AUSTRALIA AND NEW ZEALAND EDITION

POTTER AND PERRY'S

FUNDAMENTALS OF NURSING

5e

Jackie Crisp
Clint Douglas
Geraldine Rebeiro
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Fundamentals of Nursing Clinical Skills Workbook 3e

By Geraldine Rebeiro, Damian Wilson, Natashia Josephine Scully and Leanne Jack

Fundamentals of Nursing Clinical Skills Workbook 3e is an indispensable tool that will assist you in mastering the clinical skills that are essential to becoming a confident, effective and agile nurse.

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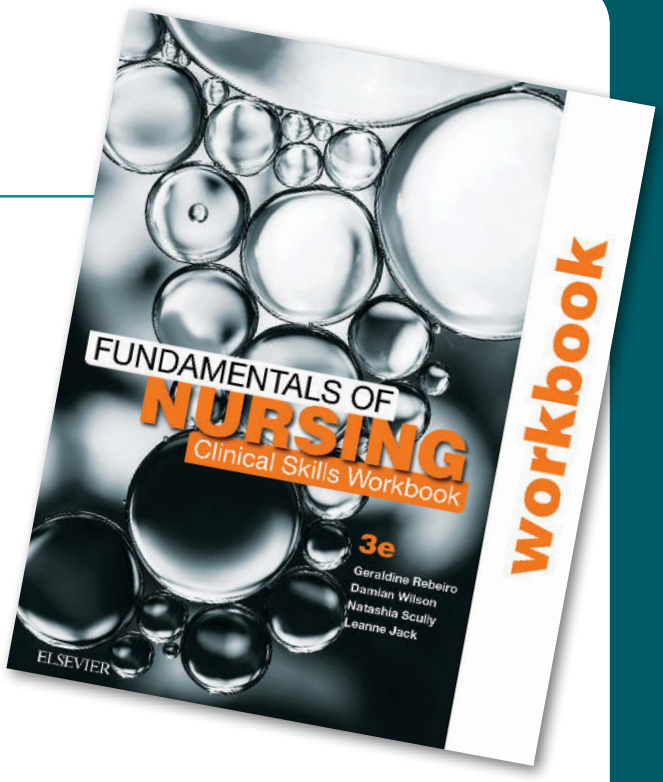

KEY FEATURES:

- Directly aligned to *Potter and Perry's Fundamentals of Nursing 5e*
- Aligned to the *Registered Nurse Standards for Practice*, 2016 (AUS) and *Competencies for Registered Nurses*, 2007 (NZ)
- 78 *Clinical Skills* linking applied nursing skills to effective clinical practice, each featuring:
  - an overview of each skill, containing rationales to help understand how and why the skill is performed
  - a focus on therapeutic relationships and patient considerations, reminding students that the patient is central to care provision
  - equipment checklist
  - a step-by-step approach, clearly explaining how to perform each skill
  - *Critical decision points*, alerting students to critical steps that ensure quality and safety in patient care
  - *Competency checklist*, providing a valuable tool for assessment, including the five-point Bondy Rating Scale
  - reflection opportunity at the end of each Competency checklist to encourage learning
- 11 new skills, including patient handover, making a post-operative bed, assessment of fluid status, and assessment and management of the deteriorating patient
- 3 additional skills (not featured in the main text):
  - Pouching a urostomy
  - Regulating CVC intravenous flow rate
  - CVC dressing change and flush

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Preface

To the student

Welcome to the fifth edition of the most successful fundamentals text ever to be published for students of nursing across Australia and New Zealand. In this new edition we have maintained the core format of a fundamentals text that you have told us you enjoy and find easy to navigate, while taking a more active and overt approach to partnership with people and families in decisions about the delivery of nursing care.

In this edition, we welcome a number of academics and clinicians to the experienced writing team, and acknowledge their expert contemporary knowledge and contribution to perspectives on health and health care. We retain an emphasis on the very important basics – the fundamentals of care that are the building blocks on which professional nursing practice is built. The clinical skills sections have been updated to reflect current best practice and are designed to support your preparation for practical learning within the ever-changing and increasingly technological world in which health care is delivered. We also re-emphasise the importance of self-reflection and awareness as important personal fundamentals for delivering quality care to the increasingly diverse populations we work with.

There is a large body of international evidence supporting the position that the quality of nursing care not only influences the way people experience illness, but also impacts on initial and long-term outcomes, quality of life and morbidity. Nurse staffing, education, workload, skill-mix and the context of care are also important determinants of quality in nursing and contribute substantially to the cost of health care. As we move into a time where the cost of hospital-based acute services is becoming unsustainable for many countries, it is the intelligent, agile and creatively competent nurse working across all sectors – including in community and primary healthcare – who will make a difference to keeping people well and cared for, more often in their own homes in the future.

Accepting the invitation to join the editorial team for the fifth edition was an easy decision for me. Not only was I excited to join an experienced and clearly successful group of editors, writers and educators, the concept of emphasising the importance and at the same time, the complexity, of fundamental nursing care, is one that resonates with me. It has been my experience that those things which may seem simple and trivial to others can have the most profound impact on people's experience of illness and health – cleaning teeth, washing hair, a kind word, a smile, a gentle touch. It has also been personally rewarding to think about, talk about and essentially reconnect with the fundamentals of nursing by working with authors, reviewers and editors on this edition. A seriously impressive bunch!

The editorial team sincerely want you to discover why seemingly routine activities, such as feeding, bathing, toileting, walking or turning patients, are so critically important to your nursing and nursing care. The moments during which you perform these tasks are crucial to forming respectful relationships and partnerships with your patients and their families, and can give powerful insights into the aspects of care, recovery and rehabilitation that are the most valued. As in previous editions, the *Clinical examples* and *Critical reflection points* throughout the text underscore how nursing knowledge and skill implemented in practice can mean the difference between effective uncomplicated recovery and independence and costly, life-threatening complications, functional decline and disability.

The fifth edition is presented to you in eight parts. First, we situate nursing within the environments of Australia and New Zealand. Concepts around partnership in care and keeping people safe are important inclusions to this section.

We introduce a new framing for clinical reasoning in Part 2, offering a scaffold for systematic and critically reflective approaches to your practice. What is your first step? Knowing how to gather appropriate information and data is critically important as this will likely be different for every patient and family. What do you do next? What does the research tell you? How does best practice apply within this context and how is it relevant to the needs of your patient and their family? Making appropriate judgements and decisions for the application of relevant, high-quality information to shared decisions about priorities and actions, and the evaluation of outcomes (from the patient's perspective) are introduced as effective ways of thinking about and embracing the value and meaning of partnerships in care.

The theme of safe and effective partnership in care continues in the third part of the text, but this time it is viewed through the lens of professional responsibility and accountability. Regulation, communication and documentation are key elements of professional and ethical practice.

Parts 4 and 5 discuss human development across the lifespan. In addition to reviewing the theoretical and practical aspects of growth and development, disability, ageing, dying and death, nursing of the developing human is situated within the complex contextual environments that we all live in and share. Here, you are invited to reflect on your own culture and values as a means of discovering personal insight into how these might affect therapeutic relationships throughout your nursing career.

The next section moves into the scientific bases of nursing practice and how these relate to basic human needs – the fundamentals of nursing. Part 6 explores the science behind physical assessment, infection control, therapeutic medication and medication management, including their practical applications. Part 7 emphasises what is at the core of this text – basic human needs, such as breathing, fluid and electrolyte balance, eating and sleeping, and how nursing practice and shared nursing knowledge aims to support people who are temporarily or permanently unable to meet specific needs by themselves.

Finally, Part 8 examines nursing in different contexts. Partly because large sectors of the Australian and New Zealand populations have access to safe food, water, shelter and a stable society; partly because contemporary Western medicine has been successful in developing and delivering treatments for disease; and partly because our world is increasingly complex and pressured – there are growing numbers of people requiring maintenance health care because of chronic conditions, people surviving previously fatal diseases, children with complex congenital and genetic birth defects who will live long and productive lives, and an ever larger group experiencing the normal degenerative conditions of ageing. While the majority of nursing graduates remain likely to commence work in acute care settings, the work of nurses in the future will be very much in demand in other locations.

Ongoing change in health care is the norm. Nursing of the future will be situated in many contexts and we believe it is crucial for you to understand the dynamic and evolving nature of your practice. To remain competent, engaged, agile and effective, having an intelligent, inquiring approach to your own learning and sharing of knowledge with others is vital.

Everyone who has contributed to this text has done so because they want you to be the best nurse you can possibly be. On behalf of the editorial team, I wish you every success in your career in health.

Donna Waters
on behalf of the Editorial Team

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The editors and publisher would like to pay tribute to Natashia Scully (author of Chapter 35 Preserving oxygenation), who passed away during the development of this text. We are so fortunate to have worked with Natashia and to have benefited from her dedication, passion and the invaluable contribution she has made to nurse education in Australia and New Zealand.

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– Jackie Crisp

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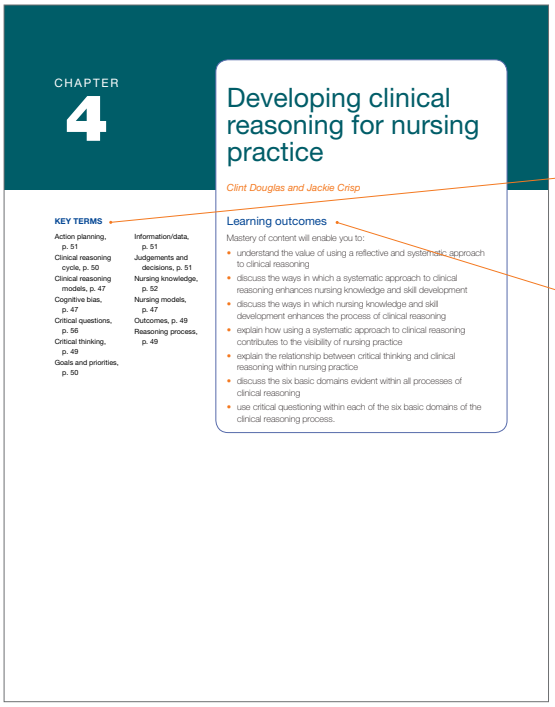
To those who have a role in preparing nurses for the future
– Donna Waters

Text features



CHAPTER
4

Developing clinical reasoning for nursing practice

Clint Douglas and Jackie Crisp

KEY TERMS

Action planning, p. 51
Clinical reasoning cycle, p. 50
Clinical reasoning models, p. 47
Cognitive bias, p. 47
Critical questions, p. 56
Critical thinking, p. 49
Goals and priorities, p. 50
Information/data, p. 51
Judgements and decisions, p. 51
Nursing knowledge, p. 52
Nursing models, p. 47
Outcomes, p. 49
Reasoning process, p. 49

Learning outcomes

Mastery of content will enable you to:

- understand the value of using a reflective and systematic approach to clinical reasoning
- discuss the ways in which a systematic approach to clinical reasoning enhances nursing knowledge and skill development
- discuss the ways in which nursing knowledge and skill development enhances the process of clinical reasoning
- explain how using a systematic approach to clinical reasoning contributes to the visibility of nursing practice
- explain the relationship between critical thinking and clinical reasoning within nursing practice
- discuss the six basic domains evident within all processes of clinical reasoning
- use critical questioning within each of the six basic domains of the clinical reasoning process.

Key terms are listed at the beginning of each chapter and defined within the text.

Learning outcomes identify the major content and foci of each chapter.

Clinical reasoning process offers a systematic and critically reflective approach as the foundation of safe and effective nursing care.



the griever. A list of local psychologists or counsellors who are skilled in bereavement support can be an invaluable resource, as can an after-hours telephone support number or liaison persons in the griever's community.

CLINICAL REASONING PROCESS

Grieving is a natural response to a loss and is considered to be a beneficial coping process. It is also a reactive process and has therapeutic value. Grieving is healthy and enables the bereaved to reflect on and accept the reality of the loss. The nurse must feel confident to assess the situation critically and make an initial needs analysis. The overall goal of nursing assessment is to gather relevant information and data in order to gain a total view of the client's health and psychosocial status. By carefully exploring information gained from interaction and collating the data in a precise and methodical way, appropriate judgements and decisions can be made to work with the client in their grieving process. Assessment provides an opportunity for the nurse to explore with the client information relating to perceived and actual priority problems (mental and physical).

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

Verbal and non-verbal communication techniques can encourage free flow of information and provide meaningful data for evaluation (see Chapter 12). These include listening, reflecting, clarifying, using non-verbal cues, appropriate use of silence, sharing perceptions, confronting contradictions and reviewing the discussions.

Culture and developmental considerations are two factors that influence communication. Culture has a profound effect on the way people communicate and behave. It is therefore important to keep in mind that cultural differences may influence how verbal and non-verbal messages are interpreted. For example, in many South-East Asian cultures – of which there are significant immigrant populations in both Australia and New Zealand – many women avoid eye contact with men. Conversely, many Western women look directly at the person to whom they are talking. *Age or developmental level* can also affect the way the assessment is handled, especially if the client is very young or very old. In the young, communication depends on the child's cognitive maturity, as noted above. In the elderly, consideration must be given to the extent to which the memory and sensory function may be affected by the ageing process. There are times when both the young and the elderly, in particular, are hesitant to share personal information, and developing communication skills that maximise the possibility of open communication is a priority for student nurses.

During periods of loss or anticipated loss, a client's emotions and behaviours may be in a state of flux. This makes assessment all the more challenging. Nurses should not assume they know how a client or family members will react. Continual assessment is essential if support and/or interventions are to be compatible with their current needs. Assessment of the client and family begins by exploring the meaning of the loss to the people involved. Examples of topics to be explored include the survivor's model of the world, personal characteristics such as personality, values, the nature of family relationships, support systems, nature of loss, cultural and spiritual beliefs, loss of personal life goals, hope, phase of grief, risks and nursing role perceptions.

When interviewing the client and family, it is important that an honest and empathetic approach is taken. Be mindful of setting the tone and direction of the interview, and of establishing a mutual understanding of the purpose of the exchange. In the initial phase it is important to establish rapport, ensure a comfortable and non-threatening setting and clarify the expectations or goals of the interview.

Establishing rapport

Establishing trust and rapport is a challenging process, particularly given the cultural diversity of Australian and New Zealand populations. A clear demonstration of respect for the client and an acceptance of the client's uniqueness as a person facilitate rapport. Greet the client by name and introduce yourself. It is usual practice not to use the client's first name unless invited to do so. In Australasian society, offering to shake hands is one way to demonstrate sincerity and acceptance.

Non-verbal behaviours

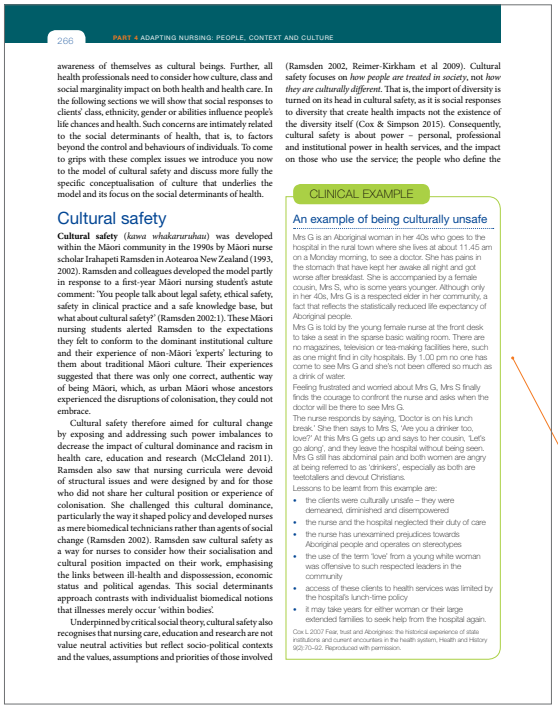
Non-verbal behaviours should match the verbal messages. Appropriate and sensitive eye contact and non-intimidating positioning should be used. Sincere and open eye contact (except in certain cultures/circumstances) is often vital with a vulnerable person, as normal contact with others may be disrupted by the emotions generated from circumstances surrounding the death. Position yourself so that you are facing the client. If the client is seated, sit at a slight angle opposite but facing, with an appropriate distance between. Avoid non-verbal behaviours such as frowning or yawning, or expressions of impatience or boredom, which imply a lack of interest. When beginning the interview, it may be appropriate to start with a brief but casual conversation that helps the client relax. Client-focused casual conversation may help alleviate any awkwardness the client may feel in talking to a stranger in the healthcare setting. Casual conversation can also be a source of valuable information.

Ensuring comfort

Ensure that the exchange of information takes place in a private setting free from interruptions and distractions. It is important to clarify that the client is feeling up to the interview before starting. Verbal therapeutic communication techniques involve open-ended questions that give the client a sense of control over the process – for example, 'Tell me about your family', 'How are you feeling now?' or 'What can you tell me about your relationship with X?'

Defining expectations

At the beginning of any interaction it is important to clarify what both the nurse and the client expect from the exchange. Make it clear that any information exchanged will be treated with sensitivity and respect. This is especially important in Australian Indigenous culture where the abuses of the past continue to have impacts on establishing trust in services (see Chapter 14). During the assessment phase, it is important to focus on how the client is reacting, not on how you believe they should be reacting. Give special attention to grief-related behaviours displayed by the client, and pay careful attention to the client's experience and the tasks of grief that may be left incomplete, which may threaten the client's psychological or physical



awareness of themselves as cultural beings. Further, all health professionals need to consider how culture, class and social marginality impact on both health and health care. In the following sections we will show that social responses to clients' class, ethnicity, gender or abilities influence people's life chances and health. Such concerns are intimately related to the social determinants of health, that is, to factors beyond the control and behaviours of individuals. To come to grips with these complex issues we introduce you now to the model of cultural safety and discuss more fully the specific conceptualisation of culture that underlies the model and its focus on the social determinants of health.

Cultural safety

Cultural safety (*kawa whakaruruhau*) was developed within the Māori community in the 1990s by Māori nurse scholar Irahapeti Ramsden in Aotearoa New Zealand (1993, 2002). Ramsden and colleagues developed the model partly in response to a first-year Māori nursing student's astute comment: 'You people talk about legal safety, ethical safety, safety in clinical practice and a safe knowledge base, but what about cultural safety?' (Ramsden 2002:1). These Māori nursing students alerted Ramsden to the expectations they felt to conform to the dominant institutional culture and their experience of non-Māori 'experts' lecturing to them about traditional Māori culture. Their experiences suggested that there was only one correct, authentic way of being Māori, which, as urban Māori whose ancestors experienced the disruptions of colonisation, they could not embrace.

Cultural safety therefore aimed for cultural change by exposing and addressing such power imbalances to decrease the impact of cultural dominance and racism in health care, education and research (McCleland 2011). Ramsden also saw that nursing curricula were devoid of structural issues and were designed by and for those who did not share her cultural position or experience of colonisation. She challenged this cultural dominance, particularly the way it shaped policy and developed nurses as mere biomedical technicians rather than agents of social change (Ramsden 2002). Ramsden saw cultural safety as a way for nurses to consider how their socialisation and cultural position impacted on their work, emphasising the links between ill-health and dispossession, economic status and political agendas. This social determinants approach contrasts with individualist biomedical notions that illnesses merely occur 'within bodies'.

Underpinned by critical social theory, cultural safety also recognises that nursing care, education and research are not value neutral activities but reflect socio-political contexts and the values, assumptions and priorities of those involved (Ramsden 2002, Reimer-Kirkham et al 2009). Cultural safety focuses on *how people are treated in society*, not *how they are culturally different*. That is, the import of diversity is turned on its head in cultural safety, as it is social responses to diversity that create health impacts not the existence of the diversity itself (Cox & Simpson 2015). Consequently, cultural safety is about power – personal, professional and institutional power in health services, and the impact on those who use the service; the people who define the

CLINICAL EXAMPLE

An example of being culturally unsafe

Mrs G is an Aboriginal woman in her 40s who goes to the hospital in the rural town where she lives at about 11.45 am on a Monday morning, to see a doctor. She has pains in the stomach that have kept her awake all night and got worse after breakfast. She is accompanied by a female cousin, Mrs S, who is some years younger. Although only in her 40s, Mrs G is a respected elder in her community, a fact that reflects the statistically reduced life expectancy of Aboriginal people.

Mrs G is told by the young female nurse at the front desk to take a seat in the sparse basic waiting room. There are no magazines, television or tea-making facilities here, such as one might find in city hospitals. By 1.00 pm no one has come to see Mrs G and she's not been offered so much as a drink of water.

Feeling frustrated and worried about Mrs G, Mrs S finally finds the courage to confront the nurse and asks when the doctor will be there to see Mrs G.

The nurse responds by saying, 'Doctor is on his lunch break.' She then says to Mrs S, 'Are you a drinker too, love?' At this Mrs G gets up and says to her cousin, 'Let's go along', and they leave the hospital without being seen. Mrs G still has abdominal pain and both women are angry at being referred to as 'drinkers', especially as both are teetotallers and devout Christians.

Lessons to be learnt from this example are:

- the clients were culturally unsafe – they were demeaned, diminished and disempowered
- the nurse and the hospital neglected their duty of care
- the nurse has unexamined prejudices towards Aboriginal people and operates on stereotypes
- the use of the term 'love' from a young white woman was offensive to such respected leaders in the community
- access of these clients to health services was limited by the hospital's lunch-time policy
- it may take years for either woman or their large extended families to seek help from the hospital again.

Cox L 2017 Fear, trust and Aborigines: the historical experience of state institutions and current encounters in the health system, Health and History 19(2):70–92. Reproduced with permission.

Clinical examples bring concepts to life and assist students to apply theory to practice with realistic case studies and clinical scenarios.

Research highlights provide examples of the most up-to-date knowledge, evidence and practice.



CHAPTER 3 ENGAGING PATIENTS AND KEEPING THEM SAFE 33

RESEARCH HIGHLIGHT

Research focus
Developing a positive relationship with patients is known to be important for the delivery of high-quality care. This paper sought to identify the factors that contribute to the development of a caring relationship between the nurse and patient.

Research abstract
The study involved conducting an umbrella review. Umbrella reviews bring together evidence from existing systematic reviews in order to synthesise the available evidence on a particular topic. This umbrella review looked at studies examining patients' and nurses' perspectives on what is important in the nurse–patient relationship. The umbrella review identified six key areas that are associated with developing and maintaining caring, positive nurse–patient relationships. They are:
- nurses' and patients' expectations of the relationship
- nurses' values and beliefs (e.g. their thoughts, perceptions, attitudes and associated behaviours)
- nurses' knowledge and skills (both clinical skills and support behaviours)
- nurses' ability to communicate effectively in a variety of ways
- how the physical and social contexts in which care is taking place affect the nurse–patient relationship
- the impact of the relationship on patients/families, nurses and nursing students.

Evidence-based practice
- The nurse–patient relationship should be based on nursing's inbuilt values such as trust, sympathy, support and responsibility, and these values should be reflected in the attitudes and behaviours of nurses.
- Compassionate care and technical skill are equally important in developing and maintaining the nurse–patient relationship.
- Nurses need to consider the context in which they are providing care and how this might impact the nurse–patient relationship.
- The nurse–patient relationship not only has an impact on patients and families/carers, but on nurses as well. Nurses find great reward in a positive relationship with their patients but can also experience guilt and frustration when a good quality nurse–patient relationship is not achieved.

Reference
Wiechula R et al 2015 Umbrella review of the evidence: What factors influence the caring relationship between a nurse and patient? Journal of Advanced Nursing, doi:10.111/jan.12862.

in decision-making about the care they receive. A meaningful relationship with the patient enables you as the nurse to make sound clinical decisions that are based on the patient's best interests.

Safety as one of the fundamentals of care

Patient safety was of central concern to Florence Nightingale as reflected in her quote, 'the very first requirement in a hospital is that it should do the sick no harm' (Nightingale 1859). Safety continues to be a concern for many modern healthcare systems, with evidence suggesting that Nightingale's doctrine of 'doing no harm' is not being completely followed. The Institute of Medicine's (IOM) landmark publication *Crossing the Quality Chasm* (2001), for example, argued that the US healthcare system was failing to deliver consistent, high-quality medical care, with such care instead frequently harming or injuring patients. The IOM called for fundamental changes to 21st-century healthcare systems to ensure the safety of all patients.

In this part of the chapter, we consider how the Fundamentals of Care Framework helps you to address patient safety concerns when providing care. As can be seen from Figure 3-1, safety is conceptualised as a fundamental of care, along with other fundamentals such as nutrition, hydration and elimination. The nurse–patient relationship is central to ensuring this fundamental need is appropriately met. While policy and organisational structures focusing on safety undoubtedly have an impact on the ability of nurses to deliver safe and effective care, our focus in this chapter is on equipping you as a student and beginning nurse with the skills to operate in a safe manner. That is, to ensure patient safety becomes part of your personal and professional responsibility as a nurse.

Patient safety encompasses three interrelated elements: physical, psychosocial and environmental safety. At the intersection of these different types of safety lies the patient's **personal safety** (see Figure 3-2). It is only when each of these types of safety are appropriately met that patients can be considered safe. Ensuring patients' personal safety requires nurses to embed patients' needs in their thinking, reflection and assessment processes (Kitson et al 2014). Careful assessment and planning prior to any intervention or interaction with a patient will ensure that injury and harm do not occur and that any safety **risks** are reduced.

Working with diversity encourages students to consider culture, lifestyle, gender and age-related issues and choices in the broadest possible way.



CHAPTER 9 EXAMINING THE ETHICAL PRACTICE OF NURSING 149

of 'characterological excellence' in determining ethical conduct (Oakley 2006, Van Hooft 2014). This is made manifest by the expression of such moral virtues as care, compassion, kindness, empathy, sympathy, altruism, generosity, respectfulness, trustworthiness, personal integrity, wisdom, courage and fairness. Virtue theorists claim that without the characterological excellence of virtue, 'a person could, robot-like, obey every moral rule and lead the perfectly moral life', but in doing so would be acting more like 'a perfectly programmed computer' than a morally responsible human being (Pence 1991). There is a sense in which being moral involves much more than merely following rules; the missing link, claim virtue theorists, is character. On this point, Pence (1991) writes:

> we need to know much more about the outer shell of behaviour to make such judgments, that is, we need to know what kind of person is involved, how the person thinks of other people, how he or she thinks of his or her own character, how the person feels about past actions, and also how the person feels about the actions not done.

Virtue ethics is particularly relevant to nursing and to nursing ethics since virtuous conduct is intricately linked to therapeutic healing behaviours and the promotion of human health and wellbeing.

The nursing profession's well-articulated ethic of care (regarded by many influential nurse theorists as the moral foundation, essence, ideal and imperative of nursing) is consistent with a virtue theory of ethics (see the classic works of the following nurse theorists: Benner & Wrubel 1989, Gaut 1991, Gaut & Leininger 1991, Leininger 1988, 1990, Roach 1987, Watson 1985a, 1985b). Significantly, virtue ethics is enjoying a renaissance in the nursing ethics literature – particularly in regard to the issue of caring for vulnerable and marginalised groups of people at risk of being treated as 'different' by healthcare providers (Armstrong 2006, 2007).

Cross-cultural ethics

As highlighted by the 'Mr G' case discussed on p. 139, another perspective on ethics and bioethics that warrants consideration by nurses is cross-cultural ethics. The basic assumptions of **cross-cultural ethics** reflect the views that:
- ethics is very much a product of the culture, society and history from which it has emerged
- all cultures have a moral system, but what this system is and how it is applied will vary across, and sometimes even within, different cultures
- there is no such thing as a universal ethic; that is, one ultimate standard of moral conduct which applies to all people equally regardless of their individual circumstances, context and culture – in other words, a 'one size fits all' approach to ethics (Johnstone 2012, 2016).

In any culturally diverse society it is imperative that a culturally informed, knowledgeable and sensitive approach to health care is taken (Johnstone 2012, Johnstone & Kanitsaki 2008). One reason for this is that a failure to adopt such an approach can result in otherwise serious moral harm being caused to people. Cross-cultural ethics, therefore, goes far beyond merely considering and critiquing the nature and content of mainstream ethical theories; it also involves a systematic examination of the moral implications of cultural and linguistic diversity in healthcare domains; for example, the extent to which patients of non-English-speaking and diverse cultural backgrounds suffer unnecessarily on account of the cultural and language differences between them and their professional carers (see de Bruijne et al 2013, Divi et al 2007, Johnstone & Kanitsaki 2006, 2009a, Suurmond et al 2010).

Nurses and other healthcare workers have a stringent moral responsibility to avoid and/or prevent the otherwise avoidable moral harms that can result from a failure to take into account the language and cultural needs of their patients (Johnstone & Kanitsaki 2006, 2008, 2009a). The harmful aftermath of racism in health care is a particular example of this. Racism in nursing and health care is a problem that has not been formally recognised as an important ethical professional issue (Johnstone & Kanitsaki 2009b, 2010). A cross-cultural approach to ethics would not only help identify the existence of racism in nursing and healthcare contexts, but also guide an effective response for dealing with it and, if not successful in eradicating it, at least minimise its harmful consequences to patient health.

WORKING WITH DIVERSITY

Truth-telling around cancer and other life-limiting diagnoses stands as one of the most controversial issues in cross-cultural health care. Research has shown that truth-telling is not just an issue for people from Greek backgrounds, but also for people from other traditional cultural backgrounds (e.g. Iranian, Pakistani, Japanese, Italian, Korean, Chinese). In these cases, truth-telling about a diagnosis of serious life-limiting illnesses (especially cancer-related illnesses) is regarded as harmful, 'undesirable' and hence to be avoided – most notably on the grounds that it could undermine the ill loved one's hope and the will to live (Johnstone 2012, 2016). Problems most commonly arise in situations where the healthcare provider (e.g. doctor, nurse) does not share the same cultural background as the patient and family, whose cultural world views are unfamiliar and even confronting to them and which they do not understand.

Critical reflection points are placed at intervals throughout each chapter as a way of inviting students to reflect on what they are reading.



8 PART 1 EVOLVING NURSING: NURSING AND THE HEALTHCARE ENVIRONMENT

Nursing's contribution to these three elements is greater than any other health profession. The nursing workforce is the single largest clinical workforce with the most direct clinical care time. Nurses continue to provide care with resilience and versatility, while often with minimal resources and organisational support. Nursing can be, as the International Council of Nurses (ICN 2015) states, 'a force for change'.

Unfortunately, reform may have short-term goals, including immediate funding reductions. As the largest workforce and, therefore, the highest cost burden, the nursing workforce is often cut, leaving fewer people to do more work. Research shows that RN staffing levels have direct implications for patient care. It demonstrates that hospitals with a higher ratio of degree-prepared RNs-to-patients have lower mortality rates (Aiken et al 2014). Hospitals with lower RN staffing numbers are linked to an increased number of adverse events including falls and medication errors (Duffield et al 2014). As a result, the aims of healthcare reform are not realised.

The escalating costs of health care require that measures be taken to contain costs to levels that countries can afford and sustain. These pressures highlight the need for how resources in health care, particularly nursing, can be used to their optimal level. When the nursing profession is optimised, evidence demonstrates that the quality of health service provision improves. When the quality of services improve, resources are often used more efficiently. For example, an optimised and appropriately resourced nursing workforce is linked to reduced adverse events (as mentioned above), improved health literacy of patients, reduced length of stay, decreased readmission rates, improved hospital avoidance and better patient outcomes (Aitken 2014). As such, the three aims of health reform can be achieved.

• CRITICAL REFLECTION POINT

Why would supporting RNs to work to their full scope of practice create a more efficient health system? How important is health literacy to the future of healthcare provision and how can nursing contribute to improving health literacy?

Nursing leadership and healthcare reform

The nursing profession is uniquely placed to lead **healthcare reform**. Nurses have close interaction with patients and their families in all health settings across the health continuum. They can help interpret and understand people's needs and expectations for health care. They are actively involved in decision-making within the clinical team and in management. They do this with a foundation of care informed by research and evidence. This understanding, experience and proximity to the patients' needs are critical components of what nursing can bring to the table and how it can enable reform.

As such, nurses have an important contribution to make in health service planning, management and policy setting. Nurses must contribute to public policy development through management and leadership roles at all levels and with direct engagement with their professional organisations. To achieve this level of responsibility, it cannot be assumed that it will automatically be provided to the profession. Historically, in many instances, nurses have been left out of the decision-making process and have been left with implementing an initiative or policy that has not been well informed. The role of the profession therefore must be proactive to maintain this level of influence and involvement.

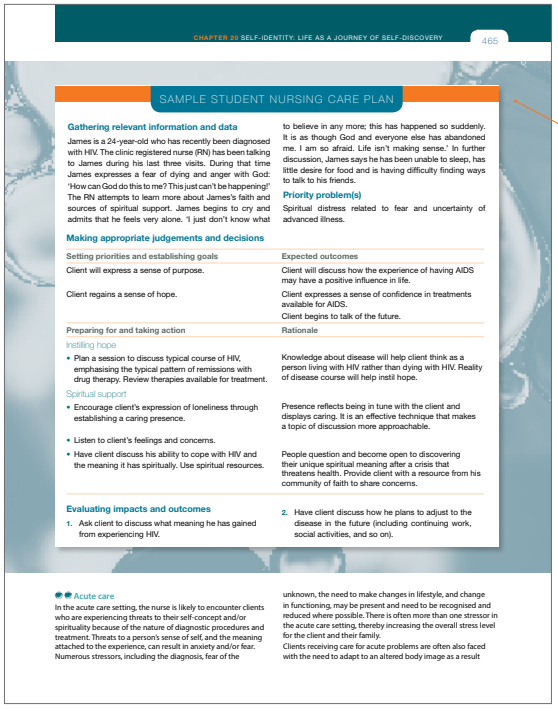
Just as important as the planning and policy setting, nurses need to be leaders in healthcare management. The International Council of Nurses (2015) asserts that nursing services must be directly managed by nurses. The reason for this is that the profession must be responsible for the professional practice of nursing. No profession outside of nursing is well positioned enough to be held to account and to lead the scope of practice and the standards for practice of the RN.

• CRITICAL REFLECTION POINT

Think about a recent health issue discussed in the news. Did nursing have a voice? How do you think nurses can promote their stories, insights, research and expert opinions via social media?

Regulation of the nursing profession

The Nursing and Midwifery Board of Australia (NMBA) and Nursing Council of New Zealand are responsible for **professional regulation** and setting standards, codes and guidelines for the nursing and midwifery professions (Box 1-2). The role of professional colleges and associations in developing specific standards of practice and credentialling individual nurses is increasing. RNs are individually accountable for their own practice and have a personal responsibility to maintain their competency and meet professional standards in order to maintain their licence to practise. The role of the RN has evolved along with changes in advancing technology, newly defined patient needs and changes to the way health care is delivered. In this way, it is not unreasonable to expect that the role of the RN will continue to evolve and change. It is



CHAPTER 20 SELF-IDENTITY: LIFE AS A JOURNEY OF SELF-DISCOVERY 465

SAMPLE STUDENT NURSING CARE PLAN

Gathering relevant information and data

James is a 24-year-old who has recently been diagnosed with HIV. The clinic registered nurse (RN) has been talking to James during his last three visits. During that time James expresses a fear of dying and anger with God: 'How can God do this to me? This just can't be happening!' The RN attempts to learn more about James's faith and sources of spiritual support. James begins to cry and admits that he feels very alone. 'I just don't know what to believe in any more; this has happened so suddenly. It is as though God and everyone else has abandoned me. I am so afraid. Life isn't making sense.' In further discussion, James says he has been unable to sleep, has little desire for food and is having difficulty finding ways to talk to his friends.

Priority problem(s)

Spiritual distress related to fear and uncertainty of advanced illness.

Making appropriate judgements and decisions

Setting priorities and establishing goals	Expected outcomes
Client will express a sense of purpose.	Client will discuss how the experience of having AIDS may have a positive influence in life.
Client regains a sense of hope.	Client expresses a sense of confidence in treatments available for AIDS. Client begins to talk of the future.
Preparing for and taking action	**Rationale**
Instilling hope	
• Plan a session to discuss typical course of HIV, emphasising the typical pattern of remissions with drug therapy. Review therapies available for treatment.	Knowledge about disease will help client think as a person living with HIV rather than dying with HIV. Reality of disease course will help instil hope.
Spiritual support	
• Encourage client's expression of loneliness through establishing a caring presence.	Presence reflects being in tune with the client and displays caring. It is an effective technique that makes a topic of discussion more approachable.
• Listen to client's feelings and concerns.	
• Have client discuss his ability to cope with HIV and the meaning it has spiritually. Use spiritual resources.	People question and become open to discovering their unique spiritual meaning after a crisis that threatens health. Provide client with a resource from his community of faith to share concerns.

Evaluating impacts and outcomes

1. Ask client to discuss what meaning he has gained from experiencing HIV.
2. Have client discuss how he plans to adjust to the disease in the future (including continuing work, social activities, and so on).

Acute care

In the acute care setting, the nurse is likely to encounter clients who are experiencing threats to their self-concept and/or spirituality because of the nature of diagnostic procedures and treatment. Threats to a person's sense of self, and the meaning attached to the experience, can result in anxiety and/or fear. Numerous stressors, including the diagnosis, fear of the unknown, the need to make changes in lifestyle, and change in functioning, may be present and need to be recognised and reduced where possible. There is often more than one stressor in the acute care setting, thereby increasing the overall stress level for the client and their family.

Clients receiving care for acute problems are often also faced with the need to adapt to an altered body image as a result

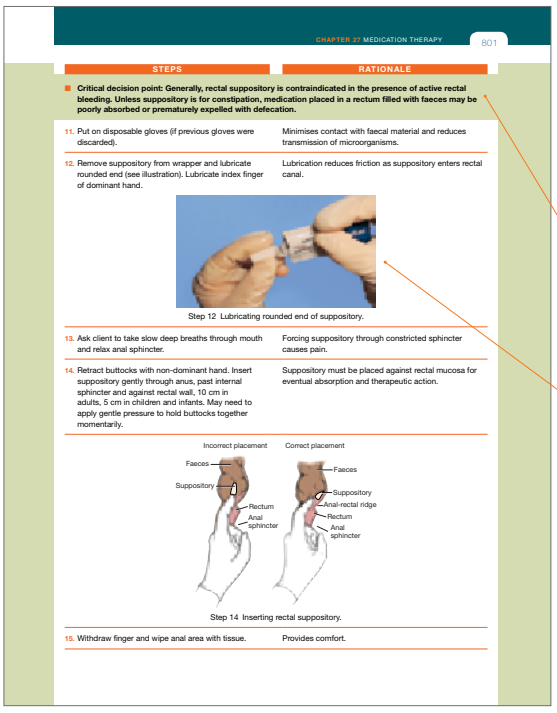
Sample student nursing care plans provide worked examples of how nursing care planning is individualised, based on scientific rationales and research evidence.

Therapeutic relationship and patient considerations

Reminds students that the person is central to care provision in the therapeutic relationship for each skill.

Steps and rationale

Each skill features the trusted step-by-step approach with rationales to help students understand how and why a skill is performed.



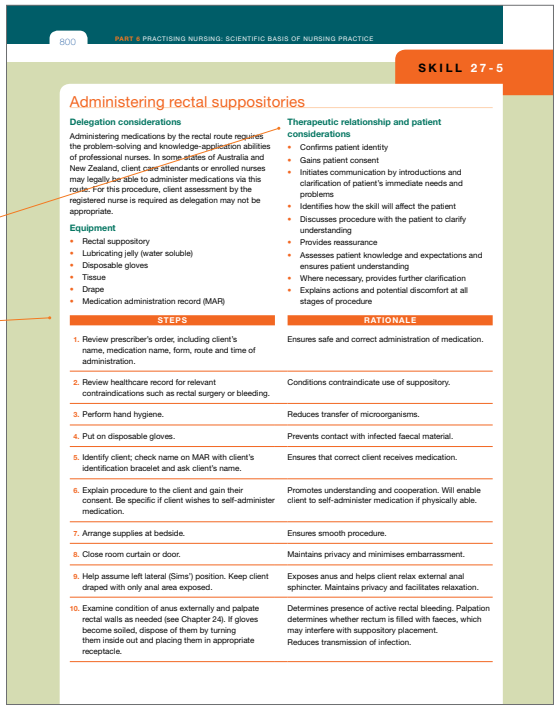
CHAPTER 27 MEDICATION THERAPY 801

STEPS	RATIONALE
■ **Critical decision point: Generally, rectal suppository is contraindicated in the presence of active rectal bleeding. Unless suppository is for constipation, medication placed in a rectum filled with faeces may be poorly absorbed or prematurely expelled with defecation.**	
11. Put on disposable gloves (if previous gloves were discarded).	Minimises contact with faecal material and reduces transmission of microorganisms.
12. Remove suppository from wrapper and lubricate rounded end (see illustration). Lubricate index finger of dominant hand.	Lubrication reduces friction as suppository enters rectal canal.
Step 12 Lubricating rounded end of suppository.	
13. Ask client to take slow deep breaths through mouth and relax anal sphincter.	Forcing suppository through constricted sphincter causes pain.
14. Retract buttocks with non-dominant hand. Insert suppository gently through anus, past internal sphincter and against rectal wall, 10 cm in adults, 5 cm in children and infants. May need to apply gentle pressure to hold buttocks together momentarily.	Suppository must be placed against rectal mucosa for eventual absorption and therapeutic action.
Step 14 Inserting rectal suppository.	
15. Withdraw finger and wipe anal area with tissue.	Provides comfort.

Critical decision points alert students to critical steps within a skill to ensure quality and safety in client care.

Images support learning and demonstrate how to perform techniques.

Skills featuring the step-by-step approach and rationales:



800 PART 6 PRACTISING NURSING: SCIENTIFIC BASIS OF NURSING PRACTICE

SKILL 27-5

Administering rectal suppositories

Delegation considerations

Administering medications by the rectal route requires the problem-solving and knowledge-application abilities of professional nurses. In some states of Australia and New Zealand, client care attendants or enrolled nurses may legally be able to administer medications via this route. For this procedure, client assessment by the registered nurse is required as delegation may not be appropriate.

Equipment

- Rectal suppository
- Lubricating jelly (water soluble)
- Disposable gloves
- Tissue
- Drape
- Medication administration record (MAR)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Review prescriber's order, including client's name, medication name, form, route and time of administration.	Ensures safe and correct administration of medication.
2. Review healthcare record for relevant contraindications such as rectal surgery or bleeding.	Conditions contraindicate use of suppository.
3. Perform hand hygiene.	Reduces transfer of microorganisms.
4. Put on disposable gloves.	Prevents contact with infected faecal material.
5. Identify client; check name on MAR with client's identification bracelet and ask client's name.	Ensures that correct client receives medication.
6. Explain procedure to the client and gain their consent. Be specific if client wishes to self-administer medication.	Promotes understanding and cooperation. Will enable client to self-administer medication if physically able.
7. Arrange supplies at bedside.	Ensures smooth procedure.
8. Close room curtain or door.	Maintains privacy and minimises embarrassment.
9. Help assume left lateral (Sims') position. Keep client draped with only anal area exposed.	Exposes anus and helps client relax external anal sphincter. Maintains privacy and facilitates relaxation.
10. Examine condition of anus externally and palpate rectal walls as needed (see Chapter 24). If gloves become soiled, dispose of them by turning them inside out and placing them in appropriate receptacle.	Determines presence of active rectal bleeding. Palpation determines whether rectum is filled with faeces, which may interfere with suppository placement. Reduces transmission of infection.

Key concepts provide a summary of each chapter's key points to reinforce learning outcomes.



12 PART 1 EVOLVING NURSING: NURSING AND THE HEALTHCARE ENVIRONMENT

greater competency, so eventually the novice becomes the advanced beginner, who in turn moves through being competent to proficient and finally to expert. At the expert level, the RN is able to provide care to patients with complex health needs and requires only indirect governance and support.

Throughout the journey across the practice pathway, the RN is protected by significant safety and quality frameworks, which are themselves underpinned by evolving legislation, registration standards, professional practice standards and policies that align with best practice and evidence.

The future of nursing: leading change

Through the effective use of the professional and regulatory frameworks, informed through postgraduate education and relevant experience, RNs can lead service transformation. Possible examples of new ways of working and new models of care may include:

- nurse proceduralists undertaking new diagnostic functions, such as endoscopy
- nurse-led clinics delivering integrated care to palliative care patients
- nurse triage models to streamline referral pathways into outpatient and specialist services
- public–private partnerships for nurse practitioners, including admission privileges, that enhance consumer choice
- RNs working in sustainable and economically viable self-employment models focused on community chronic disease management
- brokerage and community case management for disability clients through the National Disability Insurance Scheme (NDIS)
- nurses delivering care and ongoing management to rural and remote patients through outreach services delivered through use of technology and Telehealth
- expanded access to diagnostics and medicines to improve the patient journey and deliver services closer to a patient's home.

CRITICAL REFLECTION POINT

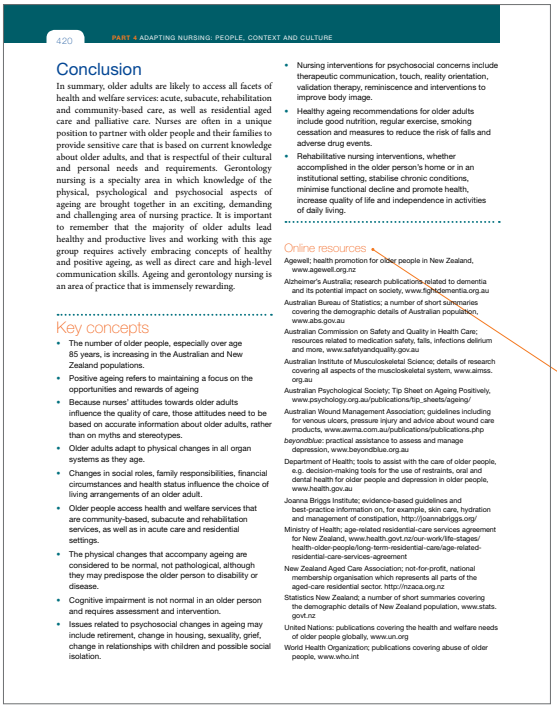
In thinking about the future directions of nursing practice, what are the capabilities you will need for success in new work environments that are constantly evolving?

Conclusion

We live in a dynamic and exciting time in the history of nursing and health care. We have an insatiable appetite for safe, accessible, affordable and quality healthcare services. The demand for professional care provided by nurses has never been greater. RNs across Australia and New Zealand are stepping up and meeting the challenges their environments are providing. They are delivering person-centred care in diverse models and settings across the continuum from primary to tertiary care. We have the safety and regulatory mechanisms that surround us to ensure we practise to our scope and can be responsive. The challenge is to maintain our ability to be responsive to our communities and be confident and resilient in an ever-changing environment. Ensuring we work to our full scope, underpinned by ongoing postgraduate education, is not only the answer to new models of care, but also to the professional and personal satisfaction of us as nurses. Nursing leadership at all levels of the healthcare system is essential to secure better health and wellbeing for our nations.

Key concepts

- Nursing practice is evolving in response to social, economic and political factors and changing population health needs. These drivers help to shape the context in which the RN practises and delivers care.
- Healthcare costs are growing at an unsustainable rate. An efficient and effective healthcare system that reduces wastage is critical to ensuring population health and wellbeing.
- Health reform is continuous and will create more opportunities for nurses to work in new models of healthcare delivery that provide quality health services to individuals, families and communities.
- Nurses are the largest group of health professionals in the health system. A proactive and dynamic nursing profession is pivotal to future healthcare provision.
- It is important that nurses are educationally prepared for an evolving context of practice across a range of healthcare environments, including those that have never been available before as a result of innovation and technology.
- Registered nurses must be supported to work to their full regulated scope of practice in order to maximise the efficiency and effectiveness of the nursing workforce.
- Nurses working to their full potential will result in personal, professional and career satisfaction, as well as ensuring the delivery of safe, quality patient outcomes.
- It is important to recognise and reinforce the important contribution of the nursing profession at all levels of the healthcare system, including direct clinical care, coordinating complex patient care, driving safety and quality, policy and systems management, research, education and executive leadership.



420 PART 4 ADAPTING NURSING: PEOPLE, CONTEXT AND CULTURE

Conclusion

In summary, older adults are likely to access all facets of health and welfare services: acute, subacute, rehabilitation and community-based care, as well as residential aged care and palliative care. Nurses are often in a unique position to partner with older people and their families to provide sensitive care that is based on current knowledge about older adults, and that is respectful of their cultural and personal needs and requirements. Gerontology nursing is a specialty area in which knowledge of the physical, psychological and psychosocial aspects of ageing are brought together in an exciting, demanding and challenging area of nursing practice. It is important to remember that the majority of older adults lead healthy and productive lives and working with this age group requires actively embracing concepts of healthy and positive ageing, as well as direct care and high-level communication skills. Ageing and gerontology nursing is an area of practice that is immensely rewarding.

Key concepts

- The number of older people, especially over age 85 years, is increasing in the Australian and New Zealand populations.
- Positive ageing refers to maintaining a focus on the opportunities and rewards of ageing
- Because nurses' attitudes towards older adults influence the quality of care, those attitudes need to be based on accurate information about older adults, rather than on myths and stereotypes.
- Older adults adapt to physical changes in all organ systems as they age.
- Changes in social roles, family responsibilities, financial circumstances and health status influence the choice of living arrangements of an older adult.
- Older people access health and welfare services that are community-based, subacute and rehabilitation services, as well as in acute care and residential settings.
- The physical changes that accompany ageing are considered to be normal, not pathological, although they may predispose the older person to disability or disease.
- Cognitive impairment is not normal in an older person and requires assessment and intervention.
- Issues related to psychosocial changes in ageing may include retirement, change in housing, sexuality, grief, change in relationships with children and possible social isolation.
- Nursing interventions for psychosocial concerns include therapeutic communication, touch, reality orientation, validation therapy, reminiscence and interventions to improve body image.
- Healthy ageing recommendations for older adults include good nutrition, regular exercise, smoking cessation and measures to reduce the risk of falls and adverse drug events.
- Rehabilitative nursing interventions, whether accomplished in the older person's home or in an institutional setting, stabilise chronic conditions, minimise functional decline and promote health, increase quality of life and independence in activities of daily living.

Online resources

Agewell; health promotion for older people in New Zealand, www.agewell.org.nz

Alzheimer's Australia; research publications related to dementia and its potential impact on society, www.fightdementia.org.au

Australian Bureau of Statistics; a number of short summaries covering the demographic details of Australian population, www.abs.gov.au

Australian Commission on Safety and Quality in Health Care; resources related to medication safety, falls, infections delirium and more, www.safetyandquality.gov.au

Australian Institute of Musculoskeletal Science; details of research covering all aspects of the musculoskeletal system, www.aimss.org.au

Australian Psychological Society; Tip Sheet on Ageing Positively, www.psychology.org.au/publications/tip_sheets/ageing/

Australian Wound Management Association; guidelines including for venous ulcers, pressure injury and advice about wound care products, www.awma.com.au/publications/publications.php

beyondblue: practical assistance to assess and manage depression, www.beyondblue.org.au

Department of Health; tools to assist with the care of older people, e.g. decision-making tools for the use of restraints, oral and dental health for older people and depression in older people, www.health.gov.au

Joanna Briggs Institute; evidence-based guidelines and best-practice information on, for example, skin care, hydration and management of constipation, http://joannabriggs.org/

Ministry of Health; age-related residential-care services agreement for New Zealand, www.health.govt.nz/our-work/life-stages/health-older-people/long-term-residential-care/age-related-residential-care-services-agreement

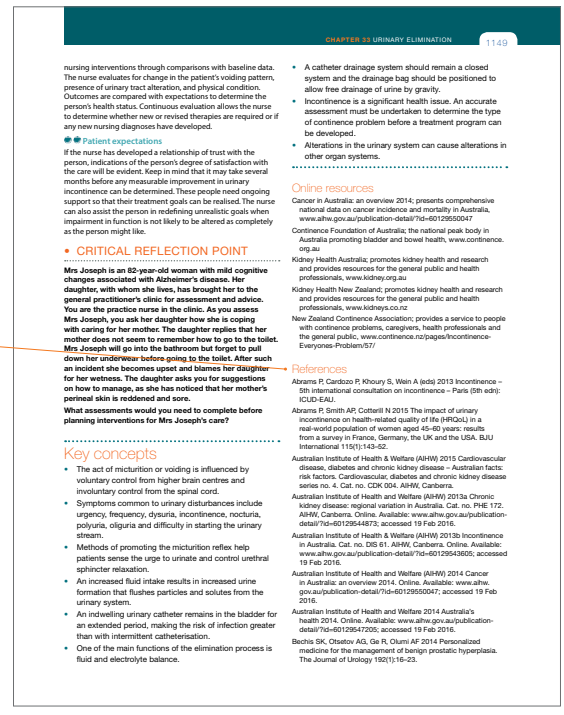
New Zealand Aged Care Association; not-for-profit, national membership organisation which represents all parts of the aged-care residential sector. http://nzaca.org.nz

Statistics New Zealand; a number of short summaries covering the demographic details of New Zealand population, www.stats.govt.nz

United Nations: publications covering the health and welfare needs of older people globally, www.un.org

World Health Organization; publications covering abuse of older people, www.who.int

Online resources contain useful web links to current information on best practice and evidence-based guidelines.



CHAPTER 33 URINARY ELIMINATION 1149

nursing interventions through comparisons with baseline data. The nurse evaluates for change in the patient's voiding pattern, presence of urinary tract alteration, and physical condition. Outcomes are compared with expectations to determine the person's health status. Continuous evaluation allows the nurse to determine whether new or revised therapies are required or if any new nursing diagnoses have developed.

Patient expectations

If the nurse has developed a relationship of trust with the person, indications of the person's degree of satisfaction with the care will be evident. Keep in mind that it may take several months before any measurable improvement in urinary incontinence can be determined. These people need ongoing support so that their treatment goals can be realised. The nurse can also assist the person in redefining unrealistic goals when impairment in function is not likely to be altered as completely as the person might like.

CRITICAL REFLECTION POINT

Mrs Joseph is an 82-year-old woman with mild cognitive changes associated with Alzheimer's disease. Her daughter, with whom she lives, has brought her to the general practitioner's clinic for assessment and advice. You are the practice nurse in the clinic. As you assess Mrs Joseph, you ask her daughter how she is coping with caring for her mother. The daughter replies that her mother does not seem to remember how to go to the toilet. Mrs Joseph will go into the bathroom but forget to pull down her underwear before going to the toilet. After such an incident she becomes upset and blames her daughter for her wetness. The daughter asks you for suggestions on how to manage, as she has noticed that her mother's perineal skin is reddened and sore.
What assessments would you need to complete before planning interventions for Mrs Joseph's care?

Key concepts

- The act of micturition or voiding is influenced by voluntary control from higher brain centres and involuntary control from the spinal cord.
- Symptoms common to urinary disturbances include urgency, frequency, dysuria, incontinence, nocturia, polyuria, oliguria and difficulty in starting the urinary stream.
- Methods of promoting the micturition reflex help patients sense the urge to urinate and control urethral sphincter relaxation.
- An increased fluid intake results in increased urine formation that flushes particles and solutes from the urinary system.
- An indwelling urinary catheter remains in the bladder for an extended period, making the risk of infection greater than with intermittent catheterisation.
- One of the main functions of the elimination process is fluid and electrolyte balance.
- A catheter drainage system should remain a closed system and the drainage bag should be positioned to allow free drainage of urine by gravity.
- Incontinence is a significant health issue. An accurate assessment must be undertaken to determine the type of continence problem before a treatment program can be developed.
- Alterations in the urinary system can cause alterations in other organ systems.

Online resources

Cancer in Australia: an overview 2014; presents comprehensive national data on cancer incidence and mortality in Australia, www.aihw.gov.au/publication-detail/?id=60129550047

Continence Foundation of Australia; the national peak body in Australia promoting bladder and bowel health, www.continence.org.au

Kidney Health Australia; promotes kidney health and research and provides resources for the general public and health professionals, www.kidney.org.au

Kidney Health New Zealand; promotes kidney health and research and provides resources for the general public and health professionals, www.kidneys.co.nz

New Zealand Continence Association; provides a service to people with continence problems, caregivers, health professionals and the general public, www.continence.nz/pages/fncontinence-Everyones-Problem/57/

References provide an up-to-date list of evidence-based sources and journal articles.

References

Abrams P, Cardozo P, Khoury S, Wein A (eds) 2013 Incontinence – 5th international consultation on incontinence – Paris (5th edn): ICUD-EAU.

Abrams P, Smith AP, Cotterill N 2015 The impact of urinary incontinence on health-related quality of life (HRQoL) in a real-world population of women aged 45–60 years: results from a survey in France, Germany, the UK and the USA. BJU International 115(1):143–52.

Australian Institute of Health & Welfare (AIHW) 2015 Cardiovascular disease, diabetes and chronic kidney disease – Australian facts: risk factors. Cardiovascular, diabetes and chronic kidney disease series no. 4. Cat. no. CDK 004. AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2013a Chronic kidney disease: regional variation in Australia. Cat. no. PHE 172. AIHW, Canberra. Online. Available: www.aihw.gov.au/publication-detail/?id=60129544873; accessed 19 Feb 2016.

Australian Institute of Health & Welfare (AIHW) 2013b Incontinence in Australia. Cat. no. DIS 61. AIHW, Canberra. Online. Available: www.aihw.gov.au/publication-detail/?id=60129543605; accessed 19 Feb 2016.

Australian Institute of Health and Welfare (AIHW) 2014 Cancer in Australia: an overview 2014. Online. Available: www.aihw.gov.au/publication-detail/?id=60129550047; accessed 19 Feb 2016.

Australian Institute of Health and Welfare 2014 Australia's health 2014. Online. Available: www.aihw.gov.au/publication-detail/?id=60129547205; accessed 19 Feb 2016.

Bechis SK, Otsetov AG, Ge R, Olumi AF 2014 Personalized medicine for the management of benign prostatic hyperplasia. The Journal of Urology 192(1):16–23.

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PART
1

EVOLVING NURSING:

Nursing and the healthcare environment

CHAPTER 1
Creating a proactive and dynamic nursing profession
2

CHAPTER 2
Building nursing practice: the Fundamentals of Care Framework
15

CHAPTER 3
Engaging patients and keeping them safe
30

CHAPTER

1

Creating a proactive and dynamic nursing profession

Frances Hughes, David Stewart and Amanda Davies

Learning outcomes

Mastery of content will enable you to:

- reflect on personal capabilities needed for a successful nursing career, in a future healthcare system characterised by rapid change
- discuss the broad aims and factors that are driving health reform in Australia and New Zealand
- understand the key elements of the nursing profession's regulatory framework in Australia and New Zealand
- discuss factors influencing nursing scope of practice
- appreciate the importance of nursing leadership at all levels for a proactive and dynamic profession.

KEY TERMS

Ageing population, p. 5
Chronic disease, p. 6
Health expenditure, p. 5
Healthcare reform, p. 8
Nursing workforce, p. 4
Person-centred care, p. 5
Practice pathway, p. 10
Professional development, p. 10
Professional regulation, p. 8
Scope of practice, p. 9

Introduction

Nursing as a profession continues to evolve in Australia and New Zealand, with nurses tackling a wider range of healthcare responsibilities, triggered by crucial health reforms. These government reforms are designed to make the health system more efficient, while relieving some of the pressures associated with growing healthcare costs (Productivity Commission 2015). The growing burden on governments to fund healthcare services is being driven by population ageing, costly medical technologies, increasing community expectations and the rising incidence of chronic diseases. While research is providing better drugs, devices and interventions to keep people healthier and living longer, subsidising these is increasingly expensive (Biggs 2014). There is renewed focus on the role and scope of practice of nurses in the context of mounting pressures on the health system, and the potential of the profession to respond to increasingly complex care needs across the life span, particularly those associated with an ageing population and the growing number of people with chronic health conditions.

Nursing education and research is crucial for a proactive and dynamic profession. With the right knowledge and skills, nurses are prepared for leading widespread change in health care and responding to demands by consumers, governments and health service providers with evidence-based models for practice that are efficient and effective at improving access to health care across a range of settings. Nurses, working as clinicians, managers, leaders, teachers, researchers, scholars and policy-makers all influence the delivery of safe, high-quality care and improve the health and wellbeing of individuals, families, communities and populations through advancing nursing practice (Nelson et al 2014).

It is imperative for nurses to be intelligent, critical thinkers, committed to lifelong learning, great caregivers but also great innovators, who are able to collaborate with other healthcare providers to lead new approaches in how health care is delivered, while actively engaging consumers as key decision-makers in shaping the future of healthcare provision. Opportunities to realise long-term health reform options cannot be achieved without nurses and without our proactive contributions and participation at all levels of the healthcare system.

Nursing's contribution to quality patient outcomes

As the largest clinical workforce, nurses have a significant impact on the overall productivity and efficiency of the healthcare system. Nursing labour costs make up one of the largest components of overall health service budgets, which often makes nursing human resources the target of fiscal constraint and workforce reforms. A large body of research demonstrates the strong relationship between a registered nurse (RN) workforce and improved patient outcomes. RNs are a critical part of the healthcare team, and the number of RNs in the team is directly linked to patient safety (Twigg et al 2010).

Traditionally, hospitals have focused on productivity (hours per unit of service, such as hours per patient day) to determine staffing levels. This approach creates unintended incentives to reduce the number of nurses on the floor, which then limits the time spent on quality

RESEARCH HIGHLIGHT

Research focus

This article provides a comprehensive review of the research linking nurse staffing to patient outcomes at a time of growing shortages, highlighting that a policy response based on substituting RNs with lower skilled workers may have adverse effects on patient outcomes.

Research abstract

An electronic search of articles published in English using the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Journals @ OVID and Medline was undertaken.

Evidence-based practice

Robust evidence exists nationally and internationally linking nurse staffing to patient outcomes. Recent meta-analyses have found that there was a 3–12% reduction in adverse outcomes and a 16% reduction in the risk of mortality in surgical patients with higher RN staffing. Evidence confirms that improvements in nurse staffing is a cost-effective investment for the health system, but this is not fully appreciated by health policy advisers.

Conclusion

An appropriate policy response demands that the evidence that patient safety is linked to nurse staffing be recognised. Policy-makers must ensure there are sufficient registered nurses to guarantee patient safety.

Reference

Twigg D et al 2010 The impact of nurses on patient morbidity and mortality – the need for a policy change in response to the nursing shortage. Aust Health Rev 34(3):312–16, with permission from CSIRO Publishing.

patient care. An evolved approach to RN staffing is focused on optimising nursing skill mix, leading to lower costs, improved RN satisfaction and improved patient outcomes (Berlin et al 2014). Job satisfaction is important to nurses, and is critical for retention across career paths, as well as attracting individuals into the profession in order to halt an imminent nursing shortage. Change is needed to improve the transition from education to the workplace, keeping nurses in their jobs, particularly in the early and later part of their careers, and in the way nurses are deployed in order to make the most of their valuable clinical skills (Health Workforce Australia 2014a, 2014b).

The nursing profession must also provide ongoing career development opportunities that capitalise on the profession's skills and expertise. Nursing roles with enhanced autonomy and decision-making have developed in response to increasingly complex healthcare needs. This has established a more flexible **nursing workforce**, with wide-ranging capabilities underpinned by robust regulatory frameworks, required to meet changing service requirements, new models of care and, more importantly, consumer expectations (Duffield et al 2011). The rapid uptake of the nurse practitioner role across Australia and New Zealand attests to identification by those at the front line of health service delivery that this nursing role is dynamic and improves the quality, timeliness and access to health care for under-served population groups, including minority groups and indigenous peoples (Middleton et al 2011).

In the current healthcare landscape, RNs need to be able to articulate their roles, describe the complexity of the care they provide and demonstrate how contemporary nursing practice contributes to quality patient outcomes. There is potential for serious quality and safety risks if there is an ongoing failure to recognise the overall value of nursing's contribution to health care.

• CRITICAL REFLECTION POINT

Why is it important for nurses to articulate their scope of practice?

Nursing defined

Registered nurses have acquired greater responsibility as autonomous and collaborative practitioners leading health and wellness programs, managing their own services and running their own nurse-led clinics. Many are at the forefront of developing innovative roles and services, acquiring new skills, conducting clinical research and finding new ways to improve health and wellbeing across Australia and New Zealand.

The International Council of Nurses (ICN 2014), which represents more than 16 million nurses worldwide, defines the role of the nurse from an international context as:

> **Encompassing autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all settings. Nursing includes the promotion of health, prevention of illness, and the care of ill, disabled and dying people. Advocacy, promotion of a safe environment, research, participation in shaping health policy and in patient and health systems management, and education are also key nursing roles.**

At all stages of life, in situations of health, illness, injury and disability, RNs deliver direct healthcare services, coordinate care and support consumers in managing their own health (Nelson et al 2014). This highlights the unique position of the nursing profession to contribute to changes in the healthcare system by virtue of their combined professional and executive leadership, across a wide range of practice settings, including clinical practice, management, education and research (Talbert 2012).

While hospitals remain the major employers of nurses, increasingly there will be a shift from nursing at the hospital bedside to nursing at the patient's side, working in settings across the healthcare continuum. It is important that the nursing workforce is educationally prepared for an evolving context of practice across a range of healthcare environments, including those that have never been available before, including the adoption of technology-enabled care. There is also an expectation that RNs will continually develop their knowledge and professional practice in accordance with the health needs of the population.

The community trusts that nurses will act in the best interests of those in their care and that nurses will base that care on an assessment of the individual's specific needs (NMBA 2016).

Nurses have an evidence-based education that enables them to meet changing healthcare needs, working both on their own and in teams with other professionals along the entire continuum of health and illness. In addition, it is essential to increase the research capability of the RN, and to systematically evaluate nursing efficiency and effectiveness. Nurses must be involved in leadership and decision-making for health policy, for which preparation should begin on initial undergraduate education and continue throughout their career (Commission on the Future of Nursing and Midwifery 2010).

Nursing as a profession offers a diverse, fulfilling career pathway with high levels of responsibility and autonomy, and opportunities for personal and professional development. New stories of nursing need to be told, framed by a clear understanding of the profession told through the lived experience of the consumer.

Person-centred care

The healthcare system continually challenges nursing practice to adapt to the broader determinants of health, including social, physical, psychological, economic and political influences on society. The philosophies of the profession will never change, with the heart of the profession remaining committed to meeting basic human needs and advocating for the most vulnerable in society. Nurses are the healthcare professionals closest to people in all settings of society, and can have an enormous impact in terms of reducing healthcare costs, while improving health outcomes (ICN 2015). As a profession, we reach people that other practitioners never see, both in urban and rural and remote communities.

In the past, people were expected to fit in with the routines and practices that health services felt were most appropriate. But in order to offer more **person-centred care**, services must change to be more flexible to meet consumer needs in a manner that is best for them. This involves working with people and their families to find the best way to provide for their care needs through a partnership that allows them to make choices (Australian College of Nursing 2014).

Making sure that people are involved in and are central to their care is now recognised as a key component of developing high-quality healthcare and is central to providing holistic nursing care (Australian Commission on Safety and Quality in Health Care 2011).

• CRITICAL REFLECTION POINT

Think about an experience you have had as a patient accessing health care. Did the clinician listen to you, consider your needs and understand what was important to you?

Challenges facing the Australian and New Zealand health systems

The challenges that the health system is facing today and into the future are well known (Box 1-1). One particular focus has been on population ageing as a key driver of **health expenditure** (Productivity Commission 2015). One of the reasons for this is that healthcare expenditure is generally higher in the older age groups. The highest expenditure is generally spent in the last 6 months of life. In 2008–09, expenditure on adults aged over 85 was almost 20 times higher per person (AIHW 2014).

On the surface it could be assumed that if the number of people in this age group continues to grow, the demand for health expenditure will increase. However, ageing cannot be considered the sole contributor to expenditure growth (Figure 1-1). Over the past 25 years, health expenditure has risen at a faster rate than either population growth or ageing (AIHW 2014). Other components attributed to the increased health expenditure can be linked to non-demographic factors such as the development of new treatments including technologies, pharmaceuticals and improved techniques. These elements have enabled treatments that can be used for a wider range of health conditions. This in turn has led to greater community awareness and expectation. Growing consumer demand and healthcare utilisation are driving up health expenditure faster than demographic factors have predicted (AIHW 2014). Figure 1-1 shows that increases in health expenditures are not primarily driven by an ageing population, but by people of all ages using healthcare services more often (volume per case).

There is some concern about the extent to which the predicated growth in health expenditure is underestimated. It is likely that over time an **ageing population**, with higher levels of chronic disease, increased expectations and access to new technologies and services, will increase

BOX 1-1 Challenges facing the health system

- Decreasing available revenue and increased health expenditure
- Increased burden of disease
- Ageing population
- Increased demand for health services across all demographics
- Innovations in treatments and techniques
- Insufficient workforce.

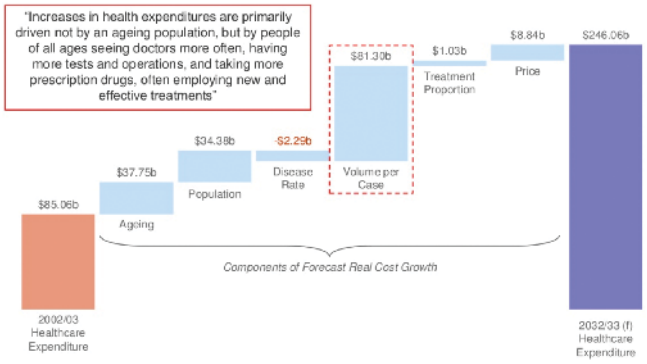

Figure 1-1 Contributors to growth in healthcare expenditure.

John Goss, AIHW.

and compound the independent effect of population ageing on the health system costs (AIHW 2014).

It is hard to deny the challenge that is set before the health system. But it is even harder to acknowledge and act on future challenges. The complex environment in which we live and work actively prevents us from dealing with the situation appropriately. For example, governments have previously identified various ways to improve the efficiency and effectiveness of the health system. However, this has often been stymied due to factors such as fractured political and funding responsibilities, poor design and implementation, inadequate resourcing or lack of political will.

Yet the challenges cannot be dismissed or ignored. In addition, we cannot expect that how we do things now will be effective in addressing them. As Albert Einstein stated: 'We cannot solve our problems with the same thinking we used when we created them'. The nursing workforce is pivotal in leading the health system to meet these challenges. Nursing needs to have a voice at the table in shaping the future of good health and healthcare provision. To achieve this, the nursing workforce must have a comprehensive understanding of the context of the health environment.

• CRITICAL REFLECTION POINT

Why is it important for nurses to understand the challenges facing the health system?

Australia's and New Zealand's health

Good health is at the core of human wellbeing, a prosperous society and good economic progress. The healthcare system is a critical component in ensuring and maintaining the health and wellbeing of populations. Health is seen as a precondition and an indicator for sustainable development. Countries that have good health have significantly higher economic development because the populations are generally more productive. In contrast, countries with poor health outcomes can find that this erodes economic growth (ICN 2015).

Australia and New Zealand spend a lot of money on the provision of health care. This money comes from numerous sources, such as taxes, insurance premiums and direct payments. This expenditure is rapidly growing. While the health system produces good outcomes in comparison to other countries around the world, there are still elements within it that are not performing as efficiently as they could be. This can be seen in areas such as wasteful spending, reduced access and substandard quality and safety outcomes (Productivity Commission 2015).

Australians and New Zealanders are among those with the highest life expectancies in the world. However, does this mean that we are healthy? Data demonstrates that mortality rates continue to decrease, meaning that people are living longer. But just as importantly, it demonstrates that people have been living with more years free from disability (AIHW 2014, Ministry of Health New Zealand 2016).

The highest causes of death are **chronic disease** rather than acute illness. This has completely changed from 100 years ago when acute illness was the predominant cause of death (Table 1-1). Chronic diseases, such as cardiovascular disease, diabetes and some cancers, are increasing as a result of changes to our lifestyles. Chronic disease has a profound effect not only on the individual and community, but also on the health system that seeks to resource and manage the illnesses (Table 1-2).

It is important to note that while we are living longer than previous generations, we are also living more years free of disability. A baby born in 2012 is expected to live 62.4 years free of disability and 17.5 years with some form of disability. Compare this with a child born in 1998 where they could expect to live 58 years free of disability and 17.9 years with some form of disability (Commonwealth Fund 2015). These changes have occurred as a result of improved sanitation and housing and the availability of vaccines to help our fight against infectious disease. We also enjoy one of the best health systems in the world with access to increasingly innovative and sophisticated health care, including improved detection, diagnosis and treatments that were not available to previous generations.

While it is clear that we are not as healthy as we could be, Australians and New Zealanders still have some of the highest life expectancies in the world. But

TABLE 1-1 Top five causes of death, 1907 and 2000

1907		2000	
Organic heart disease	8.3%	Ischaemic heart disease	21%
Tuberculosis	8.2%	Cerebrovascular disease	7.4%
Diarrhoea	7.1%	Lung cancer	6.9%
Senility	6.6%	Other heart disease	4.9%
Congenital	6.1%	Chronic obstructive pulmonary disease	4.7%

Australian Institute of Health and Welfare (AIHW) 2006 Mortality over the twentieth century in Australia: trends and patterns in major causes of death. AIHW. Canberra.

TABLE 1-2 Chronic disease in Australia and New Zealand

Condition	Australia	New Zealand
Diabetes mellitus	1 in 19	1 in 16
Cardiovascular disease	1 in 5	1 in 5
Cancer – risk of being diagnosed before the age of 85	1 in 2 (male) 1 in 3 (female)	not reported
Chronic kidney disease	1 in 10	1 in 10
Mental illness – adult	1 in 5	1 in 6
Musculoskeletal conditions	1 in 4	1 in 4
Untreated oral health conditions (adult)	3 in 10	1 in 3
Respiratory disease	1 in 10	1 in 7

ABS 2013 Australian Health Survey: Updated Results 2011–2012. Cat no. 4364.0.55.003; Ministry of Health 2015 Health of New Zealanders data and stats.

this life expectancy is not enjoyed by all population groups within these two countries. There continue to be inequalities in health among Indigenous communities where there are significant health disparities, particularly life expectancy (OECD 2014). In addition, people living in lower socioeconomic areas tend to experience increased health risk factors compared with others with the same nationality (OECD 2014).

Access to health services is a growing problem in Australia and New Zealand. Over the past decade an increased demand for elective surgery has been observed. The capacity of the health system to respond to this is limited by funding and workforce availability. It is essential that those with the greatest need will receive quality care in a timely and effective manner.

• CRITICAL REFLECTION POINT

What does it mean to measure the health of a nation? How can nursing influence the health of a nation? How might the burden of chronic disease influence the role of nursing into the future?

The growing cost of health care

A vast amount of funding is spent on health care. In New Zealand, 9.5% of Gross Domestic Product (GDP) is spent on health, while Australia spends 8.8% of its GDP on health (OECD 2015). What is concerning is that healthcare costs continue to grow faster than the broader economy. The Australian Government (Commonwealth of Australia 2010), for example, estimate that GDP will need to more than double within the next 40 years *in order to meet healthcare costs*. This has significant impact on funding for other services such as transport, education and defence. Governments all over the world are realising that the way health care is provided now is unsustainable. Something has to change. There is greater emphasis on the need to become both more productive and more efficient with the resources available.

The future of the workforce

One of the biggest areas of health expenditure is labour costs. This comes at a time when the workforce required to support future health needs is becoming smaller and smaller. The *Australia to 2050* report (Commonwealth of Australia 2010) states that in 2010 for every retiree there were five people working. By 2031, it is expected there will be three people working for every retiree. These projected workforce changes will have a dramatic effect on how health services deliver care to patients. The workforce will simply not be there to provide care in the way it does today.

Addressing challenges through health reform

Internationally there is a rapidly growing focus on providing more effective and efficient health care leading to greater value for money to meet future challenges such as the growing burden of chronic disease and rising costs. As the population of today is living longer and making lifestyle choices that contribute to the growing burden of chronic disease, this results in increased ongoing care and management. In Australia, for example, it is estimated that chronic disease accounts for 83% of all premature deaths and causes 80% of hospitalisations and allocated expenditure (AIHW 2014).

There is a growing emphasis on health reform as the way to improve productivity and efficiency. Previously, health reform was seen as intermittent and gradual. Reform is now considered a constant and continual experience. It should no longer be considered as a surprise but rather expected. According to the Institute for Healthcare Improvement (2015), the aim of any health reform should be based on these three elements:

- Reduce costs – reducing the per capita cost of health care.
- Enhance patient experience – improving the patient experience of care (including quality and satisfaction).
- Improved health outcomes – improving the health of populations.

Nursing's contribution to these three elements is greater than any other health profession. The nursing workforce is the single largest clinical workforce with the most direct clinical care time. Nurses continue to provide care with resilience and versatility, while often with minimal resources and organisational support. Nursing can be, as the International Council of Nurses (ICN 2015) states, 'a force for change'.

Unfortunately, reform may have short-term goals, including immediate funding reductions. As the largest workforce and, therefore, the highest cost burden, the nursing workforce is often cut, leaving fewer people to do more work. Research shows that RN staffing levels have direct implications for patient care. It demonstrates that hospitals with a higher ratio of degree-prepared RNs-to-patients have lower mortality rates (Aiken et al 2014). Hospitals with lower RN staffing numbers are linked to an increased number of adverse events including falls and medication errors (Duffield et al 2014). As a result, the aims of healthcare reform are not realised.

The escalating costs of health care require that measures be taken to contain costs to levels that countries can afford and sustain. These pressures highlight the need for how resources in health care, particularly nursing, can be used to their optimal level. When the nursing profession is optimised, evidence demonstrates that the quality of health service provision improves. When the quality of services improve, resources are often used more efficiently. For example, an optimised and appropriately resourced nursing workforce is linked to reduced adverse events (as mentioned above), improved health literacy of patients, reduced length of stay, decreased readmission rates, improved hospital avoidance and better patient outcomes (Aitken 2014). As such, the three aims of health reform can be achieved.

• CRITICAL REFLECTION POINT

Why would supporting RNs to work to their full scope of practice create a more efficient health system? How important is health literacy to the future of healthcare provision and how can nursing contribute to improving health literacy?

Nursing leadership and healthcare reform

The nursing profession is uniquely placed to lead **healthcare reform**. Nurses have close interaction with patients and their families in all health settings across the health continuum. They can help interpret and understand people's needs and expectations for health care. They are actively involved in decision-making within the clinical team and in management. They do this with a foundation of care informed by research and evidence. This understanding, experience and proximity to the patients' needs are critical components of what nursing can bring to the table and how it can enable reform.

As such, nurses have an important contribution to make in health service planning, management and policy setting. Nurses must contribute to public policy development through management and leadership roles at all levels and with direct engagement with their professional organisations. To achieve this level of responsibility, it cannot be assumed that it will automatically be provided to the profession. Historically, in many instances, nurses have been left out of the decision-making process and have been left with implementing an initiative or policy that has not been well informed. The role of the profession therefore must be proactive to maintain this level of influence and involvement.

Just as important as the planning and policy setting, nurses need to be leaders in healthcare management. The International Council of Nurses (2015) asserts that nursing services must be directly managed by nurses. The reason for this is that the profession must be responsible for the professional practice of nursing. No profession outside of nursing is well positioned enough to be held to account and to lead the scope of practice and the standards for practice of the RN.

• CRITICAL REFLECTION POINT

Think about a recent health issue discussed in the news. Did nursing have a voice? How do you think nurses can promote their stories, insights, research and expert opinions via social media?

Regulation of the nursing profession

The Nursing and Midwifery Board of Australia (NMBA) and Nursing Council of New Zealand are responsible for **professional regulation** and setting standards, codes and guidelines for the nursing and midwifery professions (Box 1-2). The role of professional colleges and associations in developing specific standards for practice and credentialling individual nurses is increasing. RNs are individually accountable for their own practice and have a personal responsibility to maintain their competency and meet professional standards in order to maintain their licence to practise. The role of the RN has evolved along with changes in advancing technology, newly defined patient needs and changes to the way health care is delivered. In this way, it is not unreasonable to expect that the role of the RN will continue to evolve and change. It is

BOX 1-2 Regulation of the nursing profession

The Nursing and Midwifery Board of Australia

The Nursing and Midwifery Board of Australia regulates the practice of nurses and midwives in Australia. One of its key roles is to protect the public by making sure that only nurses and/or midwives who are suitably qualified to practise in a competent and ethical manner are registered. The National Board sets registration standards as well as professional codes, standards and guidelines that underpin safe and competent practice. All applicants for nursing and/or midwifery registration must meet a range of requirements to become eligible for registration. Registration standards define the requirements that applicants for registration or renewal of registration need to meet to be registered.

The Nursing Council of New Zealand

The Nursing Council of New Zealand is the regulatory authority responsible for the registration of nurses. Its primary function is to protect the health and safety of members of the public by ensuring that nurses are competent and fit to practise.

The Nursing Council sets standards for nursing in New Zealand. These standards are applied to:

- all education programs in New Zealand
- nurses working in New Zealand
- overseas trained nurses who wish to work in New Zealand.

Any person who wishes to nurse in New Zealand must first meet these standards in order to become a nurse and then continue to maintain requirements to demonstrate they are competent and fit to practise nursing.

Nursing and Midwifery Board of Australia (NMBA) 2016 Registered Nurse standards for practice. NMBA, Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards.aspx; Nursing Council of New Zealand 2007 Competencies for registered nurses: regulating nursing practice to protect public safety.

important that RNs, consumers and employers understand that nursing practice has a rigorous safety and quality framework that is regulated, endorsed and monitored by professional bodies. This regulatory framework ensures high standards of care.

Decision-making framework

Decision-making within a sound risk management, professional, regulatory and legislative framework is a considered and rational process that enables nurses to work to their full potential and scope of practice (NMBA 2007). The *National decision-making framework* (NMBA 2007) provides guidance and support to the nursing profession. Use of the framework enables RNs' scope of practice to be extended and expanded safely. Broadly, the RN is responsible for assessing, planning, implementing, directing, supervising and evaluating direct and indirect nursing care. This includes providing actual nursing care, supervising enrolled nurses and unregulated carers, and taking ownership of their own delegation decisions.

Scope of practice

A profession's **scope of practice** is the full spectrum of roles, functions, responsibilities, activities and decision-making capacity that individuals within that profession are educated, competent and authorised to perform, and is determined by the profession itself (NMBA 2007). Registered nurses practising to their full potential have the ability to transform services and care delivery and enable clients to meet their health and wellness needs. It is important that RNs understand the role they have in the delivery of health services – this is fundamental to quality health care.

Individual nurses may have specific capabilities that are influenced by factors (ANMC 2009), such as:

- practice context
- wider environment
- legislation
- health service policy
- education level
- standards
- health needs of the population.

These are not defined in the scope of practice of their profession, but rather by the level of education and experience of the individual nurse. Decisions about both the individual's and the profession's practice can be guided by the use of the *National decision-making framework* (NMBA 2007).

While legislation, standards and other regulatory controls determine the overall scope of practice and the boundaries for registered nurses, other factors, such as organisational arrangements, influence the practice of the individual RN, including:

- health needs of the client
- context of practice, including clinical governance arrangements
- capability – based on education level of the individual
- clinical knowledge, research and evidence-based practice.

Optimising the RN contribution to health is not solely related to the incorporation of a particular skill or activity, but to the complex interplay of professional attributes, experience, learning, scientific knowledge and critical

thinking. It is also affected by elements across the context of practice and the degree to which those elements are supportive of the nursing scope of practice.

Certain factors on the **practice pathway** can enable or restrict the RN in performing to their full scope of practice. In order to maximise the efficiency and effectiveness of health service, enablers need to be strengthened and barriers challenged or removed. Highlighting how these factors can shape an RN's contribution to health provides opportunities to optimise their contribution. A range of these factors are detailed in Figure 1-2.

Continuing education and professional development

Continuing education and **professional development** are the keys to the RN's contribution to health and development of their professional pathway throughout their career. Experience in the absence of ongoing education, professional development, governance and support will not develop reflective practice that increases the individual's capability. Each step in the RN practice pathway builds on previous education, experience and the development of practice knowledge, competence and confidence in practice. The RN is expected to undertake postgraduate university programs as part of advancement and development of their practice. The initial education program for entry to practice that an RN must complete is designed to develop assessment and problem-solving skills and enable the graduate nurse to manage resources to deliver complex physical, psychological and behavioural care in a lawful and ethical manner. RNs are required to contribute to education and research, practise nursing that is underpinned by theory and continually develop practice through translation of evidence into clinical practice. One theory that has been widely adopted is Benner's practice pathway. Benner (1984) proposed that nursing knowledge develops through research and integration into clinical practice and experience. Importantly, experience is not a time-based activity, but can only develop in the context of education and knowledge acquisition. Characteristics acquired throughout the RN professional career contribute towards a sustainable profession through:

- role modelling
- clinical leadership
- mentoring and coaching
- supervision
- teaching
- research.

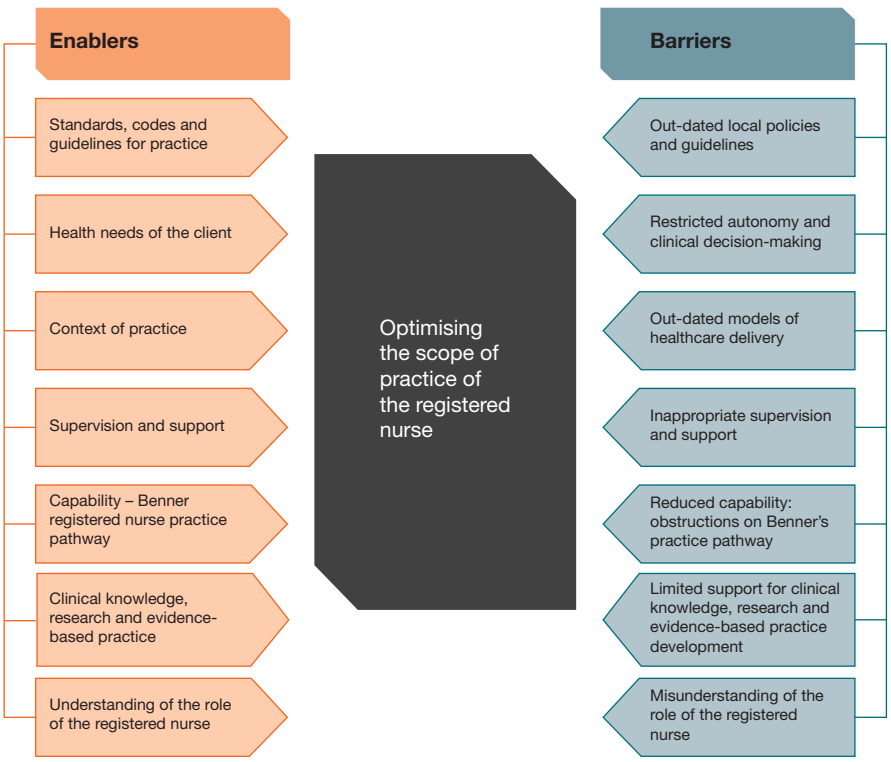

Figure 1-2 Barriers and enablers to nursing practice.

Queensland Health 2013 Registered nurse professional practice in Queensland: Guidance for practitioners, employers and consumers. Brisbane.

For the purpose of this chapter, increasing capability of the RN will be aligned to Benner's novice to expert model. Benner's model describes five levels of nursing capability and capacity and states that nursing skills increase and develop over time, depending on experience and education (Box 1-3).

BOX 1-3 Benner's novice to expert model

Novice – a beginner with no experience, behaviour is rule-governed, limited and inflexible.

Advanced beginner – has gained prior experience in actual situations and is able to recognise recurring meaningful components. Principles based on experiences begin to be formulated to guide actions.

Competent – plans own actions based on analytic thinking, achieves efficiency and organisation.

Proficient – holistic decision-making, able to modify plans based on learning from experience.

Expert – intuitive knowing in clinical situations with flexible, highly proficient performance.

Pathway to optimised practice

Drawing on the Australian qualification framework (Australian Qualification Framework Council 2013), Benner's model and contextual enablers and barriers to practice, Figure 1-3 represents an idealised pathway through which the optimisation of nursing will be achieved. Optimised practice can be achieved at each progression point through Benner's practice pathway. The novice, advanced beginner, competent, proficient and expert RN are able to optimise their practice, regardless of whether they intend to continue along the practice pathway, or if they are professionally and personally content with their current role.

Figure 1-3 details that the role the RN assumes will depend on their initial nursing qualification for initial registration (for clarity Figure 1-3 does not reflect entry to practise Masters level qualifications), specialised postgraduate education qualifications, informal training and clinical experiences. Following initial registration, the novice is able to focus on continued professional development and postgraduate qualifications relevant to identified areas of specialisation and/or contexts of practice. Additional education and experience builds

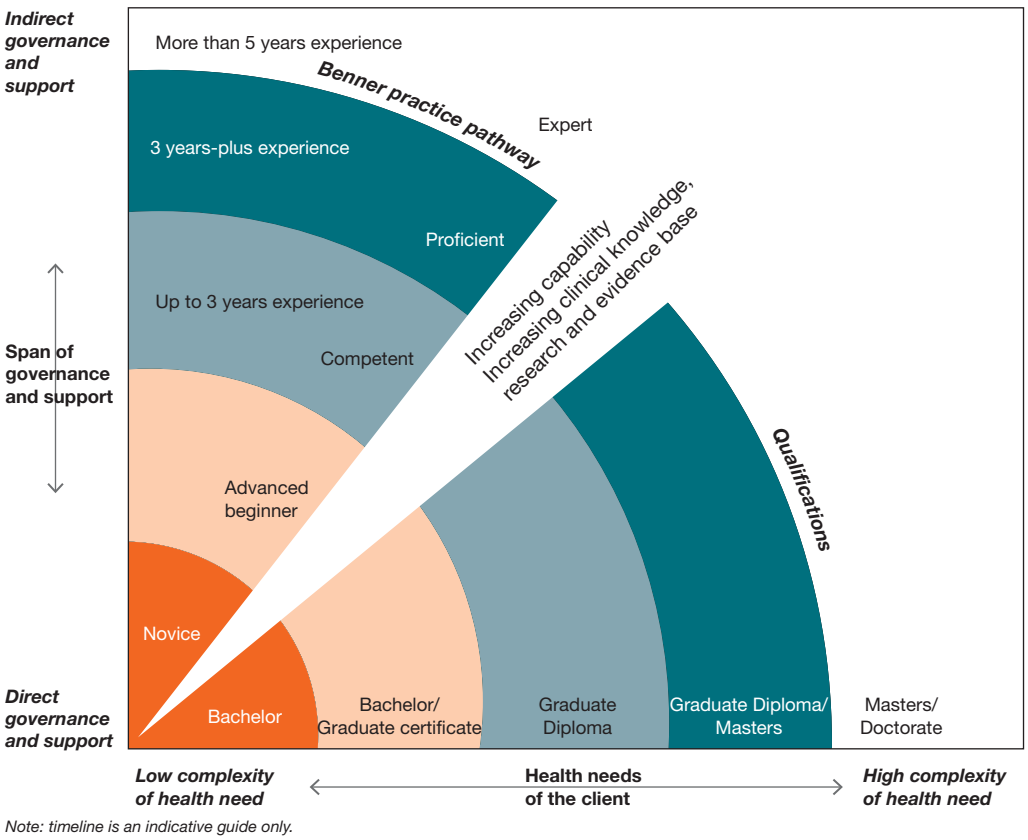

Figure 1-3 Pathway to optimised practice.

Queensland Health 2013 Registered nurse professional practice in Queensland: Guidance for practitioners, employers and consumers. Brisbane.

greater competency, so eventually the novice becomes the advanced beginner, who in turn moves through being competent to proficient and finally to expert. At the expert level, the RN is able to provide care to patients with complex health needs and requires only indirect governance and support.

Throughout the journey across the practice pathway, the RN is protected by significant safety and quality frameworks, which are themselves underpinned by evolving legislation, registration standards, professional practice standards and policies that align with best practice and evidence.

The future of nursing: leading change

Through the effective use of the professional and regulatory frameworks, informed through postgraduate education and relevant experience, RNs can lead service transformation. Possible examples of new ways of working and new models of care may include:

- nurse proceduralists undertaking new diagnostic functions, such as endoscopy
- nurse-led clinics delivering integrated care to palliative care patients
- nurse triage models to streamline referral pathways into outpatient and specialist services
- public–private partnerships for nurse practitioners, including admission privileges, that enhance consumer choice
- RNs working in sustainable and economically viable self-employment models focused on community chronic disease management
- brokerage and community case management for disability clients through the National Disability Insurance Scheme (NDIS)
- nurses delivering care and ongoing management to rural and remote patients through outreach services delivered through use of technology and Telehealth
- expanded access to diagnostics and medicines to improve the patient journey and deliver services closer to a patient's home.

• CRITICAL REFLECTION POINT

In thinking about the future directions of nursing practice, what are the capabilities you will need for success in new work environments that are constantly evolving?

Conclusion

We live in a dynamic and exciting time in the history of nursing and health care. We have an insatiable appetite for safe, accessible, affordable and quality healthcare services. The demand for professional care provided by nurses has never been greater. RNs across Australia and New Zealand are stepping up and meeting the challenges their environments are providing. They are delivering person-centred care in diverse models and settings across the continuum from primary to tertiary care. We have the safety and regulatory mechanisms that surround us to ensure we practise to our scope and can be responsive. The challenge is to maintain our ability to be responsive to our communities and be confident and resilient in an ever-changing environment. Ensuring we work to our full scope, underpinned by ongoing postgraduate education, is not only the answer to new models of care, but also to the professional and personal satisfaction of us as nurses. Nursing leadership at all levels of the healthcare system is essential to secure better health and wellbeing for our nations.

Key concepts

- Nursing practice is evolving in response to social, economic and political factors and changing population health needs. These drivers help to shape the context in which the RN practises and delivers care.
- Healthcare costs are growing at an unsustainable rate. An efficient and effective healthcare system that reduces wastage is critical to ensuring population health and wellbeing.
- Health reform is continuous and will create more opportunities for nurses to work in new models of healthcare delivery that provide quality health services to individuals, families and communities.
- Nurses are the largest group of health professionals in the health system. A proactive and dynamic nursing profession is pivotal to future healthcare provision.
- It is important that nurses are educationally prepared for an evolving context of practice across a range of healthcare environments, including those that have never been available before as a result of innovation and technology.
- Registered nurses must be supported to work to their full regulated scope of practice in order to maximise the efficiency and effectiveness of the nursing workforce.
- Nurses working to their full potential will result in personal, professional and career satisfaction, as well as ensuring the delivery of safe, quality patient outcomes.
- It is important to recognise and reinforce the important contribution of the nursing profession at all levels of the healthcare system, including direct clinical care, coordinating complex patient care, driving safety and quality, policy and systems management, research, education and executive leadership.

Online resources

Australian College of Nursing 2015 White Paper: Nurse Leadership, www.acn.edu.au/sites/default/files/leadership/ACN_Nurse_Leadership_White_Paper_FINAL.pdf

This White Paper outlines the relevance of nurse leadership within the healthcare system and highlights the connection between nurse leadership, workplace environment, staff retention and patient outcomes. It describes the challenges that exist when driving the necessary change within healthcare systems and organisations and the need to recognise the contribution that nurse leaders can make.

Nelson et al 2014 Optimising Scopes of Practice, New models of care for a new health system. Canadian Academy of Health Sciences, Ontario, cahs-acss.ca/optimizing-scopes-of-practice-new-models-of-care-for-a-new-health-care-system/

This international publication highlights that a healthcare system must be built upon collaborative care models, where the right professional provides the highest quality of care in the right setting and at the right time based upon the needs of the individual patient. Optimal scopes of practice are described as an essential element in leading healthcare transformation for the future.

Nursing Council of New Zealand 2007 Compentencies for Registered Nurses, http://www.nursingcouncil.org.nz/Nurses/Scopes-of-practice/Registered-nurse

Nursing and Midwifery Board of Australia (NMBA) 2016 Registered Nurse standards for practice, www.nursingmidwiferyboard.gov.au/News/2016-02-01-revised-standards.aspx

These national competency standards for the registered nurse are the core competency standards by which your performance is assessed to obtain and retain your registration.

Productivity Commission 2015 Efficiency in health, Commission Research Paper. Productivity Commission. Commonwealth of Australia, Canberra, www.pc.gov.au/research/completed/efficiency-health/efficiency-health.pdf

Released in April 2015, the Productivity Commission has identified and assessed opportunities to improve the operation of Australia's healthcare system.

References

Aiken LH et al 2014 Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. Lancet 383(9931):1824–30.

Australian Bureau of Statistics 2013 Australian Health Survey: Updated Results 2011–2012. Cat no. 4364.0.55.003. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/Lookup/4364.0.55.003Chapter12011-2012; acccessed 17 July 2015.

Australian College of Nursing 2014 Position statement: Person-centred care. November 2014. Online. Available: www.acn.edu.au/sites/default/files/advocacy/submissions/PS_Person-centered_Care_C2.pdf; accessed 13 April 2016.

Australian Commission on Safety and Quality in Health Care 2011 Patient-centred care: improving quality and safety through partnerships with patients and consumers. ACSQHC, Sydney.

Australian Institute of Health and Welfare (AIHW) 2015 Chronic disease. Online. Available: www.aihw.gov.au/chronic-diseases/; accessed 13 April 2016.

Australian Institute of Health and Welfare (AIHW) 2014 Australia's health 2014. Series no. 14. AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2010 National Health Survey 2007–08. AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2006 Mortality over the twentieth century in Australia: trends and patterns in major causes of death. AIHW, Canberra.

Australian Nursing and Midwifery Council 2009 Continuing competence framework for nurses and midwives. Australian Nursing and Midwifery Council, Canberra.

Australian Qualification Framework Council 2013 Australian qualifications framework. Australian Qualification Framework Council, South Australia.

Benner P 1984 From novice to expert: excellence and power in clinical nursing practice. Addison-Wesley, Menlo Park.

Berlin G, English CR, Higgins H, Lapointe M 2014 Optimising the nursing skill mix: a win for patients, nurses and hospitals. Online. Available: healthcare.mckinsey.com/optimizing-nursing-skill-mix-win-nurses-patients-and-hospitals; accessed 17 July 2015.

Biggs A 2014 Sustainable funding of health care: challenges ahead. Online. Available: http://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/BriefingBook44p/FundingHealthCare; accessed 17 January 2016.

Commission on the Future of Nursing and Midwifery 2010 Front line care: the future of nursing and midwifery in England. Report by the Prime Minister's Commission on the Future of Nursing and Midwifery England. Online. Available: http://webarchive.nationalarchives.gov.uk/20100331110400/http:/cnm.independent.gov.uk/wp-content/uploads/2010/03/front_line_care.pdf; accessed 17 January 2016.

Commonwealth of Australia 2010 Australia to 2050: future challenges. Online. Available: http://archive.treasury.gov.au/igr/igr2010/Overview/pdf/IGR_2010_Overview.pdf; accessed 2 February 2016.

Commonwealth Fund 2015 Mirror, mirror on the wall. Online. Available: www.commonwealthfund.org/publications/fund-reports/2014/jun/mirror-mirror; accessed 24 July 2015.

Department of Health 2013 Strengthening health services through optimising nursing strategy and action plan (2013–2016). Department of Health, Brisbane.

Duckett S, Breadon P 2014 Controlling costly care: a billion-dollar hospital opportunity. Online. Available: http://grattan.edu.au/wp-content/uploads/2014/03/806-costly-care.pdf; accessed 2 February 2016.

Duffield C, Diers D, O'Brien-Pallas L et al 2011 Nursing staffing, nursing workload, the work environment and patient outcomes. Applied Nursing Research 24:244–55.

Health Workforce Australia 2014a Australia's future health workforce – Nurses Overview Report. Commonwealth of Australia, Canberra.

Health Workforce Australia 2014b Nursing workforce sustainability: improving nurse retention and productivity. Commonwealth of Australia, Canberra.

International Council of Nurses 2015 Nurses a force for change: improved health and well being. ICN, Geneva.

International Council of Nurses 2014 Definition of nursing. Online. Available: www.icn.ch/who-we-are/icn-definition-of-nursing/; accessed 13 April 2016.

Institute for Healthcare Improvement 2015 IHI triple aim initiative: better care for individuals, better health for populations and low per capita costs. Online. Available: http://www.ihi.org/engage/initiatives/tripleaim/Pages/default.aspx; accessed 14 August 2015.

Middleton S, Gardner A, Gardner G, Della P 2011 The status of Australian nurse practitioners: the second national census. Australian Health Review 35(4):448–54.

Ministry of Health New Zealand 2016 New Zealand burden of disease, injuries and risk factors study 2006–2016. Online. Available: www.health.govt.nz/nz-health-statistics/health-statistics-and-data-sets/new-zealand-burden-diseases-injuries-and-risk-factors-study-2006-2016; accessed 2 February 2016.

Ministry of Health 2015 Health of New Zealanders data and stats. Online. Available: www.health.govt.nz/nz-health-statistics/health-statistics-and-data-sets/health-new-zealanders-data-and-stats; accessed 19 January 2016.

Nelson S, Turnbull J, Bainbridge L et al 2014 Optimising scopes of practice, new models of care for a new health system. Canadian Academy of Health Sciences, Ontario.

North N, Hughes F 2012 A systems approach to nursing productivity. Journal of Health Organization and Management 26:2.

Nursing Council of New Zealand 2007 Competencies for registered nurses: regulating nursing practice to protect public safety. Online. Available: www.nursingcouncil.org.nz/Nurses; accessed 27 July 2016.

Nursing and Midwifery Board of Australia (NMBA) 2016 Registered Nurse standards for practice. NMBA, Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards.aspx; accessed 14 June 2016.

Nursing and Midwifery Board of Australia 2007 A national framework for the development of decision making tools for nursing and midwifery practice. NMBA, Melbourne.

OECD 2015 OECD statistics. Online. Available: www.oecd.org/els/health-systems/Country-Note-NEW%20ZEALAND-OECD-Health-Statistics-2015.pdf; accessed 2 February 2016.

OECD 2014 OECD health statistics 2014: how does Australia compare? Online. Available: www.oecd.org/els/health-systems/Briefing-Note-AUSTRALIA-2014.pdf; accessed 24 July 2015.

OECD 2011 Society at a glance: OECD social indicators. Online. Available: www.oecd.org/berlin/47570143.pdf; accessed 24 July 2015.

Productivity Commission 2015 Efficiency in health, Commission research paper. Commonwealth of Australia, Canberra.

Queensland Health 2014 The health of Queenslanders 2014: fifth report of the Chief Health Officer. Queensland Government, Brisbane.

Queensland Health 2013 Registered nurse professional practice in Queensland: guidance for practitioners, employers and consumers. Online. Available: www.health.qld.gov.au/nmoq/documents/rn_prof_prctice_qld.pdf; accessed 13 April 2016.

Talbert T 2012 The role of the nurse executive in fostering and empowering the advanced practice registered nurse. The Nursing Clinics of North America 4(2):261–7.

Twigg D et al 2010 The impact of nurses on patient morbidity and – the need for a policy change in response to the nursing shortage. Aust Health Rev 34(3):312–16.

CHAPTER

2

Building nursing practice: the Fundamentals of Care Framework

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Learning outcomes

Mastery of the content will enable you to:

- use the Fundamentals of Care Practice Process to deliver person-centred nursing care
- recognise and understand perceptions of nursing held by you and others
- identify and use concepts, working hypotheses, frameworks and theories to inform the delivery of your nursing care
- think creatively about nursing and providing person-centred care
- access a range of theories.

KEY TERMS

Biomedical model, p. 26
Biopsychosocial model, p. 27
Concepts, p. 16
Conceptual framework, p. 16
Context of care, p. 20
Fundamentals of Care Framework, p. 17
Fundamentals of Care Practice Process, p. 17
Relationship, p. 19
Tacit knowledge, p. 16
Theories, p. 17
Working hypothesis, p. 17

Introduction

Each individual's understanding of nursing comes from personal experiences; from the way they reflect on, make sense of and learn from those experiences; from how nursing is perceived by society; and from how it is viewed politically. The way we respond to and organise all of this information helps us to generate theories or ways of thinking about nursing. The purpose of this chapter is to help beginning nurses through each step of this process – recognising and understanding their perceptions of nursing and then using concepts, working hypotheses, frameworks and theories to inform the delivery of nursing care. This chapter will help you understand how to use your everyday clinical experiences, how to access the range of theories you need to draw from, and explain why you need to think creatively about nursing and providing person-centred care. The Fundamentals of Care Framework (described in more detail on p. 19) is the intersection of concepts, working hypotheses and theories and enables you to deliver care in a holistic manner.

The Fundamentals of Care Practice Process: concepts, working hypotheses, frameworks and theories

When you decided to become a nurse you might have assumed that you would need to develop a range of intellectual and practical clinical skills to provide care. However, you may not have given much consideration to the basis for those skills: how we decide what is needed for our patients, how we choose the correct care interventions for them, and how we use our skills to deliver these interventions. Applying these skills in practice relies on identifying our concepts about a patient's needs and understanding how these concepts can be used to develop our working hypothesis about what is needed for the patient. It relies on the framework we employ to ensure all of the patient's needs are addressed, and on the theories we use to inform the delivery of care. Each of these elements is discussed in detail below.

Concepts

Concepts are general ideas or things we use to help us organise and make sense of the world. Concepts can be linked to real things in the world (e.g. our concept of a dog), or they can reflect abstract ideas (e.g. the concept of free-will or empowerment). A fact is a concept whose truth can be proved. Values and beliefs are the things that shape how we judge the world and how we judge the merits and demerits of concepts. We use our experiences of the world to refine our notions of the concepts around us. Our experiences can generate new knowledge. Formal knowledge is what we learn in a structured way (e.g. knowing how to read or do mathematics). Other knowledge is more hidden. This is called informal or **tacit knowledge**. It comes from our ability to experience and observe the world around us and to reflect on whether it is making sense to us (Kothari et al 2012).

There are three different ways that our use of concepts influences the approach that we might consider when we are presented with a patient requiring care: ideas/opinions, facts and tacit knowledge. First, based on our initial contact with the patient, we might form some ideas or opinions about what is wrong with them. These beliefs are determined by our own personal assumptions and, at this point, have not been tested or proven; they are still ideas. Second, we can determine if there is some factual information or evidence based on what we can see or what we already know about the patient. These facts are not open to interpretation but are based on evidence. Third, we might have had previous experience with a similar issue. This experience might have been in our personal or professional capacity. For example, if you have had previous experience of a condition, either personally or with a close family member, you might have a different understanding of a patient's needs than someone who has not had such an experience. This type of concept is called tacit knowledge and it covers emotional, experiential, intuitive and observational ways of knowing. We may not have all three types of concepts for every patient presentation. However, when we combine the concepts that are available to us to inform our understanding of the situation, we begin to develop a working hypothesis about what is needed for our patient.

Working hypothesis

Our working hypothesis is our determination or informed guess about the patient's problem(s), which we will use to establish the priority of care for the patient. Our working hypothesis is derived from the meaningful integration of the information obtained from our different concepts. For each patient presentation you are likely to develop multiple working hypotheses. It is your job to determine the most important or pressing priority and address that first before addressing the other problems you have identified. Your working hypothesis may evolve as your interaction with the patient progresses.

Conceptual frameworks

When providing care to a patient, a **conceptual framework** provides an integrated way of looking at the

patient's problem (your **working hypothesis**) and helps to ensure that care is provided in a holistic and person-centred manner. A conceptual framework brings together a range of related concepts (e.g. ideas/opinions, facts and tacit knowledge) to provide a broad understanding of a particular phenomenon or to guide research (Green 2014). Its aim is to synthesise concepts drawn from many sources and to demonstrate the relationships between them.

Unlike theories, conceptual frameworks do not provide causal explanations or make predictions about events or phenomena (Jarabeen 2009). Instead, they help us to map the main concepts around a particular phenomenon and to understand how those concepts relate to one another. In this way, a conceptual framework helps to provide some meaning to our many different concepts.

The **Fundamentals of Care Framework** (Kitson et al 2013a) is an example of a conceptual framework. It illustrates the need to establish a trusting relationship with the patient and to integrate and address a patient's physical, psychosocial and relational needs that are associated with any nursing care provision. The framework is also the intersection point for the application of theories to your working hypothesis.

Theories

Theories offer explanations for why things happen in a particular way. The purpose of theory is to provide nurses with a perspective for viewing patient situations in ways that help them work out what to do and why. We therefore use theories to understand, to innovate, to solve problems, and to aid our critical thinking. Theories find their way into practice through the use of frameworks such as the Fundamentals of Care Framework. They provide meaningful information that helps us to apply frameworks in practice. Multiple theories can inform a single framework. For example, when we are providing fundamental care to a child, we might be influenced by Piaget's developmental theory as well as Bowlby's attachment theory (Pallini & Barcaccia 2014).

A conceptual framework provides the intersection for these different theories; it is where the theories come together and inform how we use the concepts in our framework. We might also find in our nursing practice the need to 'pick and mix' from various theories, depending on our patient population and care environment. In addition to nursing-specific theories, nursing also uses theories from a range of disciplines. Some disciplines we borrow from include psychology, microbiology, medicine and public health. In using theories we incorporate relevant theoretical knowledge as an explanation for what is happening to our patient and why.

• CRITICAL REFLECTION POINT

Which nursing theories are you aware of? The Nursing Theory website provides a useful resource (see *Online resources* at the end of this chapter). Here you can find an overview of many nursing theories and which theories are linked to which areas of nursing practice. You will notice that some theories apply in many areas of practice. Choose two of these and explain why this is the case.

So how do we move from concepts, working hypotheses, conceptual frameworks and theories to delivering care in practice? The Fundamentals of Care Practice Process (described in detail on p. 23) illustrates this process. We begin by identifying our concepts (ideas, facts and tacit knowledge) and integrating them to create our working hypotheses. Once these hypotheses have been created, we can then begin thinking about how we might address the problems we have identified. In doing so, we consider the Fundamentals of Care Framework and what this tells us about how we should best deliver care. We also need to identify what theories are relevant to help us address our working hypotheses in a person-centred manner. That is, we must identify which theories inform the delivery of the fundamentals of care specific to our patient's problem. Once we have considered our working hypotheses in the context of the Fundamentals of Care Framework and relevant theories, we can continue with the clinical reasoning process.

It is important to note that moving from concepts to theories and then to practice is not a once-only activity for each patient. The process is dynamic and recurring; you will likely identify multiple working hypotheses for patients and will need to evaluate the outcome of your care interventions to determine whether your working hypotheses were correct. New concepts will also arise while caring for a patient, which you will need to address by going through the **Fundamentals of Care Practice Process**. Importantly, in using the Fundamentals of Care Practice Process you will develop the skills of critical reflection and evaluation of the impact your actions have had on your patient – both intended and unintended consequences. We explain each part of the process in more detail using an example.

The *Clinical example* below illustrates how nurses are faced with seemingly straightforward tasks, but hidden behind these are multiple levels of complexity. In this scenario the student will have to draw on their previous experience and knowledge.

CLINICAL EXAMPLE

You are a first-year student nurse and your first academic assignment is to conduct a psychosocial health assessment on a patient. Your instructions are to gain permission from the patient or resident and use a range of interviewing skills to gain the information required to complete the assignment. You choose a male patient, 'Barry', who has recently been admitted to the Spinal Unit of your hospital. The patient is 59 years of age and sustained a spinal injury when he was 21 years old, which resulted in paraplegia. His current admission is for traction and pain management of his cervical spine.

You approach the registered nurse (RN) in charge of the ward and tell them about your assignment. The RN reads the assignment instructions and decides that you do not have sufficient experience to deal with the potentially traumatic nature of this encounter. The RN is especially concerned about the questions relating to the patient's mental health, stating that most of the patients on the ward are depressed and that an interview of this nature will just upset them.

Following a discussion between the RN and your clinical tutor/supervisor, it is agreed that you can stay in the unit and engage in conversation with the patient; however, you are not able to specifically administer the assessment. You are given permission to care for Barry.

• CRITICAL REFLECTION POINT

1. **You decide to initiate a conversation with Barry while helping him with his breakfast because you are interested in building a picture of what Barry's life is like outside the hospital environment. What questions would you ask to elicit this information?**
2. **How would you know that you have established rapport with Barry?**
3. **Consider how you might interpret and validate the information that Barry has supplied.**
4. **Why do you think it is important for you as Barry's nurse to know about his psychosocial wellbeing?**

While assisting Barry to eat his breakfast you are able to build a rapport, which provides you with the information required to describe his general characteristics. You discover he was born in regional South Australia (Whyalla) to Australian-born parents. He finished high school but has been on a disability pension since his motor vehicle accident (MVA), which happened when he was 21 years old. He has never had paid work. You validate this data by reading his case notes. You also notice that he does not eat much or show much interest in watching TV or reading books/magazines. He also seems to sleep a lot.

• CRITICAL REFLECTION POINT

1. **Think about the different concepts you might have available to you.**
   - **Ideas and opinions (What do I think?): What assumptions could you make about Barry's psychosocial health status?**
   - **Facts (What do I know and what can I see?): Consider the information you have obtained by talking to Barry.**
   - **Tacit knowledge (Is this scenario familiar to me?): How will your personal experiences or beliefs help you to develop working hypotheses about Barry's current health status?**

Let's review Barry's case and use the Fundamentals of Care Practice Process to help link theories to practice and determine his fundamental care needs.

Concepts and working hypothesis

Concepts: First, what are our ideas about this patient? We might assume he is feeling sad and helpless in his situation. What are the facts? We know he is injured with lifelong consequences, and he seems reluctant

WORKING WITH DIVERSITY

When working with people with a spinal cord injury you may find yourself thinking about how they view their quality of life (QoL). The notion that living with a disability equals a lower QoL is a common assumption. However, many people with serious disabilities report that they experience good QoL. It is important to remember that QoL is a subjective experience and one that is strongly influenced by economic, social and cultural differences. It is influenced by personal choices, and also by the cultural environment in which people are raised and live. Employment opportunities, participation and economic circumstances all play an important role in the QoL for patients with spinal cord injuries.

Implications for practice:

- Recognise that your view of QoL will not necessarily be the same as your patient's.
- Reflect on the three types of concepts in Figure 2-1. Your working hypothesis, that is, your ideas/opinions, tacit knowledge and the facts you have about living with a spinal cord injury, need to be explored when you are establishing the relationship with your patient.
- QoL is subjective and the patient's perspective must be considered the true measure of their QoL.
- Providing meaningful opportunities for employment and participation will assist patients with a spinal cord injury to maintain their QoL.

Reference

Tate D, Forchheimer M 2014 Review of cross-cultural issues related to quality of life after spinal cord injury. Topics in Spinal Cord Rehabilitation 20(3):181–90.

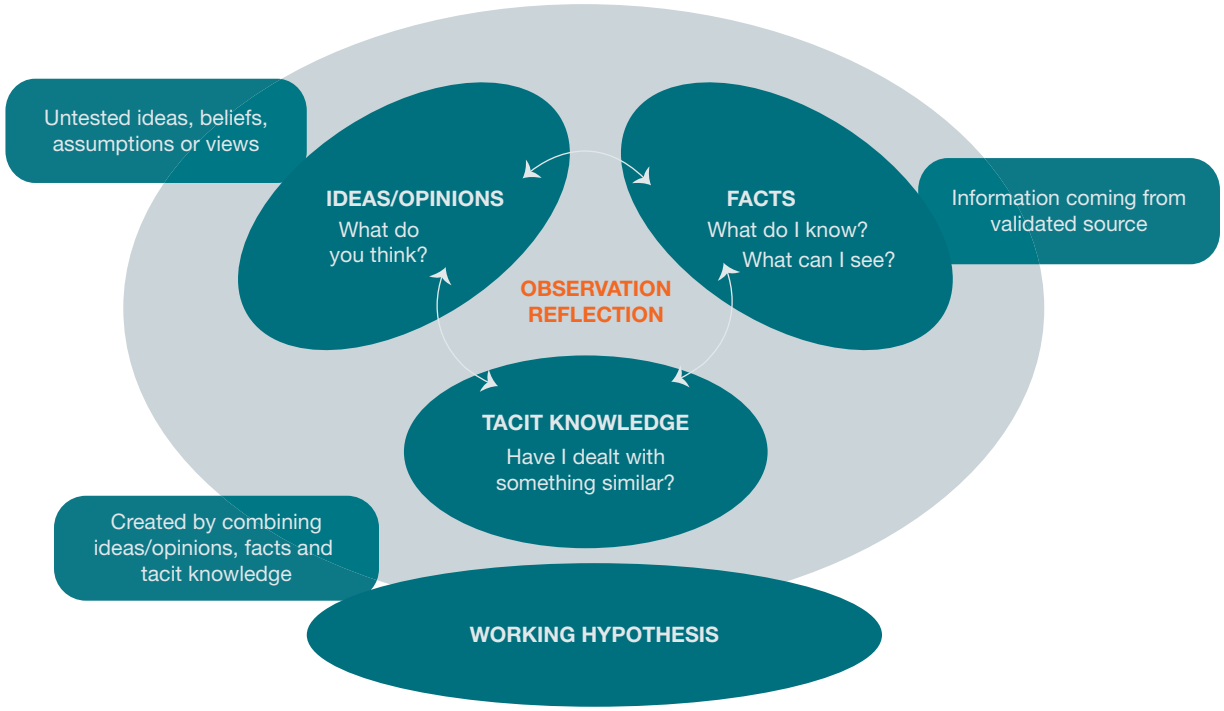

Figure 2-1 **Concepts and working hypothesis.**

to engage with staff and visitors. What is our tacit knowledge? Do we have any experience in this area? We might have known other people who have had similar experiences and have shared their feelings and thoughts with us (Figure 2-1).

Working hypothesis: Putting together our concepts, what could be our guess about what the patient's problem is? For Barry there could be many working hypotheses, from unresolved pain to depression, to lack of motivation.

These hypotheses are a vital part of the Fundamentals of Care Practice Process. Another important part of the process is the Fundamentals of Care Framework.

The Fundamentals of Care Framework

The Fundamentals of Care Framework assists the nurse to connect with the patient and help them meet their fundamental care needs. It focuses on enabling the patient and the nurse to confidently and competently assess, plan, implement and evaluate care around the fundamental care needs. As can be seen in Figure 2-2, the framework consists of three dimensions: 1) establishing the **relationship** with the patient; 2) being able to integrate and address the patient's fundamental care needs; and 3) a commitment from the wider health system to be responsive to these core tasks. Effective nursing care is achieved by aligning these

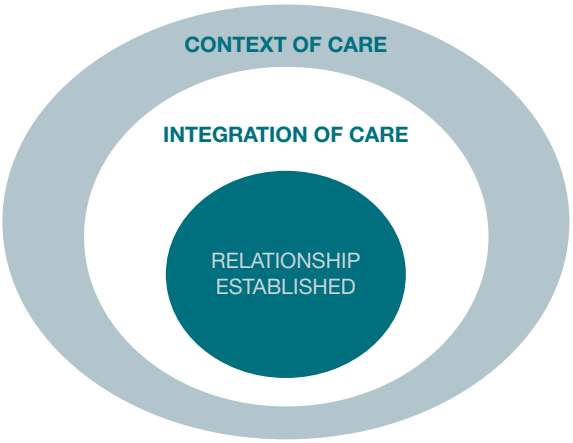

Figure 2-2 **The three dimensions of the Fundamentals of Care Framework.**

three elements. The dimensions of the Fundamentals of Care Framework revolve around the nurse, the patient, the family and the health system or context. The fundamentals of care are multidimensional and are determined by the relationship between the care provider (the nurse) and the recipient of that care (the patient) as conducted within each care encounter.

As you can see in Figure 2-2, the relationship is the central or core component of the framework. This must be successfully established before any of the other elements in the framework can be addressed. Establishing a positive

relationship with a patient is based on a commitment by you as the nurse to care for the patient (Kitson et al 2013a). There are five elements that help you establish a positive relationship with a patient: 1) developing a *trusting* relationship with the patient; 2) *focusing* on them and giving them your undivided attention; 3) *anticipating* their needs or concerns; 4) *knowing* enough about them to act appropriately; and 5) *evaluating* the quality of the relationship (Kitson et al 2013a). These five elements are involved in a process: the relationship begins when trust is established – as the nurse you need to be trustworthy and trusting. This trusting relationship then guides your actions and interactions with the patient (Figure 2-3).

Once you have established trust, you need to actively focus on the patient (and their family), and anticipate their needs so that they feel safe and free from anxiety and distress. Only when a patient is feeling calm and secure can you get to know them and their unique issues, and use this information to act appropriately and set patient goals. The final step in the process is evaluating the actions and experiences that have occurred within the relationship to determine its quality. Much like the Fundamentals of Care Practice Process, establishing a relationship with a patient is not a once-and-for-all process; it is dynamic and constantly changing. Once trust is established it will not be maintained unless you keep engaging in interactions that continually build and reinforce that trust. Likewise, you need to keep focusing on the patient and anticipating their needs at different times throughout the care encounter and continually evaluate the quality and outcome of the relationship.

The next dimension of the framework after establishing the relationship (and demonstrated by the second circle in Figure 2-4) focuses on the way the nurse addresses the patient's fundamental care needs, such as nutrition, hydration and elimination. An activity that has been routinely and independently undertaken by a person in their lifetime (e.g. bathing or going to the toilet) may, in an instant, become something that is both challenging and embarrassing. This needs to be acknowledged by the nurse and the organisation where care is being provided. Therefore, each time you address a person's fundamental care needs, there is a range of physical, psychosocial and relational needs that must be addressed for a positive patient experience to occur (Kitson & Muntlin Athlin 2013). Delivering fundamental care around hygiene, for example, involves not only keeping the patient clean, but also keeping them calm, involved, dignified and respected. This dimension of the framework incorporates the patient's journey from potentially being totally dependent upon the nurse to help them with all of their fundamental care needs to the patient being fully independent and autonomous in their self-care. It also recognises that some patients will stay dependent or become more dependent during the care encounter and these possibilities also have to be managed in respectful, dignified ways. The fundamentals of care identified in the framework are described in Table 2-1.



Figure 2-3 **Establishing the relationship in the Fundamentals of Care Framework.**

The final dimension of the Fundamentals of Care Framework (the outer circle in Figure 2-4) refers to the **context of care**, and outlines the system and policy requirements that are needed to support the nurse–patient relationship and the delivery of fundamental care. It is important that the nurse has the right resources to help them fulfil their commitment to the patient. The quality of the relationship the nurse develops with the patient is as dependent upon the wider contextual factors within the healthcare system as it is upon the skill, commitment and abilities of the individual nurse.

Systems requirements include:

- resources – physical resources in terms of environment, equipment, infrastructure and human resources, including skill-mix and staffing
- culture – organisational culture, that is, the values and norms of the system and statements about the goals of the organisation, how staff are respected and valued; and the organisation's commitment to innovation and learning
- leadership – explicit and implicit styles of leadership that are promoted in the organisation; how roles are defined and supported and how staff are mentored and coached
- evaluation and feedback – processes at individual, team and organisational levels that provide feedback in a supportive, constructive way.

Policy requirements refer to a broader set of factors that influence the health system. These might seem to be

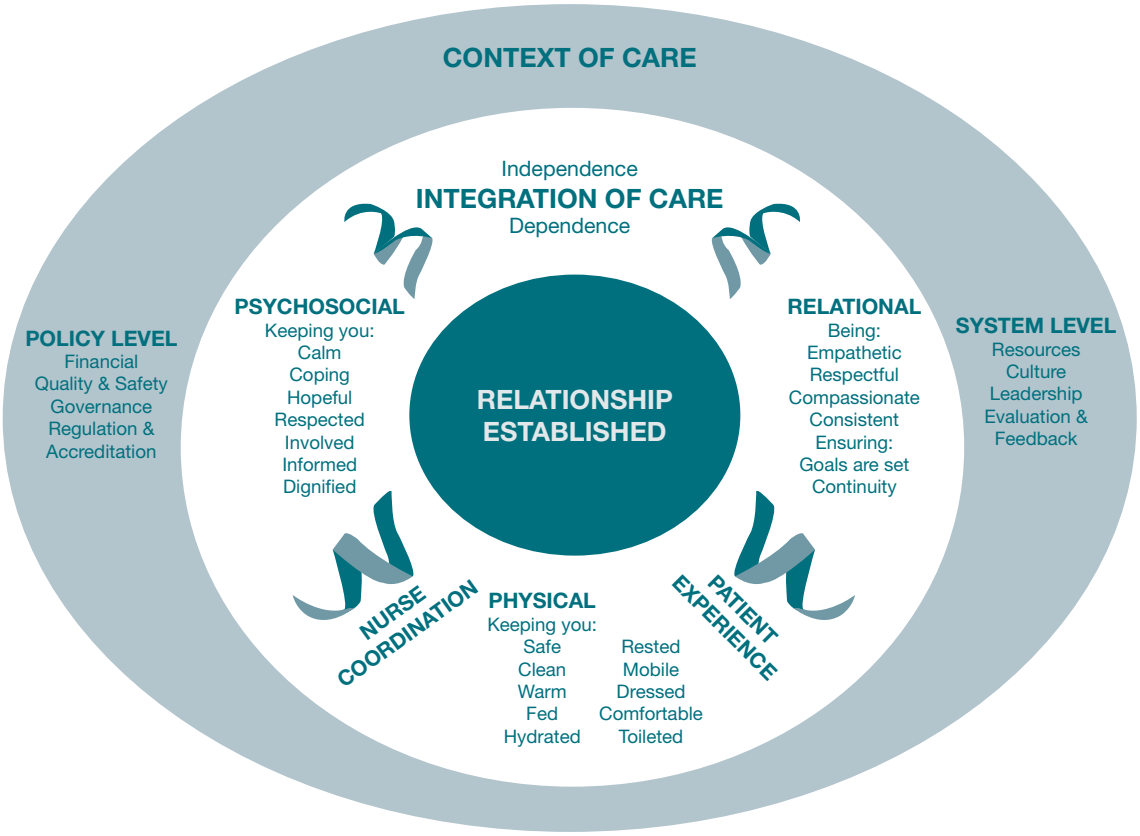

Figure 2-4 **The Fundamentals of Care Framework.**

RESEARCH HIGHLIGHT

Research focus

This research aimed to explore the Fundamentals of Care from the patient's perspective.

Abstract

The study involved examining three patients who had survived a stroke and self-reported experiences of the treatment they received throughout their hospitalisation. Patients' narratives, or stories, were reviewed to explore if, how, when and in what circumstances they discussed their experiences of fundamental care. Understanding how patients experience the fundamentals of care may help to explain the complex processes involved in providing high-quality, comprehensive nursing care. This study illustrates the multiple dimensions – physical, psychosocial and relational – identified in the Fundamentals of Care Framework.

Evidence-based practice

- The experiences of the patients highlighted the entwined nature of delivering the Fundamentals of Care. Physical needs can only be addressed when psychosocial and relational needs are also met. This reinforces that nursing is not a series of tasks but requires a highly skilled practitioner who is continually critically reflecting on and modifying their care to meet patients' needs.
- The study could not conclusively determine directions for practice, as the stories of three stroke survivors may not be representative of a wider patient experience.
- Further systematic investigation of patients' experience is required with a wider healthcare user group.
- The Fundamentals of Care Framework has the potential to be used as a predictive, evaluative and explanatory tool.

Reference

Kitson AL, Muntlin Athlin A 2013 Development and preliminary testing of a framework to evaluate patients' experiences of the fundamentals of care: a secondary analysis of three stroke survivor narratives. Nursing Research and Practice 2013, http://dx.doi.org/10.1155/2013/572437.

TABLE 2-1 Fundamentals of care descriptions

Physical Fundamentals of Care ***Keeping you:***	
Safe	The patient is safe from any physical, psychosocial and environmental harm.
Comfortable	The patient is comfortable and receives adequate relief from nausea and/or pain. Also consider a patient's physical and emotional comfort and wellbeing.
Warm	The patient is not too hot or too cold.
Fed Hydrated	The patient has adequate food and drink (i.e. they receive their allocated meals and are provided adequate fluids). The patient is able to reach their food and drink, open any food packets or containers, and use their utensils. Assist patients to eat and drink when mobility or cognitive impairment is an issue. Assess and attend to patients' dietary requirements and choices (including allergies, intolerances and preferences).
Rested	The patient receives adequate rest and sleep. Consider the person's sleeping habits and preferences (e.g. their usual sleeping and waking times) and how these can best be accommodated. Assess any difficulties with sleeping, and help to minimise these difficulties as much as possible (i.e. identify ways to promote good quality sleep or to assist patients to settle during the night). Assist patients (where necessary) with any equipment they require during sleep (e.g. CPAP machine for sleep apnoea).
Mobile	Assess a patient's mobility and need for mobility aids. Help patients with tasks that require them to be mobile (e.g. toileting). Help and encourage patients to remain mobile (as much as they can) to promote recovery and prevent pressure sores. Assist patients to turn or change position regularly or teach them different ways of relieving pressure. Assist patients with the use of mobility aids and attend to their mobility preferences.
Clean Dressed	The patient's preferences with regard to hygiene, grooming and their physical appearance are respected. Respect a patient's right to privacy when cleaning and dressing.
Toileted	The patient's toileting needs are met. Assist the patient to the toilet and help them to toilet if necessary (such as when mobility is an issue), or provide alternative means for toileting (such as a bed pan) for patients whose mobility is restricted. Assess whether patients are experiencing any discomfort that might indicate issues with elimination, and ensure that patients' privacy and choices/preferences with regard to toileting are respected. Attend to toileting needs as soon as possible to prevent patient anxiety and distress that might arise due to fear of incontinence.
Psychosocial Fundamentals of Care ***Keeping you:***	
Calm	Acknowledge and address any frustrations the patient may have, minimise noise and distractions; keep patients informed about their care, check their understanding of their condition and care plan, listen to the patient's concerns.
Coping	Listen and encourage patients to talk about their feelings and needs. Validate their emotional reactions. Use plain language. Communicate person-to-person rather than healthcare professional-to-patient.
Hopeful	It is important to view hope within the context of people's lived experience and what is important to them (Tutton et al 2009). Setting goals for care can help patients to feel hopeful about their situation and the quality of care they will receive regardless of their clinical condition or chance of recovery.
Respected	Respect a patient's choices relating to their care (e.g. not wanting assistance with toileting). This includes respecting any religious or cultural practices that might be affected by (or affect) hospitalisation and care. Respect a patient's choices with regard to independence (or their move towards independence, including discharge planning), and support patients in their desire to achieve independence.
Involved	Patients are consulted and given the opportunity to contribute to decisions about all aspects of their care.
Informed	The patient is continually kept abreast of all aspects of their proposed and ongoing care.
Dignified	Treat patients with dignity regardless of their age, ethnicity, gender, sexual orientation, religion, linguistic or cultural background or the presence of a mental health issue, disability, illness or injury.
Relational Fundamentals of Care ***Being:***	
Empathetic	Identify and set aside any biases in order to work with the patient effectively. Seek to understand the patient's perspective. Be sincere and genuinely care about what happens to patients.
Respectful	Ensure that the relationship is positive and does no harm. Be courteous and considerate when interacting with the patient.

continued

TABLE 2-1 ***continued***

Compassionate	Be conscious of others' distress, suffering and misfortune, with a desire to alleviate it. Demonstrate characteristics such as empathy, sensitivity, kindness and warmth (Farenden 2014).
Consistent	Ensure coordinated and uninterrupted healthcare services. Make sure the care you deliver is consistent with that of your colleagues, so patients do not receive fragmented or contradictory care.
	Ensuring:
Goals are set	Set mutually agreed, realistic targets for recovery. Patients are free to renegotiate these goals at any point during their care.
Continuity	Ensure continuity across the delivery, facilitation and coordination of care.

beyond the direct influence of the individual but still need to be recognised. They include financial and funding issues, international, national and local quality and safety agendas, governance processes and accountability, and regulation and accreditation.

As can be seen from the process in Figure 2-5, the Fundamentals of Care Framework is the intersection of your working hypothesis, relevant theories and the clinical reasoning process. The framework indicates it is important that we do not address care activities in isolation. Returning to our *Clinical example* with Barry, if we try to address the possible presence of depression without establishing a trusting relationship, the intervention is likely to fail. Equally, in chatting with Barry while helping him with his breakfast, we would be able to assess his interest in food and his appetite, check his oral hygiene and note his upper body mobility and hand–eye coordination.

When we are delivering nursing care we are also guided by how the theories we are using describe the patient's needs, the context (or environment we are working in), and the relationship we need to have with our patient. The theories that might help inform our care for Barry include those related to grief and loss (Kübler-Ross, Parkes) and self-care deficits (Roper, Logan and Tierney), as well as Neuman's systems model, a framework for thinking about the nurse–client interaction; and Roy's adaptation model, which focuses on psychosocial, psychological, sociological and dependent–interdependent processes. We could even draw on a sociological theory around the way people take on the 'sick role' and become more dependent than they really need to (Parsons). By being open and receptive to the various ways we could interpret what is happening in front of us, we reduce the possibility of jumping to a conclusion too early and labelling people. Once we have applied the Fundamentals of Care Framework and relevant theories to our working hypothesis we can then move to the clinical reasoning process.

Relationship between theories, practice and patients: using the Fundamentals of Care Practice Process

Let us apply the Fundamentals of Care Practice Process to the following situation. Our patient is an 18-month-old child presenting with vomiting, diarrhoea and a fever. First, consider the different concepts related to this scenario. The child is accompanied by his mother who seems anxious (this is our idea/opinion). You also know that the mother is crying, trembling, and having difficulty concentrating on what you are saying to her. The child also has poor skin elasticity, no wet nappies, dry mucous membranes, and a high temperature (38.7°C). The mother's behaviour and the child's symptoms form our facts. Our working hypotheses are that: (1) the child is possibly dehydrated due to his high temperature; and (2) the child might be uncomfortable and in pain.

Now that we have developed our working hypotheses we need to address them. We could move straight from our hypotheses to the clinical reasoning process. That is, we could take the child from the mother and start intravenous fluid therapy to rehydrate the child if this was prescribed. But what would be missed if this was our initial reaction? Without using a framework and relevant theories, the consequences could be that the child becomes distressed because he is in an unfamiliar environment and separated from his mother. The mother might also become anxious at seeing her child distressed and being unsure of what is happening to her child.

To deliver holistic and person-centred care we need to understand the Fundamentals of Care Framework and the relevant nursing (and other disciplinary) theories that inform our practice. Without considering frameworks and theories and instead moving straight to the clinical reasoning process, we might miss important information

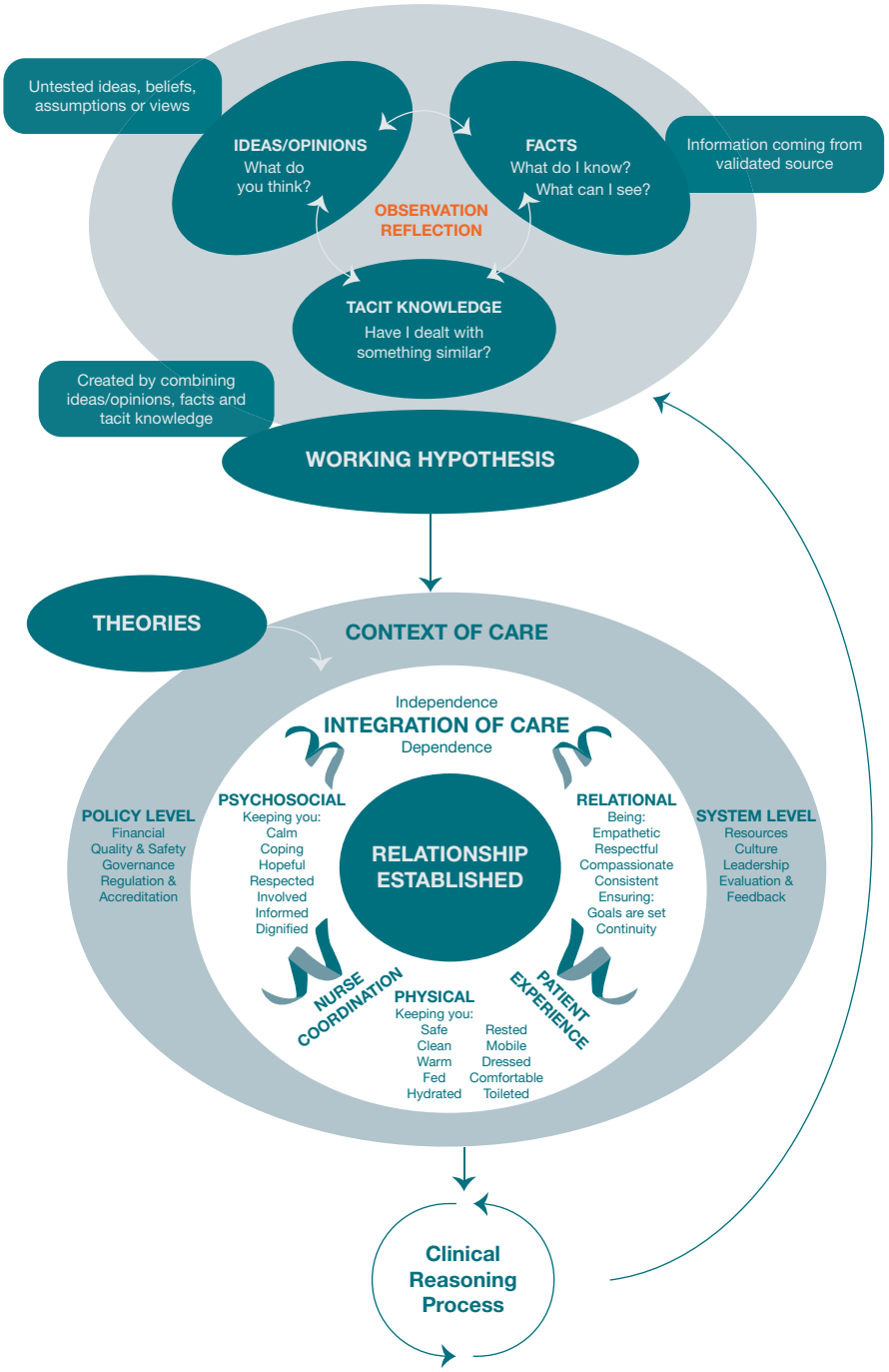

Figure 2-5 **The Fundamentals of Care Practice Process.**

that can help to deliver safe and effective care. In this paediatrics example, we might refer to attachment theory, and Piaget's theory of cognitive development to better understand how the child might react if separated from his mother.

From the Fundamentals of Care Framework we also know that it is crucially important to develop a trusting relationship with the mother and child. This can be established using theories of family-centred care. There are also many other nurse–patient relationship theories that might be relevant in a given scenario, including Peplau's interpersonal relations theory, which sets out four developmental stages of the nurse–patient relationship, and Orlando's dynamic nurse–patient relationship theory (Peden et al 2015). We also need to recognise the child's ability to understand and communicate with us, based on his developmental age and incorporate this into the way we care for him. Due to the child's age, we cannot

rely on him to self-report his symptoms. As such, closer monitoring and observation might be required.

The information that we have gathered through our framework and relevant theories then feeds into our clinical reasoning process. Without thinking about relevant theories and conceptual frameworks, the care we provide will become task-based. Focusing on the physical fundamentals (e.g. hydration) only would be inadequate and might lead to a negative care experience in which the child and parent become increasingly distressed. When providing care, we also need to consider people's relational and psychosocial needs and those of their family/carers.

You can see how nursing is complicated and needs to integrate many theories. The Fundamentals of Care Framework helps us to incorporate these and provide high-quality, holistic, person-centred care to our patients.

• CRITICAL REFLECTION POINT

Review the following scenario. Identify your concepts (ideas/opinions, facts and tacit knowledge). Develop a working hypothesis. Identify the possible theoretical influences and apply these within the Fundamentals of Care Framework.

Scenario:

An elderly person is found on the floor of their nursing home in a pool of liquid. They are unable to communicate. There is visible bruising on the person's arms and face.

What are your concepts?

- **Ideas/opinions**
- **Facts**
- **Tacit knowledge**

What is your working hypothesis?

What fundamentals of care might you need to consider and why? For example, the Fundamental of Care regarding communication needs to be considered because establishing a relationship is crucial to assessing cognition and determining the person's needs.

What theories inform the Fundamentals of Care Framework in this situation? For example, what are the underlying theories relating to communication with older people?

Why do I need to know about theories?

The example of germ theory provides a useful way to explain the importance of a theory and its application to practice. Germ theory was used to explain the role that microorganisms play in causing disease. These small organisms, too small to see without magnification, were thought to invade humans, animals and other living hosts. Using this theory, Louis Pasteur, a French chemist and microbiologist, showed that microorganisms in the air cause fermentation and putrefaction. He discovered that the growth of microorganisms could cause food and drinks to spoil, and, extrapolating from this, hypothesised that microorganisms were likely to affect humans and animals in a similar way, causing disease. He proposed preventing the entry of microorganisms into the body in order to promote health. His experimental work and discoveries provided direct support for germ theory (Pasteur et al 1878).

Through applying germ theory to practice, Louis Pasteur was instrumental in contributing to many practical applications in microbiology and medicine, including:

- instituting changes in hospital/medical practices to minimise the spread of disease by microbes or germs
- discovering that weak forms of a disease could be used to develop immunity against stronger forms
- introducing the medical world to the concept of viruses.

In 1865, a Scottish surgeon called Joseph Lister applied the concept of germ theory to practice, believing that the cause of infection in many of his postoperative patients was airborne microorganisms. Lister had heard that carbolic acid had been used to eliminate a cattle parasite and to treat sewage. He decided to see if this liquid could also stop wounds from becoming infected. He began by cleaning the wounds of his patients with the carbolic acid; he also soaked the dressings in antiseptic liquid. Between 1864–1866, the death rate for his patients was 45.7%. However, between 1867 and 1870, after he introduced his new antiseptic treatment, the death rate fell to 15%. He tested his theory in practice and provided support for the belief that airborne microorganisms were causing the disease in wounds. Once these aseptic techniques were accepted, surgery was revolutionised and saved millions of lives.

Germ theory was also utilised by Robert Koch, a German doctor. In the 1880s, he further refined the experimental processes used to demonstrate that a disease is caused by a particular organism. In doing so, Koch identified the organisms that cause tuberculosis and cholera, providing further support for germ theory. The application of germ theory to nursing practice is obvious: from the 'Five moments for hand hygiene' (World Health Organization 2006) to a myriad of policies and procedures to prevent cross-infection and contamination.

As a nurse, theories are critical to informing your practice, contributing to an evidence base relating to nursing and the delivery of care, and generating new knowledge. Professional nurses use theories from nursing and the behavioural sciences (e.g. psychology, sociology, counselling) to analyse and interpret people's health

situations and to solve problems. By practising theory-based nursing, combined with critical thinking skills, nurses are able not only to deliver high-quality, efficient and cost-effective care but also to describe a rationale for what they do.

Nursing theory is a notion or an idea that interprets observation, describes relationships, and projects outcomes for nursing (Parker & Smith 2010). Nursing theories differentiate nursing from other disciplines and activities by describing, explaining, predicting and controlling desired outcomes of nursing practices. Through informing practice and the development of new knowledge, theories also help us to distinguish the complementary roles of the healthcare team (e.g. nursing and social work). Nursing theory helps us to identify our role as being different but complementary to other healthcare professionals. Nursing theory defines what it is that nurses do and how this contributes to the delivery of health care. By working together with other members of the healthcare team who have complementary expertise and responsibilities, we can ensure we deliver integrated, holistic, person-centred care. Nursing theory can be used to guide knowledge development and can direct education, research and practice. The contribution of nursing researchers ensures that nursing work remains relevant, current and useful and has a positive impact on health outcomes. Nursing theory makes nursing unique as it not only explains what nurses do, it is also a means of testing knowledge through research and by expanding nursing's knowledge base to meet the healthcare needs of a complex, multicultural society (Fitzpatrick & Whall 1996).

There are many theories of nursing, some of which have been developed with a specific focus. For example, Florence Nightingale's theory focuses on the environmental aspects of care, Orem's theory is linked to the self-care deficits of the patient and Virginia Henderson's theory is based on identifying patient needs. There are some theories that can appear more relevant to specific clinical circumstances, such as the Tidal Model of Mental Health Nursing, used to promote mental health recovery (Barker & Buchanan-Barker 2005). As mentioned above, in our nursing practice we might also find the need to 'pick and mix' from various theories, depending on our patient population and care environment.

Types of theories

There are many different types of theories that might inform the Fundamentals of Care Framework and help to address our working hypotheses as part of the Fundamentals of Care Practice Process. Some of the theories we might consider include grand theories, mid-range theories and practice-level theories. Each type of theory differs in terms of its scope, what it describes, its level of abstraction, how easily it can be tested, and the implications it has for nursing practice (Masters 2015). Grand theories are abstract and broad in scope. They involve large unifying ideas that are not intended to guide specific nursing interventions, but to explain phenomena and provide the structural framework for broad, abstract ideas. Mid-range theories are less abstract and narrower in scope than grand theories (Masters 2015, Smith & Parker 2015). Mid-range theories cover specific phenomena or concepts, such as uncertainty, social support or incontinence. Practice-level theories are the most limited and narrow in scope. They are developed for a specific range of nursing situations and interventions and have a more direct effect on nursing practice than grand or mid-range theories (Smith & Parker 2015).

• CRITICAL REFLECTION POINT

- **What theories do we use in our everyday life? What are some of the things we might 'take for granted' that have a theoretical explanation (e.g. gravity, friction)?**
- **Think about the mobility of patients. Nurses used to keep people in bed for five days post-surgery, but now they get them moving as soon as possible. Why? What theories contributed to this change of practice?**

Linking theories to nursing knowledge, research and education

So far in this chapter we have shown how theories help impact your practice through their ability to inform conceptual frameworks. We have shown that, in nursing, theories guide your nursing practice by helping you to: organise, understand and analyse patient data; make decisions related to nursing interventions; plan patient care; predict outcomes of care; evaluate patient outcomes; and think critically as you plan and provide nursing care (Masters 2015). We will now consider how certain ways of looking at health have influenced nursing knowledge, research and education. These perspectives are not theories but they are ways of structuring the world around us. There have been two major models that have profoundly influenced the way we think about health care – the biomedical model and the biopsychosocial model.

Biomedical model

The **biomedical model** assumes that all disease results from a single physical cause, such as cellular abnormalities or imbalances in homeostasis (Wade & Halligan 2004).

The model therefore prioritises activities that will lead to diagnosis and cure of physical anomalies and places primary value on objective knowledge (e.g. doctor expertise) rather than subjective knowledge (e.g. patient expertise) (Russell 2014). It views the mind and body as separate entities and likens the body to a machine that can be reduced to its component parts (Russell 2014, Treiber & Jones 2015). Each part of the body is then examined and treated separately for its underlying physical abnormality.

The biomedical model's focus on underlying pathophysiology provided important answers to the serious medical problems of the 19th and early 20th centuries. At the time, challenges to health and health care primarily centred on acute, life-threatening diseases, including infectious diseases such as small-pox and childhood diseases such as polio (Weiner 2007). By focusing on physical anomalies, the biomedical model provided a useful framework for research that led to the treatment and cure of these life-threatening illnesses, and to the subsequent development of such modern healthcare staples as antibiotics and vaccinations. Naturally, the model would have drawn upon all the key theories relating to germ theory, sepsis and immunisation.

However, the model has also had other impacts on health care. Its focus on purely the physical aspects of disease typically means that any aspect of illness or treatment that is not easily explained by cellular and molecular processes occurring within the body is excluded. As such, social and psychological determinants of health and illness and non-physical and non-curative aspects of care, such as compassion and empathy, are often overlooked in research, education and practice (Borrel-Carrió et al 2004, Russell 2014). It would also be correct to assume that the theories underpinning these dimensions would not be valued within the biomedical model. The model might also be less fitting for today's current healthcare challenges, characterised by the increasing complexity of disease and higher incidence of chronic, incurable conditions. As a response to these new health problems, we have seen the emergence of biopsychosocial approaches to health care.

Biopsychosocial model

Unlike the biomedical model, the **biopsychosocial model** argues that illness cannot be reduced to biology alone. Rather, the causes and consequences of illness are seen to exist at multiple levels – biological, psychological and social (Borell-Carió et al 2004, Engel 1978, Weiner 2007). The model therefore provides a more integrated, holistic explanation for the development and treatment of disease than the biomedical model. In this way, the biopsychosocial model is better able to explain the acquisition of many modern illnesses, particularly those related to lifestyle factors (e.g. diabetes and cardiovascular disease).

The model is also better able to deal with the complexity of chronic, incurable disease. The increased burden that such disease places on patients, families and healthcare systems means that, in addition to physical diagnosis and cure, these systems must also focus on long-term care and management, particularly around the fundamentals of care. Meeting another person's fundamental care needs involves more than the simple act of attending to a biological need (i.e. providing food to stop hunger); it also requires that a number of psychosocial needs are met (i.e. being treated with dignity and respect, feeling safe). Unsurprisingly, the theoretical basis for the biopsychosocial model is embedded in the psychological and social sciences, thus attempting to align the biological with the psychological and social.

In contrast to the biomedical model, the biopsychosocial model also argues that subjective experiences – the ways in which people conceive of and are affected by their illness – are essential to accurate diagnosis and positive outcomes (Borell-Carrió et al 2004). The model therefore advocates that people receiving care are not seen merely as objects/patients with a disease but as persons with unique and varied circumstances that impact their experience of illness and their recovery. The model encapsulates the contemporary person-centred care paradigm that focuses on actively engaging and involving people in the care they receive (Kitson & Muntlin Athlin 2013, Kitson et al 2013b).

Research using the biopsychosocial model investigates the interactions of biological factors with behavioural and/or social issues. Behavioural issues can include cognition, attitudes, emotions, motivation, perception and communication, as well as eating, drinking, sexual and parenting behaviours. One example of a biopsychosocial approach to research is examining the effects of interactions between genetic and environmental factors on health outcomes.

Positives and negatives of using theories

Many nurses believe theory is essential to guide our practice; however, there are some who devalue, misunderstand or dismiss the need for theories. The reasons we might or might not use theories are discussed below.

We can use theories to inform our practice. The Fundamentals of Care Practice Process (Figure 2-5) illustrates when and how we use theories to deliver our

patients' fundamental care needs. In using theories we can create or add to the existing body of nursing knowledge. Nursing research can generate new theories or test existing theories for their relevance and applicability in specific situations. The scenarios we have visited in this chapter have explored how using theories can prevent nursing care from being task-driven and delivered without reflection. Exploring the relevant theories and how they contribute to delivering the fundamentals of care encourages us to critically reflect on our practice. We can ask ourselves questions about how the care was received by the patient and their family. Did we achieve the outcomes we were seeking and how might we do things differently when presented with a similar situation in the future? We can take from the many different theories what we need for the patient and their situation. A 'pick and mix' approach allows us to apply relevant theories in part or in full.

We need to ensure that when we use theories we don't assume that one-size-fits-all. Theories can be criticised for being too rigid and inflexible for nursing practice in the 'real world'. There can also be difficulties when we are faced with theories that conflict with other theories; how can we determine which is correct and applicable for our circumstances? Not all theories have been 'tested'; they remain an idea rather than a proven method. Can we justify basing our care delivery on a specific theory if there is no proof it works? Also, it can take us some experimentation to find the best theory or combination of theories that work for our patient group and us. This is made even more difficult when theories are complex and difficult to understand and apply in practice. If theories are considered in isolation, without a conceptual framework to help operationalise them, they might seem too abstract for practice. Using the Fundamentals of Care Framework to operationalise the theories can help us to overcome this issue.

The most important thing to remember about theories is that they should provide us with explanations that help us understand what to do with and for our patients. If we just follow checklists and sets of tasks, we are not operating as thinking, reflective professionals. So the sooner we learn to enjoy using theories to shape our practice and to help us test and refine how we care for our patients the better it will be for us and our patients.

CLINICAL EXAMPLE REVISITED

You are assisting Barry with his morning wash and you initiate a conversation relating to how he manages this at home. You discover that Barry lives with his mother who is his main carer. His father has passed away and he has a brother who lives close by. He tells you that his mother does all his shopping and cooking for him. He can attend to most of his hygiene needs by himself and when at home uses a wheelchair to get around. You are now establishing a trusting relationship with Barry and this additional information leads you to further identify his needs and how you might meet them.

• CRITICAL REFLECTION POINT

- **What is the theoretical model for your nursing curriculum? Is it a biomedical model or a biopsychosocial model? What are the pros and cons of these models?**
- **Would one model work better in some nursing specialties than others? Why?**
- **What sorts of theories would underpin a person-centred care model of nursing practice?**

• CRITICAL REFLECTION POINT

1. **How would you apply nursing theory to the identified problems for Barry? Which theories might apply?**
2. **How would these theories contribute to the delivery of the Fundamentals of Care for Barry?**

Conclusion

Although nursing is viewed as a practice discipline, it is underpinned by concepts, frameworks and theories and we need to approach every patient interaction as an opportunity to determine these and apply them to the care we deliver. The Fundamentals of Care Practice Process demonstrates how they fit together and enables us to practise nursing in a holistic and integrated manner. Establishing a relationship with those we care for is essential, as this becomes the basis for delivering person-centred fundamental care. Even tasks that may be initially considered simple require us to be reflective practitioners and integrate all the sources of information we have to support our practice and ensure person-centred care.

Key concepts

- Nursing practice relies on identifying concepts about a patient's needs and understanding how these can be used to develop a working hypothesis about the care they require.
- The Fundamentals of Care Framework shows the need to establish a trusting relationship with the patient and to incorporate and address a patient's physical, psychosocial and relational needs.
- The Fundamentals of Care Framework consists of three dimensions: establishing the relationship with the patient; being able to integrate and address the patient's fundamental care needs; and a commitment from the

wider health system to be responsive to these core tasks.

- The Fundamentals of Care Practice Process demonstrates how the Fundamentals of Care Framework is the intersection of your working hypothesis, relevant theories and the clinical reasoning process.

Online resources

Nursing Theory, www.nursing-theory.org; an overview of many nursing theories, categorised to help you find the theories most relevant to your patient group.

Current Nursing, Nursing Theories, currentnursing.com/nursing_theory; lists over 80 theories and also has some quizzes so you can assess your knowledge about theories in practice.

References

Barker PJ, Buchanan-Barker P 2005 The Tidal Model: a guide for mental health professionals. Brunner-Routledge, East Sussex.

Borell-Carrió F, Suchman AL, Epstein RM 2004 The biopsychosocial model 25 years later: Principles, practice and scientific inquiry. Annals of Family Medicine 2(6):576–82.

Engel GL 1978 The biopsychosocial model and the education of health professionals. Annals of the New York Academy of Sciences 310:169–81.

Farenden A 2014 Compassionate Care, Care Quality Commission. www.cqc.org.uk/content/compassionate-care; accessed 21 Sept 2015.

Fitzpatrick JJ, Whall AL 1996 Conceptual models of nursing: analysis and application. Appleton & Lange, Stamford, Connecticut.

Green H 2014 Use of theoretical and conceptual frameworks in qualitative research. Nurse Researcher 21:34–48.

Jarabeen Y 2009 Building a conceptual framework: Philosophy, definitions and procedure. International Journal of Qualitative Methods 8:49–62.

Kitson A, Conroy T, Kuluski K et al 2013 Reclaiming and redefining the Fundamentals of Care: Nursing's response to meeting patients' basic human needs. School of Nursing, the University of Adelaide, SA.

Kitson A, Marshall A, Bassett K, Zeitz K 2013 What are the core elements of patient-centred care? A narrative review and synthesis of the literature from health policy, medicine and nursing. Journal of Advanced Nursing 69(1):4–15.

Kitson A, Muntlin Athlin A 2013 Development and preliminary testing of a framework to evaluate patients' experiences of the fundamentals of care: a secondary analysis of three stroke survivor narratives. Nursing Research and Practice. Article no. 572437.

Kothari A, Rudman D, Dobbins M et al 2012 The use of tacit and explicit knowledge in public health: a qualitative study. Implementation Science 7(20), www.implementationscience.com/content/7/1/20; accessed 22 Sept 2015.

Masters K 2015 Nursing theories. A framework for professional practice. Jones & Bartlett Learning, Burlington, MA.

Pallini S, Barcaccia B 2014 A meeting of the minds: John Bowlby encounters Jean Piaget. Review of General Psychology 18(4):287–92.

Parker ME, Smith MC 2010 Nursing theories and nursing practice, 3rd edn. FA Davis Company, Philadelphia.

Pasteur L, Joubert C, Chamberland C 1878 La theorie des germes et ses applications a la medicine et a la chirurgie. C. R. Acad. Sci. Hebd. Seances Acad. Sci. 86:1037–43.

Peden AR, Laubham KA, Wells A et al 2010 Nurse–patient relationship theories: Hildegard Peplau, Joyce Travelbee, Ida Jean Orlando. In ME Parker, MC Smith (eds) Nursing theories and nursing practice, 3rd edn, FA Davis Company, Philadelphia, pp. 67–80.

Russell L 2014 Sociology for health professionals. Sage Publications.

Smith MC, Parker ME 2010 Nursing theory and the discipline of nursing. In ME Parker, MC Smith (eds) Nursing theories and nursing practice, 3rd edn. FA Davis Company, Philadelphia, pp. 3–15.

Treiber LA, Jones J 2015 The care/cure dichotomy: Nursing's struggle with dualism. Health Sociology Review, 24(2):152–62.

Tutton E, Seers K, Langstaff D 2009 An exploration of hope as a concept for nursing. Journal of Orthopaedic Nursing 13(3):119–27.

Wade DT, Halligan PW 2004 Do biomedical models of illness make for good healthcare systems? British Medical Journal 329(7479):1398–401.

Weiner BK 2007 Difficult medical problems: On explanatory models and a pragmatic alternative. Medical Hypotheses 68(3):474–9.

World Health Organization 2006 5 moments of hand hygiene, Clean care is safer care. Online. Available: www.who.int/gpsc/tools/Five_moments/en/; accessed 22 Sept 2015.

CHAPTER

3

Engaging patients and keeping them safe

Rebecca Feo, Tiffany Conroy, Jan Alderman and Alison Kitson

Learning outcomes

Mastery of the content will enable you to:

- address patient safety using the Fundamentals of Care Framework
- identify potential negative consequences of your actions and how to minimise these
- engage with patients and their families to establish a therapeutic relationship
- assess all elements of a patient's personal safety, including physical, psychosocial and environmental safety
- identify and address possible risks to your personal safety as a nurse
- assess when your relationship with a patient has moved from therapeutic to non-therapeutic
- be aware of appropriate work health safety and occupational health and safety regulations and codes of practice.

KEY TERMS

Engagement, p. 31
Environmental safety, p. 38
Fundamentals of Care Framework, p. 31
Personal safety, p. 33
Physical safety, p. 34
Professional boundaries, p. 41
Psychosocial safety, p. 35
Risks, p. 33
Safety, p. 31
Therapeutic relationship, p. 31

Introduction

This chapter will demonstrate how you can address patient safety using the Fundamentals of Care Framework, introduced in Chapter 2. The framework emphasises the importance of establishing a positive relationship with the patient. As nurses, our first objective should be to do no harm. Therefore, we need to know the potential negative consequences of our actions and attempt to minimise these. Using the Fundamentals of Care Framework enables us to provide safe, holistic and continuous care.

The World Health Organization (2011) considers engaging with patients and their families an essential element of patient safety. It is crucial that nurses understand the ways in which patients can be involved as partners in their health care. The requirements for **engagement** are: actively encouraging patients to share information; effective communication; and showing empathy, honesty and respect. These are all reflected in the Fundamentals of Care Framework. Importantly, all these requirements rely on the development of a positive relationship between the nurse and the patient.

• CRITICAL REFLECTION POINT

1. **How do you engage with a patient? What does engaging mean?**
2. **What does keeping a patient safe mean for nurses?**
3. **What does safety mean to patients and their families?**
4. **How do the views of the healthcare provider and the patient differ? How might this impact on a patient's experience of care?**

Developing a relationship

Establishing a relationship with the patient is the basis for engagement. The relationship you develop with a patient (the nurse–patient relationship) is part of a wider network of interprofessional and family/carer relationships. You as a nurse will be working as part of an interdisciplinary team of health professionals. In turn, patients will be receiving care from, and building relationships with, this team of professionals. It is vital that you work effectively with colleagues to ensure patients receive holistic, integrated care. Patients also have relationships with family and carers that are important to them. When building a relationship with a patient you will also generally be building relationships with their family and carers as well. As indicated in the **Fundamentals of Care Framework** (see Figure 3-1), developing a positive nurse–patient relationship within this wider network has five requirements: trust, focus, anticipate, know and evaluate (Kitson et al 2013, 2014).

Trust is crucial to patient **safety**. Patients need to *feel* safe; it is not sufficient that they might be safe. To feel and be safe, patients need to trust the person looking after them (Wassenaar et al 2015). It is the nurse's responsibility to develop and nurture this trust, which encourages the sharing of relevant information that can help you to keep the patient safe. To focus on the patient means to give them your undivided attention. While time might be limited, it is important that the patient feels you have listened to them and have responded to their emotional and physical needs. Focusing on the patient is therefore vital to ensuring the patient feels well cared for as well as for detecting changes in the patient's physical and emotional state. Knowing the patient involves an understanding of their individuality, including knowledge of why they are receiving care and knowledge of their concerns and preferences with regard to their care. This need to know must be balanced with the patient's wishes regarding privacy. Anticipating a patient's needs enables the nurse to plan and discuss a proposed course of action with the patient. Finally, both the patient and the nurse should evaluate the quality of their relationship by reviewing its progress and providing feedback to each other.

The **therapeutic relationship** you develop with the patient is central to the care that you provide and can either be strengthened or weakened through your care delivery. The second circle of the Fundamentals of Care Framework demonstrates how a positive and trusting nurse–patient relationship is integral to the delivery of care around patients' fundamental needs. As can be seen from the diagram, patients' fundamental care needs can be physical (e.g. nutrition, elimination and hygiene), psychosocial (e.g. feeling calm, able to cope, respected and involved) and relational (e.g. the nurse is empathic, respectful and compassionate) (Kitson et al 2013, 2014). A positive relationship helps you attend to each of these needs to ensure patients are not only safe, fed, comfortable and hydrated, but that they are dignified and calm and receive care that is respectful, compassionate, consistent and empathic. It helps you to set mutual goals around the delivery of care, ensure patients' preferences are respected, and that patients and their families are kept involved and informed. The Fundamentals of Care Framework therefore helps you to build a relationship with a patient in order to deliver safe and effective care.

Nurses need to have the necessary skills to develop a safe therapeutic relationship with a patient. Some of the skills required include:

- active listening
- collaborative decision-making

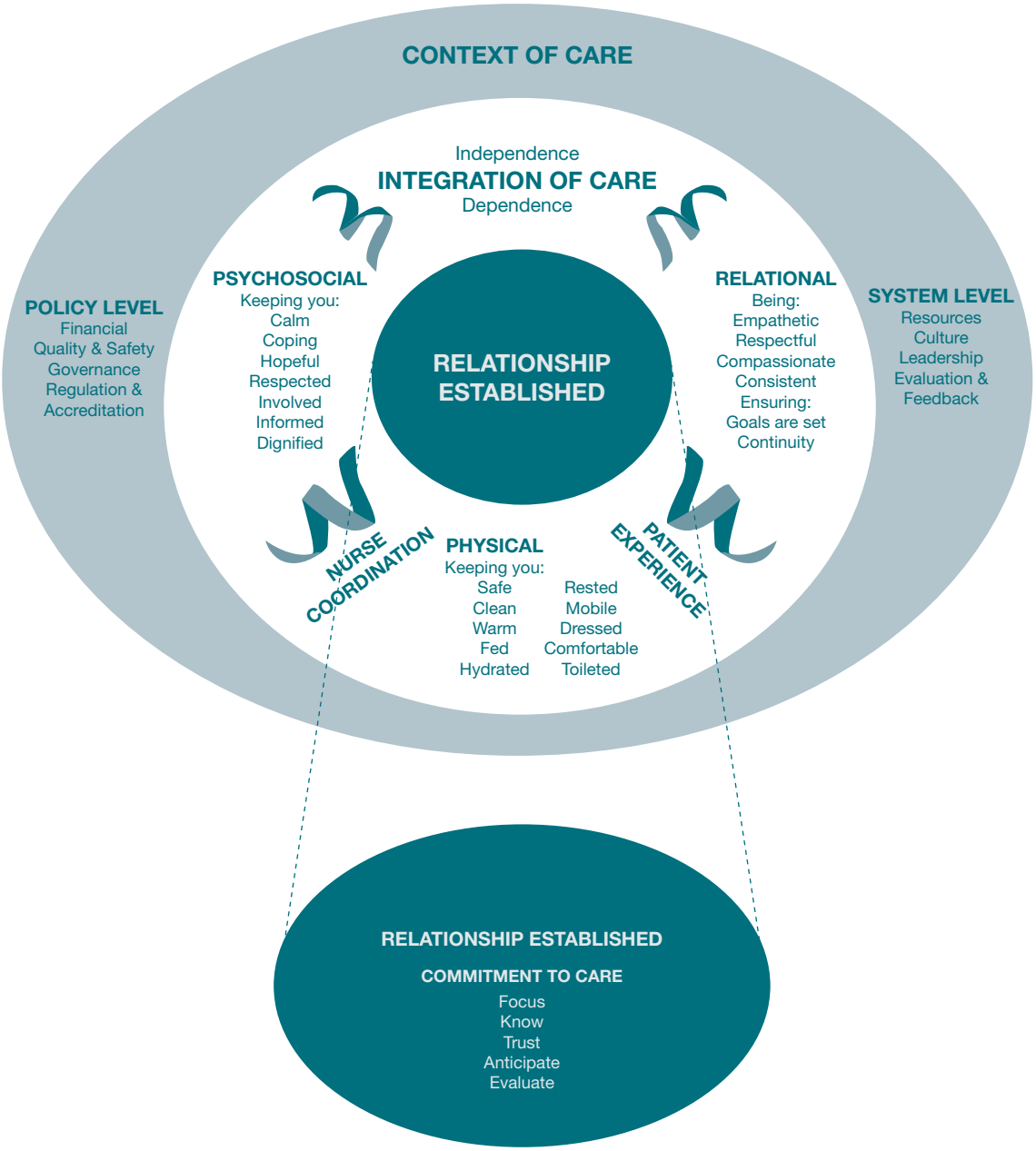

Figure 3-1 **The Fundamentals of Care Framework.**

- acknowledging the patient as the expert on his/her experience
- treating the development of trust and rapport as an ongoing and dynamic process
- communicating in a language that is appropriate for the person being cared for
- taking responsibility for actions and/or mistakes
- regularly talking to and observing patients in order to get a feel for how things are going for them (Wiechula et al 2015).

Being receptive and responsive to both verbal and non-verbal communication will assist the nurse to establish what aspects of care are most important to the patient and to tailor care around these needs and preferences.

When building a relationship with patients and their families/carers, engagement must occur at a meaningful level. Tokenistic engagement, where patients are told what has been decided or what has already happened with regard to their care, is not sufficient. The patient and any nominated family/carers should be full participants

RESEARCH HIGHLIGHT

Research focus

Developing a positive relationship with patients is known to be important for the delivery of high-quality care. This paper sought to identify the factors that contribute to the development of a caring relationship between the nurse and patient.

Research abstract

The study involved conducting an umbrella review. Umbrella reviews bring together evidence from existing systematic reviews in order to synthesise the available evidence on a particular topic. This umbrella review looked at studies examining patients' and nurses' perspectives on what is important in the nurse–patient relationship. The umbrella review identified six key areas that are associated with developing and maintaining caring, positive nurse–patient relationships. They are:

- nurses' and patients' expectations of the relationship
- nurses' values and beliefs (e.g. their thoughts, perceptions, attitudes and associated behaviours)
- nurses' knowledge and skills (both clinical skills and support behaviours)
- nurses' ability to communicate effectively in a variety of ways
- how the physical and social contexts in which care is taking place affect the nurse–patient relationship
- the impact of the relationship on patients/families, nurses and nursing students.

Evidence-based practice

- The nurse–patient relationship should be based on nursing's inbuilt values such as trust, sympathy, support and responsibility, and these values should be reflected in the attitudes and behaviours of nurses.
- Compassionate care and technical skill are equally important in developing and maintaining the nurse–patient relationship.
- Nurses need to consider the context in which they are providing care and how this might impact the nurse–patient relationship.
- The nurse–patient relationship not only has an impact on patients and families/carers, but on nurses as well. Nurses find great reward in a positive relationship with their patients but can also experience guilt and frustration when a good quality nurse–patient relationship is not achieved.

Reference

Wiechula R et al 2015 Umbrella review of the evidence: What factors influence the caring relationship between a nurse and patient? Journal of Advanced Nursing, doi:10.111/jan.12862.

in decision-making about the care they receive. A meaningful relationship with the patient enables you as the nurse to make sound clinical decisions that are based on the patient's best interests.

Safety as one of the fundamentals of care

Patient safety was of central concern to Florence Nightingale as reflected in her quote, 'the very first requirement in a hospital is that it should do the sick no harm' (Nightingale 1859). Safety continues to be a concern for many modern healthcare systems, with evidence suggesting that Nightingale's doctrine of 'doing no harm' is not being completely followed. The Institute of Medicine's (IOM) landmark publication *Crossing the Quality Chasm* (2001), for example, argued that the US healthcare system was failing to deliver consistent, high-quality medical care, with such care instead frequently harming or injuring patients. The IOM called for fundamental changes to 21st-century healthcare systems to ensure the safety of all patients.

In this part of the chapter, we consider how the Fundamentals of Care Framework helps you to address patient safety concerns when providing care. As can be seen from Figure 3-1, safety is conceptualised as a fundamental of care, along with other fundamentals such as nutrition, hydration and elimination. The nurse–patient relationship is central to ensuring this fundamental need is appropriately met. While policy and organisational structures focusing on safety undoubtedly have an impact on the ability of nurses to deliver safe and effective care, our focus in this chapter is on equipping you as a student and beginning nurse with the skills to operate in a safe manner. That is, to ensure patient safety becomes part of your personal and professional responsibility as a nurse.

Patient safety encompasses three interrelated elements: physical, psychosocial and environmental safety. At the intersection of these different types of safety lies the patient's **personal safety** (see Figure 3-2). It is only when each of these types of safety are appropriately met that patients can be considered safe. Ensuring patients' personal safety requires nurses to embed patients' needs in their thinking, reflection and assessment processes (Kitson et al 2014). Careful assessment and planning prior to any intervention or interaction with a patient will ensure that injury and harm do not occur and that any safety **risks** are reduced.

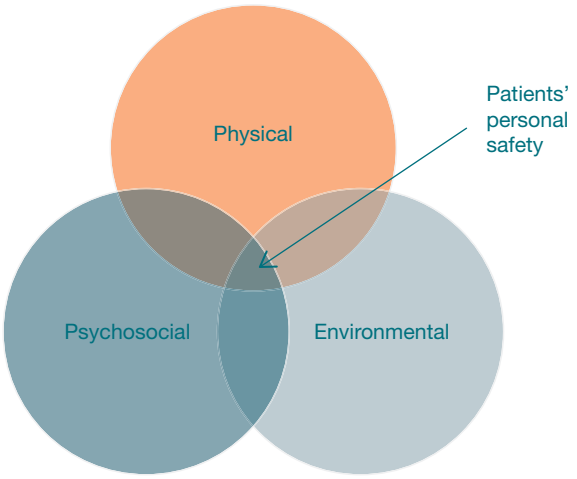

Figure 3-2 **Patients' personal safety.**



Figure 3-3 **Involving patients in their care decisions and management leads to better outcomes.**

iStockphoto/monkeybusinessimages.

Patients' physical safety

Keeping patients safe from physical harm promotes recovery, healing and quality of life, and helps to reduce hospital stay, prevent hospital-acquired infections and deconditioning, and lower the risk of re-admission (see Barker et al 2011, Gorecki et al 2009, Morris et al 2011, Reddy et al 2006, Schweickert et al 2009, Vollman 2006). Ensuring the **physical safety** of a patient includes attending to the following: skin integrity (e.g. the prevention of pressure injury); patient assessment (e.g. vital signs); falls; personal safety (i.e. threat of harm to self or from others, such as family members or carers); discharge planning; appropriate use of restraints; and fundamentals of care such as nutrition and hydration, comfort (e.g. pain management and rest and sleep), elimination and continence, hygiene and mobility.

Nurses engage in a continual process of critical thinking, observation, assessment, planning, evaluation and documentation to identify, address and minimise risks to patients' physical safety. As outlined above, and as reflected in the Fundamentals of Care Framework, a trusting and positive nurse–patient relationship is essential for ensuring patients' physical safety, and can be developed through the elements of trust, focus, anticipate, know and evaluate. Developing this relationship requires that you regularly consult with the patient, keep them involved and informed, and genuinely consider their preferences and wishes regarding care. The relationship you develop helps you to understand the patient's specific physical safety needs and to set mutual goals around those needs. The needs, goals and safety risks that you identify with the patient can then inform the development of an individualised care plan. You and other health professionals caring for the patient can use this care plan to guide the actions you take in addressing the patient's physical safety risks.

It is important to remember that physical safety needs may change over a person's life span. The types of physical safety risks that are relevant for an infant are generally not going to be the same as those for an adult, pregnant woman or an elderly person. Understanding these life span and developmental differences is an important part of *anticipating* patients' needs. Keeping in mind, of course, that while developmental needs might generally change over the life span, not all people in a particular age group will have the exact same needs. It is still important to get to *know* each patient individually and *focus* on their unique needs.

• CRITICAL REFLECTION POINT

Consider the types of risks that might be relevant for an infant as opposed to an older adult. For example, small children are typically susceptible to choking, whereas older adults might be at higher risk of falls and could be more susceptible to deconditioning while in hospital. What other risks can you identify for these different age groups?

A key element of attending to physical safety risks is to document your observations and risk analysis to ensure patients' needs are met and that care is continuous, consistent and effective. It is vital to continuously evaluate the effectiveness of care and your attempts to ensure the patient's physical safety. Ask yourself: Is the patient warm, fed, clean, hydrated, mobile, rested, dressed, toileted and comfortable? Does the patient *feel* safe and as though their care is being well managed? If not, you might have to modify your actions, taking into consideration input

from other healthcare professionals, the patient and their family. Some of the elements of the framework to consider when determining whether patients feel safe include: Is the patient being involved in and informed about their care? Are their wishes and beliefs being considered and is communication occurring in a respectful way? Is a trusting relationship in place in which the nurse follows through on requests and delivers care as they have promised? Is the patient calm and able to cope?

Let us consider in more detail how the Fundamentals of Care Framework helps you to think critically, observe, understand and assess a patient's physical safety needs in the following *Clinical example*.

CLINICAL EXAMPLE

You are a newly graduated registered nurse (RN) working in a hospital. A senior RN asks you to deliver medication to a patient. You are unsure what the medication is and have not had any previous interaction with the patient. When you deliver the medication, the patient asks you what the medication is for. She informs you that she is having a procedure tomorrow and is unable to have her normal daily aspirin. She asks you whether the medication is aspirin or another form of 'blood thinner'. You do not know the answer.

What are some of the potential safety risks that can be identified in this situation? For example, the patient might receive inappropriate medication that delays her upcoming procedure. In turn, the extra stay in hospital might contribute to emotional and/or financial distress. There might also be an issue as to whether you are giving the medication to the right patient, considering you have not met the patient before. How might these risks be minimised before entering the patient's room? First, determine what the medication is for and double check the patient's case notes to ensure you are administering the correct medication. In this way, you are *anticipating* the patient's needs and pre-emptively minimising safety risks.

Consider how you can use the Fundamentals of Care Framework to engage with the patient in order to minimise safety risks and address their concerns. First, when delivering the medication, address the patient by name to ensure you are delivering the medication to the right person. This is an important part of getting to *know* the patient. Second, genuinely listen to the patient's concerns. This is part of *focusing* on a patient and giving them your undivided attention. It also lets them know that they (and their views) are being *respected*. You could let the patient know that you will check what the medication is and come back and tell them. Following through in this way (i.e. returning when you say you will with the appropriate information) helps to develop a *trusting* relationship with the patient. Without this follow-up, patients are unlikely to trust that you will follow through with other aspects of their care. Such follow-up is also important for helping patients to feel *informed* and *involved* in the care they are receiving.

• CRITICAL REFLECTION POINT

You are on clinical placement in an operating theatre. A patient is being prepared for major cardiac surgery. The patient is elderly, diagnosed with dementia and was being cared for by his family at home. Once sedated for his operation, prior to intubation, the anaesthetist opens the patient's mouth. The patient's mouth is not clean and has a foul odour. The patient also has partial dentures in place. The anaesthetist decides that the patient is not fit for surgery and wants to know why the patient was sent to the operating theatre in this condition.

- **Using the Fundamentals of Care Framework, what safety issues can you identify for this patient (i.e. why were they considered unfit for surgery)? See Chapter 39 on preoperative care to help.**
- **How would you approach a conversation with the RN who accompanied the patient from the ward to the operating theatre to find out why the patient was considered fit for surgery?**
- **What should have been done to determine the patient's preparedness for surgery?**

As the *Clinical example* demonstrates, attending to patients' physical safety needs is complex and requires continual critical thinking, assessment and evaluation on the part of the nurse, using elements of the Fundamentals of Care Framework to help guide your actions. However, physical safety needs are not the only ones that patients can experience. When providing care to a patient, they will also experience a range of psychosocial needs, including emotional, cultural and psychological needs. It is equally important that these needs are identified and addressed.

Patients' psychosocial safety

A patient's **psychosocial safety** includes their cultural safety and their emotional and psychological wellbeing. As outlined by the Nursing Council of New Zealand (2011), culture includes, but is not limited to, a person's age or generation, gender, sexual orientation, occupation, socioeconomic status, ethnicity, migrant experience, spiritual or religious beliefs, and disability. Cultural safety involves understanding a person in the context of their culture, respecting their beliefs and values, identifying how their beliefs might differ to your own, and recognising how the patient's beliefs might impact health and healthcare delivery. All patients, regardless of their age, gender, sexual orientation, socioeconomic status, religion, ethnicity, or the presence of a disability or mental health issue, should feel safe to express their cultural, religious and sexual identities and to expect care that is free from discrimination. Crucially, cultural safety is defined by the person receiving care, not by the person providing care (Nursing Council of New Zealand 2011). It is the role of the nurse to deliver care in a way that the patient deems culturally safe.

Cultural safety also involves more than simply being aware of and sensitive to a patient's cultural differences. It requires that nurses examine their own personal values, understandings and actions and how these might impact the care they provide (Nursing Council of New Zealand 2011). When there are differences in values between patients, the nurse and the healthcare team or facility, this can have an adverse impact on patient care. For example, if the patient believes that humans can do little to overcome the forces of nature, that illness and death are inevitable, or that their condition is 'God's will', this might be in conflict with a mainstream biomedical approach that values 'mastery over nature' and believes that health outcomes are generally within our control. As a nurse, it is your responsibility to determine the patient's values, identify any differences in these values to your own values or those of the healthcare team/facility, and respond respectfully and appropriately to these differences in your care delivery. Through self-reflection on your own cultural values and beliefs, the aim is to avoid engaging in culturally determined behaviours that might lead to discriminative practice and poor quality care.

Ensuring a patient's emotional wellbeing is just as important as ensuring their physical safety. Receiving care outside the home, being away from family, and being sick or injured can all create significant stress and anxiety. Patients might have concerns about particular aspects of their illness or treatment and require reassurance and information to help them feel calm and able to cope. For people from minority groups, such as Aboriginal and Torres Strait Islander people, Māori and LGBTIQ (lesbian, gay, bisexual, transgender, intersex and queer), accessing mainstream health services can be stressful, frightening and alienating, and they can often experience stigma and discrimination (Kendall & Barnett 2015, Koh et al 2014, Moolchaem et al 2015, Riggs et al 2014, Shahid et al 2009, Shields et al 2012, Ware 2013). Attending to patients' emotional wellbeing can help them feel safe, reassured and less isolated and overwhelmed. Respecting a patient's wish to carry out religious practices during care, such as praying or visiting with a priest, might minimise stress and help them feel less alienated in an unfamiliar environment. Also consider and accommodate any preparations that might be involved in a patient's prayer ritual – for example, some patients might need to wash themselves beforehand. Ensuring patients have access to an interpreter can also help them acclimatise to their surroundings and better understand and participate in the care they are receiving.

BOX 3-1 Reflecting on your values

This exercise is based on the Value Orientation Profile developed in 1961 by Kluckhohn and Strodbeck (Meleis & Lipson 2004).

- Reflect on your values. What do you feel is the relationship of humans to nature? Your choices are: mastery over nature, subjugation to nature and harmony with nature.
- How do you conceptualise the nature of time? The choices are: past orientation, present orientation and future orientation.
- What is human activity for? The choices are: doing, being, and being and becoming.
- How should people relate to each other? The choices are: individualism and family/community focus (collateral relationships).
- How might a conflict in values for each of these areas impact on patient care? For example, if you are describing the possible impact of poor blood glucose control to a patient who is newly diagnosed with diabetes, it is easier if they have a future orientation to time and understand the longer term impact of their condition. How could you motivate them if they were oriented to the present? Think about the concept of individualism and how it might differ from a concept of community. How might these two approaches differ in terms of the value placed on patient autonomy? What might you do if you were caring for a patient whose family did not value such autonomy and was therefore keeping the patient uninformed about their life-threatening condition?

Meleis A, Lipson J 2004 Cross-cultural health and strategies to lead development of nursing practice. In: Daly J, Speedy S, Jackson D (eds) Nursing leadership. Elsevier Australia, Marrickville, NSW.

• CRITICAL REFLECTION POINT

Jenny Price is an Aboriginal woman admitted to your ward for an aortic valve replacement. She suffered with rheumatic fever as a child, which has slowly weakened the valve in her heart. Jenny is from an Indigenous community outside of Tennant Creek in the Northern Territory. She has never been to a hospital before. Her daughter, who is a community worker in Tennant Creek, accompanies her. Jenny is very shy and anxious and will not look at you when you address her. You need to explain the surgery to Jenny and what she can expect during her recovery.

- **How can you use the Fundamentals of Care Framework to engage with Jenny and better understand why she is feeling anxious?**
- **How can you engage with Jenny to understand her cultural beliefs and how they might influence her approach to the impending surgery?**
- **What practical things could you do for Jenny that would help her feel safe?**

As with any form of patient safety, ensuring patients' psychosocial safety involves developing a positive relationship with, and getting to know, the patient and their families/carers. Engaging in discussions with patients about any cultural practices that they would like accommodated during their care ensures patients are provided opportunities to express their unique cultural identities. Such conversations also help to identify situations where a patient's preferences might contradict or compromise the care they are being given. For example, a Moslem woman might not want to be cared for by a male healthcare worker, which can be difficult if only males are available. In some cultures it is customary to drink warm water rather than cold. A patient therefore might not take their medication if it is provided with cold water. In these situations it is important to understand your patient's preferences and how their needs can be met in the context of delivering safe and effective care. Developing a trusting relationship with the patient helps you to negotiate a situation in which both their physical and cultural safety needs are addressed. There are many resources on cultural safety that can help you as a student or beginning nurse to provide culturally safe care, some of which are provided in the resources section at the end of the chapter.

Getting to know how patients communicate and how they might signal distress, such as through body language and other non-verbal cues, will help you to identify and address their emotional safety risks. Genuinely listening to patients' worries, concerns and fears with regard to their illness and/or treatment, as well as those of their family and loved ones, is a crucial part of delivering person-centred care. Patients and their family members should feel as though they are integral members of the healthcare team, that they are engaged, involved and informed, and that their preferences and expertise are considered rather than dismissed.

• CRITICAL REFLECTION POINT

Consider how psychosocial needs might change over the life span. For example, providing care to a young child without their parent or caregiver could be traumatic and lead to unnecessary emotional distress. However, this might not be the case when providing care to adults. How else might psychosocial needs change over the life span?

Once you have a good understanding of the patient's cultural preferences, psychosocial needs and developmental or life span needs, document these and discuss them with your healthcare team (with the permission of the patient) so that the patient receives care that is consistent and holistic rather than contradictory and fragmented. Continually observe and assess how patients appear to be coping and check in with them to determine whether their psychosocial needs are being met.

CLINICAL EXAMPLE

Your patient is an 80-year-old man whose first language is Mandarin and who has limited English. He has bowel cancer with metastases and you are providing him with palliative care. His family does not want him to know his diagnosis and have kept him uninformed. You are unsure if this is consistent with what the patient wants. When the patient is alone he cries and looks distressed.

First, consider how you can build a trusting relationship with the patient, given the language barrier. You could have a conversation with his family to discuss whether they would prefer all communication to occur through them or if they would be happy for you to arrange an interpreter. Given that the family is involved in the patient's care and are a key way in which you can communicate with the patient, developing a positive relationship with the family is also crucially important.

Next, consider the psychosocial needs the patient might have. You might surmise that the patient is distressed or anxious and requires emotional support that will help him to feel calm and able to cope. You could consult the patient's family about the type of support that will be most appropriate, such as from a family member, a friend, or a cultural or religious leader. A conversation with the patient's family or with the patient through an interpreter will also help you to get to know the patient and better understand why he appears to be distressed.

It is also important to engage respectfully with the patient's family to better understand why they are choosing not to inform the patient about his diagnosis. This information can help you to respect the family's wishes when providing direct care to the patient. Such a conversation is best held in the context of a trusting relationship. Respecting and following through with the family's wishes will also help to reinforce that relationship. An important scenario to consider is how you might respond if the patient asks about his condition and why he is in hospital. Having a conversation with the patient's family can help to anticipate this need on the part of the patient and negotiate a way to respectfully address the patient's concerns while also adhering to the wishes of the family.

As outlined at the beginning of this chapter, the nurse–patient relationship is part of a wider network of interprofessional and family/carer relationships. Such relationships are crucial in this example. We have already highlighted how we need to build a strong and respectful relationship with the patient's family in order to deliver high-quality care. Equally, an integrated, multidisciplinary team approach is important to ensure that the family's wishes are understood by all who are providing direct care to the patient and to ensure that care is not only culturally safe but also consistent.

Let us consider how we might use the Fundamentals of Care Framework to attend to a patient's psychosocial needs in the following example.

• CRITICAL REFLECTION POINT

A medical registrar arrives to tell a patient his diagnosis and, realising that he does not speak English, asks if a translator can be found. The nurses point out that there is a student nurse currently on the ward who is from Afghanistan, which is the same country of origin as the patient. The student agrees to translate the diagnosis for the patient. The registrar then explains that the man has a tumour, that the prognosis is terminal, and that there is no treatment they can offer him. The student is very uncomfortable about translating this information because in his culture patients are not told that they are going to die.

The student translates the information to the patient. The patient sits quietly and listens. He does not ask any questions. Later the student nurse returns to the patient to talk to him about his understanding of the diagnosis and what supports he might have at home.

- **What different values can you identify in this situation? (Refer to the exercise based on the Value Orientation Profile in Box 3-1 on p. 36)**
- **What conflicting loyalties and obligations does the nurse face in this situation?**
- **How could this situation have been managed differently?**

As outlined at the beginning of the chapter, patients' safety risks are interrelated. Where there are physical safety risks to a patient there are likely to also be psychosocial safety risks, both of which need to be addressed. Consider the following *Clinical example*:

CLINICAL EXAMPLE

A Muslim female patient has just returned to a hospital ward from theatre. The patient's daughter had previously informed the nursing staff that, as a Muslim, her mother does not eat pork. When the patient returns to the ward she has missed the scheduled meal-time. Nursing staff have not organised an alternative meal for the patient. Upon request from the patient's daughter, a member of the nursing staff attempts to find the patient a meal. A nurse returns with a ham sandwich and gives it to the patient.

In this scenario, there are risks both to the patient's physical safety and psychosocial safety. First, the staff had not made sure that the patient had something to eat after returning to the ward, meaning the fundamental of care of nutrition was not appropriately met. Second, the patient's cultural needs and preferences were not respected. Despite being informed of the patient's cultural and religious needs with regard to nutrition, these were not considered in the care provided to the patient.

In addition to physical and psychosocial safety risks, there are also a number of environmental safety risks that need to be considered when providing care to patients. We will consider these environmental risks next.

Patients' environmental safety

A patient's physical environment is crucial to their recovery (Huisman et al 2012, Reiling et al 2008). Attending to a patient's **environmental safety** involves ensuring a clean, safe and secure physical environment for the patient (and their family/carers). This can include infection prevention as well as interventions to optimise the therapeutic environment, such as appropriate lighting, minimal noise, privacy, appropriate bed location and height, orientation aids, and the presence of familiar objects. These environmental safety risks were of paramount importance to Florence Nightingale, and were encapsulated in her Environmental Theory (Nightingale 1860, Selanders 2010). In this theory, Nightingale argued that the design of a hospital, in allowing for fresh air and water, light, warmth, cleanliness and quiet, is crucial to patient safety and recovery. Nursing, according to Nightingale, is the act of using these elements of a patient's environment to assist in their recovery. In modern healthcare environments, appropriate staffing numbers and skill-mix on nursing shifts are also important elements of a patient's environment that ensure safe and effective care.

While environmental safety risks relating to infections, sharps management, falls, pressure injuries and medication are more readily acknowledged and documented within healthcare systems, all of the fundamentals of care are important to consider when assessing a patient's environmental safety risks. If an environment is too hot or cold it is not only uncomfortable for patients but can lead to adverse patient outcomes. Environmental noise, particularly during night shifts, can interrupt patients' sleep, which is vital for their recovery. Patient privacy not only involves a patient's right to have their personal information maintained in a confidential manner. Nurses also ensure a private environment for the patient, particularly during physical examinations and when attending to personal hygiene and dressing.

Although you may encounter some situations where you are limited as to how much you as an indvidual nurse can alter your work environment, there are still things you can do to ensure environmental safety for patients. For example, ensuring the workplace is not cluttered and that both patients and staff have a safe thoroughfare is important for minimising physical safety risks. You can also ensure proper lighting in medication dispensing areas to avoid medication errors, and ensure availability of hand

sanitiser for handwashing to prevent infection. If possible, let natural light into patients' rooms by opening blinds or shades. You can also make sure that blinds are kept closed and lights are turned off when patients are trying to sleep. Reducing levels of noise, such as by turning the volume down on the television in patient and staff rooms, particularly during night shifts, and minimising talk between staff during rounds, can help patients to sleep. Providing access to music might also help to eliminate extraneous noise. Closing curtains or doors during examinations, washing and dressing, is also important to ensure privacy in the patient's environment.

• CRITICAL REFLECTION POINT

The critical care unit presents nurses with one of the most challenging environments in which to work. These environments were created to closely monitor very ill patients. As such, patients are in close proximity to nurses and to each other. The effects of this environment mean that patients are continually exposed to noise, light and interruptions. Critically ill patients sleep poorly and the nature of their illness, the effects of medication and the physical discomfort they experience can predispose them to cognitive impairment and poor memory, leading to confusion. Poor sleep can also cause cardiovascular stress and impaired immune system. Patients being cared for in critical care units often experience stress and anxiety (Urden et al 2016).

Imagine you are an intensive care unit (ICU) nurse rostered for night shift in a busy city hospital. You arrive to a well-lit ICU department to receive handover of your allocated patient. The number of nursing and medical staff has doubled at this time and noise is at a maximum. Handover begins.

- **What environmental safety risks to the patient can you identify in this setting? How might you mitigate these risks?**
- **Given that ICU patients are often sedated and ventilated, what data could you collect to assist you in assessing the level of stress your patient is experiencing in this environment? Who might be able to assist you with gathering this information?**
- **How can you use the Fundamentals of Care Framework to engage with critically ill patients and their families to reduce their anxiety and ensure they feel secure in your care?**
- **How might the multidisciplinary team assist the family to cope in this stressful environment, and reduce environmental safety risks?**

It is also important to consider how patients' specific developmental and life span needs are affected by their environment. For example, children are susceptible to choking. You can ensure the work environment is free from choking hazards in order to help minimise this risk. Likewise, elderly patients are susceptible to falls. Consider the aspects of the environment that might increase this susceptibility, such as wet or slippery floors or patient beds that are too high, and how you might address these safety risks.

• CRITICAL REFLECTION POINT

You are a newly graduated RN and you are working on a busy surgical ward in a large hospital. You arrive for an afternoon shift and discover that you are the team leader. The ward has a capacity of 18 beds and all beds are occupied with pre- and postoperative patients. You are allocated one enrolled nurse (EN) to assist you and one third-year student nurse. You know that this level of staffing is inadequate for this number of patients, so you request more staff from the nurse manager. Your request is unable to be met because many staff are on sick leave.

- **What would the risks to patient safety be in this understaffed environment?**
- **Can you identify any strategies to modify these risks, knowing that you are not able to change the current staffing level? For example, who might you allocate to care for the preoperative patients compared to the postoperative patients?**

As highlighted previously, the different types of patient safety – physical, psychosocial and environmental – do not occur in isolation. It is much more common for all three types of safety risks to be present at the same time when you are caring for a patient.

Throughout this chapter we have focused on how patient safety risks can change over the course of their life span. Consider the following:

- What are the different safety issues (physical, psychosocial and environmental) you might consider for an infant, a toddler, a young adult and an elderly person?
- How would you use the Fundamentals of Care Framework to identify and address these issues? (Refer to the *Clinical example* on p. 37.)
- What communication and cognitive issues might be relevant for an infant, a toddler, a young adult and an elderly person?
- How can you use the Fundamentals of Care Framework to build a trusting relationship with a patient whose communication or cognition is impaired or not yet developed?

WORKING WITH DIVERSITY

An important part of developing a positive, trusting nurse–patient relationship is avoiding making assumptions about a patient's life and needs. One common assumption is that patients are heterosexual and/or in a heterosexual

continued

relationship. It is important to respect the diversity of sexual orientation and family relationships and to respect the person identified by a patient as their significant other. Assumptions around a patient's cultural identity and preferences should also be avoided. A 'one-size-fits-all' approach to care where all patients from the same cultural or religious background are viewed as having the same needs is insufficient – it is important to get to know each patient individually and understand their unique needs and preferences. Likewise, rather than assuming that all patients in a particular age group will have the same needs, or have a limited capacity for recovery, it is important to have conversations with patients to better understand their distinctive needs and abilities. Such conversations will help you to develop trust, anticipate and address patients' concerns, and assist them in their recovery.

Implications for practice

It is important to continually check whether assumptions are making their way into your care. Consider your answers to the *Critical Reflection Point* on p. 34. Did you make any assumptions about the needs of patients in different age groups? How can you tell? How might you use the Fundamentals of Care Framework to engage with patients and their families to understand whether certain age-related risks are relevant to a particular patient?

Consulting and revisiting the Value Orientation Profile introduced in Box 3-1 on p. 36 can help you to determine whether assumptions are finding their way into your care delivery.

You can also refer to Chapter 2 and use the Fundamentals of Care Practice Process to double check your assumptions about a patient and how they might impact the care you provide.

References

Kersey-Matusiak G 2013 Delivering culturally competent nursing care. Springer Publishing Company, LLC, New York.

Muller K 2010 Communication from the inside out. Strategies for the engaged professional. FA Davis Company, Philadelphia.



Figure 3-4 Be vigilant about factors contributing to the risk of violence: prevention is better than cure.

iStockphoto/sturti.

Personal safety of the nurse

When considering safety practices in the healthcare environment it is not only the patient who needs to be protected; nursing staff are also at risk of injury and other harm on a daily basis. The management of risk is an integral component of nurses' practice, irrespective of the context in which care is being delivered (e.g. hospital or community setting).

Risks to nurses' safety can be physical, psychosocial and environmental. Physical risks include lifting and mobilising patients, needle stick injuries, being assaulted, and infectious diseases. Many healthcare organisations have implemented 'no lifting' policies, where the manual lifting of patients is eliminated or minimised and replaced with mechanical lifting devices to aid in the safe mobilisation, transport and transfer of patients. It is important to know how such policies operate in your healthcare organisation and how best to adhere to them. It is also important to ensure that you stay out of arm's reach of potentially violent patients or patients you do not know well in addition to having an exit from the room.

At all times when assessing an interaction with a patient, such as administering an injection or taking a patient to the shower, you must assess the possible risks to yourself and be aware of appropriate Work Health Safety and Occupational Health and Safety regulations and codes of practice. These regulations and codes cover staff health, safety and welfare in the workplace and are put in place to guide your work and help keep you and your patients safe. Awareness of safe work practices, such as in relation to manual handling, is part of nurses' ongoing professional development. As a nurse, you will be required to undertake mandatory training around lifting, handling waste and sharps management. It is also important that any work-related injuries are reported and investigated.

CRITICAL REFLECTION POINT

You are a student nurse and you answer a call bell of a patient you do not know. When you get to his room he is sitting in his chair and points to his bed. You assume he wants to move from the chair to the bed. You know from handover that he has had a stroke. You observed him being moved the previous day by another nurse, so thought this would be an easy task to attempt yourself. You position yourself in front of the patient and ask him to lean on you and stand up. As you do this you realise the patient has no strength in his legs and he has weakness down one side of his body. You think he might fall, so you sit him back down again.

- **What are the potential safety risks that you can identify in this situation (both to yourself and to the patient)?**
- **Using the Fundamentals of Care Framework, how would you engage with the patient to identify and address these safety issues?**
- **What assessments could you have performed before moving the patient?**
- **What did you already know that would have led you to investigate how mobile this patient was?**

Psychosocial safety risks to nurses can include being threatened by aggressive patients and relatives, sexual harassment, intimidation, and bullying from colleagues, other staff, patients or their families. The key to minimising these risks is managing stress and maintaining wellness, such as through work–life balance and appropriate nutrition, exercise and sleep. It is important to report incidences of intimidation, threats, bullying, harassment and assault from patients or staff, being sure to adhere to any relevant workplace guidelines and policies. Seeking appropriate support, both within and outside your organisation, can also help following these events.

It is also important to consider how and to what extent you engage with patients and what you can do to keep yourself safe when building therapeutic relationships with patients and their families. Setting professional boundaries around patient relationships will help you to minimise emotional burnout and other safety risks. **Professional boundaries** are the limits placed around the nurse–patient relationship that allow for a safe, therapeutic connection between you and the patient (and their family and friends) (Nursing and Midwifery Board of Australia 2010). Such boundaries mark the edges between a professional, therapeutic relationship that exists for the purpose of meeting the needs of the patient and a non-professional, personal relationship. Figure 3-5 below, taken from the Nursing and Midwifery Board of Australia's (2010) guide to professional boundaries, demonstrates how every nurse–patient relationship can be plotted on a continuum of nurses' professional behaviour (see also National Council of State Boards of Nursing 2007, from which the diagram was adapted). This continuum shows the difference between therapeutic and non-therapeutic nurse–patient relationships. You can use this diagram to evaluate your behaviour and consider if you are acting within the confines of a therapeutic relationship (National Council of State Boards of Nursing 2007).

CRITICAL REFLECTION POINT

When building a relationship with patients and their families, consider what constitutes your duty of care and what level of engagement is appropriate. While you might provide reassurance to patients and their families in the care setting, is it appropriate or necessary to maintain contact with patients outside of this setting to provide continued support? While you might help patients reconcile disagreements with their family regarding the delivery of their care, what level of engagement is appropriate? What do you do if the conflict involves more than just a disagreement about the care being provided?

Examples of boundaries that can be set around the therapeutic nurse–patient relationship include avoiding excessive self-disclosure. Carefully consider the need to disclose personal information, such as personal problems, to a patient. Excessive personal disclosure can move the nurse–patient relationship from professional to personal. Self-disclosure should be limited to revealing information that is of therapeutic value. The same applies for the information you obtain from the patient – you only need to know information that will help you in caring for



Figure 3-5 The continuum of the nurse–patient relationship.

Nursing and Midwifery Board of Australia, 2010 A nurse's guide to professional boundaries. Nursing and Midwifery Board of Australia, Melbourne.

the patient and meeting their needs. You can also set boundaries around how much time you spend with a particular patient. Notice whether you are singling out a patient for care, spending large amounts of time with them, visiting them on your day off or swapping shifts to care for them or to spend time with their family and loved ones (Nursing and Midwifery Board of Australia 2010).

Maintaining patient confidentiality is also important. For example, it is unlikely that you will need to look at the notes of a patient for whom you are not providing direct care. You can also set boundaries by avoiding developing friendships or romantic relationships with patients and socialising with them both in and outside of the care setting. In some cases it might be appropriate to socialise with former patients, such as when the patient is vulnerable, requires ongoing care or has difficulties with decision-making (College of Registered Nurses of British Columbia 2006). Also consider your conduct on social media. Making a comment via social media regarding an incident, your employer or a particular patient may be a breach of patient confidentiality or privacy and an example of a boundary violation (National Council of State Boards of Nursing 2007). This can be the case even if the comment is made during your own time and in your own home.

To determine whether a particular behaviour might go outside the limits of a professional relationship, and where your relationship with a patient sits on the nurse–patient relationship continuum, ask yourself: Does the behaviour meet a clearly identified therapeutic need for the person receiving care? Is it part of their care plan? Is it in the person's best interests? Is the behaviour within my scope of practice as a nurse and in keeping with standards for practice (National Council of State Boards of Nursing 2007, Nursing and Midwifery Board of Australia 2010)? Policies and codes will help guide your actions and determine what constitutes your duty of care to patients and their families within and outside the care setting. Relevant policies and codes include:

- *Code of Professional Conduct for Nurses in Australia* (Nursing and Midwifery Board of Australia 2008b) and *Code of Conduct for Nurses in New Zealand* (Nursing Council of New Zealand 2012a)
- *Professional boundaries guidelines* from the Nursing and Midwifery Board of Australia (2010) and the Nursing Council of New Zealand (2012b)
- *Code of ethics* from the New Zealand Nurses Organisation (2010) and the Nursing and Midwifery Board of Australia (2008a)
- *Social media policy* from the Australian Health Practitioner Regulation Agency (2014).

If you have concerns relating to boundaries in therapeutic relationships with patients and families you can also seek support and guidance from supervisors and more experienced nursing colleagues.

CRITICAL REFLECTION POINT

- **What are some of the boundaries that you might establish in order to keep yourself safe when engaging with patients and their families?**
- **Consider how you might respond in the following scenarios:**
  - **You have recently cared for a patient with whom you established good rapport and a positive relationship. The patient is now being discharged and has asked to connect with you on social media.**
  - **A patient you have been caring for is being discharged from hospital. She is not steady on her feet and so you and a colleague assist her to the taxi rank outside the hospital. You notice that the patient has some difficulties with communication and seems confused. You are concerned for her safety. Your colleague suggests that you both get into the taxi with the patient to ensure that she arrives home safely.**
  - **You notice that a colleague has been behaving towards a patient in a way that you consider to be violating the therapeutic nurse–patient relationship.**

Environmental risks for nurses can include infectious diseases, equipment malfunction, handling of medications, exposure to radiation, and latex allergies. To minimise risks around medication it is vital to ensure proper handling, management and disposal of medications (such as chemotherapy drugs), as well as correct and consistent use of personal protective equipment (e.g. coverall or gown, head covering, closed footwear, protective gloves, protective eyewear and respiratory protective devices where inhalation risk exists) (Worksafe Victoria 2013). In the event of spills of certain medications, a spill kit should be used. Also ensure that emergency skin and eye decontamination kits are readily available. To prevent the acquisition of infectious diseases, nurses must receive the required immunisations for their work activities and role (e.g. hepatitis A and B and measles), in addition to undergoing tuberculosis screening. As a student you probably would have had these tests before being permitted to work in a healthcare setting. Healthy workplace policies and procedures on Occupational Health and Safety are also important in mitigating nurses' environmental risks.

CRITICAL REFLECTION POINT

As mentioned earlier in the chapter, the different types of patient safety – physical, psychosocial and environmental – do not occur in isolation. Likewise, when there are risks to a patient's safety there are probably risks to your safety

as well. And these risks are just as important to address. Consider the following example.

A 20-year-old male presents to the emergency department. He is combative and his behaviour is erratic. He is yelling at staff and other patients. He will not lie on the bed and so has to be restrained. You assume he has been engaging in drinking and drug use, which is confirmed through testing.

- **What are the physical, psychosocial and environmental safety risks to:**
  - **the patient**
  - **yourself**
  - **other staff**
  - **other patients?**
- **How can you establish a relationship and engage with the patient, considering he is combative and under the influence of drugs and alcohol?**
- **How would you ensure the safety of the patient when he is not able to communicate with you properly? How do you ensure your safety in this situation?**
- **How might you de-escalate the situation?**

Summary

Ensuring patient safety is an important element of providing high-quality, person-centred care. The Fundamentals of Care Framework helps you to understand why a positive and trusting nurse–patient relationship is integral to maintaining patients' physical, psychosocial and environmental safety. Through building a positive therapeutic relationship and engaging respectfully with patients you are able to identify patients' unique safety risks and address these risks in a way that is suited to patients' (and their families'/carers') preferences and wishes. When assessing each care situation for the potential safety risks to patients it is also important to consider your safety as the nurse and to identify the strategies you can put in place to minimise these risks.

Key concepts

- Ensuring patient safety is an important element of providing high-quality, person-centred care.
- The Fundamentals of Care Framework illustrates how a positive and trusting nurse–patient relationship is integral to maintaining patients' physical, psychosocial and environmental safety.
- A positive therapeutic relationship and engaging respectfully with patients enables the nurse to identify patients' unique safety risks and address these risks in a way that is best suited to patients' preferences and wishes.
- When delivering nursing care, it is always important to consider your own safety as the nurse and consider how any risks can be mitigated.

Online resources

Nursing Council of New Zealand 2011 *Guidelines for cultural safety, the Treaty of Waitangi, and Maori health in nursing and midwifery education and practice* provide useful information on the principles of cultural safety. Available at: www.nursingcouncil.org.nz/Publications/Standards-and-guidelines-for-nurses

Resources for informing practice include: Queensland Health 2014 *Aboriginal and Torres Strait Islander Patient Care Guideline*. Available at: www.health.qld.gov.au/atsihealth/documents/patient_care_guideline.pdf; and Victorian Government 2010 *Improving the Patient Experience for Aboriginal People in the Emergency Department*. Available at health.vic.gov.au/emergency-care/resources.htm#aboriginal

The College of Nurses Aotearoa, New Zealand, has a collection of cultural safety stories and experiences from nurses throughout New Zealand. Available at: www.nurse.org.nz/cultural-safety-stories.html

Resources and information are also available from the New Zealand Nursing Council www.nursingcouncil.org.nz; the Nursing and Midwifery Board of Australia www.nursingmidwiferyboard.gov.au; the Congress of Aboriginal and Torres Strait Islander Nurses and Midwives catsinam.org.au/; and the Australian and Nursing Midwifery Association anmf.org.au/

References

Australian Health Practitioner Regulation Agency 2014 Social media policy. Australian Health Practitioner Regulation Agency.

Barker LA, Gout BS, Crowe TC 2011 Hospital malnutrition: Prevalence, identification and impact on patients and the healthcare system. International Journal of Environmental Research and Public Health 8(2):514–27.

College of Registered Nurses of British Columbia 2006 Nurse–client relationships. Vancouver.

Gorecki C, Brown JM, Nelson EA et al 2009 Impact of pressure ulcers on quality of life in older patients: A systematic review: Clinical investigations. Journal of the American Geriatrics Society 57(7):1175–83.

Huisman ERCM, Morales E, van Hoof J et al 2012 Healing environment: A review of the impact of physical environmental factors on users. Building and Environment 58:70–80.

Institute of Medicine 2001 Crossing the quality chasm: A new health system for the 21st century. Institute of Medicine, Washington.

Kendall E, Barnett L 2015 Principles for the development of Aboriginal health interventions: Culturally appropriate methods through systemic empathy. Ethnicity and Health 20(5):437–52.

Kitson A, Conroy T, Kuluski K et al 2013 Reclaiming and redefining the Fundamentals of Care: Nursing's response to meeting patients' basic human needs. School of Nursing, The University of Adelaide, Adelaide, SA.

Kitson A, Muntlin Athlin A, Conroy T 2014 Anything but basic: nursing's challenge in meeting patients' fundamental care needs. Journal of Nursing Scholarship 46(5):331–9.

Koh CS, Kang M, Usherwood T 2014 I demand to be treated as the person I am: Experiences of accessing primary health care for Australian adults who identify as gay, lesbian, bisexual, transgender or queer. Sexual Health 11(3):258–64.

Meleis A, Lipson J 2004 Cross-cultural health and strategies to lead development of nursing practice. In: Daly J, Speedy S, Jackson D (eds) Nursing leadership. Elsevier Australia, Marrickville, NSW.

Moolchaem P, Liamputtong P, O'Halloran P et al 2015 The lived experiences of transgender persons: a meta-synthesis. Journal of Gay and Lesbian Social Services 27(2):143–71.

Morris PE, Griffin L, Berry M et al 2011 Receiving early mobility during an intensive care unit admission is a predictor of improved outcomes in acute respiratory failure. American Journal of the Medical Sciences 341(5):373–7.

National Council of State Boards of Nursing 2007 Professional Boundaries: A nurse's guide to the importance of appropriate professional boundaries. National Council of State Boards of Nursing, Chicago, Illinois.

New Zealand Nurses Organisation 2010 Code of Ethics. New Zealand Nurses Organisation, Wellington.

Nightingale F 1859 Notes on hospitals. John W. Parker and Sons, London.

Nightingale F 1860 Notes on nursing. What it is, and what it is not. D. Appleton and Company, New York.

Nursing and Midwifery Board of Australia 2010 A nurse's guide to professional boundaries. Nursing and Midwifery Board of Australia, Melbourne.

Nursing and Midwifery Board of Australia 2008a Code of Ethics for Nurses in Australia. Nursing and Midwifery Board of Australia, Melbourne.

Nursing and Midwifery Board of Australia 2008b Code of Professional Conduct for Nurses in Australia. Nursing and Midwifery Board of Australia, Melbourne.

Nursing Council of New Zealand 2012a Code of Conduct for Nurses. Nursing Council of New Zealand, Wellington.

Nursing Council of New Zealand 2012b Guidelines: Professional Boundaries. A nurse's guide to the importance of appropriate professional boundaries. Nursing Council of New Zealand, Wellington.

Nursing Council of New Zealand 2011 Guidelines for Cultural Safety, the Treaty of Waitangi and Maori Health in Nursing Education and Practice. Nursing Council of New Zealand, Wellington.

Queensland Health 2014 Aboriginal and Torres Strait Islander patient care guidelines. State of Queensland, Brisbane.

Reddy M, Gill SS, Rochon PA 2006 Preventing pressure ulcers: A systematic review. Journal of the American Medical Association 296(8):974–84.

Reiling J, Hughes RG, Murphy MR 2008 The impact of facility design on patient safety. In: Hughes RG (ed) Patient safety and quality: an evidence-based handbook for nurses. Agency for Healthcare Research and Quality, Rockville, MD.

Riggs DW, Coleman K, Due C 2014 Healthcare experiences of gender diverse Australians: A mixed-methods, self-report survey. BMC Public Health 14(1).

Schweickert WD, Pohlman MC, Pohlman AS et al 2009 Early physical and occupational therapy in mechanically ventilated, critically ill patients: a randomised controlled trial. Lancet 373(9678):1874–82.

Selanders LC 2010 The power of environmental adaptation. Florence Nightingale's original theory for nursing practice. Journal of Holistic Nursing 28, 81–8.

Shahid S, Finn LD, Thompson SC 2009 Barriers to participation of Aboriginal people in cancer care: Communication in the hospital setting. Medical Journal of Australia 190(10):574–9.

Shields L, Zappia T, Blackwood D et al 2012 Lesbian, gay, bisexual, and transgender parents seeking health care for their children: a systematic review of the literature. Worldviews on Evidence-Based Nursing 9(4):200–09.

Urden LD, Stacy KM, Lough ME 2016 Priorities in critical care nursing, 7th edn. Elsevier, Mosby, St. Louis, Missouri.

Victorian Government 2010 Improving the patient experience for Aboriginal people in the emergency department. Hospital and Health Service Performance Division, Victorian Government, Department of Health Melbourne, Melbourne.

Vollman K 2006 Ventilator-associated pneumonia and pressure ulcer prevention as targets for quality improvement in the ICU. Critical Care Nursing Clinics of North America 18(4):453–67.

Ware V 2013 Improving the accessibility of health services in urban and regional settings for Indigenous people. Resource sheet no. 27 produced for the Closing the Gap Clearinghouse. Australian Institute of Health and Welfare, Canberra.

Wassenaar A, van den Boogaard M, van der Hooft T et al 2015 Providing good and comfortable care by building a bond of trust: Nurses' views regarding their role in patients' perception of safety in the Intensive Care Unit. Journal of Clinical Nursing 24, 3233–44.

Wiechula R, Conroy T, Kitson A et al 2015 Umbrella review of the evidence: What factors influence the caring relationship between a nurse and patient? Journal of Advanced Nursing, doi: 10.111/jan12862.

Worksafe Victoria 2013 Code of practice for the storage and handling of dangerous goods. State Government Victoria, Melbourne.

World Health Organization 2011 WHO Patient Safety Curriculum Guide. WHO.



PART
2

FRAMING NURSING:

Critical processes in nursing practice

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CHAPTER

4

Developing clinical reasoning for nursing practice

Clint Douglas and Jackie Crisp

Learning outcomes

Mastery of content will enable you to:

- understand the value of using a reflective and systematic approach to clinical reasoning
- discuss the ways in which a systematic approach to clinical reasoning enhances nursing knowledge and skill development
- discuss the ways in which nursing knowledge and skill development enhances the process of clinical reasoning
- explain how using a systematic approach to clinical reasoning contributes to the visibility of nursing practice
- explain the relationship between critical thinking and clinical reasoning within nursing practice
- discuss the six basic domains evident within all processes of clinical reasoning
- use critical questioning within each of the six basic domains of the clinical reasoning process.

KEY TERMS

Action planning, p. 51
Clinical reasoning cycle, p. 50
Clinical reasoning models, p. 47
Cognitive bias, p. 47
Critical questions, p. 56
Critical thinking, p. 49
Goals and priorities, p. 50
Information/data, p. 51
Judgements and decisions, p. 51
Nursing knowledge, p. 52
Nursing models, p. 47
Outcomes, p. 49
Reasoning process, p. 49

Introduction

This chapter will introduce you to the process of clinical reasoning, which will support your development as a nurse and make the critical thinking that guides nursing practice more visible to yourself and to others. A major goal in introducing you to a systematic process of clinical reasoning from the beginning of your nursing career is to enable its conscious and automatic use – no matter where you are practising or your level of experience as a registered nurse. We believe that those who establish such a systematic approach to their learning and practice are significantly more likely to have access to their own thinking and be more able to share their thinking and practices with others (Huang et al 2014), therefore making the complex clinical decisions that form the basis of nursing practice evident to ourselves, our colleagues and to those we care for. Put quite simply, the extent to which we engage in the process of clinical reasoning determines our ability to learn, to share that learning and to use what we have learnt in our day-to-day practice. It also helps us practise competently and confidently. Engaging in a reflective process in practice helps us to avoid the traps of **cognitive bias**, associated with self-fulfilling prophecy, prejudices, avoidance, group think and other challenges to safe and effective nursing care (Lieberman et al 2014).

Sound clinical reasoning does not happen by accident, nor does it occur by simply observing expert RNs practise (Levett-Jones et al 2010). Learning to think like a nurse requires deliberate practice and a structured approach to working through clinical problems. There is no surprise, then, that the process of clinical reasoning we outline below has several key domains that capture a systematic approach to: (1) gathering relevant information and data; (2) making appropriate judgements and decisions; (3) setting priorities and establishing goals; (4) preparing for and taking action; (5) evaluating impacts and outcomes; and (6) learning from the process to inform future practice. This process forms the first level of inquiry discussed in Chapter 7, and sets the foundation for all other levels of inquiry associated with the production and utilisation of nursing knowledge.

Previous editions of this book have used one specific framework (i.e. the Nursing Process, see Figure 4-1) to illustrate the clinical reasoning process (American Nurses Association 2010). From this edition onwards, however, we have decided to take a more inclusive and descriptive approach for ease of understanding and application. In addition, while the clinical reasoning process is depicted most commonly as a cycle (e.g. Levett-Jones 2013, Figure 4-2; Tanner 2006, Figure 4-3), we have decided to foreground the domains evident within those models, and background the notion of a cycle-like process. Within this chapter we take a generic, descriptive and inclusive approach, so that novices, such as yourselves, can understand how the range of available **nursing models** seek to achieve the same end, irrespective of specific language or depictions (Box 4-1). While there is indeed a logical process in the ordering of the domains that is cycle-like, we also know that everyday practice is inevitably more complex than starting at the beginning of the cycle, working through the domains of the cycle in a predetermined order and then closing the loop before moving on to the 'next reasoning process'. Often, nurses need to focus simultaneously on several domains in relation to overlapping issues related to one patient. This chapter seeks to provide fundamental learning in relation to each domain that can be utilised across the range of clinical reasoning models.

So it does not matter which of the many **clinical reasoning models** you may be asked to use, or you decide you like best, as long as you understand that the basic domains remain constant. And, no matter which models you encounter, the fundamental knowledge, skills and attitudes associated with sound critical thinking will always lie at the heart of clinical reasoning (problem-solving, clinical judgement or diagnostic reasoning).

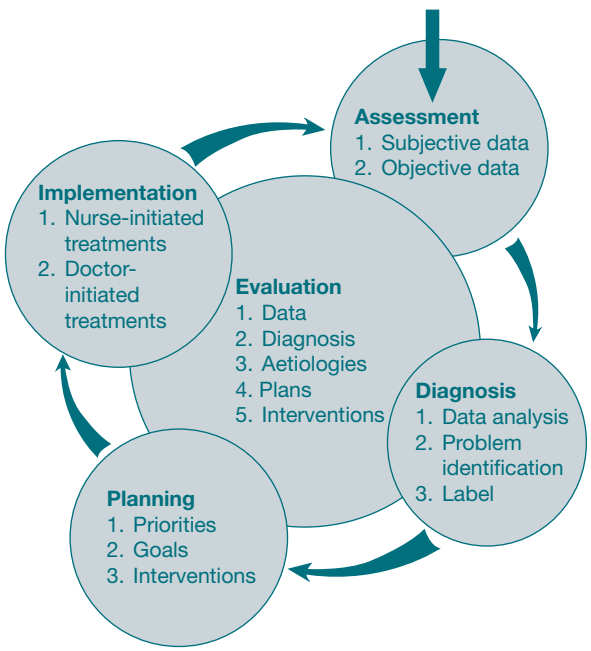


Figure 4-1 **The nursing process.**

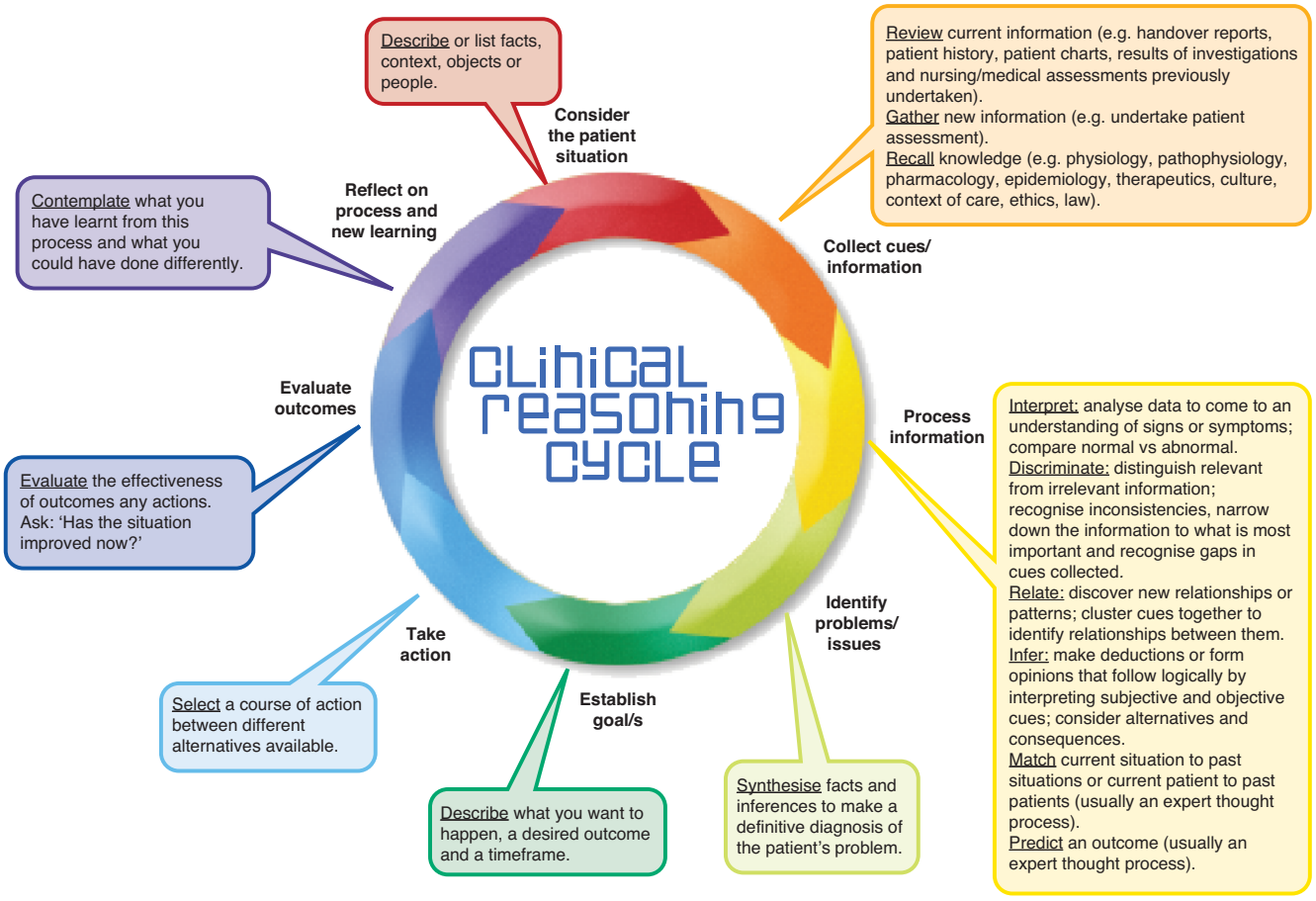


Figure 4-2 Clinical reasoning cycle.

Levett-Jones T et al 2010 The 'five rights' of clinical reasoning: an educational model to enhance nursing students' ability to identify and manage clinically 'at risk' patients. Nurse Education Today 30(6):515–20.

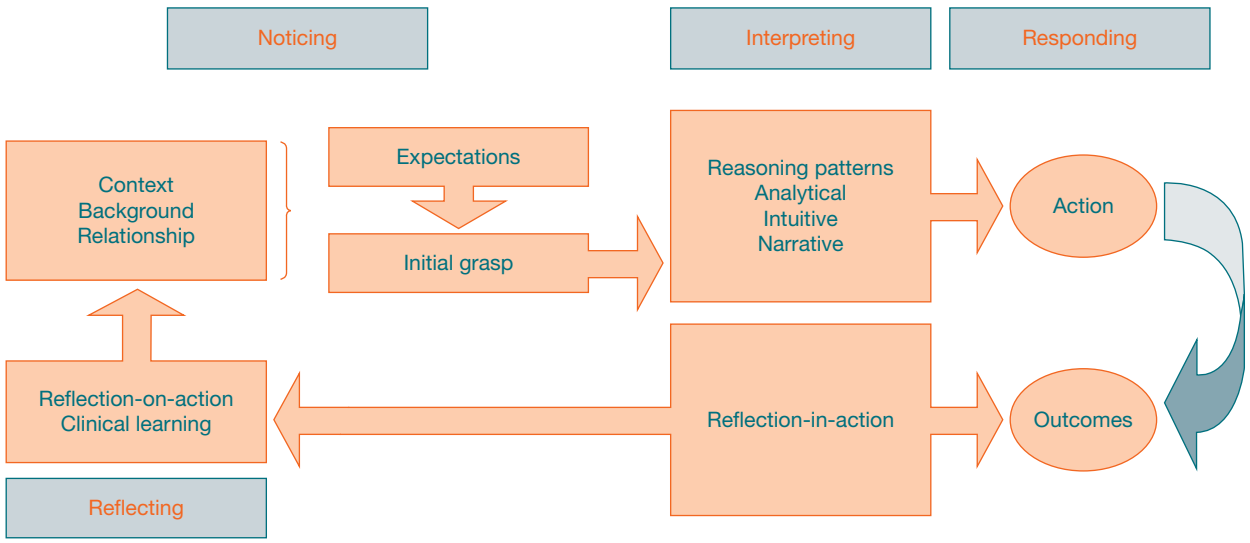


Figure 4-3 Clinical judgement model.

Redrawn from Tanner CA 2006 Thinking like a nurse: a research based model of clinical judgement in nursing. J Nurs Ed 45(6):201–11.

BOX 4-1 Six domains evident within all depictions of the clinical reasoning process

a Gathering relevant information and data
b Making appropriate judgements and decisions
c Setting priorities and establishing goals
d Preparing for and taking action
e Evaluating impacts and outcomes
f Learning from the process to inform future practice

The importance of the clinical reasoning process for effective nursing practice

Our intention across this book overall is to help you build the fundamental knowledge and skills required for your development as a nurse. To do that, you need to engage effectively with the thinking/actions and learning associated with all six of the domains outlined and described across Chapters 4–7.

As you move through your nursing program you will come to realise that all of the chapters making up this book enhance your capacity to take a reflective and critical approach to the process of clinical reasoning. For example, several chapters focus on the accountabilities and responsibilities that need to be considered throughout the clinical **reasoning process**; these include those that are professional, ethical and legal in nature (e.g. Chapters 9–11). Other chapters provide you with an understanding of healthcare systems: the ways in which nurses, along with other healthcare professionals, work within these systems in general to achieve the best possible experiences and **outcomes** for patients and their families (e.g. Chapters 1–3, Chapter 8); and the roles and realities of working as nurses within specific healthcare contexts (Chapters 38–41). The knowledge and skills that will enhance your ability to take a person-centred approach in the care you provide to patients and families are outlined in Chapter 12 and across Chapters 14–22. The remaining chapters support your development in relation to specific clinical knowledge and skills. It is, however, the clinical reasoning process that focuses all of the above knowledge and skills, and sits at the heart of effective nursing practice.

There is a great deal of ongoing confusion around the definition, overlap among, and usage of the terms clinical thinking, clinical reasoning, clinical decision-making and clinical judgement (as well as other similar terms). For a thorough description of these constructs, see Alfaro-Lefevre (2013). In this fifth edition we have decided to take a slightly different approach to that of the first four editions. In an attempt to highlight critical thinking within the clinical context – that is, nursing care provided to patients – where the process of reasoning and action are intimately linked, we are using the term **critical thinking** in relation to the knowledge, skills and attitudes required for sound thinking, and we are using the term clinical reasoning to capture the systematic process demanded in the application of that thinking in the delivery of nursing care.

To begin, let us consider the process of reasoning in relation to one common area of our everyday lives: our dental health. You might, for example, go months without even consciously considering your teeth, how they feel and how they look. One day you may notice a slight pain in a molar and then find yourself actually looking more closely and thinking about what is going on in your mouth. You may see some discolouration and feel a build-up of plaque behind your teeth. You start to worry that your mouth looks unappealing and that you might have some real problems brewing. Then you go into your exam period and forget about your mouth and it might take six months to get back to even thinking about it – unless your toothache worsens to a point where you cannot avoid it. Maybe you get back to thinking about it and even decide that you need to go to the dentist; you make the appointment and then cancel it – no money! Your mother might comment on your dental hygiene, but she is just trying to have a go at you and she doesn't know what you are going through or understand … It may take several months for you to seek out the advice of a dentist; and then several more months to act on that advice … Or you may never do anything. If you do take some of the advice, such as flossing every day, it may only last a couple of weeks because your teeth don't look any different, so why bother?

Replace this dental example with 'eating habits', 'exercise', 'hygiene', 'stress management', or any of a myriad of areas related to your day-to-day decisions and actions and you will recognise the stop/start, approach/withdraw, cost/benefit type dynamics we all experience at times. You can see from the above example that the critical points in the process of reasoning relate to:

- what we pay attention to or 'see', and the extent to which we trust what we 'see'
- how we make sense of what we 'see' (the story we tell ourselves)
- what we decide to do and why
- when we do it
- how we do it
- if we do it
- determining if it worked for us.

The chaotic and hit-or-miss nature of the approach most of us take in relation to some aspects of our personal lives is, however, simply not acceptable within the context of our nursing practice, where clinical reasoning determines patients' experiences of care as well as minor and major health outcomes. For example, failure to recognise and rescue hospitalised patients at risk of clinical deterioration is related to poor clinical reasoning skills (Levett-Jones et al 2010). We are responsible for providing safe, effective and appropriate nursing care to those we work with, and we have an obligation to ensure we do that to the best of our ability. Decisions concerning what we do and do not notice, and the actions we take (even the action of doing nothing) in response to that will determine both the experiences of care and outcomes achieved for patients. This is as true in relation to relatively 'mundane or common' aspects of nursing care (such as administering medications, oral hygiene or patient comfort) as it is for those that are viewed as more dramatic and associated with survival (such as cardiopulmonary resuscitation). One of the challenges nurses face is finding ways of providing care that covers the range of patient needs: from day-to-day care and support to care that is unequivocally life changing (or sustaining). The extensive work on patient safety and focus on patient satisfaction reflects the extent to which these distinctions are far more subjective, complex and interrelated than many think; and providing effective fundamental care can, and does, have a profound impact on patient experiences and outcomes (see Chapters 2 and 3).

Take, for example, a process triggered by an observation that a woman in your care on an acute unit is visibly upset after a visit by her husband. You could tell yourself that she is obviously missing her family and she will get over it, so decide to ignore her distress and stay away from her for an hour so she can calm down. You could tell yourself that she is lonely and work to cheer her up and spend as much time as you can with her, telling jokes and engaging her in superficial chatting. You could just choose to not think about it because it is probably something personal and none of your business. The truth is that you are making assumptions based on nothing you have verified beyond your own perspective/insight. An appropriate response to the observed distress involves a process of seeking additional information concerning the observed distress from the patient, seeking to understand the basis of the distress and the consequences of that distress for the patient, determining what you might do as a nurse in response to the distress, generating some strategies to support the patient and taking related actions, and keeping in touch with the patient to ensure that the actions you took have been helpful. The development of effective nursing practice, then, requires the use of a systematic process of clinical reasoning that maximises the use of all relevant information, leads to sound judgements and decisions, identifies appropriate **goals and priorities**, and leads to assessable outcome-based actions and learning.

• CRITICAL REFLECTION POINT

Now that you have a better understanding of the domains of clinical reasoning, reflect on the following:

1. **What existing knowledge bases, skills and experiences can you draw upon to enhance the development of clinical reasoning within your practice?**
2. **Identify three strategies that you will use to support your development in this area.**

The process of clinical reasoning

As discussed in the introduction to this chapter, there are a myriad of conceptual models seeking to explicate the process of clinical reasoning; and you will undoubtedly encounter several of these in your studies and across various clinical settings. One thing that everyone does agree on, however, is that clinical reasoning (by any name) is crucial for effective nursing practice (Box 4-2). Australian and New Zealand students are commonly exposed to the nursing process as a problem-solving approach to practice (see Figure 4-1), the **clinical reasoning cycle** (see Figure 4-2) or Tanner's clinical judgement model (see Figure 4-3). There is no surprise in this; however, the similarities and differences among such models/cycles can

BOX 4-2 Developing clinical reasoning skills

Developing clinical judgement – clinical reasoning skills – is one of the most important and challenging aspects of becoming a nurse. It's important because people's lives depend on it. It's challenging because thinking in the clinical setting is often fraught with more anxiety and risks than any other situation … It entails things like knowing what to look for, how to recognise when a patient's status is changing, and what to do about it. For beginners, this is particularly taxing because it requires an ability to recall facts, put them together into a meaningful whole, and apply the information to a current clinical situation (a situation which is often fluid and changing).

Alfaro-LeFevre R 2009 Critical thinking and clinical judgement: A practical approach to outcome-focused thinking, 4th edn. Saunders Elsevier, St Louis, p. 99.

be confusing. Just remember that they are all underpinned by a logical structure for working through a thinking process and associated actions: 'see something', 'make some interpretations or judgements concerning what is going on and what might be done about it', 'do something' and 'look to see if what was done achieved what it was intended to achieve' (see Box 4-1). And finally: learn from the experience.

• CRITICAL REFLECTION POINT

Go to your favourite search engine and insert 'define clinical reasoning'. What will appear – along with the URLs for a myriad of relevant sites – are some images of clinical reasoning models, cycles, stages, etc. Open up some of these and examine the ways in which the particular person, professional group or organisation describes their particular approach.

1. **What similarities and differences do you see among the models you examine?**
2. **Do one or more of these resonate with you and the way you think about nursing?**
3. **Why do you think so many different approaches have evolved across time, professions and contexts?**
4. **What do you think is behind our decision to take a more generic and inclusive approach to discussing the process of clinical reasoning?**

The starting point of clinical reasoning involves the identification and bringing together of **information/data** triggered by an observation or insight. For example, the observation that a patient has a high blood pressure reading triggers the gathering of information relevant to that observation: history, previous readings, diagnosis, other assessments of the patient and so forth. This information can be in existence already, or may need to be generated. The goal within this domain is to have all of the information/data required to move into making **judgements and decisions** concerning the appropriate response or actions. This process is dependent on your ability to obtain clear information from the patient and/or family members, the knowledge you were given at handover or through reading the patient's notes, and your existing knowledge of the area (e.g. normal range of blood pressure readings, factors that influence readings, etc), local policies and practice guidelines. You will also need to undertake a focused physical assessment of the patient (Chapters 23 and 24).

As the relevant information or data are obtained, the process moves on to making appropriate judgements and decisions concerning what these mean, and what actions may need to be taken. One possible, and very common, outcome at this point is the recognition of the need for more information, or different forms of information/data. There are of course other possible next steps, including the need to involve additional people in the process or the need to act quickly in response to one vital piece of information (e.g. the blood pressure falls well outside the normal range and the patient requires immediate assessment by the appropriate medical team). As a novice, one of the most common steps to be taken at this stage is identifying the best person to assist you in making sense of what is going on and what needs to happen next. Your ability to share your observations/data or information in a clear and concise manner will determine both the quality and quantity of support you receive from more experienced colleagues, as well as the timeliness of that support.

The decisions that are made concerning appropriate action then need to be prioritised and specific goals established. This involves considering options and determining what is likely to be most effective: for example, evidence from previous experience, local guidelines/data or research evidence (Chapter 7), what is possible and what is acceptable. Priorities and goals are of course linked to the impacts or outcomes that are sought through the actions to be taken. And, of course, **action planning** can uncover the need for either additional information/data or for input from others to gain additional judgements and potentially lead to different decisions.

Remember, the decision not to act is in itself an action. All actions should be preceded by appropriate preparation: this may include getting physical resources together and developing specific skills, or locating someone with those skills. And even if the patient and the family have been closely involved in the decision-making process, it always involves ensuring their input, understanding and agreement.

In order to ensure the effectiveness of nursing practice we need to avoid assumptions that those actions we take will always achieve the intended goal or outcomes. Indeed, you may find that some actions have unexpected or detrimental effects. Nursing practice is complex; human beings are complex; and healthcare environments are complex. A particular practice might work well for one patient but not for another; and the reasons for this may be unclear. Some patients experience straightforward recovery from the same procedure that causes distress in others. 'Closing the loop' or assessing the outcomes of your actions or practice is fundamental to both the ongoing development of nursing practice and to your learning.

In summary, the process of clinical reasoning works equally well across contexts and throughout all stages of your development as a nurse. That is, the process remains constant, although in different contexts the focus of each

domain (e.g. what data are available, what actions are possible or acceptable) may vary dramatically. In addition, as you develop your knowledge and expertise, the nature of your engagement in the process will evolve: as a student nurse you will need to access the support of others as you work through the cycles; as a more experienced and knowledgeable nurse your judgements and decisions will become more autonomous.

Developing your nursing knowledge and skills through the clinical reasoning process

What both drives and emerges from the clinical reasoning process is **nursing knowledge**. As your nursing knowledge base develops, the meaning you give to situations changes and learning occurs. You then take this learning with you to the next situation and create new meanings and experiential knowledge. Conway and McMillan (2014) explain this concept well in Figure 4-4 and demonstrate this continual process of learning as an outcome of nursing experience.

However, experience is 'cheap', and, as Conway and McMillan (2014) argue, experiential knowledge is not merely accumulated as a result of working as a nurse or nursing student. Experiential knowledge is generated through ongoing learning that comes from critical and reflective approaches to making sense of, and building on, our existing knowledge. Learning, rather than merely experiencing, occurs when we apply concepts to practice, manage complex patient-care situations that trigger uncertainty, and are accountable for our clinical reasoning in practice. Becoming comfortable with questioning and justifying our clinical decisions based on evidence is crucial to developing as a professional (see Box 4-3).

BOX 4-3 Learning from practice

- Was the clinical management of this patient supported by scientific rationales, research evidence and the patient's responses to treatment?
- Were there plausible alternatives to the chosen interventions?
- To what extent were my clinical decisions influenced by personal assumptions and beliefs?
- What were the most important personal learning outcomes – including awareness of my personal strengths and weaknesses?
- What actions would I take if presented with a similar situation in the future, and why?

The depth and extent of your nursing knowledge will influence your ability to think critically about and act effectively in different clinical situations. Consider the following *Clinical example*.

CLINICAL EXAMPLE

Postoperative fever

You are working on a surgical ward during a clinical placement and are asked by your buddy RN to take routine postoperative observations on a patient who is

continued

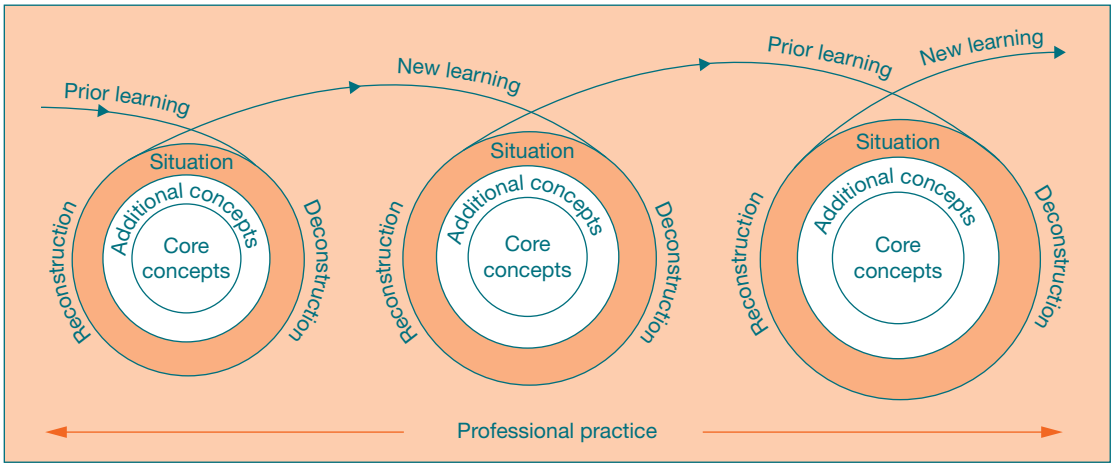


Figure 4-4 The relationship between situation analysis, learning and professional practice.

Conway J, McMillan M 2014 Connecting clinical and theoretical knowledge for practice. Fig 22.2; In Daly J, Speedy S, Jackson D (eds) Contexts of nursing, 4th edn. Elsevier, Chatswood NSW.

24-hours post-laparoscopic appendicectomy, and is to be discharged later in your shift. When you take his body temperature you find it is 38°C. You wonder whether this is significant and whether you need to do anything about it.

You discuss the finding with your buddy RN, who explains that a low-grade fever appearing soon after surgery (24–48 hours) is often part of the body's inflammatory response. Other common causes of postoperative fever include atelectasis, pneumonia, wound infection, urinary tract infections or infected IV sites. Also, because your patient has had an appendicectomy, he should be observed for evidence of peritonitis. With this information in mind, you return to the patient to complete a focused body systems assessment in order to confirm or rule out these potential causes (see Chapter 24).

On assessment you find:

- Primary survey and vital signs: The patient looks well and appears to be in no acute discomfort or distress. Other vital signs are within normal limits: Respiratory rate 14/min, SpO2 98% on room air, pulse rate 70/min, blood pressure 120/70 mmHg. On the observation chart, the temperature pattern shows a low-grade fever since admission.
- Chest: The patient's breathing is relaxed. Lungs are clear to auscultation.
- Abdomen: Soft, slight tenderness at wound sites. Bowel sounds present. No guarding.
- Wounds: Port sites are dry and intact.
- Extremities: IV in right hand without redness, oedema or tenderness.

Based on the focused assessment data, you rule out any of the possible complications identified earlier. While the patient's temperature is elevated, there is no data to suggest a problem at this time. In collaboration with your buddy RN, you decide the appropriate course of action is to monitor the patient's temperature more frequently before discharge. You explain your findings to the patient, and discuss how and why you will be monitoring his body temperature over this shift.

Later you and your buddy RN determine that there has been no change in temperature, that the patient and his family understand how to monitor for postoperative fever, and are aware of the potential complications. In reflecting on this experience and how it will influence the way you respond to similar situations in the future, you identify the new knowledge you have gained about how to analyse and respond to a patient with postoperative fever, as well as further learning needs such as gaps in your knowledge about the possible complication of peritonitis. Finally, the experience of discussing your thinking 'out loud' and hearing the way the RN could explain her decision-making and actions helped you develop confidence in discussing nursing practice. You realise that increasing your ability to make your clinical reasoning visible is a critical component of effective nursing practice.

Reference

Adapted from Lewis P, Douglas C 2014 Analysing data using critical thinking skills. In Lewis P, Foley D (eds) Health assessment in nursing, 2nd edn. Lippincott Williams & Wilkins, North Ryde, pp 56–62.

The *Clinical example* above makes clear that safely and effectively moving through each domain of clinical reasoning depends on the nurse's knowledge and critical thinking ability. Determining the most relevant data/information to collect and making appropriate judgements and decisions are difficult skills for beginning nurses, until they have developed enough knowledge and clinical experience to draw upon. Put simply, your ability to recognise abnormal data will be directly related to how much you already know about the problem. In the *Clinical example*, the RN with postoperative care experience was immediately able to consider the most likely causes of this patient's elevated temperature: respiratory complication (atelectasis), surgical complication (peritonitis), or a normal variation in response to appendicitis and surgery. In order to confirm or refute these possible explanations, the experienced RN is able to quickly focus assessment and gather additional data. While you might be tempted to jump to a conclusion based on one piece of data (i.e. body temperature 38°C), you can begin to see how this could lead to errors in clinical reasoning. An elevated body temperature in a postoperative patient could have many causes, and without further assessment, a sound clinical judgement cannot be made.

Alfaro-LeFevre (2009:99) states that: 'using sound clinical judgement means drawing valid conclusions and acting appropriately based on those conclusions (e.g. monitor more closely, begin independent treatment, or contact a more experienced professional to activate the chain of command)'. We can see in the example how, together with the RN, the decision was made to monitor the patient's temperature more closely before discharge. However, had you clustered further abnormal data along with the patient's temperature of 38°C, such as increasing abdominal tenderness with 'guarding', nausea and absent bowel sounds, this would have suggested the potential complication of peritonitis. In this situation the priorities would have been to notify the medical team and initiate fundamental nursing care and collaborative interventions to manage the complication.

Of course, taking action and determining outcomes in this relatively simple clinical example also required nursing knowledge and skill in a range of areas such as health assessment, medical–surgical nursing and patient teaching. In reality, clinical reasoning is rarely a straightforward or linear process and experienced nurses

will move backwards and forwards between domains. However, they will always be able to balance priorities and focus on nursing care that achieves the best experiences and outcomes for the patient. Consider a more complex *Clinical example* below to see this process in action: where the RN draws on her nursing expertise to work through the same process of clinical reasoning we have been discussing, albeit at a more complex level, to save the patient's life.

CLINICAL EXAMPLE

The overlooked symptom

I came to work that morning and had two patients in our transplant intensive care unit. One was a 22-year-old man who had received a liver transplant about 48 hours earlier. When I was doing my morning head-to-toe check, I found that he was very sleepy, his eyes were closed, he was jaundiced and he wouldn't respond when I talked to him. When he did try to talk to me, he mumbled incomprehensibly.

I knew these symptoms were a problem. As an experienced transplant nurse, I knew that when you give somebody a liver and it works, they're not jaundiced and they're alert. They're perky, eating, talking and even walking the halls.

This young man was doing none of that. So I checked all his vital signs, his blood pressure, pulse, temperature. Everything was where it should have been at that point in time, two days post transplant. Although his urine output was okay, the urine was a dark amber colour – which was a concern. I did his morning lab work, and everything was fine. But I was still worried. As the shift progressed, he became more lethargic and sleepy. I did another set of blood work on him, and it started to document that life in his liver was deteriorating. His urine output was now a very thick sludge that was brown-coloured and basically unmeasurable as a liquid.

I paged the resident, who blew me off with some comment like, 'I'm the doctor,' and so I shouldn't worry. I told him bluntly that I was worried and that I was going to talk to the chief resident, and he said, 'No, don't call the chief resident. I think it's all right, but I'm going to keep an eye on him.' To which I replied, 'I am, too.'

A few hours later, when I became more concerned because the patient was even more unresponsive, I paged the resident again and got the same response.

'Look,' I told him, 'I'm sorry, I'm going to call the chief or the surgeon because this is not good; we're wasting time,' and I hung up.

Just as I got off the phone with the resident, the surgeon walked in. 'Lou,' I said, 'look, this young guy's in liver failure. His liver has failed.'

I presented all the data supporting this conclusion. I explained that he was going into a hepatic coma, becoming encephalopathic. He was filling up with poisons that his new transplanted liver was not able to detoxify. Because I had been a transplant nurse for over eight years, I determined this even without doing any neurological testing.

I was right. Indeed, his new blood work reflected a failed liver. The other critical liver lab values also reflected that fact. So did his urine. The dark brown sludge in his urine was bile that the liver was not utilising properly (usually you excrete your bile in your stool, which is why your stool is brown). The fact that his labs were normal in the morning was meaningless because they had rapidly changed over the course of the shift.

'We have to put him back on the list to get a new liver,' I told the surgeon. 'We're wasting time by not being proactive.'

The surgeon gave the patient a once-over and agreed that I was spot-on. We immediately relisted the young man. He got a transplant, not that night but the next. Forty-eight hours later, he was sitting up in bed, eating and chatting. Six days later, he went home with his parents and younger brother.

Reference

Reprinted Jo Stecher, 'The Overlooked Symptom' from When Chicken Soup Isn't Enough: Stories of Nurses Standing Up for Themselves, Their Patients, and Their Profession, edited by Suzanne Gordon. Copyright © 2010 by Jo Stecher. Used by permission of the publisher, Cornell University Press.

The bottom line is that the process of clinical reasoning is the basis for your practice as a registered nurse. One of the most important goals of nursing education is to develop your clinical reasoning skills so that you can make the transition from student to graduate RN capable of taking action based on sound clinical judgements. As Table 4-1 makes clear, as a beginner encountering new clinical situations, you need to be active in learning and

TABLE 4-1 The difference between cue collection in experienced and novice nurses

Experienced nurses	Novice nurses
Select relevant and specific cues	Less focused in their selection; tend to 'over-select cues'
Select cues that are context dependent	Follow rules when collecting cues, ignoring context
Collect information on a range of factors in addition to the patient's presenting symptoms	Concentrate on presenting symptoms only
Have a way of 'being with a patient' and instantly knowing the patient after scanning him/her; they know what to pay attention to and what questions to ask	Focus on task and technology rather than the patient, and often miss important cues

Levett-Jones T et al 2010 The 'five rights' of clinical reasoning: an educational model to enhance nursing students' ability to identify and manage clinically 'at risk' patients. Nurse Education Today 30(6):515–20.

seeking support through this transition. Fundamental to your success in becoming an effective clinical nurse is a commitment to lifelong learning and critical self-awareness. Learning to take a critical approach to your nursing practice will at times challenge your personal assumptions and beliefs. It involves making honest appraisals of your personal strengths and weaknesses. And it means knowing when and where you need to seek support to meet patient needs.

Critical thinking – knowledge, skills and attitudes for sound clinical reasoning

Contemporary neuroscience is providing a range of lenses through which to view the challenges we all face in engaging in sound critical thinking: that is, challenges associated with being a human being, working as, and with, other human beings, being human! Work within one area, *cognitive bias*, is particularly relevant to our ability to think critically and engage in the process of sound clinical reasoning. Put quite simply, our 'beliefs, decisions, and actions can be influenced by the unconscious drivers of cognitive bias' (Lieberman et al 2014, p 4). It appears that as human beings we need to accept this fact, understand the potential implications for our thinking and decision-making and find ways to minimise these in our day-to-day practice.

Recent work in the area of cognitive bias identified above generated four categories into which the 150-odd biases evident within the literature on cognitive bias may be organised and a range of strategies for mitigating these (Box 4-4). It is a mistake to believe that those of us who have experienced the benefits of higher education and those of us who have accrued a lot of expertise are immune to bias; as it is to believe that the more 'intelligent' we are the less likely we are to be biased (Lieberman et al 2014). However, the more we work in teams, where information is shared and multiple perspectives are taken into consideration as a matter of course, the more 'bias-proof' we make our decisions. So teamwork is not simply about different members of the team having different knowledge and skill-sets associated with different aspects of the work of the team; it is also about having multiple sets of eyes and perspectives in play across all of the team's work (Chapter 8).

Critical thinking is, then, a skill that demands a good deal of self-insight and willingness to challenge our own thinking, as well as that of others. Although critical thinking has many definitions (Huang et al 2014), there are common factors identified in the literature on critical thinking processes, all of which result in a change in belief or course of action (Riddell 2007):

- reflection
- identification and appraisal of assumptions
- inquiry, interpretation and analysis, and reasoning and judgement
- consideration of context.

BOX 4-4 Ways to reduce the impact of bias on critical thinking and clinical reasoning

As you develop your understanding of cognitive bias and the forms it takes, you will be able to identify a range of strategies to help you minimise the impact of these unconscious biases on your thinking and actions. Here are some that are a useful starting point:

- Seek out the opinions of independent others before making decisions
- Engage with colleagues who you know have different ideas or perspectives in order to challenge your own thinking
- Ask yourself, 'What would I do if this patient was my grandmother/sister/brother etc?' in situations where you are making decisions
- Get to know your colleagues and discuss your shared goals and values to maximise your sense of inter-connectedness around practice
- After making complex decisions, take some time out and revisit your decision before taking action
- Develop a reflective approach to your practice in order to evaluate critically your actions and the associated outcomes
- Find a clinical supervisor or other more experienced colleagues who can help you think through your practice decisions
- Contribute to a culture where identifying own errors or performance challenges is accepted practice and the level of defensiveness surrounding these processes is low
- Practise becoming more of an objective observer of your own practice and that of your colleagues
- Seek out as much information or data as possible to inform decisions and actions
- Develop the high-level knowledge and skills required to ensure the above, including: critical thinking, critical reflection, high challenge/high support conversations.

Lieberman M, Rock D, Cox C 2014 Breaking bias. NeuroLeadership Journal 5. Online. Available:www.scn.ucla.edu/pdf/Lieberman(2014)NLJ.pdf; accessed 29 April 2016.

Taken together, critical thinking is essentially the activity of questioning what is usually taken for granted (Parker 2014). A critical thinker identifies and challenges assumptions, considers what is important in a situation, imagines and explores alternatives, applies reason and logic, and thus makes informed decisions (Alfaro-LeFevre 2013). Critical thinking involves the application of nursing knowledge and experience to identify patient problems and to direct clinical judgements and actions that result in positive patient outcomes (Benner et al 2008).

As a nursing student, critical thinking begins when you start to seriously question what it is you do as a nurse, why you do what you do and how you might do it differently. Critical thinking presupposes a certain basic level of intellectual humility (i.e. acknowledging one's own ignorance); an understanding of one's values and possible biases; a commitment to think clearly, precisely and accurately; and the confidence to act on the basis of a well-argued position. When an RN directs critical thinking towards understanding and helping patients to find solutions to their health problems, the process is purposeful and goal oriented. Evaluation of the impact and outcomes achieved allows us to examine the extent to which our critical thinking achieved those goals.

As outlined above, the process of clinical reasoning is systematic and consistent across context and level of development of the nurse using it; however, context and level of expertise does affect the focus of each domain and the nature of the nurse's engagement within each domain. A student nurse, for example, will require input from a range of people and external resources when seeking to work within each domain; and an experienced RN will inevitably move through the process more quickly than a student nurse (see Box 4-5). And as you saw above, the complexity of the situation at hand will determine whether the process is relatively straightforward – with a logical beginning and end point – or whether it is complex and dynamic.

The contemporary nursing practice environment is characterised by rapid change (Chapter 1). Even new graduates are involved with increasingly complex decisions because of greater acuity and complexity of patient care. Undergraduate nursing programs are designed to develop students' core critical thinking skills such as those identified by the American Philosophical Association (Table 4-2). Huang and colleagues (2014) suggest potential milestones for the development of critical thinking (Table 4-3). It is clear that sound clinical thinking skills and knowledge, and a positive attitude to the development of these, will determine the effectiveness of clinical reasoning, and the minimisation of error and mismanagement of patient care. The development of such skills demands ongoing commitment and engagement in lifelong learning.

The crucial issue, whatever the context or knowledge base of the nurse involved, is the commitment of that nurse to actively engage in critical thinking throughout the clinical reasoning process. To arrive at more accurate conclusions, you will need to address **critical questions** as you work through each domain rather than make assumptions about patient problems and initiate interventions that have not been adequately considered. Box 4-6 provides some broad critical questions that provide a good starting place when working through the basic domains of a clinical reasoning process.

BOX 4-5 Novices and experts – bridging the gap

Clinical decision-making is a skill that is acquired with experience. The expert has learnt to deal with complexity, be receptive to nuance, to recognise urgency, to predict outcomes, to make decisions based on incomplete information, and to accept that an action may prove to be incorrect but was the 'most right' one to make at the time. They also have insight into their own thinking processes and personality, are better able to contain negative emotions and weigh up the opinions of others, and know how to get the team to work effectively.

Novices often feel compelled to make the right decision and want to gather all the information according to 'the rules' they have been taught before making the decision. They have a limited knowledge base and are uncomfortable with uncertainty and the negative emotion it may impart. They may have little experience in performing the task that is consequent to their decision, so rationalise against the decision. They are more likely to be influenced by the opinion of others, and to defer to others' 'expertise', even if they suspect it is wrong.

Bridging the gap requires both the experts and novices to be aware of these differences. Novices need to recognise their limitations, and understand that they are in training and are not expected to perform like an expert.

Experts need to be aware that the thinking processes of novices are not equivalent to their own and that the information being conveyed by telephone is not the same as being there.

Karen Dunn, Paediatric Emergency Physician, Royal Children's Hospital, Melbourne, Australia. In: Victorian Institute of Forensic Medicine 2015. Clinical Communiqué 2(1):6.

TABLE 4-2 Critical thinking skills proposed by the American Philosophical Association

Consensus list of CT cognitive skills and sub-skills

Skill	Sub-skills
1. Interpretation	Categorisation Decoding significance Clarifying meaning
2. Analysis	Examining ideas Identifying arguments Analysing arguments
3. Evaluation	Assessing claims Assessing arguments
4. Inference	Querying evidence Conjecturing alternatives Drawing conclusions
5. Explanation	Stating results Justifying procedures Presenting arguments
6. Self-regulation	Self-examination Self-correction

Facione PA (project director) 1990 Executive summary of critical thinking: a statement of expert consensus for purposes of educational assessment and instruction (the APA Delphi report). Newark, DE, American Philosophical Association. ERIC Doc No. ED 315–423, Table 3, p 6.

• CRITICAL REFLECTION POINT

Now that you have been introduced to some basic ideas concerning brain-based imperatives and their potential impact on thinking and behaviour, re-read and reflect on Table 4-3. How does a neuroscience lens help us make sense of the knowledge, skills and attitudes of a 'novice' versus a 'master'?

Conclusion

Sound clinical reasoning processes are the foundation of effective nursing care. Even if it is not at the level of conscious awareness, each clinical action we take as a nurse is the result of a reasoning process. Unless this is made visible and supported during your development as a registered nurse, faulty thinking and decision-making have obvious implications for patient safety and outcomes. We have argued that while there are several frameworks, models or cycles that use slightly different language or descriptions of clinical reasoning, they all seek to capture the same processes: gathering information, making decisions, setting goals, taking action and evaluating the outcomes achieved. Critical thinking is a skill that sits at the heart of sound clinical reasoning processes – and, like all skills, it can be

TABLE 4-3 Potential milestones for development of critical thinking knowledge, skills and attitudes

Stage	Knowledge	Skills	Attitudes
Novice	Emphasises content over process. Lacks knowledge of critical thinking skills.	Has rudimentary ability to compare and contrast information. Is dependent on prompting from others. Uses memorisation to solve problems.	Is not self-reflective. Believes that the more facts the better. Places priority on memorisation.
Intermediate	Has basic/emerging knowledge of critical thinking skills. Senses limits of knowledge.	Has emerging skills – slows down, sees limits of knowledge, asks for help. Begins to discriminate facts. Sees linkages between domains. Begins to prioritise.	Self-reflection is emerging. Recognises need for more information. Awareness of personal role in error is evolving. Accepts second-order decision-making.*
Master	Modulates content, process and context well. Has intricate knowledge of critical thinking skills. Knows the critical thinking skills related to error.	Flexibly integrates and applies critical thinking to patient care. Uses adaptive expertise (toggles between Systems 1 & 2 thinking).# Uses metacognition routinely. Is able to teach and articulate own thinking process.	Considers arguments on both sides as well as 'grey areas'. Appreciates need to develop critical thinking skills to improve patient outcomes. Embodies intellectual humility. Accepts uncertainty. Sees self as lifelong learner.

* Rules we make up in our lives either to avoid making complex trade-offs or to remove the need to continuously reassess everyday choices.

'System 1' is fast, instinctive and emotional; 'System 2' is slower, more deliberative and more logical.

Modified from Huang GC, Newman LR, Schwartzstein RM 2014 Critical thinking in health professions education: summary and consensus statements of the millennium conference 2011. Table 3. Teach Learn Med 26(1):95–102.

BOX 4-6 Broad questions associated with each of the basic domains within the clinical reasoning process

Gathering relevant information and data

- What information/data exist and can be accessed?
- What additional information/data are needed?
- How reliable are the information/data?
- How confident am I in obtaining relevant information and do I need input from others?

Making appropriate judgements and decisions

- What do the information/data mean?
- What actions are indicated?
- Are the required actions acceptable or possible?
- How confident am I in making these judgements and decisions and do I need input from others?

Setting priorities and establishing goals

- What needs to happen and when?
- How are these goals to be achieved?
- What are the expected outcomes and timeframes?
- How confident am I in setting priorities and establishing goals and do I need input from others?

Preparing for and taking action

- What knowledge/skills do the actions demand?
- What resources are required?
- How will appropriate people become involved?
- How confident am I in my ability to take these actions and do I need input from others?

Evaluating impacts and outcomes

- What has been achieved?
- What is still to be achieved?
- Where do we go from here?
- How confident am I in evaluating the impacts and outcomes and do I need input from others?

Learning from the process to inform future practice

- How might input from others assist me or enhance my learning?
- What have we learnt that can inform future practice – related to the current patient/situation or in general?

RESEARCH HIGHLIGHT

Research focus

The complexity and challenges of contemporary health care mean that critical thinking skills are more important than ever for all healthcare professionals. The centrality of critical thinking is clearly reflected in competency frameworks across the health professions; although many clinicians achieve critical thinking through experience and observation rather than explicit instruction, others never master this skill.

Research abstract

The purpose of the work described here was to bring together experts from across medicine and nursing in order to develop a range of strategies that would support the explicit teaching of clinical thinking across medical and nursing curricula. Participants were selected from North American Medical Schools and met the criteria of a) demonstrated commitment to curricular innovation; b) consideration of the cognitive sciences in curriculum development; and c) quality of the team members. The authors state that the decision to include nursing colleagues in this process was based on the significant contribution of nursing to the literature on critical thinking. Data were derived for this summary from small-group discussion notes, videotape review of large group conference events, and preliminary consensus documents circulated among the participants.

Evidence-based practice

Overall strategies to support the development of critical thinking skills:

- Slowing down the pace of the learning process to enable students to digest and apply knowledge.
- Actively engaging the learner in tasks that require problems to be solved.
- Compelling students to justify how they arrive at decisions.
- Making thinking explicit.
- Requiring self-reflection on the part of the learner.

Reference

Huang GC, Newman LR, Schwartzstein RM 2014 Critical thinking in health professions education; summary and consensus statement of the millennium conference 2011. Teach Learn Med 26(1):95–102.

enhanced over time through focus and practice. Critical thinking, and therefore clinical reasoning, is susceptible to cognitive bias, and individuals and organisations need to develop appropriate strategies to minimise its impact. Chapters 5 and 6 provide in-depth discussion of a range of factors and issues associated with each domain of the clinical reasoning process; and, Chapter 7 explores the utilisation of the knowledge gained through the reasoning process.

Key concepts

- Each of us engages in a reasoning process in our everyday lives. In a nursing practice context, this is called clinical reasoning and demands a critical approach to ensure patient safety.
- Although you will no doubt encounter many different frameworks or models to explain clinical reasoning, the process involves six basic domains: 1) gathering relevant information and data; 2) making appropriate judgements and decisions; 3) setting priorities and establishing goals; 4) preparing for and taking action; 5) evaluating impacts and outcomes; and 6) learning from the process to inform future practice.
- Asking critical questions at each domain of clinical reasoning helps us to become more aware of our assumptions and cognitive biases, leading to better clinical decisions.
- A commitment to developing as a reflective practitioner – being critical and learning from practice – is the essence of good nursing.

Online resources

Foundation for Critical Thinking – an online model for learning the elements and standards of critical thinking: www.criticalthinking.org/ctmodel/logic-model1.htm#

David Rock provides a comprehensive starting place for anyone seeking to journey into the area of 'neuroscience meets cognition and human behaviour': www.davidrock.net/resources/

References

Alfaro-LeFevre R 2013 Critical thinking, clinical reasoning, and clinical judgement: a practical approach. Saunders Elsevier, St Louis.

Alfaro-LeFevre R 2009 Critical thinking and clinical judgement: A practical approach to outcome-focused thinking, 4th edn. Saunders Elsevier, St Louis.

American Nurses Association 2010 Nursing: Scope and standards of practice, 2nd edn. American Nurses Association, Silver Springs, Maryland.

Benner P, Hughes R, Molly S 2008 Clinical reasoning, decision making, and action: Thinking critically and clinically. In R Hughes (ed) Patient safety and quality: An evidence-based handbook for nurses. Agency for Healthcare Research and Quality (US), Rockville, MD.

Conway J, McMillan M 2014 Connecting clinical and theoretical knowledge for practice. In Daly J, Speedy S, Jackson D (eds) Contexts of nursing, 4th edn. Elsevier, Chatswood, NSW.

Huang GC, Newman LR, Schwartzstein RM 2014 Critical thinking in health professions education: summary and consensus statements of the millennium conference 2011. Teach Learn Med 26(1):95–102.

Levett-Jones T (ed) 2013 Clinical reasoning: Learning to think like a nurse. Pearson Australia.

Levett-Jones T et al 2010 The 'five rights' of clinical reasoning: An educational model to enhance nursing students' ability to identify and manage clinically 'at risk' patients. Nurs Educ Today, 30(6):515–20.

Lieberman MD, Rock D, Cox CL 2014 Breaking bias. NeuroLeadership Journal 5:1–17. Online. Available: www.scn.ucla.edu/pdf/Lieberman(2014)NLI.pdf; accessed 18 Dec 2015.

Parker S 2014 Becoming a critical thinker. In Daly J, Speedy S, Jackson D (eds) Contexts of nursing, 4th edn. Elsevier, Chatswood, NSW.

Riddell T 2007 Critical assumptions: thinking critically about critical thinking. Nurs Ed 46(3):121–6.

Tanner CA 2006 Thinking like a nurse: a research based model of clinical judgement in nursing. J Nurs Ed 45(6):201–11.

CHAPTER

5

Gathering relevant information and making decisions

Clint Douglas and Jackie Crisp

Learning outcomes

Mastery of content will enable you to:

- discuss the domains of clinical reasoning that involve gathering relevant information and making decisions
- understand the interrelationships among data collection, analysis and critical thinking
- explain the difference between a comprehensive and a focused health assessment
- seek patient and family perspectives and expectations during assessment
- differentiate between subjective and objective data
- use a range of different sources and methods of data collection for nursing assessment
- explain the purpose of a health history and physical examination
- perform and document a nursing health assessment
- understand the process of data analysis to make nursing judgements and decisions.

KEY TERMS

Assessment framework, p. 61
Clinical judgement, p. 69
Closed-ended questions, p. 62
Decision-making, p. 72
Interview, p. 65
Nursing health history, p. 66
Objective data, p. 64
Open-ended questions, p. 62
Patient-centred problems, p. 62
Person-centred care, p. 61
Physical examination, p. 62
Subjective data, p. 63

Introduction

Nurses make lots of clinical decisions. Estimates from observational studies suggest acute care nurses face a decision or judgement every 10 minutes and critical care nurses every 30 seconds (Thompson et al 2013). Unlike many other health professionals in acute care settings, who tend to 'treat' and then 'retreat,' registered nurses (RNs) are primarily responsible for ongoing surveillance to recognise patients at risk of clinical deterioration and to prevent medical errors and serious adverse events (Levett-Jones 2013). Developing your ability to collect, interpret and act on relevant data, therefore, is critical for the quality and safety of patient care.

In Chapter 4 we introduced you to the process of clinical reasoning that lies at the heart of effective nursing care, including the role of critical thinking, its role in the evolution of nursing practice (see Chapter 7) and the ongoing learning that is crucial for the development of nursing knowledge and associated skills; and their application in our day-to-day practice. In addition, we outlined six domains of thinking/action/learning that are part of the clinical reasoning process, no matter how it is depicted in specific models (Box 5-1). This current chapter focuses on the first two of these: a) gathering relevant information and data; and b) making appropriate clinical judgements and decisions.

• CRITICAL REFLECTION POINT

To what extent do you believe registered nurses are responsible and accountable for their clinical decisions? What kind of judgements and decisions do you believe you will have to make as a nurse? Some beginning nursing students hold the belief that nurses follow 'doctors' orders' – the clinical reality is that you will have to make judgements and decisions for every action you take and be prepared to intervene based on your clinical reasoning skills as the patient's condition changes over time.

BOX 5-1 Description of the six domains evident within all depictions of the clinical reasoning process

Domain	Focus
a	Gathering relevant information and data
b	Making appropriate judgements and decisions
c	Setting priorities and establishing goals
d	Preparing for and taking action
e	Evaluating impacts and outcomes
f	Learning from the process to inform future practice

Taking a critical thinking approach

Professional practice standards require that nurses solve problems accurately, thoroughly and quickly. In order to do that, nurses review information or data from a variety of sources and make judgements concerning the relevance or meaning of the information/data; and, what, if anything needs to be done in relation to those judgements. Nurses systematically collect, verify, analyse and communicate information and data about a patient by:

- collecting and verifying data and information from primary (patients) and secondary sources (family, healthcare professionals)
- judging the needs of patients and making decisions as nurses seeking to provide effective care.

The purpose here is to establish and document a comprehensive picture of the patient's health problems and responses to those problems.

Nurses also seek to understand the patient's subjective experience of health and illness – engaging with the patient's stories and personal experiences of health care to gain a shared understanding of perceived needs, health practices, goals, values, lifestyle and expectations of care. The information contained in the resulting 'assessment database' is the foundation for making appropriate judgements, which enable nurses to make decisions and plan individualised, or **person-centred care**. Bringing the perspectives of patients and families directly into the planning, delivery and evaluation of health care, and thereby improving its quality and safety, is at the heart of patient- and family-centred care.

Gordon (2010) describes two approaches to collecting data. One is a structured, comprehensive assessment framework and the other is a problem-oriented approach focusing on the patient's presenting situation.

The comprehensive approach moves from general to specific and utilises a holistic framework such as functional health patterns (see Table 5-1). When you work within this **assessment framework** you collect data across all 11 functional health patterns and then review these to uncover existing patterns of problems. For each of the 11 patterns, nurses assess patients by organising behaviour and physiological responses that pertain to a functional health category. The data are then compared to the patient's baseline (e.g. usual blood pressure, weight and nutritional intake) and established norms based on age, gender, cultural, social or other norms, such as religious practices, ethnic dietary guidelines and healthcare practices. Description and evaluation of health patterns

TABLE 5-1 Gordon's functional health patterns and associated data/information required from the patient or family members

Area of assessment	Focus of data/information collection
Health perception–health management pattern	Patient's perceived level of health and wellbeing, and on practices for maintaining health
Nutritional–metabolic pattern	Patient's food and fluid consumption relative to metabolic need
Elimination pattern	Patient's excretory patterns: bowel, bladder and skin
Activity–exercise pattern	Patient's activities of daily living requiring energy expenditure, including self-care activities, exercise and leisure activities
Cognitive–perceptual pattern	Patient's ability to comprehend and use information and sensory functions and experiences including pain
Sleep–rest pattern	Patient's sleep, rest and relaxation practices
Self-perception–self-concept pattern	Patient's attitudes towards self, including identity, body image and sense of self-worth.
Role–relationship pattern	Patient's roles in the world and relationships with others
Sexuality–reproductive pattern	Patient's satisfaction or dissatisfaction with sexuality patterns and reproductive functions
Coping–stress–tolerance pattern	Patient's perception of stress and on his or her coping strategies
Value–belief pattern	Patient's values and beliefs, including spiritual beliefs, and/or the goals that guide choices or decisions

Gordon M 2010 Manual of nursing diagnosis, 12th edn. Jones and Bartlett Publishing, Sudbury, Mass.

help you identify patient strengths and areas of need, both of which allow planning of appropriate care.

The second, and more common approach to gathering information is the problem-focused approach. This process begins with specific **patient-centred problems** (such as shortness of breath) and broadens to relevant areas of the patient's life. For example, your assessment might begin with a focused respiratory assessment and then broaden to categories such as how this health problem influences the patient's lifestyle, family relationships and work habits. Once you have completed that part of the assessment, the presenting problem of shortness of breath will be thoroughly analysed so that a comprehensive approach can be used to plan interventions directed towards relief.

Whatever approach is used, nurses analyse data to identify emerging patterns and potential problems. Once a question has been asked of a patient or an observation has been made, the information often branches to an additional series of questions or observations (see, for example, Figure 5-1). Knowing how to frame questions is a skill refined over time (see Chapter 12). For example, simply asking a patient if they have pain may elicit a yes or no answer, but not enough information to effectively plan interventions. If you framed the question differently, for example, 'How would you describe the pain in your chest?' the patient may give a fuller description of the onset, severity and type of pain experienced. These examples describe the difference between **open-ended** and **closed-ended questions**. The nurse decides which questions are relevant to the situation while at the same time making sure the assessment is complete: proceeding from something given, a cue or datum, to a conclusion.

Gathering data and information

Identifying and assessing important cues requires the use of all of your senses. For example, when assessing a patient with shortness of breath, you will need to explore the patient's subjective experience of dyspnoea – which is a symptom – as well as draw on a range of objective data to determine the patient's level of respiratory distress – which is a sign. The skills of **physical examination** enable you to examine the patient's work of breathing, such as observing the patient's respiratory rate and listening to the patient's lung sounds (see Chapter 24). When making clinical judgements, nurses connect patterns of data with their knowledge and experience.

Assessment does not include inferences or interpretative statements that are unsupported by data. It is important to encourage patients to tell their story from their perspective. For example, a patient may describe their pain as a 'deep, throbbing pain in the stomach'. A nurse's observation may be 'the patient lies on the right side holding the abdomen; legs drawn up'. The nurse conducts a focused examination and records only

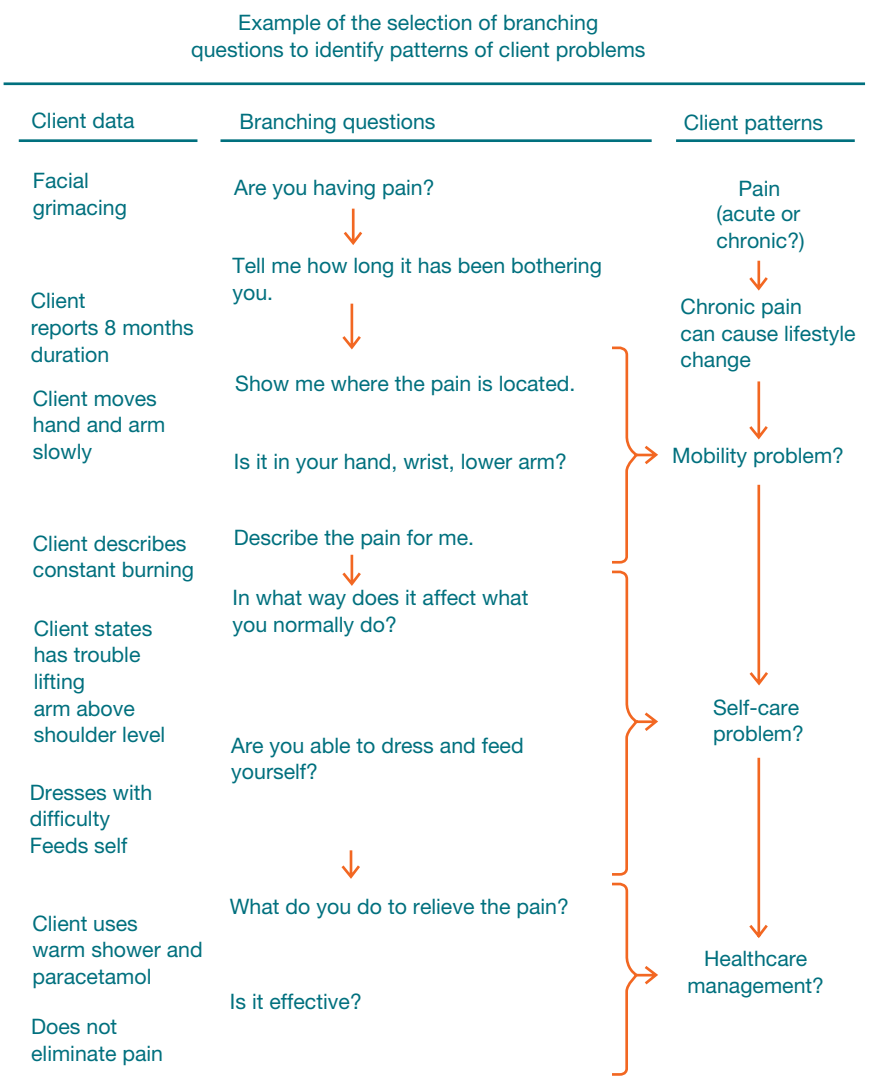


Figure 5-1 **Example of branching logic for selecting assessment questions.**

observations, avoiding prejudicial and discriminatory statements (e.g. 'the patient tolerates pain poorly').

As the information and data are collected, they are summarised using appropriate clinical language and terminology (see Chapter 13). For example: 'Patient describes a "deep, throbbing pain" in the right upper quadrant of the abdomen. Pain began 48 hours before hospitalisation 2 hours after a high-fat meal. Not relieved by antacids.' Complete data collection results from obtaining all information relevant to the actual or potential health problems.

The collection of inaccurate, incomplete or inappropriate data may lead to incorrect identification of the patient's healthcare needs, and subsequent inaccurate judgements and incomplete or inappropriate nursing decisions. Inaccurate data result if we fail to collect information relevant to a patient's problems, if we are disorganised or if we are unskilled in assessment techniques. Data may be incomplete if we jump to conclusions about a potential problem, stop asking questions prematurely or make assumptions without validation.

Forms of data and information

Data and information that form the basis of nursing judgements or decisions can be either subjective or objective. **Subjective data** are patients' perceptions about their health problems. Only patients can provide information about a symptom's frequency, duration, location and intensity. Subjective data may include feelings of anxiety, physical discomfort or mental stress. Although only patients can provide subjective data relevant to these feelings, you need to remain aware that these problems can result in physiological and behavioural changes, which are identified through objective data collection.

Objective data are observations or measurements made by nurses. Assessment of a patient's wound and identification of the size of a localised body rash are examples of observed objective data. The measurement of objective data is based on an accepted standard, such as the Celsius measure on a thermometer or centimetres on a measuring tape. Bodyweight and height are examples of measured objective data.

Sources of data and information

Nurses need to gather and process information from multiple sources. Subjective data are obtained from the patient, family and significant others, healthcare team members and health records. Objective data are obtained through physical examination, results of diagnostic and laboratory tests and pertinent nursing and health literature. A nurse's own past experience with similar types of patients is an additional source of data. Each source provides information about the patient's level of wellness, anticipated prognosis, risk factors, health practices and goals and patterns of health and illness, as well as information relevant to the patient's healthcare needs. The patient who is oriented and answers questions appropriately can provide the most accurate information about his or her healthcare needs, lifestyle patterns, present and past illnesses, perception of symptoms and changes in activities of daily living.

Family and significant others

Families and significant others can be interviewed as primary sources of information about infants or children and critically ill, cognitively impaired, disoriented or unconscious patients. In emergency situations, paramedics, police officers and other emergency workers may be the primary source of information about the nature of a patient's problem. In severe illness, families may be the only available sources of data about a patient's health–illness patterns, current medications, allergies, onset of illness and other vital information.



Figure 5-2 Nurse palpates temperature of skin to assess quality of circulation.

The family and significant others are also important secondary sources of information. Often partners or close friends will sit in during an assessment and provide their view of the patient's health problems or needs. Not only can they supply information about the patient's current health status, but they may also be able to indicate when changes in the patient's status occurred and how the patient's functioning was affected. For example, the partner of an elderly woman with symptoms of memory loss may be able to recall the onset of the symptom and any related factors.

Healthcare team members

The healthcare team consists of nursing, medical, allied health professionals and other employees working in a healthcare setting (see Chapter 8). Because assessment is an ongoing process, nurses communicate with other healthcare team members whenever possible to gather information about the way the patient interacts within the healthcare environment, the patient's reaction to information about diagnostic tests and, in acute and restorative care settings, how the patient responds to visitors. Patients will frequently discuss their feelings and perceptions with other staff on the unit who can be a valuable source of feedback to nurses.

You may also seek validation of your findings by an expert colleague such as a nurse practitioner; not just during your time as a student, but also as you encounter patients with needs that are beyond your level of expertise throughout your career. For example, a patient who is being cared for in an orthopaedic unit following the application of traction for lower leg trauma may also present a history of type 1 diabetes, which requires careful management due to a change in diet and immobilisation. The expertise of a diabetes nurse educator may assist nurses with less expertise plan to care for the patient's hospital stay as well as prepare the patient for eventual discharge home.

• CRITICAL REFLECTION POINT

Think about your role as a nurse in sharing information with a range of professionals, with differing perspectives, roles and goals. What can you do to maximise the likelihood that others will have confidence in your observations and judgements? How will you maximise the likelihood that you will be able to take on board the range of differing observations and judgements you may encounter as the team works to integrate care?

Healthcare records

The present and past healthcare records of the patient can verify information about past health patterns and treatments or can provide new information. By reviewing these records, nurses can identify patterns of illness, previous responses to treatment and past methods of coping. Other records such as educational, military and employment records may contain pertinent healthcare information (e.g. immunisations, previous illnesses). Any information obtained is confidential and is treated as part of the patient's legal healthcare record (see Chapters 10 and 11). Reviewing evidence-based literature may also help the nurse to complete the database. A review increases the nurse's currency of knowledge about the symptoms and related aetiology.

Methods of data and information collection

Patient interviewing, health history, physical examination and results of laboratory and diagnostic tests establish the nursing assessment database. Each method contributes information about the patient's past and present level of wellness.

Interview

The **interview** is a pattern of communication initiated for a specific purpose and focused on a specific content area. In nursing, the major purposes of the interview are to obtain from the patient a health history, identify health needs and risk factors and determine specific changes in level of wellness and patterns of living. Most importantly, the interview should help patients relate their own interpretation and understanding of their condition. This means the nurse and patient must be partners during the interview rather than the nurse controlling the interview. Unless an interview allows a patient to express needs from their perspective, the interaction will be unsuccessful.

An interview may be focused, as in the case of a patient admitted to the emergency department, or it can be comprehensive, as in the case of a new patient for whom a complete health history is required. The interviewer obtains information about the patient's health, lifestyle, support systems, patterns of illness, patterns of adaptation, strengths and limitations, and resources. As the nurse listens to and considers the information given, the patient may be directed to give more detail or discuss a topic that seems to reveal a possible problem. The nurse later uses objective methods to validate and build on subjective data from the interview. For example, if the patient reports difficulty in walking, the patient's gait and muscle strength will be examined.

When conducting the interview, use specific communication skills to focus attention on the patient's level of wellness. Nurses also help patients understand the change that is occurring or will occur once health care begins. This chapter briefly describes communication skills and the interview, whereas Chapter 12 discusses communication for nursing practice in more depth.

First, a nurse–patient relationship is initiated which encourages the sharing of information, ideas and emotions, and enables nurses to express a level of caring for patients. The *Clinical example* below shows how one nurse establishes a beginning rapport with a newly admitted patient.

CLINICAL EXAMPLE

The RN is preparing an admission history on Mr Brown, a 60-year-old man hospitalised for the first time.

Nurse: Good afternoon, Mr Brown. I'm Wendy Thomas, the registered nurse who will be managing your care during your hospital stay and through discharge to your home.

Mr Brown: Hello, Wendy. Please call me Bill. What do you mean by managing my care?

Nurse: That means I'm responsible for coordinating your nursing care with the rest of the nurses while you're hospitalised. I will work with them to plan for your discharge back to your home. Although other nurses will sometimes take care of you when I'm off, I'm the nurse who plans your care. Once you're discharged, I'll call you at home to see how you are doing and if you have any questions.

Mr Brown: I guess that's a lot like being a coach. You may not play the game, but you're responsible for winning or losing.

Nurse: I suppose that's one way of looking at it. To better plan your care I will be asking some questions about your health. We call this a health interview. Any information you give me is confidential. The total interview should take about 20 to 30 minutes. Is it okay if I begin the interview in a few minutes?

Mr Brown: Can you give me half an hour? My wife is about to leave. She needs to pick up the grandchildren at daycare. That way we can have some time together. I'll be ready after that.

Nurse: That's fine. Since you're in a private room, I will do the health interview here. (Mr Brown nods.)

Thirty minutes later, Wendy returns to the room.

Nurse: Okay. Before I get started, do you have any questions for me?

Mr Brown: Yes. Why is there an outlet for oxygen on the wall above my bed? Does that mean that I'm really sick? Did they put me in a special room?

Nurse: No, that's not it. Every bed in this hospital has an oxygen outlet located on the wall above the head of the

continued

bed. The reason is that this hospital has a central oxygen delivery system, and when a patient needs oxygen, we're able to supply it quickly, easily and safely.

Mr Brown: Okay. I wasn't actually worried. I was basically just curious. That was the only piece of equipment I couldn't explain.

Nurse: (pause) Bill, you mentioned that you and your wife have grandchildren in daycare. Tell me a bit about your family.

An interview seeks information about patients' physical, developmental and psychosocial dimensions. Physical and developmental information reflects normal functioning and the pathological changes in a person's pattern of living induced by illness, trauma or developmental crisis. Emotional information includes the behavioural responses to changes in health and pattern of living. Relevant emotional information includes mood, perceptions, body image, self-concept and attitudes about sexuality. Intellectual information includes intellectual performance, problem-solving ability, educational level, communication patterns and attention span. Social information involves environmental, cultural, ethnic or social patterns that can affect the present or future level of wellness. Nurses also collect information about values, beliefs and religious practices, which are part of the spiritual dimension.

Interviews also provide the opportunity to observe patients. Nurses observe interactions between the patient and family and between the patient and the healthcare environment: relevant observations may include use of eye contact, non-verbal communication and other body language. Nurses compare their observations with the verbal information that they are obtaining from the patients throughout the interview process. Inconsistencies between what the patient is saying and what the nurse is observing are often important sources of information. For example, if the patient does not disclose concern about an upcoming diagnostic test but appears anxious and irritable, the data are in conflict. Observations during an interview lead nurses to gather additional objective information to form accurate conclusions.

If a positive nurse–patient relationship has been established, the patient will feel comfortable asking the nurse questions about the healthcare environment, treatments, diagnostic testing and available resources. The patient needs this information to participate in decision-making regarding goals and the plan of care. It is important to ask patients about their expectations of healthcare providers. In addition, the interview is a first step towards establishing a therapeutic relationship between the nurse and patient so that health interventions such as education or counselling can occur.

• CRITICAL REFLECTION POINT

'When you talk, you are only repeating what you already know. But if you listen, you may learn something new' – Dalai Lama

Nursing health history

The **nursing health history** is information collected at interview about the patient's level of wellness (present and past), family history, changes in life patterns, sociocultural history and psychosocial responses to illness. The objective is to identify patterns of health and illness, risk factors for physical and behavioural health problems, deviations from normal, and available resources for adaptation. Although many health history forms are structured, nurses learn to use the questions as starting points.

Biographical information

Biographical information is factual demographic data about the patient. The patient's age, address, occupation and working status, and marital status should be included.

Reason for seeking health care

Nurses ask why the patient sought health care, because the information contained on the initial admission form may differ greatly from the patient's subjective reason. Clarification of the patient's perception identifies potential areas for education, counselling or community resources required throughout all phases of diagnosis and recovery. When recorded, the statement is enclosed in quotation marks to indicate that these words came directly from the patient.

Patient expectations

The assessment of patient expectations is not the same as the reason for seeking health care, although they are often related. It is becoming more important for nurses to acknowledge what is important to the patient who is seeking health care. Failure to identify a patient's expectations of healthcare providers and a healthcare institution can result in poor patient satisfaction. Patient satisfaction is becoming a standard measure of quality for almost every major healthcare institution throughout the country. Patients typically have expectations in the following areas:

- Information needed to care for their health problems independently.
- Caring and compassion expressed by care providers.
- Timeliness of caregivers' response to patient requests.
- Relief of pain and symptoms.
- Involvement in decision-making.

This information helps establish the goals of nursing care, as well as determines whether patients' expectations of themselves and the healthcare providers are realistic. In addition, such expectations provide information on patient perceptions about patterns of illness or changes in lifestyle.

• CRITICAL REFLECTION POINT

Think about the expectations you would have as a patient seeking care in an emergency department. Next time you are at a hospital, spend several minutes sitting in the waiting room and observing. How do you think you would react if you were in pain and waiting to be seen? What impact do you think that might have on how you interact with staff, what information you provide and your ability to focus on the questions they ask?

Present illness

If an illness is present, nurses gather essential and relevant data about the onset of symptoms: when the symptoms began, whether they began suddenly or gradually, and whether they are always present or come and go. Nurses ask about the duration of symptoms. In the section on the history of present illness, the nurse records specific information such as location, intensity and quality of a symptom. The development and use of a symptom assessment mnemonic such as PQRST is cited in the literature (Gaunt 2014) as a useful tool to assist nurses to evaluate each symptom by describing provoking or palliating factors (P), quality or quantity (Q), severity or intensity of the system (S), region (R) and timing (T) (see Box 5-2). Examples of in-depth symptom assessment can be found in the clinical chapters of this text.

BOX 5-2 PQRST mnemonic for symptom analysis

Factors	The client is asked to describe:
P – Provoking or palliative	What brings on the symptom? What makes it worse or better?
Q – Quality or quantity	How does the symptom feel, look, sound or smell?
R – Region and radiation	Where does the symptom occur? Does it spread to other areas?
S – Severity	How severe is the symptom? (Use a rating scale) Does the severity change? How does the severity affect your normal activity?
T – Timing	When did the symptoms begin? Was the onset sudden or gradual? If intermittent, how often does it occur? How long does the symptom persist?

Past health history

The information collected about past health history provides data on the patient's healthcare experiences and includes many dimensions (Figure 5-3). Nurses assess whether the patient has experienced a serious illness, been hospitalised or undergone surgery. Also essential in planning nursing care are descriptions of allergies, including allergic reactions to food, latex, drugs or pollutants. If an allergy is present, the specific reaction and treatment are noted on the assessment form.

Nurses also identify habits and lifestyle patterns. Use of alcohol, tobacco, caffeine, over-the-counter drugs, illicit drugs or routinely taken medications can place the patient at risk of diseases involving the liver, lungs, heart, nervous system or thought processes. Noting the type of dependence, as well as the frequency and duration of use, provides essential data.

Assessing patterns of sleep, exercise and nutrition is important when planning nursing care. The plan of care within a healthcare setting should match a patient's lifestyle patterns as much as possible. Often, variations in sleep, activity and nutritional patterns can be accommodated.

Family history

The purpose of the family history is to obtain data about immediate and blood relatives. The objectives are to determine whether the patient is at risk of illnesses of a genetic or familial nature and to identify areas of health promotion and illness prevention. The family history also provides information about family structure, interaction and function that may be useful in planning care. For example, a cohesive, supportive family can be a resource in helping a patient adjust to an illness or disability and should be incorporated into the plan of care. If the patient's family is not supportive, it may be better not to involve them in care.

Environmental history

The environmental history provides data about the patient's home environments and any support systems that they or family members might need. Information pertaining to the home environment may include function of utilities, layout of rooms in the house and the presence of any barriers or risks to patient safety. In addition, the environmental history identifies exposure to pollutants that can affect health, existence of high crime that prevents patients from walking around their neighbourhoods and available resources that can help patients return to the community.

Psychosocial history

A complete psychosocial history will reveal the patient's support system, which may include spouse/partner,

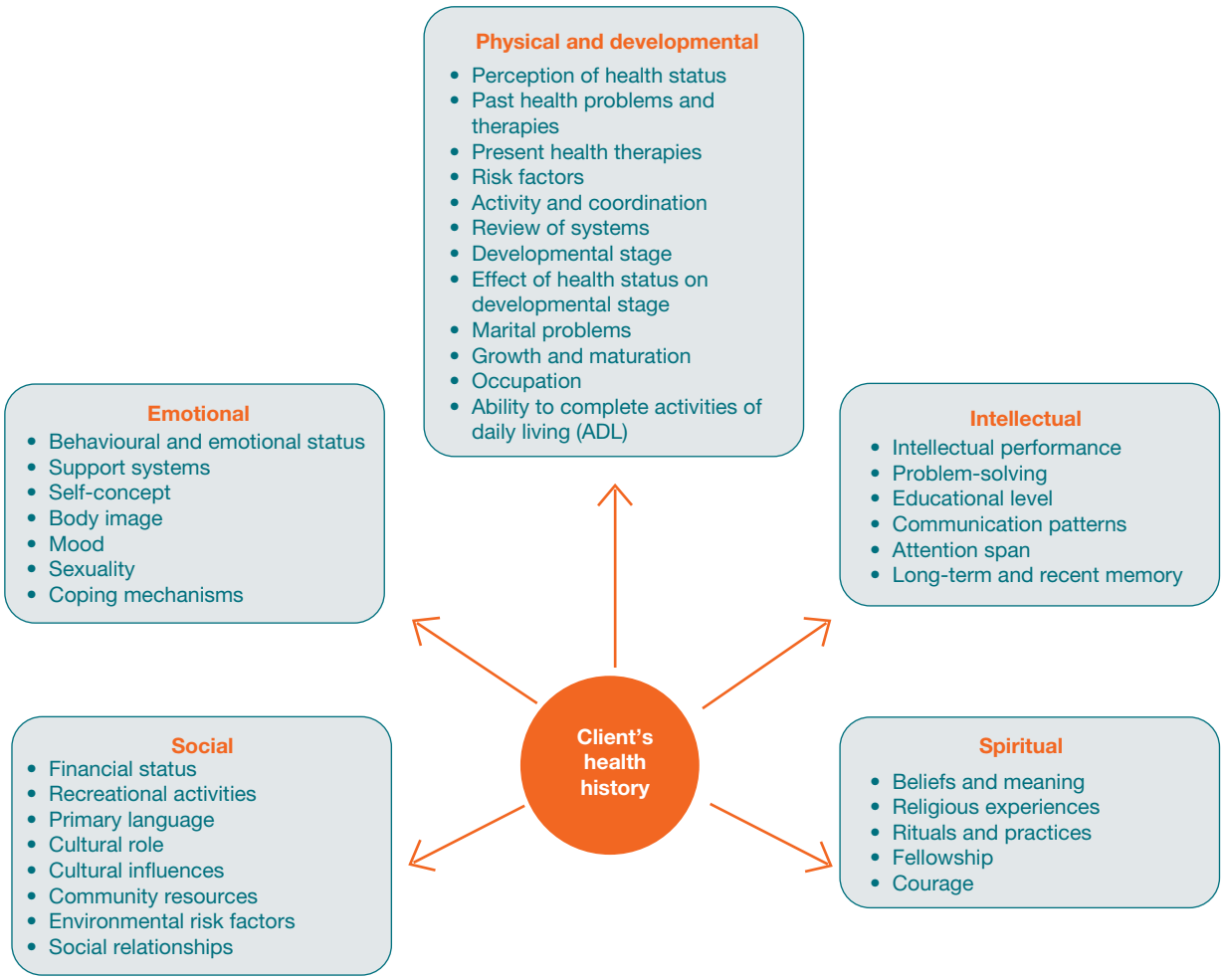


Figure 5-3 **Dimensions for gathering data for a health history.**

children, other family members and close friends. The psychosocial history includes information about ways the patient and family typically cope with stress (see Chapter 42). The same behaviour, such as taking a walk, reading or talking with a friend, can be used as a nursing intervention if the patient experiences stress while receiving health care. Nurses also learn whether patients have experienced any recent losses that create a sense of grief.

Physical examination

The physical examination and collection of diagnostic and laboratory data involve the gathering of objective data (see Chapter 23). The physical examination is the taking of vital signs and other measurements and the examination of all body parts using the techniques of inspection, palpation, percussion, and auscultation. Nurses observe for abnormalities that may yield information about past, present and future health problems. Throughout the examination, data are measured against a standard, which is an established rule or basis of comparison in measuring or judging capacity, quantity, content and value of objects in the same category. Selected standards are reliable and relevant for the category being compared. For example, there are established standards for ideal height and weight that are used to determine whether an individual is overweight or underweight; there are standards for blood pressure ranges for patients of particular age groups. Example standards for nursing physical examination of body systems provided by Rothman and colleagues (2012) are presented in Box 5-3.

Investigations

The final source of assessment data is the results of diagnostic and laboratory tests. The tests are usually ordered by medical or nurse practitioners. It is important to review the results to verify alterations identified in the nursing health history and physical examination. Laboratory data are compared with the established norms for a particular test, age group and sex. In addition, laboratory data can be used to evaluate the success or

BOX 5-3 Example standards for nursing physical assessment of body systems

Neurological: Alert, oriented to person, place, time and situation. Speech is coherent.

Cardiac: Pulse regular, rate 60–100 bpm, skin warm and dry. Blood pressure less than 140/90 and no symptoms of hypotension.

Peripheral/vascular: Extremities are normal or pink and warm. Peripheral pulses palpable. Capillary refill < 3 sec. No oedema, numbness or tingling.

Respiratory: Respiration 12–24/min at rest quiet and regular. Bilateral breath sounds clear. Nail beds and mucous membranes pink. Sputum clear if present.

Food/nutrition: No difficulty with chewing, swallowing or manual dexterity. Patient consuming > 50% of daily diet ordered as observed or stated.

Gastrointestinal: Abdomen soft and non-tender. Bowel sounds present. No nausea or vomiting. Continent. Bowel pattern normal as observed or stated.

Genitourinary: Voids without difficulty. Continent. Urine clear, yellow to amber as observed or stated. Urinary catheter patent if present.

Musculoskeletal: Independently able to move all extremities and perform functional activities as observed or stated (includes assistive devices).

Pain: Without pain or visual analogue scale < 4 or experiencing chronic pain that is managed effectively.

Psychosocial: Behaviour appropriate to situation. Expressed concerns and fears being addressed. Adequate support system.

Safety/fall risk: Safety/fall risk factors not present. Patient is not a risk to self or others.

Skin/tissue: Skin clean, dry and intact with no reddened areas. Patient is alert, cooperative and able to reposition self independently. Braden scale > 15.

Rothman MJ et al 2012 Clinical implications and validity of nursing assessments: a longitudinal measure of patient condition from analysis of the Electronic Medical Record. BMJ open 2(4):6.

failure of interventions. Specific laboratory tests and the nursing responsibilities associated with them are detailed in Parts 6 and 7 of the text.

Data documentation

Data documentation is the last part of a complete assessment (see Chapter 13). Thoroughness in data documentation is essential for two reasons. First, all data pertinent to a patient's status are included. Second, observation and recording of patient status is a legal and professional responsibility. A range of nursing Acts and Regulations, under which nurses practise, regulates the completeness and accuracy of data collection and recording required. There are also legal requirements surrounding the storage of and access to any information recorded (see Chapters 10 and 11).

When recording data, pay attention to facts and make an effort to be as descriptive as possible. Anything heard, seen, felt or smelt should be reported exactly. Because assessment includes the collection and documentation of subjective and objective data, nurses should make certain that the database is complete and factual before data clustering (putting together cues which illuminate emerging problems). Premature clustering can lead to false judgements and poor nursing decision-making. Focused clustering data for Mr Brown can be found in Box 5-4.

In situations where the patient has just been admitted or when the patient's status is changing rapidly, it is better to continually update data records.

• CRITICAL REFLECTION POINT

Following uncomplicated surgery for the emergency removal of a ruptured ovarian cyst, Mrs A's postoperative recovery is uneventful. However, while undertaking a postoperative assessment you have noticed that she is withdrawn and weepy. On initial questioning she expresses concern about being able to have a baby in the future. What information or data would you seek in this situation? As a student nurse, who would you take your observations to for discussion? What would you do if the person you took your observations to responded: 'Don't worry, she will be okay when we give her something for pain.'

Making nursing judgements and decisions

Tanner's (2006) and Cappelletti and colleagues' (2014) systematic reviews of **clinical judgement** and reasoning among RNs are valuable in bringing together the current research evidence, as well as pointing to the importance of human factors which influence the quality and safety of clinical decision-making. Based on these reviews, six key evidence-based conclusions can be drawn which are considered here in terms of your development as a nursing student.

Clinical judgements are more influenced by what the nurse brings to the situation than the objective data about the situation at hand

It is important to remember that the extent of a nurse's ability to notice clinically significant changes in a

BOX 5-4 Focused information and data for Mr Brown using different assessment frameworks

Body systems framework

Integumentary system
- Intact, flushed skin that is hot and dry to the touch
- Dry oral mucosa, coated tongue and cracked lips

Gastrointestinal system
- Distended, firm abdomen that is tender to palpation in lower quadrants
- Hyperactive bowel sounds in all quadrants
- History of diarrhoea and cramping for 3 weeks
- Poor nutritional intake over last week

Investigations
- Laboratory tests indicating elevated white blood cell (WBC) count and haematocrit level; hypernatraemia
- Abdominal X-ray examination showing gas-filled loops of bowel
- Admitting diagnosis of gastroenteritis

Functional health pattern framework

Activity and exercise pattern
- Statement of increased fatigue when walking
- Demonstration of ability to perform activities of daily living (ADLs)
- Fatigued, dyspnoeic and diaphoretic appearance when performing ADLs
- Increased pulse from 90 to 126 beats per minute during ADLs
- Previous history of decreased activity tolerance and poor sleeping 2 weeks before hospital admission for congestive heart failure
- Chest X-ray film showing pulmonary congestion

Sleep and rest pattern
- Report of difficulty in falling and remaining asleep
- Denial of use of sleeping aids

Coping–stress–tolerance pattern
- Anxiety about illness
- Pain

patient's condition and grasp the meaning of the data being collected and analysed is based on the nurse's knowledge, experience and personal values. What experienced nurses notice depends on their expectations of the situation based on caring for similar patients in the past. For example, nurses experienced in postoperative care for patients after cardiac surgery will know the typical responses and will understand the physiological and pathophysiological changes for this population, such as targets for adequate perfusion and ventilation, body temperature and need for re-warming, output from chest drains, the need for sedation and analgesia, fluid and electrolyte disturbances, emotional responses and need for family support; all of which shape the nurse's expectations for patient care and whether those expectations are met (Tanner 2006).

Developing nursing knowledge will improve your ability to ask relevant questions and collect physical assessment data related to the patient's expectation of care or underlying healthcare needs. As a student nurse, validation of your assessment and any abnormal clinical findings by experienced nurses will also assist you to gain competence and confidence in the assessment process.

What is most important is for you to learn to think critically about what to assess, as the clinical implications and validity of nursing assessments are crucial for patient safety (Rothman et al 2012). Gathering the most relevant information or data, and making appropriate judgements and decisions, requires the ability to remain open-minded and avoid the inevitable cognitive bias that is an ongoing challenge to critical thinking and clinical reasoning (Lieberman et al 2014).

A nurse who applies the stereotype of 'young children cope best when they don't have to worry about what is going to be happening' will never 'hear' the child asking for information; a nurse who believes that all elderly patients love to feel included and called by their first name, will never see the distress this may cause for some of those in her or his care; and a nurse who 'knows' that people from some cultures are prone to exaggerating pain, will run the ongoing risk of providing substandard nursing care. Busy wards and units, the pressure to 'fit in' with the culture of the team in which you work, your own uncertainty around your knowledge and skill base and many other factors can influence your observations and the judgements you make in relation to those. And all nurses need to develop strategies that enable the reflective and critical approach to thinking that effective nursing demands.

• CRITICAL REFLECTION POINT

Take some time to reflect on some of the beliefs you have about pain and the ways in which people vary in coping with acute and/or chronic pain. What forms of coping do you think are 'best'? Do you think that individuals from certain age groups, socioeconomic backgrounds or ethnic groups are easier to nurse because they cope better? What impact do you think those beliefs will have on your observations and judgements concerning appropriate nursing care?

Sound clinical judgement rests to some degree on knowing the patient and his or her typical pattern of responses, as well as engagement with the patient and his or her concerns

A person-centred philosophy brings to the foreground the importance of the nurse–patient relationship for safe and effective care (see Chapters 2 and 3). Knowing how a patient typically responds and knowing the patient as an individual affects nurses' judgement of what is important to and for the patient. It also allows for individualising nursing responses and actions.

Time pressures are an important constraint to patient engagement and recognising individual trends in assessment data over time, such as subtle trends over a number of days (Cappelletti et al 2014). If data are incomplete, omitted or inaccurate, errors may be made. If data collection is disorganised, the diagnostic process is scattered (Box 5-5). As a beginner the student needs a great deal of practice to develop the confidence and skills required, and should consider the following strategies:

- What is my level of skill? The beginner should approach assessment in steps. For example, the first experience may be completing an interview of a family member or collecting physical assessment data on one body system.
- Am I hearing correctly? Nurses must determine the accuracy of data collected. For example, a nurse who auscultates abnormal lung sounds for the first time may be unsure of what is being heard through the stethoscope. To minimise the risk of inaccuracy, the nurse must have a more experienced colleague validate findings or explain why they are incorrect.
- Is my assessment complete? Reviewing patient assessments in clinical or classroom settings provides nurses with a constructive learning opportunity to determine when assessments are complete or when further revisions are needed.
- What other sources can I call on to assist my judgements and decision-making?
- How organised am I? Before assessment, nurses should have the appropriate forms and examination equipment. Nurses can achieve an organised assessment if the environment is private, quiet and comfortable for the patient.

BOX 5-5 Sources of error

Collecting

Lack of knowledge or skill
Inaccurate data
Missing data
Haphazard or poorly organised approach
Premature or early closure

Judging

Inaccurate interpretation of cues
Failure to consider conflicting cues
Using an insufficient number of cues
Using unreliable or invalid data
Failure to consider cultural influences or developmental stage

Deciding

Failure to validate nursing judgements with patient
Overlooking perspectives of other healthcare professionals
Not seeking appropriate guidance

Clinical judgements are influenced by the context in which the situation occurs and the culture of the nursing unit

Nursing students quickly encounter the importance of the work environment and workplace culture in shaping nurses' decision-making and responses to patient problems: 'This is the way we do it here.' Cappelletti and colleagues (2014) found that the context of a unit, which includes how information is gathered and shared, as well as the broader culture in which nursing is situated, influences the types and depth of clinical judgements that nurses make.

An interesting example is nurses' decision to call for help when a ward patient deteriorates. Most Australian and New Zealand hospitals have a rapid response system (RRS) designed as a safety net for deteriorating ward patients. Hospitals typically have standardised medical emergency team (MET) call criteria and escalation protocols based on vital sign monitoring. When MET call criteria are triggered by staff at the bedside, a rapid response team with critical care expertise arrives to assess and stabilise the deteriorating ward patient.

However, staff frequently do not activate the RRS despite MET call criteria being met and there is a growing nursing literature exploring factors that influence how acute care staff use RRSs. Overall, findings suggest that nurses view the outcomes of a RRS positively because it legitimises their concerns and is a way of working

around ward and systems barriers to escalate care (Kitto et al 2015). Yet, there are major obstacles and professional tensions between nursing and medical staff (Douglas et al 2015, Kitto et al 2015). A recent Australian study found that instead of being used as an early intervention strategy, RNs spoke about managing deteriorating patients in ways that conflated MET and cardiac arrest calls, with a MET being perceived as a last resort (Massey et al 2014). Fears of being reprimanded or appearing incompetent to others were powerful reasons for delaying activation.

• CRITICAL REFLECTION POINT

What kind of hospital culture is needed for patient safety? What strategies will be helpful to you as a beginning practitioner to advocate for patient needs?

Nurses use a variety of reasoning patterns alone or in combination

Nursing judgement and **decision-making** involves the recognition of patterns or trends, comparison of these to normal standards and coming to a reasoned conclusion about the patient's needs, concerns or health problems. Thompson and colleagues (2013) provide examples of the types of clinical judgements and decisions nurses regularly make in Table 5-2. As an example, consider the following excerpt from an interview with an experienced heart failure nurse discussing a patient, where Thompson and Dowding (2009:4) have highlighted the different kinds of clinical judgements made:

> **Although he's generally unwell (*descriptive judgement*), he wasn't dramatically worse than he had been (*evaluative***

TABLE 5-2 Types of clinical judgements and decisions made by nurses

Judgement	Definition	Exemplar
Causal judgement (diagnosis)	A statement expressing a state or condition based on the presence of attributes that are used to explain a problem	Nurse diagnoses the cause of a patient's incontinence (based on information collected during a full assessment)
Descriptive judgement	A statement expressing a state or condition based on the presence of attributes that have been observed directly or obtained from another source	Nurse judges that the patient is 'stable' (based on information collected during a full assessment)
Evaluative judgement	A statement expressing a quantitative difference in a state or condition based on the presence of attributes that been observed directly or obtained from another source	Nurse judges that the patient's condition has 'deteriorated' (based on information collected about the patient at this point in time, compared with a previous occasion)
Predictive judgement	A statement expressing a belief in the likely course of a patient's state or condition, based on the presence of attributes that been observed directly or obtained from another source	Nurse judges that the patient will have problems postoperatively (based on information collected about the patient preoperatively)

Decision (Uncertainty)	Exemplar
Intervention: choosing between interventions (intervention)	Choosing a mattress for a frail elderly man who has been admitted with an acute bowel obstruction
Targeting: choosing which patient will benefit most from the intervention (intervention)	Deciding which patients should get anti-embolic stockings
Timing: choosing the best time to employ an intervention (intervention)	Choosing a time to commence asthma education with newly diagnosed asthmatics
Communication: choices in delivering and receiving information to and from patients, families or colleagues (intervention and prognostic)	Choosing how to approach cardiac rehabilitation following acute myocardial infarction in an elderly patient who lives alone, although his family is nearby
Service organisation, delivery and management: the configuration or process of service delivery (intervention)	Choosing how to organise handover, so that communication is most effective
Experiential, understanding or hermeneutic: the interpretation of cues in the process of care (diagnostic but unlikely to be resolved using quantitative research knowledge)	Choosing how to reassure a patient who is worrying about cardiac arrest after witnessing another patient arresting

Thompson C, Aitken L, Doran D, Dowding D 2013 An agenda for clinical decision making and judgment in nursing research and education. Int J Nursing Studies 50(12):1720–6.

***judgement*) … we started to go through things like blood pressure, blood pressure OK (*descriptive judgement*), did his heart rate and it was 30, so it was 'Oops' and obviously you're stopped in your tracks because there's something not quite right here (*descriptive judgement*) and went back over things, what's happened, what drugs was he on and we actually hadn't altered any of his medication. So we had to try to work it back and there wasn't anything obvious but obviously there had been some kind of acute event or some acute change (*causal judgement*), so we had to organise an ECG. No – in fact we didn't – we discussed it with the consultant and because of his age and he was so slow we actually admitted him (*decision*) and it turned out that he was in complete heart block, possibly related to his beta-blockers or an ischaemic event because he was diabetic (*causal judgement/diagnosis*).**

When looking for a pattern or trend, nurses examine all available data. Clusters of signs or symptoms may be grouped together in a logical order to allow the emergence of patterns and themes within the data. Alone, these signs or symptoms tell nurses little and no clear judgement or decisions can be made. However, when these signs are placed or brought together as a group, nurses see a relationship among the assessment findings. For example, Box 5-6 includes a summary of relevant data from Mr Brown's nursing assessment. By looking at these data in combination nurses are able to think about functional health patterns and the potential effect that Mr Brown's illness may have on his independence. When nurses recognise relevant patterns and identify the relationships among them, patient-centred nursing emerges (Manley et al 2011).

The identified pattern is then compared with data that are consistent with normal, healthy patterns. Nurses use widely accepted norms, such as normal laboratory and diagnostic test values, and professional knowledge as the basis for comparison and judgement. When comparing patterns, nurses judge whether the grouped signs and symptoms are normal for the individual patient and whether they are within the range of healthy responses. Box 5-7 and Table 5-3 provide examples of this process in relation to Mr Brown.

It is important to continually review assessment data to identify patient needs, and not to focus solely on the patient's health problems. For example, a patient experiencing social isolation due to their relocation into a retirement village has a need to gain friends, social supports and familiarity with new surroundings. Working with the patient to meet these needs may ultimately result in improving the patient's independence and level of wellness and can help the patient avoid future health problems. When patient needs/problems are identified, it is important for nurses to remember that the challenges experienced by patients may not be solely the result of illness or physiological alterations.

BOX 5-6 Summary of relevant information and data from Mr Brown's nursing assessment

Physical and developmental

- Diarrhoea for 3 weeks
- Productive cough on rising each morning
- Scattered crackles in lung bases
- 7 kg weight loss 3 weeks before hospitalisation
- Haemoglobin 100 g/L
- Slight change of emphysema shown on chest X-ray
- Distended abdomen
- Squamous cell cancer
- Biopsy obtained during outpatient colonoscopy
- Smoked for 20 years 2 packs a day (40 pack-years)
- Family history of stomach cancer
- Family history of heart attack
- Married 40 years
- Self-employed for 20 years
- One adult son, 35 years old
- Two sisters, 50 and 48, with no major health problems

Intellectual

- Talkative
- Frequently asks nurses if he has cancer and 'can it be treated?'
- Good attention span

Emotional

- Anxious
- Withdrawn after biopsy report of squamous cell cancer
- Awaiting colon resection and temporary colostomy

Social

- Walks with neighbour
- Active in his neighbourhood
- Married with children

BOX 5-7 Information and pattern recognition for Mr Brown

Recognise pattern

- Diarrhoea for 3 weeks
- Ribbon-shaped or watery stools
- Distended abdomen
- Cramping before and during each bowel movement

Compare with normal standards

- Soft, formed stool daily
- Abdomen soft, non-distended
- Defecation non-painful

Make a reasoned conclusion

- Bowel elimination problem

TABLE 5-3 Foundation of nursing judgements and decisions for Mr Brown

Clustering data	Identification of patient need	Nursing judgements/Decisions
Diarrhoea for 3 weeks	Stabilise elimination patterns	Diarrhoea related to irritation
Distended abdomen		
Family history of stomach cancer		
Weight loss: 7 kilograms	Increase bodyweight	Not meeting nutritional requirements due to poor absorption of nutrients because of chronic diarrhoea over past 3 weeks
Anaemia, haemoglobin level of 100 g/L		
40 pack-year history of smoking	Avoid postoperative respiratory complications	Ineffective airway clearance after surgery related to incisional pain
Slight change of emphysema shown on chest X-ray film		
Crackles auscultated in lung fields		
Productive cough on rising each morning		
Temporary colostomy	Adapt to changes in body image	Challenges to self-esteem due to changes in body image
Abdominal incision		
Patient resistance to viewing of abdomen		
Patient verbalisation of fear of stomach cancer	Develop strategies to cope with fear	Challenged in dealing with unknown prognosis associated with cancer
Patient withdrawal after biopsy report		
Anxiety		

Consider the following *Clinical example*, which provides an 'unfolding story' of an acutely ill patient requiring RNs to gather relevant assessment data, interpret data and make clinical decisions, and act on and communicate those decisions in order to keep the patient safe.

Reflection on practice is often triggered by breakdown in clinical judgement and is critical for the development of clinical knowledge and improvement in clinical reasoning

Nursing judgements that are clinically astute and those that lead to patient harm both offer the opportunity for reflection and clinical learning (Tanner 2006). Whereas beginning nurses face the challenge of applying theoretical concepts to practice, experienced nurses must avoid being dominated by task-based routines that may not produce clinical judgements in the individual's best interests (Cappelletti et al 2014). The research literature suggests reflection enhances nurses' clinical judgement, often in response to an actual or perceived breakdown in practice (Tanner 2006, Cappelletti et al 2014). In Chapter 4 we introduced a critical questioning approach for each domain of clinical reasoning (Box 4-5), as well as examples of common cognitive errors and biases that can lead to errors in judgement. These provide a basic framework to identify where you may have, for example, made assumptions or reached premature conclusions without sufficient data or to what extent your thinking was influenced by common cognitive biases.

Cappelletti and colleagues (2014) found that education strategies, such as high fidelity simulation and concept-based learning, may improve nursing students' clinical reasoning and judgement. Reflective journaling and structured debriefing sessions after real or simulated clinical experiences can be effective strategies to examine students' clinical judgements and ways in which they can improve (see *Research highlight*).

CLINICAL EXAMPLE

PRESENTING COMPLAINT
Abdominal pain

Time: 1000 (Emergency Triage)

Patient states
Female, 24 yrs old
Generalised abdominal pain for 18/24
Lethargy
Mild nausea (Nil vomiting)
Bowels normal
Reduced appetite
Feels 'off'
Mother with patient and states she 'looks unwell'

Triage Nurse documents
Primary survey:
Airway: Patent
Breathing: Work of breathing effortless. Patient talking in sentences
Circulation: Slightly pale, skin warm and dry

Patient does not appear distressed. States generalised abdominal pain. Pain rated 3/10. Nil nausea or vomiting at triage. No difficulty passing urine
Past history: Endometriosis, tonsillectomy, asthma.
Triaged category 4 and sent to waiting room

Time 1130 (Emergency Waiting Room)

Patient in Waiting Room for 1.5 hours
Patient presents back to triage
States pain worse – now 6/10
Nausea increasing and states she had 1 vomit
Feels slightly dizzy

Assessment in Waiting Room by Triage Nurse (Time 1135)
Airway: Patient alert. Airway patent
Breathing: Effortless
Circulation: Skin pale, warm to touch, dry
Nil diaphoresis
Pain more prominent right side of abdomen
BP = 110/70, HR = 80, RR = 15, SpO_2 = 100% RA and
Temp = 37.2°C
Taken to cubicle

Patient arrives in cubicle 1145
Handover given to cubicle nurse from triage nurse
'Hi, Sally, this is Emily. Emily is 24 years old. She presents with generalised abdominal pain for the past 18 hours. At triage her pain was 3/10 and she had no nausea or vomiting. When she was in the waiting room she stated the pain increased to 6/10, and became more prominent on her right side. She also had one vomit. She has a past history of endometriosis, tonsillectomy and asthma. She states the pain is different from the pain she gets with endometriosis. I brought her through now because she looks worse to me than when she arrived.'

continued

Nursing assessment
Nurse documents:
1200
Airway: Airway patent. Nil obvious obstruction
Breathing: Slight increased work of breathing (talking in phrases associated with intermittent increases in pain)
Circulation: Skin, pale, warm, slightly sweaty on palpation
Patient appears slightly distressed from pain
Rates pain 6–7/10. More severe to right side of abdomen. Patient asks for analgesia
Mild nausea – no further vomiting since patient arrived in cubicle. Bowels open yesterday – diarrhoea. Bowels opened 0800 and described as normal by the patient. Patient's mother in attendance and states patient looks very pale to her and 'not right'

Medications: Oral contraceptive pill
Past history: Endometriosis, tonsillectomy, asthma
Allergies: None known

Vital signs
BP = 102/55
HR = 92
RR = 17
SpO_2 = 100% RA
Temp = 37.6°C

IV cannula size 18 inserted. Blood taken and sent to the lab. Await medical review and results

1225 hrs
Nurse gets called away to help with another patient

1245: Nurse returns to cubicle

Vitals signs re-taken
BP = 95/55
HR = 102
RR = 18
SpO_2= 100% RA
Temp = 37.8°C
Pain 8/10

Nurse documents: 'Pt groaning with pain. States pain increased to 8/10. Describes pain as 'stabbing' pain to right side of abdomen. Reporting worsening nausea. Patient guarding stomach. Patient's mother expresses concern stating 'she is used to pain with her endometriosis but this looks a lot worse'. Doctor notified of pt condition and order for morphine 2.5 mg IV and Maxolon 10 mg given.'

Nurse goes to get analgesia and antiemetic – returns to cubicle

Nurse documents: 'Patient pale. Skin hot to touch. Patient is sweaty. Patient holding her abdomen. States pain remains 8/10. Patient had one further vomit. Nil blood or mucous in vomit. Patient given 2.5 mg IV morphine and 10 mg IV Maxolon. Doctor in charge notified of patient condition. Awaits review. Patient's mother becoming anxious and wanting to know how long until a doctor will review patient. Patient's mother notified patient is next to be seen.'

continued

1310: Nurse goes back to room to check on patient

Doctor is in the room assessing the patient. He states he will review the blood test results and has ordered an ultrasound. He leaves the room.

Nurse documents: 'Patient appears slightly more comfortable after analgesia. Vitals signs re-checked. Patient states pain reduced to 6/10 and requests more morphine for the pain. Nil vomiting. Nausea settled. Patient states pain localised to the right lower quadrant. Patient not voided since arrived to Emergency Department. Pt mother states she 'looks so pale'. Further morphine 2.5 mg given to patient.

Vital signs
BP = 95/45
HR = 115
RR = 20
SpO_2 = 98% RA
Temp = 38.1

1320: Nurse documents: 'Patient taken for ultrasound. Doctor notified that patient requests more analgesia and that further 2.5 mg IV morphine was given. Doctor stated he has notified the surgeon of her admission, and request for her to be admitted to the ward. Possible surgery tonight for ? appendicitis. The surgeon will review pt on the ward when he arrives at the hospital at 1500 hrs. If the ultrasound is normal she will remain in hospital for monitoring overnight.'

Nurse in Charge states: Ward bed ready in 2 South. Pt to be transferred to ward on her return from ultrasound.

1345: Patient returns to cubicle

Nurse documents: 'Patient returns to cubicle following ultrasound. Instructed by doctor and nurse in charge to transfer patient to the ward. Pt pale, skin hot to touch. Slightly sweating. Pt lying in the bed. Currently asleep. Seems comfortable. All belongings taken to ward.'

1400: Arrives to Ward 2, handover given to ward nurse at nurses' station

Nurse states: 'Hi, Kate, this is Emily. Emily is 24 years old. She has come into hospital today with abdominal pain. She has a past history of endometriosis, tonsillectomy and asthma. She states this pain is different from the pain she gets with endometriosis. The pain started about 18 hours before she came into ED. She had one vomit in the waiting room but I gave her Maxolon when she came into the cubicle and has not vomited any more. Just before we transferred her to the ward she went to ultrasound. She was given 2.5 mg of IV morphine for her pain prior to the ultrasound. On return she looked a lot more settled. Before going for the ultrasound she was holding her stomach and groaning. She said the pain was generalised but more severe on her right side. Her mother has been here the whole time, and said to me she was concerned at how much pain she was in and how pale she was. Her last observations before ultrasound were: BP = 95/45, HR = 115, RR = 20, SpO_2 = 98% and Temp = 38.1°C. The plan is for a surgical review this afternoon and most likely theatre tonight for an appendicectomy. Blood tests were taken but I have not seen the results yet. The surgeon will review the ultrasound when he arrives. Her only regular medication is the oral contraceptive pill and she is not allergic to anything.'

1410: Ward nurse goes in to introduce herself to patient and do an assessment

On arrival to room patient appears to be asleep. RN Kate says hello and gently rubs on her shoulder. Pt groans and opens her eyes. RN Kate notices her skin is very hot to touch and she feels sweaty. RN Kate immediately takes patient's vital signs.

Vital signs
BP = 85/40
HR = 135
RR = 24
SpO_2 = 96% RA
Temp = 38.9°C

1420: RN calls a MET call for hypotension, tachycardia and fever

continued

1425: MET arrive and conduct a patient assessment

Primary survey
Airway: Patent. Nil obvious obstruction to airway
Breathing: Spontaneously breathing. Noted increased work of breathing. Use of accessory muscles. Respiratory rate is 22. Pt able to speak in phrases to sentences depending on pain levels
Circulation: Skin pale, diaphoretic. Capillary refill is 3 seconds. Pulse strong, fast and regular
Disability: GCS is fluctuating between 14 and 15. Pt drowsy but rouses to voice and touch. States pain 9/10 to right side of abdomen
Exposure: Nil rash noted to limb or torso. Nil obvious abdominal mass. Nil lesions. Nil dilated veins

Secondary survey (Focused assessment)
Nurse conducts assessment of patient

When did it start?
'I have had this pain now for nearly 24 hours.' Patient describes constant dull pain across entire abdomen. But now it is much more severe. It is sharp pain to right lower quadrant. She states 'It is so severe I feel like I can't breathe properly.'

Have you ever had this pain before?
'No. I have endometriosis but the pain is very different. That pain is lower down and is crampy – this feels so much worse.' Patient's mother adds: 'I have had to take my daughter to the GP before when she was in pain caused by her endometriosis, but it was nothing like this. I have never seen her in so much pain.'

What is the quality of the pain (sharp, dull, tender, cramping, burning)?
'It's sharp pain. My entire stomach is aching, it's very sharp and more prominent on the right side.'

Is it intermittent or continuous?
'The aching pain is continuous, and the sharp pain is intermittent.'

Does the pain travel anywhere (radiate) or is it localised?
'As I said my entire abdomen is sore. I can't tell anymore, it's just so painful. It hurts around into my back on the right side.' Patient indicates that pain is most severe in the lower right quadrant.

On a scale of 0 to 10 with 0 being no pain and 10 being the worst pain ever felt, what is your pain level right now?
'Right now, the pain is a 9. But when the severe pain comes it is 10/10.'

Does anything make the pain better or worse?
'No, it just hurts all the time. Well, the morphine took the edge off for a little while, but that only lasted about 45 minutes. I took Panadeine Forte at home. I usually take that when I get pain from my endometriosis and it works well. But this time, it did nothing. I have never felt this pain before. It didn't even touch the sides.'

Is the pain associated with eating? Has the pain affected your food intake and appetite?
'I'm not sure, I have not eaten since lunch time yesterday. I just have not wanted to eat, I've had no appetite.'

Have you had any recent weight loss? If so, was it planned weight loss or not planned?
'No, I have not lost any weight.'

Have you had any abdominal surgeries? If so, what was the procedure and what was the outcome of the procedure?
'I had a laparoscopy 2 years ago. That is when I found out I had endometriosis. As I said, I just take Panadeine Forte when the pain is bad, but it has been okay now for around 6 months.'

Have you had any menstrual irregularities recently? When was your last period?
'I have not had a period for 2 months. But that is normal for me. The last period was normal.'

Do you have any pain when having intercourse? Any vaginal discharge?
'No'.

Is there any chance you could be pregnant?
'No.'

Are there associated symptoms, such as nausea and vomiting and/or diarrhoea?
'I felt nauseated all night. I had one vomit in emergency. I felt better after I was given Maxolon, but now I feel really nauseated, like I will vomit anytime soon.'

Have you noticed any black stools or blood in your stool? Have your stools been white or chalky?
'No. Yesterday I had one episode of diarrhoea at 2 pm. I did not notice any blood in my stool. This morning I had a normal bowel action.'

Have you noticed blood in your urine? Do you have frequency?
'No, I haven't had any blood. But last time I went to the toilet was around 2 am. It was quite dark at that time. I have not been since then. I don't even feel like I need to go.'

continued

Do you feel as though you have had a fever?
'I don't know. The nurse said I did. I know I have been sweating a lot. But I feel really cold. When I was having the ultrasound I was shaking. I couldn't stop it. I was so freezing.'

Physical examination
Nurse palpates patient's abdomen
Palpation: Involuntary rigidity noted suggestive of peritoneal inflammation. Abdomen is very firm and distended. Pain is reported to be greater with the withdrawal of the hands as compared to palpation itself, thus positive for rebound tenderness. Rebound tenderness could indicate peritoneal inflammation

Listens to patient's bowel sounds
Hypoactive bowel sounds

Listens to patient's chest
Chest clear. Equal air entry to bases. Nil wheeze. Nil crackles. Nil reported cough

The following information is combined:
Subjective data from patient
Discussion with patient's mother
Physical assessment data including patient's visual appearance, assessment of circulation, skin, chest, abdomen and vital signs
Blood test results
Ultrasound report

Medical diagnosis: Peritonitis caused by perforated appendix

Problem statements
Pain related to perforated appendix
Risk for deficient fluid volume related to vomiting and inadequate fluid intake
Fever related to infection

Immediate plan
- Immediate surgery – to remove appendix and wash out blood and pus from the abdominal cavity
- IV antibiotics – sensitive to the specific bacteria to treat the infection
- Intravenous fluids – to rehydrate the body and replace lost electrolytes
- Vital signs every 15 minutes until taken to the operating theatre
- Nil by mouth

Bucknall T, Hewitt N, Guinane J 2016 Focused assessment. In Forbes H, Watt E (eds), Jarvis's physical examination and health assessment 2nd edn. Elsevier, Chatswood, NSW.

RESEARCH HIGHLIGHT

Research focus
Clinical judgement is an essential skill needed by registered nurses and as such nursing programs seek to support the development of requisite knowledge and skills prior to graduation.

Research abstract
The author undertook a qualitative, interpretive description study in which she reviewed the reflective journals of 30 nursing students who participated in four progressive high-fidelity simulation (HFS) scenarios during a medical-surgical nursing course. Eight themes were identified in the reflective journals:

1. Expectations about the patient
2. Recognition of a focused assessment
3. Interpretation of medications, laboratory data, and diagnostics
4. Communication with the patient
5. Collaboration and interprofessionalism
6. Prioritising interventions
7. Skilfulness with interventions
8. Incorporation of skills and information into real patient situations.

Evidence-based practice
This study indicated that reflective journaling following progressive HFS scenarios might be an effective teaching–learning strategy to assist nursing students in the development of clinical judgement.

Reference
Bussard ME 2015 Clinical judgment in reflective journals of pre-licensure nursing students. J Nurs Educ 54(1):36–40.

Conclusion

This chapter has presented a broad introduction to the nurse's role in gathering relevant assessment data and making appropriate clinical judgements and decisions. We hope that it has highlighted the importance of being systematic as you work through these first two domains, and to personalise your approach to meet individual patient and family needs. In many places it has emphasised the role of nursing knowledge, experience and context in shaping patient assessment and decision-making. As a new nurse, taking the time to reflect on complex patient care situations that triggered uncertainty and seeking to connect concepts you are learning to practice, will promote the development of safe and effective clinical reasoning skills.

Key concepts

- Assessment requires the application of knowledge and experience in making the necessary observations and measurements for gathering data about patients.
- The nature and amount of data in assessment are always changing, requiring a nurse to anticipate and ask questions to be sure assessment is accurate and complete.
- Gordon's 11 functional health patterns is an example of a comprehensive assessment framework that moves inquiry from the general to the specific so that patterns of problems can be identified.
- The nursing health history involves data about level of wellness, past medical history, family history, environmental history, psychosocial and cultural history and a review of the body systems.
- Physical assessment skills are used to collect objective data.
- Making appropriate judgements and decisions involves critical analysis and interpretation of data, identification of all relevant factors and formulation of potential relationships among those factors.
- Errors can occur at any point in the reasoning process: in data collection, in the interpretation and analysis of data, in judgements related to the data or in the decisions about what needs to happen in response to those judgements.

Online resources

Nursing and Midwifery Board of Australia 2016 National competency standards for the registered nurse, www.nursingmidwiferyboard.gov.au/News/2016-02-01-revised-standards.aspx

Nursing Council of New Zealand 2011 Policies and standards for the registered nurse, www.nursingcouncil.org.nz

References

Bussard ME 2015 Clinical judgment in reflective journals of pre-licensure nursing students. J Nurs Educ 54(1):36–40.

Cappelletti A, Engel JK, Prentice D 2014 Systematic review of clinical judgment and reasoning in nursing. Journal of Nursing Education 53(8):453–8.

Douglas C et al 2015 Nursing and medical perceptions of a hospital rapid response system: new process but same old game? J Nursing Care Quality. doi:10.1097/NCQ.0000000000000139.

Gaunt H 2014 Is chest pain always an emergency? Nursing Times 110(44):12–14. Online. Available: www.nursingtimes.net/Journals/2014/10/24/v/g/s/266ZWK-B.PDF; accessed 10 Oct 2015.

Gordon M 2010 Nursing diagnosis: process and application, 12th edn. Jones and Bartlett Publishing, Sudbury, Mass.

Kitto S et al 2015 Rapid response systems and collective (in) competence: an exploratory analysis of intraprofessional and interprofessional activation factors. J Interprofess Care 29:340–6.

Levett-Jones T (ed) 2013 Clinical reasoning: learning to think like a nurse. Pearson Australia, Melbourne.

Lieberman et al 2014 Breaking bias. Neuro Leadership Journal 5:1–17. Online. Available: www.scn.ucla.edu/pdf/Lieberman(2014)NLI.pdf; accessed 26 Feb 2016.

Manley K et al 2011 Effective workplace culture: the attributes, enabling factors and consequences of a new concept. Int Practice Development Journal 1(2):1–29.

Massey D, Chaboyer W, Aitken L 2014 Nurses' perceptions of accessing a medical emergency team: a qualitative study. Australian Critical Care 27(3):133–8.

Rothman MJ et al 2012 Clinical implications and validity of nursing assessments: a longitudinal measure of patient condition from analysis of the electronic medical record. BMJ Open 2(4). Online. Available: http://bmjopen.bmj.com/content/2/4/e000849.full?rss=1; accessed 10 Oct 2015.

Tanner C 2006 Thinking like a nurse: a research-based model of clinical judgment in nursing. Nurs Ed 45(6):204.

Thompson C, Dowding D 2009 Essential decision making and clinical judgement for nurses. Churchill Livingstone Elsevier, Edinburgh.

Thompson C et al 2013 An agenda for clinical decision-making and judgment in nursing research and education. Int J Nurs Studies 50(12):1720–6.

CHAPTER

6

Setting priorities, taking action and evaluating outcomes

Clint Douglas and Jackie Crisp

Learning outcomes

Mastery of content will enable you to:

- apply a framework to determine clinical priorities and specific patient goals
- create nursing care plans which demonstrate a person-centred approach to care
- select appropriate nursing interventions, understanding the difference between independent and collaborative interventions
- determine evaluation criteria to measure a patient's progress towards goals
- explain the crucial place of critical thinking within the processes of goal-setting, taking action and evaluating outcomes.

KEY TERMS

Activities of daily living (ADLs), p. 83
Clinical pathways, p. 87
Clinical priorities, p. 82
Collaborative interventions, p. 93
Evaluation, p. 97
Expected outcomes, p. 82
Nursing care plan, p. 87
Nursing intervention, p. 93
Patient outcomes, p. 83
SMART goals, p. 84

BOX 6-1 Description of the six domains evident within all depictions of the clinical reasoning process

Domain	Focus
a	Gathering relevant information and data
b	Making appropriate judgements and decisions
c	Setting priorities and establishing goals
d	Preparing for and taking action
e	Evaluating impacts and outcomes
f	Learning from the process to inform future practice

Introduction

This chapter discusses the next three domains within the clinical reasoning process which form a sound foundation for planning effective nursing care (Box 6-1). Such planning involves creating patient-centred goals and identifying expected outcomes; and nursing actions or interventions are selected to achieve these goals and outcomes. The learning associated with systematically engaging in planned interventions and explicitly seeking evidence that these have been successful provides the foundational knowledge that allows you to build your skills and expertise; and generates evidence required for ongoing improvement of nursing practice.

Setting priorities

Nursing work is complex and requires critical thinking to prioritise patient problems and interventions. **Clinical priorities** are the most important or pressing patient problems or issues based on the assessment data collected. The primary survey (ABCDE) provides a structured and practical framework of assessment and prioritisation in acute care situations, breaking down a complex clinical situation into more manageable parts (Considine & Currey 2015). Life-threatening problems are treated when encountered, before moving on to the next part of the assessment (Box 6-2).

BOX 6-2 The ABCDE of initial assessment and treatment in acute situations

A = airway – is the airway patent?
B = breathing – is breathing sufficient?
C = circulation – is circulation sufficient?
D = disability – what is the level of consciousness?
E = exposure – what might explain the patient's condition?

Patients entering the healthcare system generally have unmet needs. For example, a person brought to an emergency department experiencing acute pneumonia has an unmet need for oxygenation, the most basic physiological need. An older woman living alone may be concerned about the safety of her home while she is hospitalised, and may have a need for psychological security from fear that her home will be burgled. You were introduced to Mr Brown and the assessment of his needs in Chapter 5, and it may be useful to review this scenario and consider the clinical priorities at this point.

Patient problems which, if untreated, could result in harm to the patient or others, have the highest priority. For example, impaired gas exchange, decreased cardiac output and the risk of violence or self-harm are high priority needs. High priorities can occur in both the psychological and the physiological dimensions, so avoid classifying only physiological problems as high priority. Lower priority problems involve the non-urgent, non-life-threatening needs of the patient. This includes problems and patient needs that may not be directly related to a specific illness or prognosis.

Whenever possible, seek patient involvement in setting priorities. In some situations, the patient and staff may assign different rankings to the same situation or problem. If they place different values on healthcare needs and treatments they can resolve these differences through open communication. However, when the patient's physiological and emotional needs are at stake, decisions concerning priority-setting become more complex. At such times you need to maintain principles of person-centred care and find ways of working with the patient and their family towards a shared goal (McCance et al 2013). When determining care priorities, the needs of the patient, the resources of the healthcare system and the limitations of time need to be considered.

Critical thinking in establishing goals and expected outcomes

There are two main purposes for writing goals and **expected outcomes**: (1) to provide direction for individualised nursing interventions; and (2) to set standards for determining the effectiveness of the interventions. There is also strong evidence that patient involvement in setting goals enhances patient outcomes (Revello & Fields 2015).

Goals of care

Goals are defined as guideposts to the selection of nursing interventions and as criteria in the evaluation of those

interventions. To create a plan of care, first develop goals relevant to the patient's clinical priorities as evidenced by your assessment. Development of nursing knowledge enables the planning of goals. For example, a patient with pneumonia may have impaired gas exchange. Knowledge of the pathophysiology of pneumonia coupled with knowledge of respiratory care principles informs the goals of care. Similarly, indications of improved gas exchange will be effected in outcomes such as 'return of oxygen saturation to > 95% on room air, absence of pulmonary secretions'. Finally, interventions that are likely to be successful are selected drawing on a combination of research evidence, patient preferences and clinical experience with other patients with respiratory problems.

A patient-centred goal is a specific, measurable objective designed to reflect the patient's highest possible level of wellness and independence in function. Patient-centred goals require active involvement by the patient. Goals should be realistic and based on patient needs and resources.

For patients to participate in goal-setting, they should be alert and have some degree of independence in completing **activities of daily living (ADLs)**, problem-solving and decision-making. This is important, as nurses and patients are partners in care. If a patient's cognitive and physical impairments are so severe that they cannot actively participate in goal-setting, the nursing team works with family or significant others and acts on the patient's behalf to develop patient-centred goals. When developing goals, act as an advocate for patients by developing nursing interventions to promote their return to health or to prevent further deterioration in their level of wellness.

• CRITICAL REFLECTION POINT

Can you think of other examples where the patient may be unable or unwilling to participate in their care? What strategies could you use to overcome this?

Goals should not only meet the immediate needs of the patient, but should also strive towards prevention and rehabilitation. Two types of goals, short and long term, are developed with the patient depending on the nature of the patient's need or problems and the nature of the nursing services provided.

Short-term goals

A short-term goal is one that is expected to be achieved in a short time, such as within a 24-hour period (Carpenito-Moyet 2008). With the present healthcare system and shorter hospital stays, short-term goals are the direction for the immediate care plan. A short-term goal for a patient with ineffective airway clearance, for example, may be 'patient's lungs will remain clear postoperatively'.

Long-term goals

A long-term goal is an objective that is expected to be achieved over a longer period of time, usually over weeks or months. Long-term goals may be more appropriate for problem resolution after discharge, especially from acute care settings (Carpenito-Moyet 2008). Long-term goals are appropriate for patients in home care settings and those adapting to chronic illnesses who live in extended-care facilities, and for some patients in rehabilitation, mental health, ambulatory care and community nursing settings. For example, a long-term goal for a patient with an ineffective airway clearance might be to remain free of upper respiratory infection for 6 months. These goals often focus on prevention, rehabilitation and health education.

Goal-setting establishes the framework of the nursing care plan. Mr Brown was introduced in Chapter 5. Imagine it is now one day after Mr Brown had surgery for a bowel resection. Table 6-1 shows example nursing judgements that are linked to goals and expected outcomes for Mr Brown. By setting specific goals you are able to provide continuity of care and promote the best use of time and resources.

Expected outcomes

An expected outcome is the specific, step-by-step objective that leads to attainment of the goal and resolution of the underlying problems. An outcome is a measurable change of the patient's status in response to nursing care (Carpenito-Moyet 2008). **Patient outcomes** have been referred to as the ultimate definition of effectiveness and efficiency, and there is an increased emphasis on identifying and measuring the results of nursing interventions and practice. Outcomes are the desired responses of a patient's condition in the physiological, social, emotional, developmental or spiritual dimensions. This change in condition is documented through observable or measurable patient responses (Ignatavicius & Workman 2016).

The expected outcomes determine when a specific, patient-centred goal has been met and later help in the evaluation of the response to nursing care and resolution of the problem (Table 6-2). Expected outcomes provide a direction for nursing activities because they are projected before nursing actions are selected. They provide a projected timespan for goal attainment and an opportunity to state any additional resources that may be required to achieve the goal, including additional equipment, personnel or knowledge. Nurses use expected outcomes as criteria to evaluate the effectiveness of nursing activities.

TABLE 6-1 Examples of goal-setting with expected outcomes for Mr Brown

Nursing judgements and decisions	Goals	Expected outcomes (all within 24 hours)
Challenges to coping related to fear of negative prognosis	Patient will openly discuss diagnosis	Asks pertinent questions about diagnosis Expresses fears Identifies at least two strategies for dealing with fears
Ineffective airway clearance related to incisional pain	Patient's lungs will remain clear throughout postoperative period	Continues deep-breathing and coughing exercises every hour Raises three balls in the tri-flow incentive spirometer Pain level remains < 3 on a pain scale of 0–10
Needs support in order to manage postoperative care at home	Patient will understand the major postoperative risks before discharge	Tolerates sips of clear liquids Names three signs of wound infection States home activity restrictions
Risk of postoperative venous thromboembolism	Patient will maintain adequate tissue perfusion by discharge	Performs active range of motion exercises every 2 hours while resting in bed Toes remain warm, dry with capillary refill of < 2 seconds Sits in a chair for 30 minutes (or more) at least three times Assisted walk at least three times

When writing expected outcomes, nurses should ensure the outcome statement is written in measurable behavioural terms. A useful mnemonic here is **SMART goals** (Figure 6-1). This allows nurses to reframe vague patient responses about goals of care as specific expected outcomes.

In the current healthcare environment, more attention needs to be given to measuring outcomes of nursing interventions for both everyday practices (see first *Research highlight*) and more complex practices (see second *Research highlight*); and generating robust evidence concerning their implementation and effectiveness.

Developing a plan of care must also incorporate the role of other healthcare disciplines, the family and community resources. In the planning of care, nurses display attitudes such as creativity and perseverance to develop a plan of care that is tailored to the patient/family needs and has measurable outcomes.

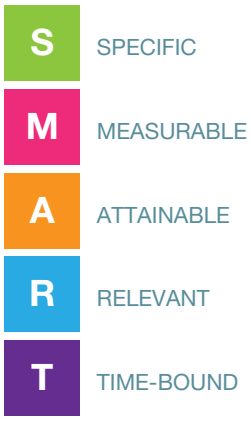


Figure 6-1 SMART goals.

CLINICAL EXAMPLE

Revello and Fields (2015) give the example of a nurse converting the original vague patient goal of 'I want to go home' to the SMART goal of 'tomorrow I will increase my water intake to four glasses':

Patient: 'I want to go home.'

Nurse: 'Why are you in the hospital?'

Patient: 'I haven't been taking in enough fluids and the doctor said I am dehydrated.'

Nurse: 'It sounds like you need to increase your fluid intake.'

Patient: 'I drank two cups of water today.'

Nurse: 'That's good; however, what if we make it a goal that you will drink four glasses of water tomorrow? Can you do that?'

Patient: 'I will try.'

Nurse: 'When you can increase your oral intake to eight glasses of fluid per day we can get the IV out, which is an important step towards getting you home. I will write your goal on your whiteboard.'

Revello K, Fields W 2015 An educational intervention to increase nurse adherence in eliciting patient daily goals. Rehabilitation Nursing 40:320–6. doi: 10.1002/rnj.201.

Formulating goals and expected outcomes

Patient-centred approach

Statements of goals and expected outcomes of care focus are derived through comprehensive assessment of the

RESEARCH HIGHLIGHT

Research focus

The use of Normal saline flushes in place of heparin to maintain the patency of peripheral intravenous locks (IVLs).

Research abstract

While there is a recent move to use Normal saline rather than heparin, the frequency with which cannulas require flushing varies due to the lack of clear evidence. This study was an open, non-inferiority, randomised controlled trial. Children, aged 1–17 years, were randomly assigned to receive saline flushing every 12 hours (Group A) or every 24 hours (Group B). The outcomes measured included the maintenance of catheter patency and a range of catheter-related complications. Group A included 198 children; Group B included 199. Occlusion of the catheter occurred in 15 children (7.6%) in Group A and 9 children in Group B (4.5%) ($p = 0.21$). Catheter patency was more frequent (+3.1%) in Group B (95% CI –1.6% to 7.7%). There was no difference between the two groups in relation to catheter-related complications (12.1% in Group A vs 9.5% in Group B; $p = 0.42$).

Evidence-based practice

One flush per day of Normal saline allows maintenance of catheter patency without an increase in catheter-related complications. This approach reduces costs (materials use and nursing time), labour and unnecessary accessing of catheters, potentially reducing distress in younger children and their parents.

Reference

Schreiber S et al 2015 Normal saline flushes performed once daily maintain peripheral intravenous catheter patency: a randomised controlled trial. Archives of Disease in Childhood 100(7):700–3.

RESEARCH HIGHLIGHT

Research focus

Ward-based interventions for patients with hemispatial neglect in stroke rehabilitation.

Research abstract

The *JBI Reviewers' Manual* was used to guide the overall procedure of the review. A preliminary literature search was undertaken in the Cochrane Controlled Trials Register; as well as searches of PubMed, CINAHL and PsychINFO databases for relevant articles published between January 2006 and June 2014. Additional literature was identified through manual searches of relevant journals and reference lists and tracking citations of the selected articles. Two reviewers evaluated the risk of methodological bias independently by using quantitative appraisal forms from the Joanna Briggs Institute (JBI) and disagreements were resolved by consensus. The selected studies were graded according to the strength of their evidence (Levels 1–5); the proposed interventions were given recommendation grades (Grades A–D).

Eleven forms of intervention were identified: 1) contralesional neck vibration (Grade C); 2) emotionally salient stimuli and reward (Grade D); 3) family participation and intensity of training (Grade C); 4) limb activation training (Grade C); 5) mental imagery training (Grade D); 6) mirror therapy (Grade C); 7) music therapy (Grade D); 8) right half-field eye patching (Grade D); 9) smooth pursuit eye-movement training (Grade B); 10) virtual reality and computer-based training (Grade C); and 11) visual scanning training (Grade D).

Evidence-based practice

- Smooth pursuit eye-movement training showed promise as a ward-based intervention. However, the low level of evidence found, and the diversity of interventions investigated, means that no clear recommendations concerning interventions, or combinations of interventions, can be made.
- Interventions should be based on careful evaluation of each patient's unique capacities and problems.
- In this area, as well as many areas of nursing interventions, there is a need for sound research evidence to guide their use.

Reference

Klinke ME et al 2015 Ward-based interventions for patients with hemispatial neglect in stroke rehabilitation: A systematic literature review. International Journal of Nursing Studies 52(8):1375–403.

patient: gathering information and data related to the patient, and making judgements and decisions that flow from this assessment. These statements reflect expected patient behaviour and responses as a result of nursing interventions.

Mutual setting of goals and expected outcomes ensures that the patient and nurse agree on the direction and time limits of care. Mutual goal-setting can increase the patient's motivation and cooperation. However, you may need to direct some of the goals and expected outcomes to keep

the patient physically and emotionally stable and safe. For example, a patient may be refusing pain medication because of fear of addiction. Yet the pain is preventing mobilisation and exercise, which can lead to complications.

Specific

Each goal and expected outcome statement should refer to only one behavioural response. This singularity provides a precise method of evaluating patient response to the nursing action. For example, an incorrect outcome statement might read 'patient's lungs will be clear on auscultation, and respiratory rate will be < 24 per minute'. If the lungs are clear but the respiratory rate is 28 per minute after nursing actions, it is difficult to determine whether the expected outcome has been achieved. By splitting the statement into two parts – 'lungs will be clear on auscultation' and 'respiratory rate will be < 24 per minute' – it can be determined if each outcome has been achieved.

Measurable

We need to objectively demonstrate the effectiveness of nursing interventions on the patient's level of health. Observable changes can occur in physiological findings and in the patient's level of knowledge and behaviour. The results can be obtained by directly asking the patient about the condition or by using assessment skills. Examples of outcomes involving assessment skills are 'lungs will be clear on auscultation' and 'purulent wound drainage will cease'.

Goals and expected outcomes are written as a standard against which to measure the patient's response to nursing care. Examples are 'body temperature will be < 37.5°C' and 'apical pulse will remain between 80 and 100 beats per minute'. A goal or an outcome stated in measurable terms allows the team to objectively quantify changes in the patient's status.

Common mistakes are made when vague qualifiers such as 'normal', 'stable', 'acceptable' or 'sufficient' are used as evaluation criteria. Terms specifically describing quality, quantity, frequency and weight allow evaluation of whether the expected outcome was achieved.

Attainable

Short-term, realistic goals and expected outcomes can quickly provide the patient with a sense of accomplishment. In turn, this sense of accomplishment can increase motivation and cooperation. When establishing realistic goals consider the:

- resources of the healthcare facility, family and patient
- patient's physiological, emotional, cognitive and sociocultural potential, and
- economic cost and resources available to reach expected outcomes in a timely manner.

Establishing goals and expected outcomes without a thorough assessment of patient, environment or resources is problematic because the plan then contains unrealistic goals.

Relevant

You need to apply critical thinking to determine the most relevant evaluation criteria to decide on the effectiveness of an intervention or improvement in the patient's condition. For example, if a diuretic is administered to reduce pulmonary congestion in a patient with heart failure, the most relevant data would include improvement in respiratory rate, oxygen saturation and lung sounds. Noting an increase in urine output from the diuretic is not the most relevant data.

Time-limited

The timeframe for each goal and expected outcome indicates when the expected response should occur (e.g. a 24-hour patient goal). Timeframes help determine that progress is being made at a reasonable rate. When the date of evaluation arrives, assess the patient to determine whether that particular expected outcome has been reached. If the outcome is not achieved, but it is still appropriate for the patient's care, another appropriate time is set.

Specific evaluation criteria

Expected outcomes are the expected results of a goal-oriented process. They are statements of progressive, step-by-step responses or behaviours that the patient needs to accomplish to achieve the goals of care provided. When outcomes are achieved, assessment data indicating patient problems no longer exist. For example, for a nursing judgement that physical immobilisation has caused the development of a pressure ulcer, the patient goal is attaining intact skin in the area of injury. This will be accomplished by meeting the outcomes of 'the skin lesion will be clean without drainage' and showing evidence of healing through 'reduction in size and inflammation'. If the outcomes are met, nurses have successfully eliminated pressure over the skin and used therapies that have healed the skin lesion. Expected outcomes have short timeframes (depending on the healthcare setting) and include as few as one or two intervention sessions.

After a specified interval or when all interventions in the plan of care have been completed, evaluate the patient's ability to demonstrate the behaviour or response stated in the outcomes. Achievement of clinically useful

and measurable patient outcomes sensitive to nursing interventions is needed to determine the effectiveness of planned interventions, and can improve the patient's level of health. If the patient achieves the expected outcomes, either continue the care plan or discontinue interventions because the goal of care is met. If evaluation determines that the expected outcomes were not met or only partially met, begin reassessment and revision of the care plan. As a nursing student, evaluation criteria can be developed and justified by searching the evidence-based literature for your patient's condition and the chosen interventions.

Planning nursing care

There are many ways to communicate a patient's nursing care. One is the **nursing care plan**, which includes the judgements or decisions concerning problems, goals, expected outcomes and specific nursing activities and strategies. In many settings, nursing care plans are integrated into multidisciplinary plans of care. The nursing component of a multidisciplinary plan is easily recognisable. A second way is critical pathways, often known as **clinical pathways**. Critical or clinical pathways are multidisciplinary treatment plans that prescribe interventions and the timeframe for achieving expected outcomes for selected patients over a projected length of stay. Many health institutions also utilise protocols and standing orders, which are integrated into an individualised plan of care.

Purpose of care plans

The nursing care plan is a written guideline for patient care. Written care plans document the patient's healthcare needs. In addition, the written care plan communicates to other nurses and healthcare professionals the patient's pertinent assessment data, a list of problems and therapies. A written care plan is designed to decrease the risk of incomplete, incorrect or inaccurate care.

The care plan is organised so that any nurse can quickly identify the actions to be delivered. In hospitals, outpatient clinics and community-based settings, the patient often receives care from more than one nurse, medical officer or allied health professional. The written nursing care plan makes possible the coordination of nursing care, subspecialty consultations and scheduling of diagnostic tests.

The care plan can also identify and coordinate resources – human, physical and financial – required to deliver nursing care. The nursing care plan enhances the continuity of care by documenting specific nursing actions necessary to achieve the goals of care. Written nursing care plans organise information exchanged by nurses in change-of-shift reports. Nurses focus these reports on nursing care and treatments delineated in care plans. At the end of shifts, nurses discuss care plans with the next caregivers. Thus all nurses are able to discuss current and pertinent information about the patient's care plan.

The written care plan also includes the long-term needs of the patient. Incorporating the goals of the care plan into discharge planning is particularly important for a patient who will be undergoing long-term rehabilitation in the community. A complete care plan enhances the continuity of nursing care between nurses in the hospital and in the community. When developing an individualised care plan, involve the patient and family. The family can help the patient meet health goals. In addition, meeting some of the family's needs may improve the patient's level of wellness.

Care plans in various settings

The format of the nursing care plan varies from one healthcare setting to another. For example, in a hospital, a care plan may consist of columns for assessment, goals, interventions and expected outcomes. The nursing care plan developed for the patient returning home is usually based solely on long-term health needs. In addition, the patient, family and significant others are more involved and assume more responsibility for care because the patient is receiving nursing care in the home.

In a community health setting, the care plan may be in a narrative form. Despite variations, the overall purpose of the care plan is to provide written guidelines so that the healthcare needs of the patient and subsequent therapies are communicated to all healthcare team members. Sample care plans are included in the clinical chapters of this text. It is also a good learning resource to collect, with permission, sample care plans from clinical placement experiences.

Nursing students also frequently learn to write and use a nursing care plan to develop clinical reasoning, written communication and organisational skills needed for nursing care. The student care plan is often more detailed than a care plan in a hospital or community healthcare agency because its purpose is to teach the process of planning care. Student care plans vary from one educational program to another, and between beginning and more advanced students. Some educational institutions model the student care plan on the care plan used in an affiliated healthcare agency. The only modification might be that the educator requires the beginning student to include the scientific rationales for the nursing interventions selected (see Table 6-2).

TABLE 6-2 Rationale for the student care plan

PRIORITY PROBLEM: Risk of breakdown of skin integrity related to immobility resulting from stroke.

DEFINITION: Risk of impaired skin integrity is the state in which an individual's skin is at risk of being adversely altered.

Assessment	Goals	Implementation	Rationale	Expected outcomes
Fever: higher than 39°C for 72 hours Diaphoresis Incontinence of urine	Skin remains intact Muscle mass is retained over bony prominences	Turn patient every 2 hours in following sequence: 8 am – supine 10 am – left side Noon – prone Repeat, beginning with supine position Administer antipyretics as ordered	Critical time for skin tissue breakdown is between 1 and 2 hours of constant pressure	No skin breakdown is noted. Skin warm, pink, capillary refill < 2 seconds. Patient is afebrile within 24 hours
Decreased skin turgor No skin breakdown noted		Keep patient's skin dry at all times	Moisture increases maceration of skin and promotes bacterial growth	Skin remains dry and intact Skin turgor is improved within 24 hours

Planning care for patients in community-based settings, such as clinics, community centres or patients' homes, involves the same principles of nursing practice. However, in these settings a more comprehensive community, home and family assessment is needed. Ultimately, the patient/family must be able to independently provide the majority of health care. Nurses design a plan to:

- educate the patient/family about the necessary care
- teach the patient/family how to integrate care with family activities, and
- allow the patient/family to assume a greater percentage of care in graduated increments.

Writing the nursing care plan

The highest clinical priority is the starting point for the nursing care plan, and is followed by others in order of assigned priority. The example in Table 6-2 shows how to write a care plan in a five-column format. The assessment column (column 1) includes all information and data relevant to the priority problem. The previously developed goals are written in the next column (column 2). At this point, the short- and long-term goals are developed into action plans that anticipate the needs of the patient, coordinate nursing care and select appropriate nursing interventions.

Write the action plan in the implementation column (column 3). Each nursing action is written to include information necessary to implement nursing care. It may help to ask whether the stated interventions answer the following questions:

- What is the intervention?
- When should each intervention be implemented?
- How should each intervention be performed?
- What resources may be needed for the intervention?
- Who should be involved in each aspect of intervention?

In addition, you should be able to articulate the rationale (column 4) for chosen interventions; and, although you will not find this column used in practice, throughout this book the rationale has been included as a means of supporting your learning (i.e. within clinical chapters). Non-specific nursing interventions result in incomplete or inaccurate nursing care, lack of continuity among caregivers and poor use of resources.

Common omissions in writing nursing interventions include action, frequency, quantity, method or person to perform the action. Table 6-3 illustrates these types of errors by showing incorrect and correct statements of nursing interventions.

Column 5 of the care plan contains the evaluation criteria previously identified. Listing all outcomes on the care plan provides a written estimation of when the goal of care is to be achieved. When outcomes are met the plan can be revised, thus indicating when a particular nursing intervention is no longer relevant to the patient's care.

Critical (or clinical) pathways

Critical pathways allow staff from all disciplines, such as nursing, medicine, pharmacy and social work, to develop integrated care plans for a projected length of stay or

TABLE 6-3 Common errors in writing nursing interventions

Type of error	Incorrectly stated nursing intervention	Correctly stated nursing intervention
Failure to precisely or completely indicate nursing actions	Nurse assistant will turn patient every 2 hours	Nurse assistant will turn patient every 2 hours, using the following schedule: 8 am – supine 10 am – left side Noon – prone 2 pm – right side Repeat sequence at 4 pm and at midnight
Failure to indicate frequency	Nurse assistant will observe patient cough and deep-breathe	Nurse assistant will observe patient cough and deep-breathe at 10 am–2 pm–6 pm–10 pm
Failure to indicate quantity	Primary nurse will provide hydrogen peroxide (H_2O_2) mouthwash to patient every 2 hours while awake: 8–10–12–2–4–6–8–10	Primary nurse will provide 50 mL of H_2O_2 mouthwash to patient every 2 hours while awake: 8–10–12–2–4–6–8–10
Failure to indicate method	Primary nurse will change patient's dressing once a shift: 6 am–2 pm–10 pm	Primary nurse will replace patient's dressing, with Neosporin ointment to wound and two dry 10 cm × 10 cm dressings secured with hypoallergenic tape, once a shift: 2 pm–10 pm–6 am
Failure to indicate person to perform the action	Irrigate nasogastric (NG) tube every 2 hours (even) round the clock with 30 mL of Normal saline (NS)	Primary nurse will irrigate NG tube every 2 hours around the clock with 30 mL NS

number of visits for patients with a specific case type (see example in Figure 6-2). For example, a pathway for a trans-urethral resection of the prostate (TURP) may recommend on a day-by-day basis the patient's activities, consults, procedures and discharge planning activities, and educational topics expected for the patient's progression through the process (for example, see Chapter 37). Nurses and other healthcare team members use the pathway to monitor a patient's progress and as a documentation tool.

Once developed, critical pathways become a case management tool that indicates desired interventions and patient outcomes within specific timeframes. However, you need to apply critical thinking and clinical judgement to determine whether the components of the pathway apply to your patient. Nursing care should be individualised to meet the patient's clinical priorities based on your assessment.

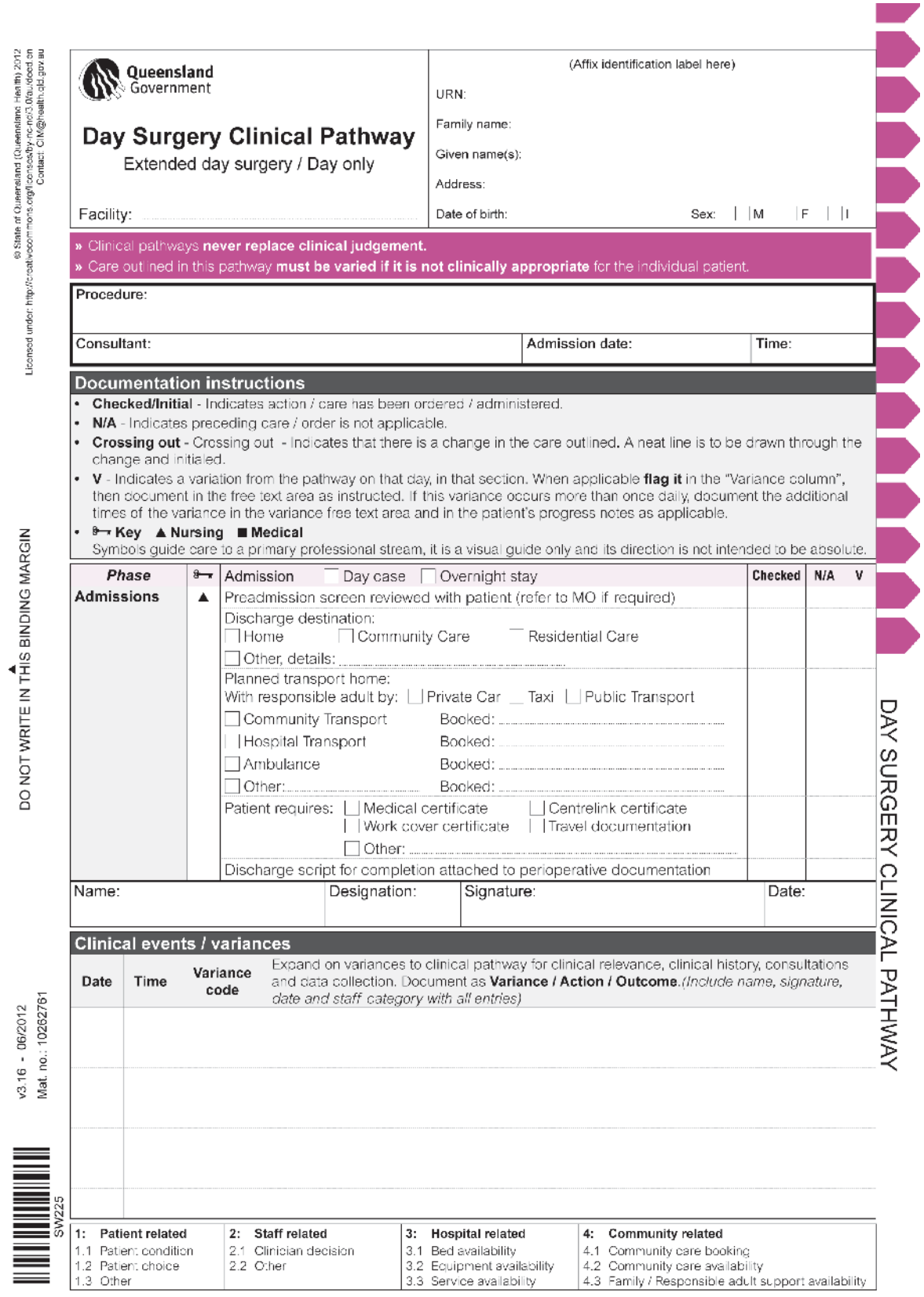
Protocols and standing orders

A protocol is a written plan specifying the procedures to be followed during care of a patient with a selected clinical condition or situation, such as care of a postoperative patient. Nurses providing primary care for patients in an outpatient setting may follow treatment and diagnostic protocol. In such a setting, nurses assess the patient and identify abnormalities. The protocol delineates the conditions that nurses are permitted to treat, such as controlled hypertension, and the types of treatment they are permitted to administer, such as immunisations.

A protocol can also be strictly within the framework of nursing, such as a protocol for admission and discharge, pain management, or initiating cardiopulmonary resuscitation. Protocols are also used in interdisciplinary settings for diagnostic testing and physical, occupational and speech therapies.

A standing order is a document containing prescriptions for the conduct of routine therapies, monitoring guidelines and/or diagnostic procedures for specific patients with identified clinical problems. The orders direct the conduct of patient care in various clinical settings. They are commonly found in critical care settings, where patients' needs can change rapidly and require immediate attention. Such a standing order might specify a certain drug, such as morphine for pain. For example, after assessing a patient in acute pain, an emergency nurse independently decides to administer morphine based on a standing order in the department. Standing orders are also common in the community and remote health settings, in which nurses encounter situations that do not permit immediate contact with a doctor.

Thus, standing orders and protocols give nurses legal protection to intervene appropriately in the patient's best



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Queensland Government

Day Surgery Clinical Pathway

Extended day surgery / Day only

Facility:

(Affix identification label here)

URN:

Family name:

Given name(s):

Address:

Date of birth: Sex: | M F | I

» Clinical pathways **never replace clinical judgement.**
» Care outlined in this pathway **must be varied if it is not clinically appropriate** for the individual patient.

Procedure:

Consultant: | Admission date: | Time:

Documentation instructions

- **Checked/Initial** - Indicates action / care has been ordered / administered.
- **N/A** - Indicates preceding care / order is not applicable.
- **Crossing out** - Crossing out - Indicates that there is a change in the care outlined. A neat line is to be drawn through the change and initialed.
- **V** - Indicates a variation from the pathway on that day, in that section. When applicable **flag it** in the "Variance column", then document in the free text area as instructed. If this variance occurs more than once daily, document the additional times of the variance in the variance free text area and in the patient's progress notes as applicable.
- **Key ▲ Nursing ■ Medical**
  Symbols guide care to a primary professional stream, it is a visual guide only and its direction is not intended to be absolute.

Phase	Admission ☐ Day case ☐ Overnight stay	Checked	N/A	V
Admissions ▲	Preadmission screen reviewed with patient (refer to MO if required)			
	Discharge destination: ☐ Home ☐ Community Care ☐ Residential Care ☐ Other, details:			
	Planned transport home: With responsible adult by: ☐ Private Car ☐ Taxi ☐ Public Transport ☐ Community Transport Booked: ☐ Hospital Transport Booked: ☐ Ambulance Booked: ☐ Other: Booked:			
	Patient requires: ☐ Medical certificate ☐ Centrelink certificate ☐ Work cover certificate ☐ Travel documentation ☐ Other:			
	Discharge script for completion attached to perioperative documentation			

Name: | Designation: | Signature: | Date:

Clinical events / variances

Date	Time	Variance code	Expand on variances to clinical pathway for clinical relevance, clinical history, consultations and data collection. Document as **Variance / Action / Outcome**. *(Include name, signature, date and staff category with all entries)*

1: Patient related	2: Staff related	3: Hospital related	4: Community related
1.1 Patient condition	2.1 Clinician decision	3.1 Bed availability	4.1 Community care booking
1.2 Patient choice	2.2 Other	3.2 Equipment availability	4.2 Community care availability
1.3 Other		3.3 Service availability	4.3 Family / Responsible adult support availability

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DAY SURGERY CLINICAL PATHWAY

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Figure 6-2 Excerpts from a day surgery clinical pathway.

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continued

Queensland Government

Day Surgery Clinical Pathway

Extended day surgery / Day only

(Affix identification label here)

URN:

Family name:

Given name(s):

Address:

Date of birth: Sex: ☐ M ☐ F ☐ I

Instructions: **Checked** - action completed; **N/A** - not applicable; **V** - variance (record and sign all variances on sheet provided or progress notes)

Key ▲ **Nursing** ■ **Medical**

Phase		*2nd Stage Recovery* Arrival time:	Checked	N/A	V
Arrival in 2nd stage Recovery	▲	Clinical hand over from: ☐ Anaesthetist ☐ Nursing staff ☐ Medical officer			
		Observations are within acceptable parameters for the patient			
		Dressing intact			
		Minimal wound ooze			
		IVT / IVC insitu and patent			
		IDC draining			
		Drain(s) insitu and patent			
Nursing care	▲	As per unit protocol			
Discharge from 2nd Stage	▲	Patient meets criteria for transfer to stage 3 as per unit protocols ***or*** Patient meets Modified PADSS for discharge			

Name:	Designation:	Signature:	Date:

Phase		*3rd Stage Recovery / Ward* Arrival time:	Checked	N/A	V
Arrival in 3rd stage / ward	▲	Clinical hand over from: ☐ Anaesthetist ☐ Nursing staff ☐ Medical officer			
		Observations are within acceptable parameters for the patient			
		Dressing intact			
		Minimal wound ooze			
		IVT / IVC insitu and patent; or IVC removed			
		IDC draining			
		Drain(s) insitu and patent			
Nursing care	▲	As per unit protocol			
Discharge	▲	Patient meets Modified PADSS for discharge			

Name:	Designation:	Signature:	Date:

Modified PADSS (POST-Anaesthetic Discharge Scoring System)

The maximum score is 10. Patients scoring 9 or 10 are considered ready for discharge home.

Tick boxes are supplied for a second assessment if necessary.

Assessment 1

Vital Signs	Within 20% of pre-op value ☐ **2**	> 20–40% of pre-op value ☐ **1**	> 40% of pre-op value ☐ **0**
Ambulation	Steady gait no dizziness ☐ **2**	With assistance ☐ **1**	None, dizziness ☐ **0**
Nausea / Vomiting	Minimal ☐ **2**	Moderate ☐ **1**	Severe ☐ **0**
Pain	Minimal ☐ **2**	Moderate ☐ **1**	Severe ☐ **0**
Surgical bleeding	Minimal ☐ **2**	Moderate ☐ **1**	Severe ☐ **0**
Total score:	**/ 10 Time:**	**Initial:**	

Assessment 2

Vital Signs	Within 20% of pre-op value ☐ **2**	> 20–40% of pre-op value ☐ **1**	> 40% of pre-op value ☐ **0**
Ambulation	Steady gait no dizziness ☐ **2**	With assistance ☐ **1**	None, dizziness ☐ **0**
Nausea / Vomiting	Minimal ☐ **2**	Moderate ☐ **1**	Severe ☐ **0**
Pain	Minimal ☐ **2**	Moderate ☐ **1**	Severe ☐ **0**
Surgical bleeding	Minimal ☐ **2**	Moderate ☐ **1**	Severe ☐ **0**
Total score:	**/ 10 Time:**	**Initial:**	

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Figure 6-2 ***continued***

continued

Queensland Government

Day Surgery Clinical Pathway

Extended day surgery / Day only

(Affix identification label here)

URN:

Family name:

Given name(s):

Address:

Date of birth: Sex: M F I

Clinical Handover from Recovery

Given by (initial): ..... **Received by** (initial): ..... @ ..... : .....

Care Plan ▲

The aim of the Care Plan is to achieve the following outcomes prior to discharge:

- Observations are within acceptable parameters for the patient.
- No fresh bleeding or excess swelling to operative area.
- Patient has tolerated diet and fluids as ordered.
- Patient able to ambulate and peform self cares as expected.
- Patient and carer understands post procedure care instructions.

Categories	**Initial as outcomes achieved** (and complete signature log below)	Initial: Date / Shift			V
Investigation / Reviews	Post-op: X-ray Pathology Cardiac Medical Criteria Led Discharge Other:				
ADLs / Mobility	Encourage mobility and self cares per protocol				
Drains / Wounds	Operation area reviewed				
	Dressing intact				
	Minimal ooze				
	Dressing changed / reinforced				
	Drains patent				
	Drains removed Date: ..... Time:				
Elimination	Trial / Post-op void Date: ..... Time:				
	IDC removed Date: ..... Time:				
Nutrition / IV	Tolerating diet as ordered nil nausea or vomiting				
	IVT / IVC insitu and patent				
	IVC removed Date: ..... Time:				
Observation / BGL	As per unit protocol				
Patient education / Discharge planning	Written and verbal information regarding post procedure care given to patient/carer				
	Patient/responsible adult advised of appropriate contacts in the event they have any concerns				

Signature Log Every person documenting in this Care Plan **must** supply a sample of their initials and signature below

Initials	Signature	Print name	Role

DO NOT WRITE IN THIS BINDING MARGIN

Figure 6-2 ***continued***

interest. Before implementing any therapy, including those in protocols and standing orders, sound judgement and clinical competency is needed to determine whether the intervention is correct and appropriate (e.g. medication standing orders – see *Online resources*).

Critical thinking in designing nursing interventions

Nursing interventions, strategies or actions are selected after priorities and goals are established. Nursing interventions are those actions designed to help the patient move from the present level of health to that which is described in the goal and measured with the expected outcomes. A **nursing intervention** is defined as any treatment based on clinical judgement and knowledge that a nurse performs to enhance patient outcomes.

The patient may require intervention in the form of a wound dressing, treatment for the current condition, patient–family education, treatment to prevent future health problems, or social, emotional or physical support. Interventions that promote culturally safe care increase the chances of attaining the goals and expected outcomes of nursing care. When choosing suitable nursing interventions, nurses:

- know the scientific rationale for the intervention (see, for example, Table 6-2)
- possess the necessary psychomotor and interpersonal skills, and
- are able to function within a particular setting to use the available healthcare resources effectively.

Many examples of specific clinical interventions and their scientific rationale are given throughout the clinical chapters of this text.

Types of interventions

Nurse-initiated interventions

Nurse-initiated interventions are the independent response of nurses to the patient's healthcare needs. This type of intervention is an autonomous action based on scientific rationale that is executed to benefit the patient and meet patient-centred goals (Carpenito-Moyet 2008). Nurse-initiated interventions involve aspects of professional nursing practice covered by licence and law. These interventions require no supervision or direction from others. For example, interventions for increasing a patient's knowledge about adequate nutrition or ADLs related to hygiene are independent nursing actions. According to the various state Acts and Regulations governing the conduct of nursing, actions pertaining to ADLs, health education, health promotion and counselling are within the domain of nursing practice. These Acts and Regulations delineate the legal scope of the practice of nursing within the boundaries of their jurisdiction (see Chapters 10 and 11).

Several factors make decision-making more difficult when choosing among independent nursing interventions. Evidence-based literature on the effectiveness of nursing interventions is increasingly available through online databases such as the Joanna Briggs Institute (see *Online resources* at end of this chapter), but much work remains to be done. A second factor is that nurse-initiated interventions are often not mutually exclusive. For example, you may need to include relaxation, massage and guided imagery techniques with prescribed analgesics for pain management. Before implementing a plan of care, it may be necessary to consult the agency's standards. It is important to know what the guidelines are for procedures and to whom the procedures may be delegated.

Collaborative interventions

Collaborative interventions are therapies that require the knowledge, skill and expertise of multiple healthcare professionals. Nurses collaborate with other members of the healthcare team when they have identified a patient problem that cannot be solved by the RN alone. For example, nurses administer treatments prescribed by advanced practitioners, such as medication, implementing an invasive procedure or changing a dressing. It is not always within the legal practice of nursing for a nurse to prescribe and order these treatments, but nurses have ethical and legal obligations to assess all planned care. Nurses are not relieved of malpractice liability simply because they were administering treatment as prescribed. For example, when administering medications, nurses are responsible for knowing the classification of the drug, its physiological action, normal dosage, side effects and nursing interventions related to its action or side effects. With an invasive procedure or dressing change, nurses are responsible for knowing when the procedure is necessary, the clinical skills necessary to complete it, and its expected outcome and possible side effects. Nurses are also responsible for adequate preparation of the patient and proper communication of the results.

When a specific diagnostic or laboratory test is prescribed, nurses are responsible for knowing when the test is scheduled, preparing the patient, and knowing the normal findings and nursing implications associated with it. When encountering collaborative interventions, nurses do not automatically implement the therapy but must determine whether it is appropriate for the patient.

Every nurse encounters an inappropriate or incorrect order at some time. The ability to recognise and query incorrect therapies protects the patient and members of the healthcare team. Nurses carrying out an incorrect or inappropriate intervention are as much in error as the person who wrote or transcribed the original order, and are liable for any complications resulting from the error.

Consider an older woman who is a hemiplegic (paralysed on one side) from a recent stroke, which has also severely affected her speech. She is unable to make herself understood, and is anxious and frustrated by her futile efforts. She is also at risk of problems related to impaired mobility, and she is unable to independently complete ADLs. In order to maintain her present level of health she requires multiple interventions, including nursing interventions to prevent pressure ulcer development, physiotherapy interventions to prevent musculoskeletal changes from immobility, speech therapy interventions for communication difficulties and occupational therapy interventions for eating and hygiene needs. Caring for this patient requires the coordination of collaborative interventions from multiple healthcare professionals, all directed towards the long-term goal of maintaining her present level of health.

Consultation is a process in which the expertise of a specialist is sought to identify ways to handle problems in patient management or the planning and implementation of programs. In clinical nursing, consultation is used to solve problems in the delivery of nursing care or the use of resources. Nurse consultants are most often approached for advice about difficult clinical problems. Nurses are often consulted for their clinical expertise, patient education skills or staff education skills. For example, a team caring for a patient with a recent colostomy might request a consultation from an enterostomal therapist to determine the materials needed to clean the colostomy site and the specific techniques to use during the procedure.

Critical thinking and the implementation process

Updating the nursing care plan

Before beginning care, review the care plan and compare it with assessment data to validate the priorities of care and determine whether the nursing interventions are the most appropriate for the clinical situation. If the patient's status has changed and the existing nursing interventions are no longer appropriate, the nursing care plan needs to be modified.

Modification of the existing written care plan includes several steps. First, data in the assessment column are revised to reflect the patient's current status. New data entered in the care plan should be dated to inform other members of the healthcare team of the time that the change occurred.

Second, the patient's problem statements are revised. Those that are no longer relevant are deleted, and new ones are added and dated. Because the patient's status and healthcare needs have changed, the priorities, goals and expected outcomes must also be revised. The revisions are also dated on the care plan.

Third, specific implementation methods are revised to correspond to the new problem statements and patient goals. This revision reflects the patient's present status. In addition, revised implementation can include the patient's specific needs for healthcare resources, such as a specific form of dressing.

Finally, determine what methods of evaluation will be used. For example, a preoperative care plan was developed for Mr Brown. As he progressed through the postoperative period his nursing needs changed. The nurse made modifications in the care plan in one area: breathing patterns post-surgery related to abdominal incisional pain. On the second postoperative day the nurse assessed the patient and noted decreased oxygen saturation, crackles that were auscultated in the right base and an elevated temperature (39°C). On further assessment the nurse determined that his breathing was impaired due to uncontrolled postoperative pain. Mr Brown had a chest X-ray, which revealed a right lower lobe collapse. The plan was revised to read ineffective airway clearance related to abdominal incisional pain (Table 6-4). The goal of maintaining patent airways was still appropriate. Specific new nursing interventions were developed to help resolve the breathing problem. Finally, new evaluation criteria were set.

Organising resources and care delivery

Equipment

All necessary supplies should be gathered and put in a convenient location, usually where they will be used, before implementing the care plan. Extra supplies should be available in case of mishaps. By having extra sterile gloves, for example, a nurse anticipates the possibility of a break in aseptic non-touch technique. The nurse also arranges the supplies in the order in which they will be used.

Personnel

Before intervention, consider the competencies of personnel available and the model of care delivery being used.

TABLE 6-4 Modified nursing care plan for Mr Brown

PRIORITY PROBLEM: Ineffective airway clearance related to abdominal incisional pain.

DEFINITION: Ineffective airway clearance is the state in which an individual is unable to clear secretions or obstructions from the respiratory tract to maintain airway patency.

Assessment	Goals	Implementation	Evaluation
Smoked two packs/day for 20 years; chest X-ray film showing slight change of emphysema; crackles auscultated in lung field; scheduled for abdominal surgery	Maintains clear airways postoperatively	Demonstrate turn, cough and deep-breathing exercises to patient Have patient perform exercises every 2 hours while awake	Breathing effortless SpO_2 > 95% on room air Chest clear to auscultation
Modified 24 hours after surgery			
Decreased oxygen saturation (< 92%); coarse crackles in right base that do not clear with coughing; abdominal pain (6/10) on coughing and deep breathing	Practises coughing and deep-breathing exercises every hour	Encourage use of patient-controlled analgesia Splint incision with pillow before and during coughing Use tri-flow every hour	Pain score < 4 on coughing and deep breathing SpO_2 > 95% on room air Lung fields are clear on auscultation

Agency policies also help to clarify what interventions various levels of staff can perform. Nursing care delivery systems vary among facilities and must be considered when allocating resources. The system by which nursing is organised determines the way in which personnel are designated for patient care delivery. The most common types of nursing delivery systems are functional, team, total patient care, primary nursing and case management; review of these systems can be found in later chapters.

Depending on the system of healthcare delivery, the nurse who develops the care plan may not perform all of the nursing interventions. Some activities may be delegated to other members of the healthcare team and coordinated by the nurse. When delegating aspects of a patient's care to another staff member, the nurse assigning the tasks must ensure that each task is appropriately assigned and completed according to the standard of care.

Environment

Environmental factors influence the delivery and reception of care. The surroundings in which nursing activities occur should be safe and conducive to the implementation of the therapy. If the patient has sensory deficits, physical disability or an alteration in level of consciousness, the environment must be arranged to prevent injury. Having special rooms, rearranging furniture and equipment, keeping rooms free of clutter and providing for additional personnel are examples of creating safe surroundings.

Privacy promotes relaxation when body parts are exposed. Reducing distractions enhances a patient's learning opportunities. Adequate space and lighting promotes efficiency when procedures are performed.

Patient

Making sure the patient is comfortable before initiating interventions enables the patient to participate more fully. For example, if patient alertness is needed, the dose of pain medication should be enough to relieve discomfort but not cause sedation. Also consider the patient's level of endurance and plan only the amount of activity that the patient can comfortably tolerate.

Awareness of the patient's psychosocial needs helps create a favourable emotional climate. Some patients feel reassured by having a significant other present to lend encouragement and moral support. Other strategies include planning sufficient time or multiple opportunities for the patient to work through and ventilate feelings and anxieties.

Anticipating and preventing complications

Risks to the patient arise from both illness and treatment. Take the time to identify these risks, evaluate the relative benefit of the treatment versus the risk and initiate risk-prevention measures. Many patient conditions place the patient at risk of additional complications. For example, the patient with pre-existing left-sided paralysis following a stroke 2 years earlier is at risk of developing a pressure ulcer following surgery that limits mobility. Some nursing procedures also pose risks for the patient. For example, the patient receiving enteric feeding through a nasogastric tube is at risk of aspiration. Elevate the head of the bed and have pharyngeal suction equipment at the bedside before initiating the feedings.

Identifying areas of assistance

Some nursing situations require help from additional personnel, knowledge and/or nursing skills. For example, a nurse assigned to care for an overweight, immobilised patient may need additional personnel to help turn, transfer and position the patient. Nurses need to determine the number of additional personnel and when they are needed.

Some nursing situations require additional knowledge and skills, as well as additional personnel. A nurse needs additional knowledge when administering a new medication or implementing a new procedure. Such information can be obtained from a hospital's procedure or policy manual. If still uncertain about the new procedure, other members of the healthcare team can be consulted. Asking for help occurs often in all types of nursing practice, and is a learning process that continues throughout educational experiences and into professional development.

Implementing nursing interventions

Select from the following nursing intervention methods to achieve the patient-care goals:

- Performing, assisting or directing the performance of ADLs, activities usually performed in the course of a normal day; they include walking, eating, dressing, bathing, teeth brushing and grooming.
- Counselling and teaching the patient and family. Counselling is an implementation method that helps the patient use a problem-solving process to recognise and manage stress and to facilitate interpersonal relationships among the patient, family and healthcare team. Teaching presents correct principles, procedures and techniques of health care to patients and informs patients about their health status.
- Providing direct care to achieve patient-centred goals; nurses initiate interventions to compensate for adverse reactions, use preventive measures in providing care, apply correct techniques in administering care and prepare the patient for special procedures and initiate life-saving measures in emergency situations. The specific knowledge and skills needed to carry out these nursing procedures are detailed in subsequent chapters.
- Delegating, supervising and evaluating the work of other staff members and recording and exchanging information relevant to the patient's continued care.

Nursing practice includes cognitive, interpersonal and psychomotor (technical) skills. Each type of skill is needed to implement interventions. Nurses are responsible for knowing when one of these methods is preferred over another, and for having the necessary theoretical knowledge and psychomotor skills to implement each.

Achieving a patient's goals of care

The patient's healthcare goals can be achieved by:

- providing an environment conducive to meeting such goals
- adjusting care in accordance with the patient's expressed or implied needs
- stimulating and motivating patients, thereby enabling them to achieve self-care and independence
- encouraging patients to accept care or adhere to the treatment regimen.

For each nursing intervention, the nurse and patient work together to meet the mutually developed goals. The nurse assumes a more active or more passive role depending on the intervention.

Whether patients are in a hospital, outpatient clinic or community setting, take measures to provide privacy. In an environment of privacy, patients may feel free to share concerns, ask questions about their diagnosis and treatment and resolve personal problems.

Nursing care and other therapeutic measures are designed to meet the patient's needs. As a further help in attaining healthcare goals, the nursing care plan should be flexible so that the patient is not placed in a fixed routine. The degree of flexibility, however, depends on the nature of the need, the severity of the patient's disability or illness and the patient's dependence on nursing care. Patients with severe and chronic diseases are encouraged to increase their levels of self-care and independence. To avoid discouraging patients, it is best to progress gradually. The care plan is implemented so that patients successfully achieve one level of independence before attempting the next.

Patients with chronic diseases may need to adhere to many treatment regimens. Patient adherence means that patients and families invest time in carrying out the required home treatments. For example, a patient with chronic obstructive pulmonary disease (COPD) may need to spend several hours a day performing respiratory therapies designed to keep the airways open and maintain an acceptable level of wellness. Investments of time, money and personal resources for a long period can be discouraging. Nurses are able to intervene and help the patient adhere to the treatment plan. Adequate discharge planning and education of the patient and family help promote a smooth transition from one healthcare setting to another or to the home.

Communicating nursing interventions

Nursing interventions are incorporated into the nursing care plan and patient's healthcare record. The care plan usually reflects proposed nursing interventions. After the interventions are completed, the patient's response to the treatment is recorded on the appropriate record. Documenting a brief description of pertinent assessment findings and the patient's response in the patient's healthcare record validates the need for a specific nursing intervention. Recording the time and the details of the intervention documents that the procedure was completed.

Unless communication is timely and accurate, caregivers may be uninformed, interventions may be needlessly duplicated, procedures may be delayed or tasks may be left undone. Patients can tell when members of the healthcare team communicate inconsistent messages, indicating that no one is in charge. Nurses commonly communicate orally when conferring with colleagues, changing shifts, transferring a patient to another unit or discharging a patient to another healthcare agency. Whether the nursing intervention is written or communicated orally, the language should be clear, concise and to the point.

Critical thinking skills and evaluation of care

Evaluation of care requires you to think about patient responses to nursing interventions and to determine their effectiveness in promoting the patient's wellbeing. Evaluation requires knowledge of the characteristics of improved care in all patient domains, expected and unexpected outcomes of interventions from nursing and other disciplines, characteristics of improved family and group dynamics, and community resources. For example, when evaluating a patient for a change in vital signs, the nurse applies knowledge of disease processes and physiological responses to interpret whether a change has indeed occurred and whether the change is desirable. For example, a patient in acute pain may present with an increased heart rate and increased muscular tension. The nurse knows that this is a sympathetic nervous system response to painful stimuli. After administering a pain medication and repositioning the patient, the nurse will return to evaluate whether vital signs have returned to either a more acceptable level or the patient's pre-pain baseline. Positive evaluations occur when established outcomes are achieved, leading the nurse to conclude that the medication dosage and nursing intervention effectively met the patient's goal of improved comfort. Negative evaluations or undesired results indicate that the intervention was not effective in minimising or resolving the problem or in avoiding a potential problem. As a result, the nurse must change the care plan and try different therapies or a different approach to administering existing therapies.

This sequence of evaluating and revising therapies continues until problems are appropriately resolved. Evaluation is dynamic and ever-changing, depending on the patient's condition; as problems change, so too may expected outcomes. A patient whose health status continuously changes requires more frequent evaluation. In addition, priority problems are often evaluated first; for example, evaluating a patient's acute pain before evaluating the status of a knowledge deficit.

Evaluation of goal achievement

The purpose of nursing care is to help the patient resolve actual health problems, prevent the occurrence of potential problems and maintain a healthy state. Evaluation of the goals of care determines whether this was accomplished (Table 6-5). For example, during an initial assessment a postoperative patient may report acute abdominal pain, rate the pain as 8 on a scale of 0–10 and grimace or hold the abdomen during attempts to move in bed. This baseline is used by the nurse to identify the presence of acute pain and establish the comfort–function goal of < 3/10 pain. Evaluation determines whether the outcomes that reflect goal accomplishment were met. Did the interventions of positioning, proper and timely administration of analgesics and use of relaxation successfully reduce the patient's pain? To objectively evaluate the degree of success in achieving a goal, use the following steps:

1. Examine the goal statement to identify the exact desired patient behaviour or response.
2. Assess the patient for the presence of that behaviour or response.
3. Compare the outcome criteria with the behaviour or response.
4. Judge the degree of agreement between outcome criteria and the behaviour or response.
5. If there is no agreement (or only partial agreement) between the outcome criteria and the behaviour or response, what are the barriers? Why did they not agree?

There are different degrees of goal attainment. If the patient's response matches or exceeds the outcome criteria, the goal is met. If the patient's behaviour begins to show changes but does not yet meet the criteria set, the goal is

TABLE 6-5 Evaluation measures to determine the success of goals and expected outcomes

Goals	Evaluative measures	Expected outcomes
Patient's pressure ulcer will heal within 7 days	Inspect colour, condition and location of pressure ulcer	Erythema will be reduced in 2 days
	Measure diameter of ulcer daily	Diameter of ulcer will decrease in 5 days
	Note odour and colour of drainage from ulcer	Ulcer will have no drainage in 2 days Skin overlying ulcer will be closed in 7 days
Patient will tolerate ambulation to end of hall by 20/11	Palpate patient's radial pulse before exercise	Pulse will remain below 110 beats per minute during exercise
	Palpate patient's radial pulse 10 minutes after exercise	Pulse rate will return to resting baseline within 10 minutes of exercise
	Assess respiratory rate during exercise	Respiratory rate will remain within 2 breaths of patient's baseline rate
	Observe patient for dyspnoea or breathlessness during exercise	Patient will deny feeling of breathlessness
Patient will have improved grief resolution by 15/1	Ask patient about frequency of periods of crying, sadness	Patient reports decreased frequency of crying, sadness in 2 months
	Review patient's sleeping log	Patient has periods of 6–7 hours of sleep without interruption within 10 days
	Review patient's dietary intake	Patient has no weight loss in 1 month

partially met. If there is no progress, the goal is not met (Table 6-6). A clearly defined goal with specific outcomes is easily measured.

As goals are evaluated, adjustments to the care plan are made as indicated. If a goal was successfully met, that portion of the care plan is discontinued. Unmet and partially met goals require nurses to continue intervention. This is an important step in critical thinking – knowing how the patient is progressing and how problems either resolve or worsen. The nurse's careful monitoring and early detection of problems are a patient's first line of defence. Groves and colleagues (2014) describe the importance of nurses learning how to anticipate at-risk patients. Clinical judgements are based on the nurse's observations of what is occurring with a specific patient, and not merely on what may happen to patients in general. Changes are often very subtle. Evaluation must be patient-specific, based on a close familiarity with each patient's behaviour,

TABLE 6-6 Examples of objective evaluation of goal achievement

Goals	Outcome criteria	Patient response	Evaluation findings
Patient will self-administer insulin	Patient prepares insulin dosage in syringe Patient demonstrates self-injection	Patient prepared accurate dosage in syringe Patient administered morning insulin dosage; self-injection was correctly performed	Patient has progressed and achieved desired behaviour
Patient's lungs will be free of secretions	Coughing will be non-productive	Patient coughed frequently and productively	Patient will require continued therapy
	Lungs will be clear to auscultation	Lungs were clear to auscultation	Condition is improving
	Respirations will be < 20 per minute	Respirations were 18 per minute	
Patient will be able to perform self-care measures without discomfort	Patient will rate pain as < 3 on a scale of 0–10 Patient will initiate bathing	Patient reports right-sided abdominal pain as 5/10 while attempting bathing	Patient's condition still indicates a problem Continued therapy with possibly new care measures is required

physical status and reaction to caregivers. Critical thinking skills promote accurate evaluation, which leads to the appropriate revision of ineffective care plans and discontinuation of any therapy that has been successful (see Table 6-7 and Figure 6-3).

Unmet goals

As hospital stays become shorter, many patients are discharged before all goals are met and all clinical problems are resolved. When preparing a patient for discharge, evaluate the status of each nursing intervention and write an evaluative statement identifying the patient's progress towards goal achievement and problem resolution. Appropriate revisions to the care plan are made for home or follow-up care (e.g. an extended-care facility). Clearly distinguish between goals that have been met and goals that require continued intervention.

When goals are not met, identify the variables or factors that have interfered with goal achievement. Usually a change in the patient's condition, needs or abilities makes alteration of the care plan necessary. For example, when teaching self-administration of insulin a nurse discovers that the patient has a literacy problem or a visual impairment that prevents the reading of insulin dosages on the syringe. As a result, original outcomes cannot be met. Thus new interventions are needed and revised outcomes to meet the goal of care.

The evaluation of interventions examines two factors: the appropriateness of the interventions selected, and the correct application of the implementation process.



Figure 6-3 Nurse evaluates circulation following application of elastic wrap bandage.

Potter PA, Perry AG 2004 Fundamentals of nursing, 6th edn. Mosby, St Louis.

TABLE 6-7 Modification of nursing care plan for Mr Brown

Reassessment	Nursing judgement or decision	Goals and expected outcomes	Interventions
40 pack-year history of smoking Infiltrates present on chest X-ray film Crackles present over right lung fields Achieves only 60–70% of incentive spirometry goal because of incisional pain Reluctant to turn, cough and deep-breathe because of incisional pain Does not splint abdominal incision Oral temperature of 39.8°C	Ineffective airway clearance related to poor control of incisional pain	Goal: Patient's acute pain will be well controlled	
		Expected outcomes: Improved respiratory function	
		Patient will use PCA more frequently	Demonstrate proper use of PCA and rationale for regular use of medication
		Patient will splint incision before each cough and deep-breathing exercise	Demonstrate correct splinting procedure. Allow for return demonstration by patient
		Patient's level of pain decreases to < 3 on a scale of 0–10	
		Patient's lungs will become clear	
Infrequent, irregular use of patient controlled analgesia (PCA) Reports 7/10 pain on a 0–10 scale	Patient's lungs will become clear to auscultation	Assist patient with splinting procedure	
		Patient will achieve 90% of incentive spirometry goal	Demonstrate and assist patient with incentive spirometry
		Patient's oral temperature will return to normal	
		Patient will turn, cough and deep-breathe	Encourage patient to turn, cough and deep-breathe every hour

The appropriateness of an intervention may be based on the standard of care for a patient's health problem. A standard of care is the minimum level of care accepted to ensure a high quality of care to patients. Standards of care define the types of therapies typically administered to patients with defined problems or needs.

During implementation, evaluate the patient's response during and immediately after intervention. Evaluation must be integrated with ongoing nursing care. If the response is favourable, implementation continues. Re-evaluation occurs when the intervention proves to be unsuccessful. Changes in implementation should be guided by the nature of the patient's unfavourable response. Consulting with other nurses may yield suggestions for improving the approach to care delivery. Senior nurses are often excellent resources because of their clinical experience. Regular evaluation ensures that a patient's care plan is current and appropriate.

Conclusion

This chapter has unpacked some key concepts as we move through the next three domains of the process of clinical reasoning. Clinical priorities are set in collaboration with the patient, family and other members of the healthcare team. The process of planning nursing care involves identifying health problems and setting goals specific to the patient and the agreed outcomes of care. Only then can appropriate nursing actions or interventions be identified and implemented. The appropriate selection of patient outcomes will provide a base for evaluation of the care, given the patient's progress towards goals and the standard of care received. As you move into Chapter 7, which provides an overview of the quality improvement and research processes, you will undoubtedly notice strong parallels between these and the clinical reasoning process outlined within the last three chapters.

Key concepts

- Clinical priorities are the most important or pressing patient problems or issues based on the assessment data collected.
- Partner with the patient and family to develop goals for each priority problem that are SMART (specific, measurable, achievable, relevant and timely).
- The care plan is a written guideline for care, documenting the individualised nursing actions for each goal.
- Independent nursing interventions are within the RN's scope of practice and are initiated autonomously to address patient problems, whereas collaborative interventions require a prescription from an advanced practitioner, but always require nursing judgement or decision-making.
- Taking action also requires planning of resources and determining when help is needed.
- Evaluation determines a patient's response to nursing actions and the extent to which goals of care have been met.
- The nursing care plan is then modified based on evaluation data.

Online resources

Emergency Care Institute NSW provides information concerning medication standing orders that are used within the framework of the Nurse Delegated Emergency Care (NDEC) patient care model in NSW, www.ecinsw.com.au/medication-standing-orders

The Joanna Briggs Institute (JBI) is the international not-for-profit, research and development centre within the Faculty of Health Sciences at the University of Adelaide, South Australia, http://joannabriggs.org

Queensland Health has developed examples of clinical pathways, www.health.qld.gov.au/caru/pathways/

References

Carpenito-Moyet LJ 2008 Nursing diagnoses: application to clinical practice, 12th edn. JB Lippincott, Philadelphia.

Considine J, Currey J 2015 Ensuring a proactive, evidence-based, patient safety approach to patient assessment. J Clin Nurs 24:300–7.

Groves PS, Finfgeld-Connett D, Wakefield BJ 2014 It's always something: hospital nurses managing risk. Clinical Nursing Research 23(3):296–313.

Ignatavicius DD, Workman ML 2016 Medical–Surgical Nursing – Patient-centred collaborative care, 8th edn. Elsevier, St Louis.

Klinke ME et al 2015 Ward-based interventions for patients with hemispatial neglect in stroke rehabilitation: a systematic literature review. Int J Nursing Studies 52(8):1375–403.

McCance T et al 2013 Promoting person-centred practice in acute care: the impact of culture and context on a facilitated practice development programme. Int Practice Devel J 3(1):2. Online. Available: www.fons.org/Resources/Documents/Journal/Vol3No1/IDPJ_0301_02.pdf; accessed 10 Oct 2015.

Revello K, Fields W 2015 An educational intervention to increase nurse adherence in eliciting patient daily goals. Rehabilitation Nursing 40:320–6. doi: 10.1002/rnj.201.

CHAPTER

7

Developing and using nursing knowledge

Jackie Crisp

KEY TERMS

Active learning, p. 105
Clinical audit, p. 105
Critical inquiry, p. 103
Effects, p. 114
Environment, p. 102
Evidence-based practice, p. 109
Levels of nursing inquiry, p. 103
Outcomes, p. 114
PEEP framework (People, Effects, Environment and Praxis), p. 103
Person-centredness, p. 114
Practice development, p. 111
Praxis, p. 103
Processes, p. 102
PARiHS (Promoting Action on Research Implementation in Health Services), p. 116
Reflection, p. 104
Research, p. 106

Learning outcomes

Mastery of content will enable you to:

- recognise the place of ongoing inquiry in nursing practice
- appreciate the three levels of nursing inquiry:
  1. Inquiry into own practice through ongoing critical reflection on experiences and learning associated with the clinical reasoning process
  2. Inquiry into local practices through ongoing collaborative evaluation and development of practice
  3. Inquiry into nursing practice through ongoing utilisation of research evidence produced through the ongoing development of nursing knowledge through research
- recognise the role that workplace culture plays in the effectiveness of all levels of inquiry and the place of practice development in creating the collaborative and person-centred cultures associated with positive patient experiences and health outcomes
- understand how a PEEP framework – People, Effects, Environment, Praxis – forms a useful organising structure when thinking about different broad domains of nursing inquiry and the utilisation and production of nursing knowledge and practice
- discuss the characteristics of systematic practice: reflection, evaluation and research processes
- understand how different levels of inquiry are crucial in generating different kinds of knowledge for practice
- begin to build a picture of the complexity of nursing practice, and the need for ongoing participation at all levels of inquiry.

For those who believe, no proof is necessary. For those who don't believe, no proof is possible.
Stuart Chase

Introduction

Being effective as a nurse is a constant state of 'becoming'; that is, being an effective clinical nurse entails continuous development of the self and of practice through ongoing **processes** of inquiry, which maximise the likelihood that we take a curious and open-minded approach to building our knowledge and expertise. This development of self as a nurse, and of our nursing practice, is influenced by the extent to which we understand ourselves, take care of ourselves and find ways to engage actively in our own development through ongoing inquiry. To do this we need to understand and avoid the human tendency for 'seeing' only what we 'believe' and 'believing' only what we 'see' (see above quote).

Our development as clinical nurses is also influenced by the cultures within the contexts in which we gain our experience as nurses, and the nursing team's shared beliefs about the forms of inquiry that are practised and those that are not. Some workplace cultures perpetuate established practices through a 'don't rock the boat' or 'we have always done it like this' attitude; others challenge and support critical and systematic examination of established practices (or rituals) in order to find ways to continuously improve the care they provide. Many vacillate between these two positions practice-by-practice and day-by-day.

Lastly, our development, and that of our practice, is dependent upon the generation of meaningful nursing knowledge through systematic research, and the appropriate integration of this knowledge into our understandings and practices. The appropriate utilisation of research evidence is highly dependent on a sound understanding of the people to whom the evidence may relate, of the **environment** to which the evidence may apply, and of the nature and strength of the evidence itself. Understanding the complexity surrounding evidence utilisation helps us make sense of the fact that practice change based on research evidence is extraordinarily difficult to achieve, and the range of publications and initiatives seeking to support clinicians in achieving the translation of research-based knowledge into practice attest to this fact (see *Online resources* on p. 117).

This constant state of becoming an effective clinical nurse then, is supported by our engagement in three interrelated areas or levels of inquiry (Box 7-1). The first is engagement in ongoing inquiry into, and development of, our own knowledge and expertise. The links between this form of inquiry and the content of Chapters 4, 5 and 6 will become obvious, and we suggest you become familiar with the notion of clinical reasoning (Chapter 4) and think about that process as the basis of this first level of inquiry. That is, the way in which the ongoing learning (the sixth domain of clinical reasoning) provides the foundation upon which evidence-based practice and nursing research are built.

The second area involves engagement in ongoing collaborative inquiry through evaluation, and development of local practices. It is not difficult to see that this second level of inquiry is more likely to occur when individual nurses are actively engaging at the first level. Some writers label this second level of inquiry as 'continuous quality improvement', 'total quality management' or similar, and highlight a project-based approach to examining improvements in specific practices – for example, pressure area care or fall prevention – for addressing identified clinical problems (e.g. Sollecito & Johnson 2013). An alternative to this project-based approach involves a broader concern for the creation of person-centred workplace cultures (Dewing et al 2014), which are known to lead to more positive patient experiences and better health outcomes (Manley et al 2011a). While this broader approach also involves the identification and improvement of specific areas of practice, the intention is always to address the underpinning social processes and systems in order to reduce the likelihood of similar problems occurring in the future (Manley et al 2011b; see Evolve site: Essentials of Care Program). It also increases the likelihood that when the team identifies the need for improvement, the required changes or refinements to current practice are implemented. This chapter takes this second approach, and discusses one methodology – practice development – for enhancing the workplace culture in order to generate sustainable improvements and positive practice change at the second level of inquiry (Dewing et al 2014).

The third area addressed within this chapter is the ongoing development of nursing practice produced through the integration of new knowledge and understandings generated through healthcare or nursing research. And, just as the quality of inquiry at the second level (or indeed the likelihood that nurses even engage at that level of inquiry) is related to engagement in level one inquiry, level two inquiry is a crucial foundation for level three inquiry. It is important to understand that the majority of nurses will never lead their own research projects, although many may be involved as collaborators or participants in research undertaken by others. All nurses will, however, need to access and assess the findings of research undertaken by others if they are to provide

BOX 7-1 Three levels of nursing inquiry

1. Inquiry into own practice through ongoing critical reflection on experiences and learning associated with the clinical reasoning process.
2. Inquiry into local practices through ongoing collaborative evaluation and development of practice.
3. Inquiry into nursing practice through ongoing utilisation of research evidence produced through the ongoing development of nursing knowledge through research.

BOX 7-2 The PEEP framework

- **P** the People involved, their experiences and their preferences
- **E** relevant evidence of the Effects of nursing practice
- **E** the local Environment or contextual realities of practice
- **P** Praxis as a means of learning and evolving practice actively

best practice (see Box 7-1). Accessing and determining the relevance of specific research findings requires a good deal of knowledge: of research methods and the extent to which findings derived through specific research approaches are relevant to local practice decisions. The focus over the last two decades on providing clinicians with useful summaries or guidelines for integrating research evidence into practice has helped deal with the reality that many nurses are novices when it comes to judging and applying research findings in their practice. This chapter provides a beginning point for a journey that will extend across the remainder of your career in nursing.

The process of developing the knowledge and skills required for **critical inquiry** may feel overwhelming at times. If that happens to you, we urge you to stay engaged in the learning process and to work with others, provide each other with challenges and support, and strive to continue to develop your knowledge and skills. To assist you in the early stages of this journey, this chapter provides material that will help organise some of the complexity and provide some foundational understandings of the nature of nursing inquiry and its role in the development of effective nursing practice.

This chapter explores processes for engaging in critical inquiry as a nurse, which requires an understanding of different forms of knowledge, and an understanding of how nurses must work with knowledge critically and translate that knowing into practical action. To achieve that goal we have divided the chapter into three major sections.

The first section draws out the main features of the three **levels of nursing inquiry** and argues for ongoing engagement of all nurses in the processes associated with each level. The integration among these levels of inquiry will become more obvious as your knowledge and confidence builds. That is, your practice will draw upon the knowledge you have developed through your own experiences, from the insights you have gained through engaging in local practice development and from your understanding of relevant research findings. The knowledge/evidence generated through each of these levels of inquiry impacts on, and is impacted on, by the knowledge/evidence created across all three levels.

The second section outlines contemporary ideas relating to practice development and its place in creating person-centred cultures that enable nursing inquiry and continuous integration of new knowledge into nursing practice.

The third section is organised according to the **PEEP framework – People, Effects, Environment and Praxis**. This framework provides a means of thinking about broad domains of nursing inquiry (People, Effects and Environment), and the integration of new knowledge into nursing practice (**Praxis**) (see Box 7-2). Within the first three of these four domains (PEE*), we discuss the methods used for both evaluating local nursing practices and undertaking nursing research. Discussion of the fourth domain (***P) focuses on the integration of knowledge through praxis.

Three levels of nursing inquiry

This section provides material that we hope will convince you that nursing inquiry is a part of everyday practice; not, as some would argue, simply the domain of academics or senior clinicians/managers who bear the major responsibility for nursing research. The view that the ideas of nursing inquiry and evidence for practice are limited to nursing research and the evidence produced through a limited range of methods denies a world of learning and development that is crucial for the provision of effective nursing care.

• CRITICAL REFLECTION POINT

Think about the kind of information that you feel confident to hold as 'factual' and the kind of information that you are less confident about. How easy is it to track the origin of the things that you believe to be true?

Inquiry involving critical engagement in everyday practice

Every experience of working with colleagues and patients is an opportunity to engage with an inquiring mind in order to learn and develop your nursing expertise. The cornerstone of this process is clinical reasoning, which is discussed at length in Chapter 4. This day-to-day practice inquiry and learning is enhanced through critical reflection and experiential learning. You will encounter the ideas behind critical reflection and experiential learning across many of the subjects you undertake within your undergraduate and postgraduate courses – in nursing and beyond. Different lecturers or clinicians may cite different theorists and have slightly different ways of discussing the processes involved and the underpinning theoretical frameworks. Broadly speaking, however, critical reflection can be undertaken by those seeking to become more self-aware (learn) and take action (act) in relation to improving the clinical knowledge, skills or attitudes they require to provide the best possible nursing care.

Reflection

The link between **reflection** and learning has been around for a long time. Dewey (1933) believed that the function of reflective thought is to:

> **transform a situation in which there is experienced obscurity, doubt, conflict, disturbance of some sort, into a situation that is clear, coherent, settled and harmonious.**

The work of Donald Schön (1983, 1991) has been highly influential in the development of reflective practice. Schön believed that clinicians needed to develop ways of understanding the unpredictable, complex, everyday world of practice in order to learn from it. Schön also emphasised the need for a safe environment in which reflective conversation can be held. We will pick up on this point in our discussion of effective workplace cultures (Manley et al 2011b).

Jack Mezirow's (1991) work in reflective practice is significant because it addressed one of the most important aspects of learning for adults: that of *perspective transformation*. Transforming perspective about practice and about the self is a central objective of guided reflection (McCormack & Johns 1998). This involves a process of becoming critically aware of how and why our assumptions about the world in which we operate have come to constrain the way we see ourselves, our relationships with patients and our practice.

Mezirow argued that there are two ways of achieving perspective transformation. First, one can develop a sudden insight. This sort of *mirror imaging* often occurs when one is faced with a situation that is so challenging that it creates doubt about previously held assumptions. An example of this would be realising in a conversation with a patient that we hold a particular belief or value system that influences the way we respond to the patient's particular circumstances.

The second way perspective transformation can be achieved is by proceeding through a series of transitions whereby one revises previously held assumptions, about oneself and others, until these assumptions are transformed. Mezirow described six levels of *critical reflectivity* that assist in this process (see Box 7-3). While their hierarchical nature may be criticised, the levels are useful within the reflective process, if they are seen as *reflective foci* rather than a hierarchy. In this way they can be used as a means of reflecting on one's development as a reflective clinician. The literature on reflection within nursing practice is extensive and used within all nursing programs. Somerville and Keeling (2004) provide a straightforward overview that you may find useful.

Experiential learning and action

Revans (1983) and McGill and Beaty (1995) argue that experiential learning is a more viable alternative than traditional education methods for adults in a constantly changing environment. Inextricably linked to experiential learning is the resultant action. Revans (1983) describes action learning as 'learning by doing' and a social process: 'those who try it learn with and from each other.' He believes this learning occurs more effectively in small groups (with structure and discipline) than in simple pairs. Revans believes that action learning is not about teaching. He differentiates between what he calls 'programmed

BOX 7-3 The levels that Mezirow describes

Reflectivity – having a level of awareness and being able to observe and describe.

Affective reflectivity – awareness of how we feel about ourselves and how we think and act.

Discriminant reflectivity – awareness of the process of decision-making and the effectiveness of our perceptions.

Judgemental reflectivity – awareness of value judgements and assumptions made in our practice.

Conceptual reflectivity – awareness and understanding of the concepts involved in decision-making and the identification of the need for further learning.

Theoretical reflectivity – using experience to generate theories. Awareness of how practice is influenced by theory. Recognition of the various forces that influence our perceptions, thoughts and actions.

knowledge' found in books or passed on by experts and 'questioning insight' which engages experience. Like Revans, Pedler and colleagues (1991) emphasise the importance of the action element of action learning: 'there is no learning without action and no sober and deliberate action without learning'. Action learning enables the art and the science of nursing to be articulated and made real for the practitioner through the facilitation of reflection on their practice. This reflection enables the practitioner to embody (internalise and make real from one's own perspective) complex knowledge and theory that would otherwise feel alien and disconnected to the realities of practice.

Professional nursing practice is an art form in itself – one that is created and re-created with every interaction. However, like all artists, professional nurses have core elements that transcend all relationships, interventions and activities. These are largely hidden to the gaze of the novice clinician; and like any work of art, the first viewing reflects the finished product. It is only through repeated inquiry into the product (and multiple products) that the hidden dimensions of the finished product are revealed. Collaborative learning facilitates the process of uncovering the hidden dimensions. Several collaborative approaches have been identified as effective in assisting in this process: critical companionship (Hardiman & Dewing 2014), clinical supervision (Brunero & Stein-Parbury 2008), **active learning** groups (Shin et al 2015) and action learning sets (Haith & Whittingham 2012), to name but a few. These approaches are collaborative in nature.

In collaborative learning experiences, there is no distinction between knowledge generators and knowledge users. Instead, the process of deconstructing and reconstructing practice experience results in a shared learning that enables individual learning, the development of effective practice and cultural change to occur in parallel.

The second level of inquiry (see Box 7-1) is also about collaborative learning and action; however, the difference is that the learning and action flow from a broader and systematic inquiry into the experiences and outcomes resulting from current practice.

Inquiry involving collaborative and ongoing evaluation of local practice

As is the case for all professionals working within health care, nurses should work with others to evaluate the effectiveness of their practice; this may involve you in any of the stages outlined in Box 7-4. The aims of all healthcare services should include continuous improvement in the quality of care provided to service users (Gawande 2008). *Quality of care* is a broad concept that is inclusive of aspects such as accessibility, efficiency, effectiveness, safety, and responsiveness to consumer needs. Evaluation of the ongoing improvements in the quality of nursing practice will, therefore, involve comparison of current practice with past performance, and evaluation of current practice against established standards or best practice.

Clinical audit involves ongoing cycles of continuous improvement, each of which includes stages that follow a systematic process of:

- establishing best practice
- measuring current practice against the established criteria
- taking action to improve care
- monitoring to sustain improvement.

BOX 7-4 Stages in clinical audit cycle

Stage 1: identify the focus, practice, problem or issue

This stage involves the selection of a focus for the audit. This selection may be influenced by:

- stakeholder (patient feedback)
- areas where problems have been encountered in practice
- where there is a clear potential for improving practice
- areas of high volume, high risk or high cost, in which improvements may be made.

Stage 2: define criteria and standards

The overall purpose of the audit should be determined and the specific questions that require answers should be written; these form the audit criteria. The criteria define what is to be measured and what can be measured objectively. A standard is the threshold of the expected compliance for each criterion, usually expressed as a percentage.

Stage 3: collect data

Data to be collected may already exist in a clinical information system, or a new data collection system may need to be developed.

Ethical issues must be considered; the data collected must relate only to the objectives of the audit, and staff and patient confidentiality must be respected.

Stage 4: compare performance with criteria and standards

This is the analysis stage in which data are compared with criteria and standards and conclusions drawn in relation to how well the standards have been met.

Stage 5: implement change

The results of the audit are published and discussed and an action plan developed to record recommendations.

Re-audit: sustain improvements

After an agreed period, the audit should be repeated.

Adverse occurrence screening and critical incident monitoring are crucial components of continuous quality improvement. Peer review of cases that have caused concern or from which there was an unexpected outcome is undertaken by a team of clinicians. The goal of this critical analysis is to identify what went wrong and to find ways of preventing similar events occurring in the future. This is sometimes called a *significant event audit*.

Peer review involves assessment of the quality of care provided by a clinical team with a view to improving clinical care. Peers discuss individual cases to determine whether the best care was given. This is similar to the method used for critical incidents, but is not restricted to problematic cases.

Patient surveys and focus groups are methods used to obtain users' views about the quality of care they have received. In addition, patient stories of their experiences of care can be obtained and reviewed by clinicians seeking to develop deeper understanding of the experiences of patients in their unit or ward.

Evaluating local nursing practices requires the use of approaches that engage practitioners in assessing the processes and outcomes of their practice. Many of these approaches are synonymous with reflection and collaborative inquiry. Ongoing practice evaluation contributes to both the development of local practice and the development of workplace cultures where research is valued. Through practice-based evaluation, new avenues for engaging differently in practice can be explored and compared with established external research evidence. For example, while there may be strong international evidence about a particular nursing practice, the way this evidence translates into practice may vary across contexts (Estabrooks et al 2008, Masso et al 2014, Øvretveit 2011). Evaluation of models of care, communication, assessment practices, record keeping and multidisciplinary relationships will all help to inform the best use of the evidence. Therefore, we need to use systematic and rigorous approaches to exploring, making sense of and evaluating our everyday practices. Research methods have much to offer us in this respect.

• CRITICAL REFLECTION POINT

What do you think would be the major barriers to clinicians exploring the experiences of the patients receiving care on their ward? How do you think regular clinical audits might overcome some of those barriers?

Inquiry involving nursing research for advancement of nursing knowledge

Approaches used in nursing research

Nursing researchers use a wide range of **research** approaches (methodologies and methods), many with their origins in disciplines such as sociology, psychology, epidemiology, anthropology and history. Selection of the appropriate research approach is based both on the intention that the researcher has in mind in undertaking the research and on the specific question to be addressed within the research (Table 7-1). Some research approaches, for example, focus on providing a deeper understanding of the experiences of people and their interpretations of those experiences (see Box 7-5); others focus on measuring the extent to which a particular nursing intervention achieves a desired outcome in order to establish the effects of nursing practice (see Table 7-2). Other research approaches are more concerned with bringing about and researching sustainable practice change in particular environments (see Box 7-6).

No matter which approach is used, however, nursing research is a systematic examination of phenomena important to nursing: in the delivery of services to patients and their families; in the advancement of teaching and learning approaches; in the development of leadership and management strategies; and in the advancement of nursing as a professional discipline. Research is needed in order to ensure the effectiveness of nursing interventions, for providing the knowledge necessary for practice and its development, and for helping nurses to be accountable by demonstrating to society the safety, effectiveness and efficiency of services provided.

Approaches used in data collection

A variety of data collection methods are used in nursing research. Broadly speaking, however, data are often categorised as *qualitative* – most commonly words or text derived from interviews, diaries or discussions; or *quantitative* – information collected either in the form of numbers or converted into numbers for the purposes of analysis (Table 7-3).

Data collection and analysis need to be undertaken in a manner that maximises the *rigour* of the study – the extent to which the findings can be believed. Some researchers use terms such as *validity* and *reliability* in relation to their research processes; others use broader terms such as *accuracy*, *trustworthiness* and *transparency*. The appropriate term is a function of the approach taken and

TABLE 7-1 Intention of the research and types of research questions associated with quantitative and qualitative data analysis

Purpose of research	Questions for quantitative data and analysis	Questions for qualitative data and analysis
Identification		What are the phenomena?
Description	How frequent are the phenomena? What are the characteristics of the phenomena?	What are the dimensions of the phenomena? What is important about the phenomena?
Exploration	What factors relate to the phenomena? What are the antecedents of the phenomena?	What is occurring with the phenomena? What is the process by which the phenomena are experienced?
Explanation	What are the measurable associations among the phenomena? What causes the phenomena? Does the theory explain the phenomena?	How do the phenomena work? Why do the phenomena exist? How did the phenomena occur?
Prediction	What will happen if an intervention is used? If phenomenon X occurs will Y follow? How can we make the phenomena happen? Can the phenomena be controlled?	

BOX 7-5 Approaches used for PEEPing at people

Narrative research

This approach is concerned with the interpretation of stories told by individuals in normal conversational situations and involves the in-depth study of personal stories, of those receiving care or those involved in providing that care. These stories provide insights into the meanings attached to experiences of nursing and health care, and are often a rich source of data for identifying improvements needed in care processes, service delivery models and organisational structures and processes.

Phenomenology

The focus of phenomenology is what people experience in regard to daily practices or experiences and how they interpret those experiences. The goal of this type of research is a full description of the experience of patients, their perceptions of how these events happened, how they and others made decisions, the meaning of those decisions to them and, finally, how these events have shaped their lives from their perspective.

Hermeneutics

Hermeneutics is another form of research that seeks to understand the meanings that people attach to experiences, events and practices. Unlike phenomenology with its focus on describing the meanings people attach to experience, hermeneutic research attempts to interpret these meanings by breaking down each experience into parts and exploring these in the context of the whole experience. Originally used by the Greeks as a method of interpreting texts, hermeneutics is concerned with bringing to understanding the nature of the social world from both the subjective interpretation of the individual and the more general meanings abstracted from individual interpretations.

Grounded theory

Grounded theory is an approach to collecting and analysing data which has the aim of developing theories and theoretical propositions that are grounded in real-world observations. That is, the goal is development of a theoretical explanation for behaviour observed in qualitative investigations.

TABLE 7-2 Designs used in research for PEEPing at effects

Goal of research	Design labels used traditionally in nursing research	Contemporary clinical epidemiological design labels
Describe – what is going on?	Descriptive: qualitative or quantitative data	Prevalence
Identify relationships – are factors related?	Correlational	Incidence Case series Before-and-after studies
Test causation – do interventions work?	Quasi-experimental Experimental Integrative review	Cohort Case-control Randomised controlled trials Multi-site randomised controlled trials

BOX 7-6 Approaches used for PEEPing at environment

Ethnography

The focus of researchers using an ethnographic approach is deep understanding of the social perspective and cultural values of a particular group by participating with or getting to know their activities in depth and in detail. Ethnography is founded on the idea that a system's properties cannot be understood in isolation.

Critical ethnography

The focus of critical ethnographers goes beyond describing 'what is' to asking 'what could be?' There is no one accepted definition, but in general the approach has a political purpose: of seeking the empowerment of their 'subjects' through raising awareness of the structures and processes that maintain inequalities and oppression.

Ethnonursing

The focus of researchers using an ethnonursing approach is the shifting of nurses' views from the emphasis on medical disease and a perception of reliance on research methods associated with medicine. This approach was developed to help form holistic pictures of cultures through examination of shared cultural care values, meanings and modes of action, leading eventually to the identification of transcultural care concepts. The major goal of ethnonursing is to understand the diversity and universality of care.

Critical inquiry

Critical inquiry involves using various modes of inquiry and perspectives or methodologies to conceptualise, investigate, derive meaning, challenge taken-for-granted assumptions and generate actions for changing the status quo and the power imbalances reflected within social structures and systems.

Action research

Action research is participatory research that focuses on enabling practitioners to gain the power needed to bring about change in their and/or others' practice. Through processes of critical reflection on experience and methods of research that are practitioner focused, new knowledge is generated. Thus, action research has three purposes: the development of practice, the facilitation of practitioners to learn and become empowered, and the facilitation of practitioners to contribute to or refine theory.

Evaluation

Evaluation is the systematic determination of the merit, worth and significance of specific nursing practices to relevant stakeholders through testing of context/mechanism/outcome/configurations (CMOCs). Experimental methods are used to test CMOCs and to inform theory, policy and practice. Realistic evaluation is similar but focuses on testing more-realistic theories; that is, theories that take into account multiple perspectives and interpretations.

TABLE 7-3 Forms of data and approach to data analysis

Forms of data	Forms of analysis
Unstructured interviews, discussions or conversations	Thematic analysis: inductive coding for themes
Written text, such as diaries and stories	Template analysis: predetermined themes based on conceptual model or similar
	Narrative analysis: used in relation to stories
Semi-structured interviews, observations or surveys	Content analysis: for descriptive categories
	Coding of responses: with allocation of numbers
Structured interviews, observations, surveys or measures	Statistical analysis seeking to describe, identify relationships or establish cause and effect

associated assumptions about subjectivity/objectivity and the nature of reality. Meaningful discussion of these issues is beyond the scope of this text. As you develop your interest in nursing research, you will need to access materials and people with the knowledge and expertise to assist you with your learning. Understanding the assumptions and beliefs associated with particular approaches to research is a vital part of making sound decisions about the relevance of any findings to your practice.

The major push over the past decade for the use of research evidence in clinical decision-making has led researchers to convey their findings in a form more easily understood by clinicians. Within research employing quantitative analysis this has meant a move away from focusing on *statistical significance* – the probability of obtaining a particular result by chance, with probabilities of less than 5 times in 100 deemed by convention to be significant. (You may have seen this expressed as $p < 0.05$.)

Researchers are now more likely to report their findings using more intuitively meaningful measures of clinical significance (Box 7-7). Research and professional journals have also moved to publish a broader range of research and encourage researchers to present their findings in a manner that makes their knowledge claims or relevance to nursing practice more explicit (Greenhalgh 2014).

Approaches to bringing research evidence together

The findings of nursing research, and the research of other health disciplines relevant to nursing, are published in a vast array of research and specialist journals. One of the greatest challenges in using research evidence is the overwhelming number of articles that need to be accessed and considered. An alternative challenge is the complete absence of relevant work to be found in relation to areas of nursing practice. In the latter case, you will need to rely on your own clinical expertise, the expertise of others you work with, and locally produced knowledge as a basis for your practice. You can see, then, that the more actively you engage in levels one and two of inquiry the more able you will be at making good decisions concerning level three knowledge and evidence.

Whether there is an abundance of research evidence or not, there is a need for both clinical and research expertise to determine the 'so what?' of the research in relation to clinical practice. In recent years there has been exponential growth in the production of materials/publications that summarise the relevant research and/or make recommendations for practice. Some of the most common of these are included in Box 7-8.

The growth in systematic summaries of research and practice guidelines based on the best available research evidence has been driven by the evidence-based practice movement and both positive and negative (and often strong) responses to it (Greenhalgh 2014). Many clinicians have defined **evidence-based practice** across

BOX 7-7 Measures of clinical significance

Numbers needed to treat (NNT): the number of patients who would need to be treated in order for one patient to gain the desired outcome.

Relative risk (RR): the risk of a negative outcome for one group compared with the risk of that outcome in the comparison (control) group.

Odds ratio (OR): the odds of a patient benefiting from a treatment over the odds of benefiting from the alternative.

Coefficient of determination (R^2): the percentage of the variance in an outcome accounted for by a particular factor (or group of factors).

Mean difference: the difference between the extent of achievement of an outcome of one group compared with the extent of achievement of an outcome determined through comparison of group averages.

Confidence interval (CI): a range established around any point estimate (mean difference, RR, %, etc), within which there is 95% confidence that the population 'difference', 'risk', 'percentage' actually falls.

BOX 7-8 Common approaches to bringing together the findings of multiple research studies

Systematic review

Involves the application of a precise method to accessing, assessing and combining the results of all valid and reliable research undertaken in relation to a specific clinical question – normally comparisons of two or more interventions or treatments – in order to make as definitive a statement as possible concerning best practice (e.g. the approach to administering bronchodilators that has the largest effect on length of stay in hospital). Systematic reviews may or may not include a meta-analysis, which is the use of statistical procedures to combine the findings of several studies. The data from individual studies can be combined into a larger data set as long as the studies used similar interventions (e.g. nebulisers versus spacers in emergency departments) and similar outcomes (e.g. admission to hospital, number of hours spent in emergency department, spirometry).

Meta-narrative review

Is an approach that is broader than systematic reviewing; it covers a wide range of issues within a given topic. In addition, a narrative review bases the decision to include or exclude studies on descriptive grading of forms of evidence, rather than the narrow hierarchy of evidence used in systematic reviews. The outcome is, therefore, a comprehensive overview of the topic or area of interest.

Realistic review or synthesis

Similar to a narrative review, but more heterogeneous and iterative in terms of the sources of evidence and their contribution to the findings. The processes used in accessing evidence from a full range of sources, making decisions about the inclusion of material, sifting and assessing the material and bringing together synthesised findings and recommendations are rigorous and systematic.

Research-based guidelines

Systematically developed statements, based on the best available research evidence, generated to assist healthcare professionals and patients make decisions about screening, prevention, treatment or care for specific illnesses or conditions.

the spectrum of healthcare disciplines (Box 7-9) and there are ongoing debates concerning the hierarchies of evidence and the ways in which particular approaches to research (e.g. randomised controlled trials – RCTs) are valued over others. However, the major issue is finding and assessing the usefulness of research that addresses the question at hand. For example, if the question is about the effectiveness of a particular approach to treating pressure ulcers, an RCT provides the 'best' evidence. However, if the question is about the feasibility and acceptability of that approach to treatment in particular contexts, research designs employing qualitative analysis would potentially provide more useful insights.

Given the expertise and time needed to integrate research evidence into clinical decision-making, adequate resources and support are crucial (see *Research highlight*).

Accessing relevant research literature demands the development of some fundamental skills in database searching. You need to take advantage of library teaching sessions so you can become familiar with the systems in place within your library and online. Locating the forms of publications outlined in Box 7-8 will be useful, particularly in sourcing research evidence in relation to best practice. For example, the Joanna Briggs Institute (http://joannabriggs.org/) supports the development of a range of reviews and guidelines relevant to nursing; the Cochrane Collaboration (www.cochrane.org) provides systematic reviews which cover topics relevant to nursing practice, although predominantly relating to medical diagnosis, prognosis, therapies and harm/risk. Both of these organisations have broadened the focus of their reviews to be more inclusive of the full range of research approaches associated with meaningful integration of research into practice.

BOX 7-9 A common definition of evidence-based nursing practice

The practice of nursing in which the nurse makes clinical decisions based on the best available current research evidence, his or her own clinical experience and the needs and preferences of the patient.

Harris et al 2010 Mosby's dictionary of medicine, nursing and health professions – Australian and New Zealand edition, 2nd edn. Elsevier, Sydney.

RESEARCH HIGHLIGHT

Research focus

A good deal of research is being undertaken to identify strategies to improve the utilisation of research evidence in everyday nursing practice. Barriers to the use of research evidence can be clustered into factors associated with individual clinicians, those related to the nature of the evidence itself or aspects of organisational structure and/or culture.

Research abstract

The purpose of this research was to determine whether individual or organisational qualities could be identified that were related to registered nurses' readiness for evidence-based practice (EBP) as measured by their reported EBP barriers, ability, desire, and frequency of behaviour.

The researchers used a descriptive cross-sectional survey in collecting data from 2441 nurses working within the healthcare system in the United States. The American Nurses Credentialing Center (ANCC 2014) had designated some of the organisations in which the nurses worked as 'Magnet' or 'Pathway to Excellence' facilities; some facilities in which the nurses worked had neither designation. Participants completed a modified version of the Information Literacy for Evidence-Based Nursing Questionnaire. Data were analysed using a range of appropriate descriptive and inferential statistical tests.

The researchers found that education, research, and certification standards promoted by the Magnet program may provide a nursing workforce that is better prepared for EBP. Organisations should continue structural supports that increase professional development and research opportunities so nurses are empowered to practice at their full capacity (Wilson et al 2015:12).

Evidence-based practice

1. Nurses with degree-level education appear more likely to desire and engage in EBP.
2. Nurses who participate in research and ongoing professional development appear more likely to report readiness to engage in EBP.
3. Organisations that are successful in meeting the standards set by the ANCC for Magnet status appear more likely to support nurses in the use of research evidence within their day-to-day practice.

References

ANCC 2014 Magnet Recognition Program® overview: Data and expected outcomes. Available at: http://nursecredentialing.org

Wilson M et al 2015 Empowering nurses with evidence-based practice environments: Surveying Magnet®, Pathway to Excellence® and Non-Magnet facilities in one healthcare system. Worldviews on Evidence-Based Nursing 12(1).

In summary, nurses must use the knowledge generated within each of the three levels of inquiry to improve both processes and outcomes of care for patients. One means of overcoming some of the major challenges to ongoing practice improvement is what has become known as *practice development* (PD). The next section outlines some of the most important aspects of PD.

• CRITICAL REFLECTION POINT

You are concerned about the likelihood that an older, immobilised patient will develop pressure ulcers. What are the best sources of evidence related to preventing ulcers? Where would you find that evidence? How would you determine if the evidence is a good basis for your practice?

Practice development

Contemporary nursing practice requires nurses to develop their practice continuously, through ongoing inquiry into practice and taking action to improve practice wherever change is needed (see Evolve, Essentials of Care). This is not easy to do in a systematic way, and nurses require support and resources to maintain learning and practice improvements. The following overview establishes the crucial role that practice development can play in stimulating and sustaining nursing inquiry and the integration of new knowledge into practice.

Practice development has been described as meaning many things to different people. However, the definition developed by Manley and colleagues (2008) forms the basis of our discussion here (Box 7-10). As you seek deeper understanding of practice development you will need to access a number of the theoretical and research papers that are becoming increasingly available.

Garbett and McCormack (2004) identify five elements of practice development. These are:

1. an emphasis on improving patient care
2. transforming the contexts and cultures in which nursing care takes place
3. the importance of employing a systematic approach to effect changes in practice
4. the continuous nature of practice development activity
5. the nature of the facilitation required for change to take place.

BOX 7-10 Definition of practice development

Practice development is a continuous process of developing person-centred cultures. It is enabled by facilitators who authentically engage with individuals and teams to blend personal qualities and creative imagination with practice skills and practice wisdom. The learning that occurs brings about transformation of individual and team practices. This is sustained by embedding both processes and outcomes in corporate strategy.

Manley et al 2008 International practice development in nursing and health care. Blackwell, Oxford, p. 9.

Manley and McCormack (2004) outline what they call technical practice development. Technical practice development focuses on the development of technical knowledge to improve technical skills and emphasises the changing of specific aspects of practice. Best practice is universally defined (i.e. what is considered best practice in one part of the world will apply everywhere else in the world), therefore, and there is a central assumption that if clinicians know the evidence, then their practice will be effective. In many respects this form of practice development resembles more traditional, passive approaches to research utilisation, whereby it is assumed that practice change flows naturally from awareness of deficiencies in clinical practice and education concerning best practice. However, contemporary research suggests otherwise, and critiques of technical approaches to helping people use knowledge in practice have highlighted the naivety of assuming that acquired knowledge will automatically lead to a change in practice (Stetler et al 2011).

Manley and McCormack (2004) contrast the technical approach with emancipatory and transformational practice development. *Emancipatory practice development* is an approach that emphasises sustained development of practice through helping practitioners to free themselves from the taken-for-granted assumptions they make about practice. Through facilitated approaches, practitioners are helped as individuals and teams to make changes that bring about more-empowered practice cultures. Facilitating these processes involves cycles of reflective learning and action, so that clinicians develop awareness of the need for change by identifying contradictions between what is espoused about practice and the realities of practice. The process therefore involves action to change practice and refines action through reflection. *Transformational practice development* focuses on both getting the products of inquiry (knowledge and research evidence) into practice and creating a culture of innovation and clinical effectiveness (Manley et al 2011a). It focuses on helping practitioners to transform their practice and to achieve person-centred cultures of practice through their engagement with multiple intelligences and both the art and the science of practice.

These facilitated processes help clinicians remove barriers to action and enable cultures of effectiveness to be

developed (Titchen et al 2013). While research evidence is important to transformational practice development, best practice is locally defined and contextually bound. So for evidence to be understood and used it has to be placed in a local context that makes sense to the immediacy of practice experience. Thus, evidence in this context comes from a variety of sources – clinician experience, user preferences, local data and research evidence – and is understood through reflective engagement with collective practice experience (see Stetler et al 2011).

In terms of evaluating effectiveness, therefore, the emphasis is on both the outcomes achieved from the development of practice and the processes used to achieve those outcomes. Thorough understanding of the processes used to achieve particular outcomes makes these processes more likely to be transferred appropriately to other contexts, thus creating cultures of continuous improvement that are committed to increasing effectiveness in person-centred care.

The key processes of emancipator or transformational practice development include:

1. identifying a particular practice requiring consideration
2. clarifying values and beliefs among team members about the particular practice
3. identifying the existence of these values and beliefs in day-to-day practice
4. identifying the gap that exists between the espoused and the real values through processes of inquiry and evaluation
5. negotiating systematic approaches to developing practice and creating action plans to develop practice
6. using collaborative, inclusive and participatory approaches (McCormack et al 2007) to increase the likelihood that key stakeholders (i.e. those affected by potential developments) have a sustainable commitment to learning from the processes, via reflective learning strategies such as action learning (McGill & Brockbank 2004) and supported reflective practice (Johns 1998).

The example presented in Box 7-11 highlights the central role that facilitation plays in enabling the processes involved in practice development to evolve fully and the goals to be achieved.

Facilitation of practice development

Facilitation is fundamental to practice development (Crisp & Wilson 2011). *Facilitation* has long been used as a process for enabling individuals and groups to understand what they have to go through to change aspects of their behaviour or attitudes in relation to themselves, their work or other individuals (Marshall & McLean 1988). A similar interpretation is apparent in some approaches to practice-based learning in health care, the aim being to challenge existing practice and support the development of new ways of working (Figure 7-1).

Just as there are at least two types of practice development (technical and emancipatory/transformational) (Manley & McCormack 2004), facilitation styles can be similarly characterised. *Task-orientated facilitation* may increase the use of theoretical or empirical knowledge in practice, but it requires the facilitator to have a lot of expertise in facilitation as well as technical knowledge associated with the practice in question. Knowledge expertise alone is inadequate because it is still the facilitator

BOX 7-11 Examples of the implementation of EPD processes

Scenario: A medical-surgical nurse providing care for older adults with mobility problems starts to observe an increase in the number of patients with pressure injuries. The nurse would collaborate with others in the ward to:

1. Gather any data that exists in relation to the incidence of pressure injuries in the ward to confirm or disconfirm the observation. If there is a cause for concern, they would then move on to the second step in the process.
2. Clarify values and beliefs held by others in the ward about pressure-area care practices.
3. Seek evidence that these values and beliefs influence day-to-day practice through auditing pressure-area care or structured observations of care.
   - These structured observations enable the identification of any gaps between what nurses value and identify as important and the values evident in practice.
   - Using a systematic approach, such as claims, concerns and issues, all stakeholders would be invited to create action plans to develop best practice around pressure-area care.
   - Reflective learning strategies, such as action learning and supported reflective practice, would be used to support ongoing engagement with the practice of pressure-area care within the ward.

Clark P 2001 What residents are not learning: observations in an NICU. Acad Med 76:419–24; Johns C 1998 Opening the doors of reflection. In: Johns C, Freshwater D (eds) Transforming nursing through reflective practice. Blackwell Science, Oxford; McCormack B, Manley K 2004 Evaluating practice developments. In McCormack B et al (eds) Practice development in nursing. Blackwell, Oxford; McGill I, Brockbank A 2004 The action learning handbook. RoutledgeFalmer, London. Manley K 2000 Organisational culture and consultant nurse outcomes. Part 1: organisational culture. Nurs Stand 14(36):34–8.



Figure 7-1 Collaboration is at the heart of nursing inquiry.
iStockphoto/sturti.

who is ultimately responsible for the success or failure of the initiative and the development of practice (Box 7-12).

In contrast to the task or technical approach, the overall aim of the emancipatory or *transformational facilitator* is to enable individuals and teams to become empowered to develop a transformational culture in their individual and collective service that can nurture and sustain the development of a particular goal or task (Titchen et al 2013). Although the overall approach may encompass elements of technical facilitation, it is essential to recognise that technical facilitation must be integrated into holistic approaches if the different needs of stakeholders are to be met. Crisp and Wilson (2011) provide a framework that helps make sense of the development of expertise required for the transformation of individuals and practice.

Within a holistic facilitation approach, the focus is on the social system as well as the practice of individuals or groups. Facilitators help participants become aware of, and freed from, taken-for-granted aspects of their practice and the organisational systems constraining them. They foster a climate of critical inquiry through reflective discussion; incorporating the various ideas of group members enables individuals and groups to act. Responsibility for action rests with the individual or group (Kemmis 2006). By considering the external climate and broader social system in which nurses work, collective insight, understanding and ownership develop through clinicians' own actions, rather than the actions of others (Box 7-13).

Practice development, then, has a central focus on developing person-centred cultures that facilitate human flourishing, clinical effectiveness and the development and integration of knowledge through ongoing inquiry.

BOX 7-12 Skills used in technical facilitation

The skills used in technical facilitation are narrow and focus on:

- sourcing information
- assessing the relevance and adequacy of that information
- translating the information into differing formats (e.g. protocols, guidelines, information sheets)
- developing training programs
- training
- information giving
- audit and monitoring.

BOX 7-13 Skills of the holistic facilitator

The skills of the holistic facilitator are broad and responsive:

- Working with values, beliefs and assumptions.
- Challenging contradictions.
- Developing moral awareness about the most appropriate way to act.
- Focusing on the impact of the context on practice, as well as practice itself.
- Using self-reflection and fostering reflection in others.
- Enabling others to 'see the possibilities'.
- Fostering widening participation and collaboration by all involved.

• CRITICAL REFLECTION POINT

Before reading the next section, think about what person-centred workplaces might look like. What do you think such workplaces would feel like to those working there?

Person-centredness and person-centred practice

The word *person* aims to capture those attributes of people that represent our humanness and the factors we regard as the most important and the most challenging in our lives. A person should always be treated as an end in his or herself and not as a means to another's end – a principle that guides many ethical, legal and moral frameworks in Western society (see Chapter 9). What this means is that we should never do things to people that are not going to benefit them as a person. Thus Tom Kitwood (1997:8) defined personhood as:

> **a standing or status that is bestowed upon one human being, by others, in the context of relationship and social being. It implies recognition, respect and trust.**

BOX 7-14 Core concepts at the heart of person-centred nursing

- Being in relation
- Being in a social context
- Being in place
- Being with self

If we accept this well-respected and widely used definition of personhood, then four core concepts can be identified as lying at the heart of person-centred nursing (Box 7-14).

Being in relation

Relationships are central to **person-centredness**. Indeed, models of nursing, irrespective of their philosophical underpinnings, have emphasised the importance of relationships (e.g. Boykin & Schoenhofer 1993, Johns 1994, Peplau 1952, Rogers 1986, Watson 1985). In person-centred nursing, the relationship between the nurse, the patient and others important to the patient is paramount. Sustaining a relationship that is nurturing to both nurse and patient requires valuing of self, moral integrity, reflective ability, knowing of self and others, and flexibility derived from reflection on values and their place in the relationship.

Being in a social context

This concept recognises that patients have a social context and that this context contributes to shaping who they are as people, how they respond to stimuli and how they might make sense of things they experience. Listening to, collecting and analysing patients' stories help us to understand who the person is in a social context. Stories afford us the opportunity to understand the local spheres of meaning that bear on and enter into the nurse–patient relationship and to understand the person's context.

Being in place

The context in which care is provided has the greatest potential to enhance or limit the facilitation of person-centred practice (McCormack et al 2010). Indeed, Andrews (2003) argues that the concept of *place* and its impact on care experiences is poorly understood in nursing. Paying attention to place in care relationships is increasingly recognised as important.

When facilitating person-centredness, nurses find they not only balance competing care values, but often they find it necessary to consider organisational values too. Nurses are not free to fulfil a moral obligation to the patient without considering organisational and professional implications. While the freedom of the nurse is a significant issue in the facilitation of person-centredness, other characteristics of context have been found to be of equal significance; these include systems of decision-making, staff relationships, organisational systems, power differentials and the potential of the organisation to tolerate innovative practices and risk-taking.

Being with self

Respect for values is central to person-centred practice (McCormack & McCance 2006). It is important to develop a clear picture of what patients value about their life and how they make sense of what is happening to them. This provides a standard against which the nurse can compare current decisions and behaviours of the patient with those values and preferences made in life in general and which form the basis of a care plan. Assisting the patient to find meaning in care may help them to tolerate the incongruity of their situation in order to create a future. This can only be achieved when we have a clear picture of what is important to the patient and others, what they really value about their life and how they make sense of the things happening to them. For this reason, nursing care decision-making ought to adopt a negotiated approach between nurse and patient.

To work effectively as a person-centred nurse and to create care environments that are person-centred requires the integration and blending of different kinds of knowledge: knowledge about people, knowledge about what it means to be clinically effective and knowledge about the care environment. Nurses need to know the person in their patients; know their colleagues as people; understand what it means to be clinically effective; and understand the culture of the place in which they work. To do that, they need to take a PEEP.

• CRITICAL REFLECTION POINT

You have found what you believe to be best evidence related to preventing pressure ulcers. How would you ensure that your use of that evidence is person-centred?

Taking a PEEP

Within the PEEP framework (see Box 7-2), the people domain is about variation in individuals' needs and preferences for care, as well as the ways in which different stakeholders experience receiving or giving care and use different kinds of knowledge. The **effects** domain refers to the kinds of evidence used in determining best practice. Research evidence is one kind of evidence, and this informs and is informed by the evaluation of **outcomes** and the cost–benefit of these outcomes. However, it is

increasingly recognised that the environment in which care is provided has an impact on effectiveness. The environment of care is often referred to as the context, and how much that context supports a culture of learning and change through supportive challenge is an essential consideration in the use of knowledge in practice. It is increasingly acknowledged, however, that an environment which takes account of people's perspective, choices and preferences, which uses a variety of sources of evidence to inform the evaluation of effectiveness, and which provides a culture of learning through supportive challenge, is an effective workplace. Clinicians and leaders in such workplaces demonstrate praxis; that is, they engage in critical practice development as part of everyday practice.

Taking a PEEP at people

When reading research studies, nurses should avoid automatically generalising the findings to individuals or groups for whom they care. While the researchers may have identified best practice in relation to a specific nursing intervention – for example, a particular approach to healing venous leg ulcers – the decision to use that practice in relation to a specific patient requires both an understanding of the evidence and an understanding of the patient's circumstances and preferences.

Effective nursing care needs to work with variation in individual needs and preferences for care, as well as the ways in which different stakeholders experience receiving or giving care. It also needs to use different kinds of knowledge. Patients, for example, may express preferences that are not consistent with what is known to be the best evidence; or nurses may find particular care practices personally distressing. In such situations, decision-making will be influenced by the balance between expressed preferences, the priorities of the nurse and the personal and professional beliefs and values of all those involved in the decision. Thus, thinking about how people engage in decision-making and the factors that influence decision-making is important to being clinically effective as a nurse.

Working effectively requires forming therapeutic relationships between nurses and patients (and others significant to them in their lives), between nurses as colleagues and between nurses and the wider healthcare team. These relationships are built on mutual trust, understanding and a sharing of collective knowledge (see Chapter 12, Nolan et al 2004). Nursing literature on therapeutic caring where the concept of person is central, for example, Watson's theory of human caring (1985), support this view.

To be person-centred in a relationship with a patient and others significant to them, nurses need to be able to work with the beliefs and values of a patient and their family; have an engaged relationship with the patient and family; demonstrate understanding of the patient's feelings; share decision-making; and provide for physical needs. Liaschenko and Fisher (1999) delineate three types of knowledge that may assist you in working effectively with patients. These are *case knowledge*, which is generalised and objective knowledge, such as anatomy and physiology and pharmacology; *patient knowledge*, which is knowledge of how individual patients are experiencing and responding to their illness situation; and *person knowledge*, which is knowledge of the unique individuality of the patient (Stein-Parbury 2005).

Working with patients' beliefs and values reinforces one of the fundamental principles of person-centred nursing, which places importance on developing a clear picture of what the patient values about their life and how they make sense of what is happening to them. This is closely linked to shared decision-making, and focuses on nurses facilitating patient and family participation through providing information and integrating newly formed perspectives into established practices. This must involve a process of negotiation that takes account of individual values to form a legitimate basis for decision-making, the success of which rests on successful processes of communication (Chapter 12).

The extent to which you are successful in achieving the forms of relationships and ways of working with patients that lead to effective care can be evaluated through ongoing reflections and critical discussions with colleagues, a mentor or a critical companion (Hardiman & Dewing 2014). Evaluation of the extent to which local practices meet the needs of patients in a person-centred way involves systematic data collection, such as patient stories and collection of patient satisfaction surveys. Nursing researchers seeking to generate new knowledge in relation to the experiences of people cared for by nurses will commonly use one of the approaches outlined in Box 7-5. This material may be brought together within narrative or realistic reviews or syntheses that can be used to inform your thinking about your work with patients and their families (Box 7-8).

Taking a PEEP at practice effects

As you develop expertise in nursing you will accumulate expertise related to specific nursing practices and the outcomes that you achieve. The area in which you work will undertake clinical audits and other forms of quality enhancement projects that identify the outcomes being

achieved in relation to current practice. Both of these forms of inquiry are vital to understanding the extent to which specific practices achieve their desired outcomes or, conversely, to identifying factors that are having negative impacts on achieving the desired outcomes.

If an intervention appears to work for most patients, the nurse may be satisfied with this success without questioning whether there might be a better way. If the intervention is not successful, the nurse might use an approach practised by a colleague or try a different sequence of accepted measures. Even if an intervention discovered with this approach is effective for one or more patients, it may not be appropriate for those in other settings. Practices must be tested to determine the measures that work best with specific patients; that is, those that determine best practice.

Research approaches associated with testing the effectiveness of nursing practices include those listed in Table 7-2. This form of research is most easily drawn together in systematic review with meta-analysis; and as long as the studies that have been undertaken are rigorous and able to be combined, some clear pointers to the most effective approach may be available.

• CRITICAL REFLECTION POINT

An RN decides to investigate the effectiveness of pressure-area care within the ward. What level of inquiry is needed? How would the nurse go about this investigation?

Taking a PEEP at impact of environment on nursing practice

As discussed previously, the environment of care is often referred to as the context, and how much that context supports a culture of inquiry, learning and change through supportive challenge is an essential consideration in the use of knowledge in practice. The competence of nurses, particularly in relation to interpersonal and communication skills, was drawn out in a study undertaken by McCabe (2004). McCabe concluded that nurses can communicate well with patients when they use a person-centred approach, but that the ability to do so is heavily influenced by the work and culture of the organisation; that is, the care environment. The care environment focuses on the context in which care is delivered and includes the following: appropriate skill-mix, systems that facilitate shared decision-making, effective staff relationships, organisational systems that are supportive, the sharing of power, and the potential for innovation and risk taking. Key characteristics of context include the culture of the workplace, the quality of nursing leadership and the commitment of the organisation to the use of multiple sources of evidence to evaluate the quality of care delivery.

Research approaches associated with the environments or context in which nursing takes place are outlined in Box 7-6. These approaches fall into two categories: describing the context and culture in order to provide a deeper understanding of the social relationships and systems that influence the way that things are done, or working with people within particular contexts to identify and bring about change in the way things are done.

Taking a PEEP at engagement through praxis

As discussed previously, effective workplace cultures demand that all nurses demonstrate praxis; that is, they engage in critical inquiry and practice development as part of everyday practice. An enormous amount of effort has gone into research and thinking about ways of achieving practice change based on the local knowledge generated through the quality-improvement processes, or getting the products of research into practice since the mid-1990s (e.g. Greenhalgh et al 2004, Kitson et al 1998). However, continuous practice improvement is complex and requires critical reflection, systematic evaluation, behaviour change and facilitation. The **PARiHS model (Promoting Action on Research Implementation in Health Services)** is a framework that recognises and accommodates this complexity (Rycroft-Malone et al 2004, Stetler et al 2011). This framework suggests that if we are to translate evidence/knowledge into practice successfully, we have to consider the quality of the evidence, the context in which it is to be implemented and the approach used to facilitate the implementation process – all issues discussed earlier in this chapter. This integration is consistent with the meaning of praxis and involves practising with the moral intent of person-centredness.

Aristotle distinguished between two kinds of action – poiesis and praxis (Welldon 1987). Poiesis means 'making action' and praxis means 'doing action'. *Poiesis* involves action that is focused on achieving a predetermined end; that is, the construction of a product or an object is its endpoint (e.g. a successfully completed surgical intervention). According to Carr (1987:169), poiesis is 'a species of rule-following action'. The worth of practice in this way is judged on the quality of the end-product. Worth is decided on by the way the practice is judged to conform to recognised and predetermined standards and current understanding of what counts as good quality in the particular practice area. We see this evidenced in the way that quality of practice is judged solely on diversions

from care pathways, adverse events rates, throughput, complaints or levels of satisfaction.

Praxis, on the other hand, is not only concerned with the end-product, but also with morally worthwhile action that cannot be predetermined in advance as it is dependent on the context in which the action is undertaken. The achievement of an end-product and the process of getting there are not separate entities, because the quality of the end-product is inseparable from the means of getting there.

Good practice, understood as praxis, involves more than the application of theory and research evidence or the exercise of a skill. Determining the right thing to do at the right time and in the right way (often seen as the essence of clinical effectiveness) involves a particular kind of knowledge – *practical knowledge* (Eraut et al 2000). Titchen and colleagues (Titchen & Higgs 2001) use the terms *professional craft knowledge* or *practical know-how*. This knowledge is expressed and embedded in practice, is often tacit (i.e. it is embedded in our thinking and taken for granted) and intuitive, and it combines perception, reasoning and virtue. Good-quality practice from this view is concerned with technical outcomes (such as the effectiveness of a particular intervention), but it is equally concerned about the experience of achieving the outcome from the perspective of patients and staff and the learning derived from engaging in the process itself.

The complexity of nursing inquiry

In summary, providing the most effective care for a given person or group of people, in a specific context, involves complex decision-making. The most productive way of dealing with this complexity is to work systematically with the knowledge and practical skills that you have developed and to gather additional knowledge in the form of local practices and research evidence. Essentially, engaging with these different forms of inquiry will enable the artistry of practice to shine through. We know from research that when we blend our personal qualities, practice skills and our creativity we develop what has been referred to as practice wisdom. Being wise as a practitioner comes from many years of systematic reflection on practice and, in particular, the artistry of practice. Professional artistry blends the science and art of practice and enables complex scientific and objective facts to be translated into the particular requirements of professional practice. Thus to be an effective practitioner, nurses need to be able to reflect on practice, put into practice new understandings gained through reflection, generate questions for further inquiry and use external research processes and outcomes to generate and verify new knowledge.

Key concepts

- Nurses develop their knowledge-base and expertise through processes of ongoing inquiry into nursing practice.
- There are three levels of nursing inquiry that are crucial to the development of nursing knowledge and expertise: active engagement in everyday practice, ongoing evaluation of local nursing practices, and production and refinement of nursing knowledge through research.
- Practice development plays a crucial role in stimulating and supporting all levels of inquiry.
- The PEEP framework – People, Effects, Environment, Praxis – forms a useful organising structure when thinking about different broad domains of nursing inquiry and the integration of the products of inquiry into effective nursing practice.
- Nursing practice should be subjected to systematic evaluation and underpinned by the best evidence available at the time.
- A range of research methodologies and methods are required for the spectrum of research questions that arise from nursing practice.
- Nurses need to utilise evidence for practice in a person-centred manner.

Online resources

The range of online resources available to nurses and others working in health care who are seeking to extend their understanding of knowledge generation or utilisation is extensive, and we encourage you to seek assistance from academic and library staff in locating those relevant to your specific focus. Here are four of the major sites for Australian and New Zealand health research and for practice development internationally.

www.nhmrc.gov.au is the website of the Australian National Health and Medical Research Council, where you will find a range of material related to the production and utilisation of research findings.

www.hrc.govt.nz is the website of the New Zealand Health Research Council, where you will find a range of material related to the production and utilisation of research findings.

www.fons.org is the Foundation of Nursing Studies' Centre for Nursing Innovation, where you will find a range of materials – including free access to the International Practice Development Journal – relating to practice development.

www.health.nsw.gov.au/nursing/projects/eoc.asp gives access to the Essentials of Care Program of the Nursing and Midwifery Office of the NSW Ministry of Health, an example of a health-sector-wide program using a practice development approach.

References

Andrews G 2003 Locating a geography of nursing: space, place and the progress of geographical thought. Nurs Philos 4(3):231–48.

Boykin A, Schoenhofer SO 1993 Nursing as caring: A model for transforming practice. National League of Nursing Publications, New York.

Brunero S, Stein Parbury J 2008 The effectiveness of clinical supervision in nursing: an evidence-based literature review. AJAN 25(3):86–94.

Carr W 1987 What is an educational practice? J Philos Educ 21:163–75.

Crisp J, Wilson V 2011 How do facilitators of practice development gain the expertise to support vital transformation of practice and workplace cultures? Nurs Educ Pract 11(3):173–8.

Dewey J 1933 How we think. A restatement of the relation of reflective thinking to the educative process. DC Heath, Boston.

Dewing et al 2014 Practice Development workbook for nursing, health and social care teams. John Wiley & Sons, Ltd, Oxford.

Eraut M et al 2000 Development of knowledge and skills at work. In: Coffield F (ed) Differing visions of a learning society, vol 1. The Policy Press, Bristol.

Estabrooks C et al 2008 Patterns of research utilization on patient care units. Implement Sci 3(31):39–44.

Garbett R, McCormack B 2004 A concept analysis of practice development. In McCormack B et al (eds) Practice development in nursing. Blackwell, Oxford.

Gawande A 2008 Better. A surgeon's notes on performance. Profile Books, London.

Greenhalgh T 2014 How to read a paper. The basics of evidence-based medicine. John Wiley & Sons, Oxford.

Greenhalgh T et al 2004 Diffusion of innovations in service organizations: systematic review and recommendations. Milbank Q 82(4):581–629.

Haith MP, Whittingham KA 2012 How to use action learning sets to support nurses. Nursing Times 108(18/19). Online. Available: www.nursingtimes.net/Journals/2012/04/27/s/q/s/120501-Disc-actlearn.pdf; accessed 22 Dec 2015.

Hardiman M, Dewing J 2014 Critical ally and critical friend: stepping stones to facilitating practice development. International Practice Development Journal 4(1). Online. Available: www.fons.org/library/journal.aspx; accessed 22 Dec 2015.

Johns C 1998 Opening the doors of reflection. In: Johns C, Freshwater D (eds) Transforming nursing through reflective practice. Blackwell Science, Oxford.

Johns C 1994 The Burford NDU model: caring in practice. Blackwell Science, Oxford.

Kemmis M 2006 Participatory action research and the public sphere. Educ Action Res 14(4):459–76.

Kitson A et al 1998 Approaches to implementing research in practice. Qual Health Care 7(3):149–59.

Kitwood T 1997 On being a person. In: Kitwood T (ed) Dementia reconsidered: the person comes first. Open University Press, Milton Keynes.

Liaschenko J, Fisher A 1999 Theorizing the knowledge that nurses use in the conduct of their work. Schol Inquiry Nurs Pract 13(1):29–41.

Manley K et al 2011a Effective workplace cultures: the attributes, enabling factors and consequences of a new concept. Int Pract Dev J 1(2): article 1. Online. www.fons.org/library/journal/aspx; accessed 22 Dec 2015.

Manley K et al 2011b Advancing the practice development outcomes agenda within multiple contexts. International Journal of Practice Development 1(4):1–16.

Manley K et al 2008 International practice development in nursing and healthcare. Blackwell, Oxford.

Manley K, McCormack B 2004 Practice development purpose, methodology, facilitation and evaluation. In: McCormack B et al (eds) Practice development in nursing. Blackwell, Oxford.

Marshall J, McLean A 1988 Reflection in action: exploring organisational culture. In P Reason (ed) Human inquiry in action: developments in new paradigm research. Sage, London.

Masso M et al 2014 Mechanisms which help explain implementation of evidence-based practice in residential aged care facilities; a grounded theory study. Int J Nurs Stud 517:1014–28.

McCabe C 2004 Nurse–patient communication: an exploration of patients' experiences. J Clin Nurs 13(1):41–9.

McCormack B, Johns C 1998 Unfolding the conditions where the transformative potential of guided reflection [clinical supervision] might flourish or flounder. In Johns C (ed) Transforming nursing through reflective practice. Blackwell, Oxford.

McCormack B, McCance T 2006 Development of a framework for person-centred nursing. Journal of Advanced Nursing 56(5):472–9.

McCormack B et al 2004 Practice development in nursing. Blackwell, Oxford.

McCormack B et al 2007 A realist synthesis of evidence relating to practice development: recommendations. Pract Dev Health Care 6(1):76–80.

McCormack B, Manley K 2004 Evaluating practice developments. In McCormack B et al (eds) Practice development in nursing. Blackwell, Oxford.

McGill I, Beaty L 1995 Action learning, 2nd edn. London, Kogan Page.

McGill I, Brockbank A 2004 The action learning handbook. RoutledgeFalmer, London.

Mezirow J 1991 Transformative dimensions of adult learning. Jossey-Bass, San Francisco.

Nolan M et al 2004 Beyond 'person-centred' care: a new vision for gerontological nursing. Int J Older People Nurs 13(3a):45–53.

Øvretveit J 2011 Understanding the conditions for improvement: research to discover which context influences affect improvement success. BMJ Qual Saf 20(Suppl 1):18–123.

Pedler M et al 1991 The learning company. McGraw-Hill, Maidenhead.

Peplau HE 1952 Interpersonal relations in nursing. GP Putnam & Sons, New York.

Revans R 1983 The ABC of action learning. Chartwell-Bratt, Bromley.

Rogers ME 1986 Science of unitary human beings. In: Malinski VM (ed) Explorations on Martha E. Rogers' science of unitary human beings. Appleton-Century-Crofts, Norwalk CT.

Rycroft-Malone J et al 2004 An exploration of the factors that influence the implementation of evidence into practice. J Clin Nurs 13(8):913–24.

Schön DA 1983 The reflective practitioner: how professionals think in action. Temple Smith, London.

Shin H et al 2015 Competency and an active learning program in undergraduate nursing education. J Adv Nurs 71(3):591–8.

Sollecito WA, Johnson JK (eds) 2013 McLauglin and Kaluzney's continuous quality improvement in health care. Jones & Bartlett Learning, Burlington MA.

Somerville D, Keeling J 2004 A practical approach to promote reflective practice within nursing. Nursing Times 100(12):42–5.

Stein-Parbury J 2005 Patient and person. Interpersonal skills in nursing, 3rd edn. Elsevier, Sydney.

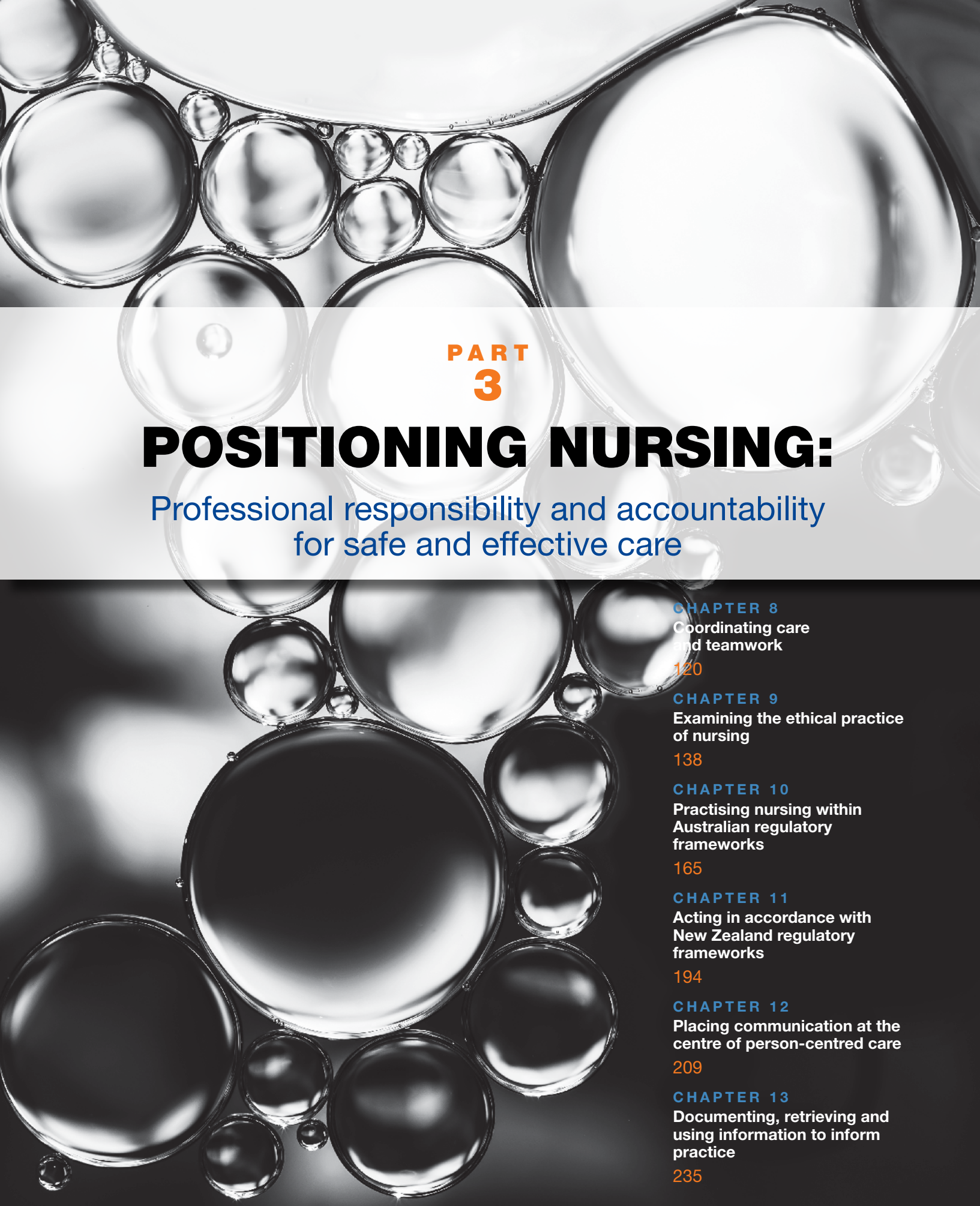
Stetler CB et al 2011 A guide for applying a revised version of the PARIHS framework for implementation. Implementation Science 6(99).

Titchen A et al 2013 Getting going with facilitation skills in practice development. In McCormack B, Manley K, Titchen A (eds) Practice development in nursing and healthcare. Wiley-Blackwell, Oxford, pp. 109–29.

Titchen A, Higgs J 2001 Towards professional artistry and creativity in practice. In Higgs J, Titchen A (eds), Professional practice in health, education and the creative arts. Blackwell Science, Oxford.

Watson J 1985 Nursing: human science and human care; a theory of nursing. National League of Nursing Press, New York.

Welldon JEC (trans) 1987 Aristotle: The Nicomachean ethics. Prometheus Books, New York.



PART 3

POSITIONING NURSING:

Professional responsibility and accountability for safe and effective care

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Examining the ethical practice of nursing
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CHAPTER

8

Coordinating care and teamwork

Patricia Mary Davidson and Louise D Hickman

KEY TERMS

Accountability, p. 133
Chronic care, p. 132
Clinical outcomes, p. 129
Clinical pathways, p. 128
Clinical practice guidelines, p. 128
Complexity, p. 123
Evidence-based practice, p. 121
Interdisciplinary, p. 123
Models of nursing care, p. 125
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Nursing-sensitive indicators, p. 131
Patient/client safety, p. 129
Positive practice environments, p. 122
Quality of care, p. 127
Registered nurse, p. 124
Self-care, p. 125
Self-management, p. 125
Teamwork, p. 127

Learning outcomes

Mastery of content will enable you to:

- describe the importance of teamwork in providing high-quality care
- identify factors that support coordination of care and teamwork
- describe the importance of an evidence-based approach to managing care
- explain and review the unique role of nurses in multidisciplinary and interdisciplinary teams
- describe approaches to delivering nursing care, including person-centred care, interdisciplinary, multidisciplinary and primary care
- identify the nurse's role in managing and coordinating care with the patient and family/carer as team members
- describe the importance of leadership in the clinical setting
- describe the scope of nursing practice and the levels of competency required to manage nursing care
- describe and appreciate the legal, policy and regulatory frameworks that influence the context of nursing practice
- discuss ways to apply strategies to promote client autonomy and promote self-management
- understand and demonstrate how nursing care contributes to clinical and organisational outcomes in the healthcare setting
- illustrate how the quality improvement process can promote optimal client outcomes and model of care development
- appreciate the importance of developing and monitoring nursing-sensitive patient outcome measures.

Nurses comprise almost 80% of the healthcare workforce, and in these times of increasing patient complexities, ensuring appropriate coordination of care contributes significantly to improving outcomes of patient care. Nurses work in both independent and dependent practice settings but invariably in a healthcare team. Globally, healthcare systems are challenged by a range of factors, including workforce shortages, ageing populations, increasing rates of chronic conditions and escalating health inequities (Crisp et al 2014). Yet, in spite of these challenges nurses have never before been equipped with such a robust body of research and scholarship to inform their practice. Although there is an increasing diversity of professionals in the healthcare setting, nurses are responsible for the greatest proportion of client care and are often responsible for coordination. As a consequence, nurses are driving a range of healthcare reforms through innovative care delivery models, such as using link nurses in palliative care settings to improve cross-sector collaboration between primary, secondary and tertiary care (Ellerbe et al 2012). Internationally, healthcare systems are looking at a range of reforms to address the increasing demands for health care and the need to decrease health disparities. Nurses in contemporary healthcare systems are at the forefront of planning and managing care, directing the agenda of healthcare delivery in the policy setting, as well as managing and delivering care in the preventive, acute, community and residential care settings (Davidson et al 2013, Jackson et al 2014).

Principles informing a nursing approach to care delivery include ensuring that models of care:

- are fiscally responsible, using resources such as people, facilities, equipment and time, appropriately and efficiently
- are informed by the best available evidence derived from high-quality patient-centred research and clinical guidelines endorsed by peak bodies
- promote a wellness model focusing on the health and wellbeing of the wider community
- promote autonomy of the individual and engage in activities to promote self-care
- tailor processes and desired outcomes to meet the unique needs of clients and their families
- are mindful of the unique role nursing plays in the interdisciplinary team
- are culturally safe and appropriate and tailor care for culturally and linguistically diverse populations
- foster both independent and collaborative nursing practice, where nurses both initiate and evaluate nursing therapies and interventions and also work with other healthcare providers to achieve optimal outcomes
- are directed at promoting optimal client and organisational outcomes (Davidson et al 2006).

In the United States, collaboration between the Institute of Medicine and the Robert Wood Johnson Foundation, *The future of nursing: leading change, advancing health*, lays an important framework for developing nursing into the future (Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing 2011). This report recommends that nurses should be enabled to practise to the full extent of their education and training; achieve higher levels of education and training through an improved education system; be full partners, with doctors and other healthcare professionals, in healthcare reform; and engage in workforce planning and policy development based upon high-quality data. These recommendations are salient for managing client care internationally and have cast the spotlight on advanced practice nursing roles (Shamian & Ellen 2014).

Using evidence to inform teamwork and nursing practice

Evidence-based practice is essential for optimising patients' health outcomes and strategically allocating finite health resources. Adopting an evidence-based practice approach to care ensures that optimal clinical decisions are made, based on the best available research evidence, clinician expertise and patient/community preferences (Sackett et al 1996). Nurses are in a unique position to make a significant difference to health outcomes for a broad range of individuals and communities by providing care in accordance with the best available evidence.

Contemporary approaches to coordinating and providing team-based care should be driven by evidence-based practice and a strong foundation of nursing scholarship. Innovative nursing research is driving clinical practice and defining the importance of nursing in both independent and collaborative practice settings. The *Research highlight* describes that implementation of **multidisciplinary**, supported, evidence-based protocols, initiated by nurses in the acute phase of stroke, for the management of fever, hyperglycaemia and swallowing dysfunction, delivers better patient outcomes after discharge from stroke units (Middleton et al 2011). This study has important implications for identifying nurses' integral role in improving health outcomes and their role in the multidisciplinary team.

RESEARCH HIGHLIGHT

Research focus

Optimising health outcomes following stroke is dependent on the monitoring of blood sugar, swallow reflex and temperature. This is a critical role for nurses.

Research abstract

Patient outcomes 90 days after hospital admission for stroke were assessed following a multidisciplinary intervention targeting evidence-based management of fever, hyperglycaemia, and swallowing dysfunction in acute stroke units.

Evidence-based practice

Implementation of multidisciplinary, supported, evidence-based protocols initiated by nurses for the management of fever, hyperglycaemia, and swallowing dysfunction delivers better patient outcomes after discharge from stroke units.

Reference

Middleton et al 2011 Implementation of evidence-based treatment protocols to manage fever, hyperglycaemia, and swallowing dysfunction in acute stroke (QASC): a cluster randomised controlled trial. The Lancet. 378(9804):1699–706.

The pressures facing healthcare systems also require nurses to respond effectively and appropriately to challenges such as skill-mix diversification and increasing financial pressures (Davidson et al 2015). Effective models of nursing care, a strong research base for practice and **positive practice environments** promoting quality, safety and clinical leadership are important drivers in promoting optimal client care and improving the working life of nurses.

For example, the increased importance of the nursing role in primary care and an emphasis on universal health care (Henderson et al 2014) has led to an exponential rise in research internationally. Increasingly, nursing is provided in ambulatory, community and also tele-healthcare settings. As you progress in your career you are likely to see a decreased emphasis on hospital-based care and a greater focus on the needs of the individual and their family. The increased focus on person-centred care is an important influence on healthcare policy (Cloninger et al 2015).

It is, however, also important to be mindful of consumers' views in developing innovative approaches and role substitution (Halcomb et al 2014). For example, it may take consumers time to access nursing providers when they are accustomed to medical clinicians. In order to achieve role clarity for both healthcare consumers and other healthcare professionals, we need to work towards an increased standardisation of titles (Parker et al 2014).

• CRITICAL REFLECTION POINT

Take time to reflect on your own communication style and how easy or challenging you find asserting your ideas or opinions:

1. **How will you build confidence in communicating and questioning those in authority respectfully and collegially?**
2. **How will you communicate change supported by the evidence so it can be translated into practice?**

Many of us enter nursing because we are passionate about improving patient care and are adamant about being patient advocates. However, an argument positioned by evidence and a strong rationale and data is much more likely to be effective than an emotive outburst. Think about your personal communication style and seek critical feedback from mentors and colleagues. Reflect on strategies that will assist on improving person-centred care and interdisciplinary team communication, as communicating with team members who you do not know, who may be external to your organisation, can be difficult.

Building a nursing team and coordinating care teams

A range of descriptors have been applied to nursing care models. Regardless of the term used to describe the approach to nursing care, nurses work in a multidisciplinary milieu and the nursing role cannot be considered in isolation from the roles of other healthcare professionals and overarching drivers affecting the healthcare system, such as financial constraints. As nurses are the largest group of healthcare providers, they have an invaluable role in supporting and building a coordinated team approach to the complex care required by the older person. A multidisciplinary approach, focusing on interdisciplinary models, is essential given the need to provide patient-centred care. The increasing complexities of patient conditions and psychosocial support needs and information requirements demand a collaborative multidisciplinary or interdisciplinary team approach (Hickman et al 2015). Often you will be involved in either multidisciplinary teams or interdisciplinary teams. A multidisciplinary team may be composed of a range of healthcare professionals functioning under

one organisational umbrella or by professionals from a range of organisations, including private practice, who function as a virtual team to meet each patient's unique needs (Mitchell et al 2008). On the other hand, in an ideal setting an **interdisciplinary** team approach to care can be composed of healthcare providers (e.g. public health nurses, general nurses and practice nurses) who are required to interact, collaborate and negotiate in the provision of care (O'Neill et al 2008).

Teamwork is seen when a group of people contribute their knowledge and skills and work together to achieve a common goal/task. The **complexity** of contemporary health care demands effective teamwork, and it is important that healthcare professionals contribute to the work of their teams (Pearce et al 2011). A team can be described as a group of people with a range of experiences and skills who have come together with a common purpose. It is the common purpose or goal that defines this group as a team (Hartgerink et al 2014). More importantly, people have to work together to achieve this goal; there is an assumption that the contribution and input of a group of individuals is more beneficial than the contribution of the individuals alone. It's important to include patients, their families and volunteers where appropriate in the team. In addition, the more tangible and measurable the team goal, the more effective the team is likely to be. Increasingly, there is an emphasis on inter-professional education to enable health professionals to work in teams (Reeves et al 2008).

Defining measurable goals has led to a range of clinical improvements through the use of collaborative methodology. Collaborative methodology is a method of driving improvements in clinical care by closing the gap between what is known and what is practised. Collaborative methodology uses a continuous improvement cycle to bring about small, rapid changes that create a larger change within the system over a finite period, by using change management principles and evidence-based goals and targets. This method is being used increasingly in Australia and internationally to drive quality improvement. For example, 16 acute adult mental health inpatient services across Queensland have worked together to develop clinical indicators related to the inpatient treatment of schizophrenia (Plever et al 2010).

Goals of practice that do not provide effective and tangible goals for planning, delivering and evaluating care are likely to be inadequate. In the instance where constructs are poorly defined, they can have a range of meanings for different people. A more appropriate way of negotiating a goal is to make it measurable. For example, a goal of care could be to deliver it in accordance with best-practice guidelines with assessable outcomes, such as the proportion of people admitted to hospital with a stroke who are assessed for their ability to swallow, or the proportion of women who have a vaginal delivery compared to those who have a caesarean section. These examples show that client outcomes are often dependent on the role of nurses in the broader healthcare system.

For the most part, nurses deliver care in complex and dynamic circumstances, in collaboration with health and social service providers, as well as with family members and caregivers (Hickman et al 2015). Teams do not occur spontaneously, but grow and are developed and nurtured by positive practice environments and effective managers and leaders. A range of factors contribute to developing an effective team, and many of these factors are dependent on the aptitudes and capabilities of clinical leaders. Some of the characteristics of effective teams and leaders include:

- negotiating goals and intended outcomes of nursing interventions
- leading by inspiring, enabling and motivating rather than dominating
- effectively communicating strategies and processes for sharing information
- clarifying the roles, responsibilities and accountability of team members
- collaborating and seeking external opinion and expertise
- regularly reflecting on team progress and how this relates to the team goals
- taking the time to celebrate successes and to support each other when things are not going well
- leadership and support at all levels along the healthcare spectrum
- effective formal and informal communication processes that are transparent
- participation in decision-making regarding clients and organisational decision-making in respect of clinical care delivery models
- promotion of a safe work environment that provides adequate education and opportunity for personal and professional development and recognition of achievements
- implementation and monitoring of equitable and manageable workloads.

Regardless of the approach to nursing care, nurses work within an interdisciplinary context and are subject to a range of internal and external factors. Examples of internal factors include the organisation's approach to

management, while external factors can include funding and staff-mix models prescribed by government bodies.

Approaches to delivering nursing care

A range of nursing models has been used to describe the organisation of nursing care. Yet it is important to recognise that many models implemented in the clinical setting are actually hybrid approaches; that is, they incorporate a range of elements from different models. Increasingly, in clinical environments nurses are required to be flexible and responsive to policy demands and changes as well as increased heterogeneity and diversity in the health workforce (Davidson et al 2015). Dynamic staff-mix and acuity of case-mix mean that various models can be used interchangeably, depending on the needs of the clinical setting, patient-mix and staffing arrangements in place. The key approaches to providing nursing care are described below. Table 8-1 summarises the strengths and limitations of each of these approaches. As you review each of these nursing models, consider which clinical environments these approaches will be most applicable to in the care settings that you have been exposed to. Take the time to reflect on your clinical experiences to date and categorise the approaches to client care in these settings. Consider whether the approach used was optimal for the clinical setting and client's needs.

Team nursing

The team nursing approach is based on using nurses with a range of skill-mix and scopes of practice. For example, assistants in nursing (AINs), enrolled nurses (ENs) and **registered nurses** (RNs) work under the leadership and coordination of the RN. Ideally, in this model nurses are assigned client-based tasks, in response to the needs of the individual and the clinical area. This approach is commonly used in acute care hospitals and residential aged care.

Total patient care

In a total patient care approach, the RN retains overall responsibility for the client, working collaboratively with other team members to coordinate clinical care. The RN may delegate elements of clinical care to other members of the healthcare team, but retains overall responsibility and accountability of care. Adequate staffing models of RNs are necessary for this approach.

TABLE 8-1 Strengths and limitations of approaches to care delivery

Model of nursing care delivery	Strengths	Limitations
Functional nursing	Nurses become proficient in a designated task Potential for efficiencies in time management	Lack of an integrated approach to care management Client needs subsumed in organisational demands
Team nursing	Accommodates a range of skill-mix and scopes of practice Allows for a collaborative approach and uses a range of expertise	Less RN involvement may impact adversely on client outcomes Dependent on high-level organisational, delegation and coordination skills of the RN
Total patient care	High level of coordination of care Access to high-level clinical skills and decision-making	Increased costs associated with high numbers of RNs Decreased capacity for skill development in more junior members of the nursing team
Primary nursing	Strongly client-centred model of care promoting autonomous decision-making Promotes continuity of care and interdisciplinary communication	Efficacy of the model dependent on the quality of the care plan and communication within the healthcare team Greater dependence on RN models of care Potential for role burden for the RN
Case management	Promotes continuity of care Optimal for clients with chronic and complex care needs Creates a point of contact for clients and the healthcare team	Need for communication structures such as regular team meetings which can be time-consuming Dependent on coordinating and communication skills of case manager
Telehealth	Promotes access to individuals living in rural and remote areas Creates a point of contact for clients and the healthcare team	Requires standardised protocols and processes Requires access to information technology

Functional nursing

In a functional nursing model, nursing workload is based upon task allocation where nurses exclusively perform a designated task, such as medication administration, for a range of patients. These tasks are traditionally assigned by the nurse coordinating the shift. The appropriateness and relevance of functional nursing models is dependent on the nursing skill-mix, patient acuity and complexity and scope of practice of nursing tasks.

Primary care nursing

The primary care nursing model designates an RN's responsibility for a set of clients over a designated period, such as an episode of care. Based on a comprehensive and holistic assessment, the RN develops a care plan (see Chapter 7). When the primary care RN is off-duty, the plans are continued by associate nurses. There is scope to negotiate care plans within the broader healthcare team. A primary care nursing model is often applicable to the community nursing sector.

Case management

Relying on a comprehensive assessment and expert knowledge of the clinical situation, the RN liaises with health and social service professionals and agencies and advocates on behalf of clients. The case management model is an iterative, responsive approach to care where goals are constantly re-evaluated and care modified according to the client's conditions and changing social circumstances. In some settings, such as mental health, terms such as 'care management' are used as it is considered to be a more client-centred terminology. Case management approaches are often used in the mental health setting.

Telehealth

Telehealth is the use of electronic information and tele-communications technologies to support long-distance patient care. This mode of nursing intervention is commonly used for individuals living in rural and remote areas, as well as a support for chronic disease management.

Models of nursing care

Nursing care is provided in a range of settings and contexts. The way in which care is planned, delivered and evaluated should be based upon a prospective plan or template appropriate to the care setting, which can also be known as a model of nursing care.

Models are tools that are a standard for comparison, describing the relationship of concepts (Davidson et al 2006). In nursing, models should be dependent on the needs of the client group, the scope and skills of the nursing workforce and anticipated health outcomes. In parallel with international trends, the Australian healthcare system faces workforce shortages with increasing pressure on the acute care sector. These factors are compelling nurses to explore innovative approaches to care delivery. Nursing and nursing models should be flexible and responsive to the needs of clients and the healthcare system. Nurses can work independently, such as in the nurse practitioner role; dependently based on delegation, such as in the general practice setting; interchangeably, as in the doctor assistant role; and collaboratively, such as in nurse-coordinated models of care. These approaches challenge traditional hierarchical approaches and functional models of care, and have provoked discussion and debate surrounding the benefits and disadvantages of approaches to models of nursing care.

Describing a model of care provides a structure for nurses to systematically plan, deliver and evaluate client care (Davidson et al 2006). This structure should become the blueprint to scope and plan care delivery. It is therefore important for nurses to appreciate the conceptual underpinnings and goals of a nursing model of care. For example, what does *person-centred care* mean, and how can nurses measure and evaluate these goals? As the diversification of the workforce increases, along with acknowledgement of the importance of interdisciplinary care, the importance of teamwork is underscored (Hobgood et al 2010).

Models of nursing care promoting wellness, autonomy and self-care

Contemporary **models of nursing care** should be culturally sensitive and flexible, focusing on collaborating with clients and meeting their needs. This is in contrast with traditional nursing models of care, such as functional nursing, which can be inflexible and prescriptive. Key goals of nursing models of care should be to promote independence and wellness. Pivotal to promoting client independence and autonomy is engagement in activities that promote self-care. **Self-care** refers to the activities that an individual undertakes to manage their condition. This can include taking medication, performing activities of daily living (ADLs) and having strategies for monitoring their condition. **Self-management** embraces the concepts of self-care, but also refers to a broader set of knowledge, skills, attitudes and beliefs that prepare the individual to interact collaboratively with healthcare professionals, including nurses, to achieve negotiated goals (Riegel et al 2009). As a consequence, it may be advisable to work with clients to develop and assess their competency in

undertaking self-management tasks, such as daily weights, rather than doing these tasks for patients.

Nurses need the necessary skills to be culturally sensitive to the needs of individuals and their families, and they need to engage in strategies for supporting belief in the individual's ability to learn self-management skills. In the clinical setting, nurses need to empower clients to be independent and undertake monitoring of their own condition. For example, a client with diabetes should undertake the monitoring of their blood sugar levels and be encouraged to discuss appropriate strategies in response to these readings.

Migration and globalisation are defining characteristics of the contemporary world, and countries such as Australia and New Zealand have a rich and diverse cultural mix. As health and illness behaviours are embedded in culture and ethnicity, it is important that nurses approach client care within a context of cultural competence. The terms 'culture' and 'ethnicity' both refer to combinations of socioeconomic, religious and political qualities of human groups, including language, diet, dress, customs, kinship systems and historical or territorial identity, whereas 'competence' implies having the capacity to function effectively (Davidson et al 2010). A failure to respect and address these factors can result in marginalisation and potentially adverse health outcomes for clients. It is also important to consider that sometimes adverse behaviours can actually be labelled racist (Durey 2010).

As part of becoming culturally competent practitioners, nurses need to be aware of their own beliefs and attitudes about ethnic minorities in order not to impose them on clients. In addition, nurses need to understand the worldview of the client and their family without judging them, and to use culturally competent skills when interacting with ethnically diverse clients and groups. Key factors in developing culturally competent models of care include administration and leadership; policy-making and governing boards; clinical standards and guidelines; and an effective vision and mission to drive organisational priorities. As discussed above, positive policy environments that prime the practice setting for respect and reciprocity are pivotal in achieving optimal health-related outcomes.

Although particular settings drive characteristics of models of nursing care, generic principles that underpin the shaping of care delivery need to incorporate interventions and strategies for:

- promoting clients' understanding of their clinical condition, treatment plan and the anticipated trajectory of their condition
- developing clients' skills and opportunities necessary for negotiating and following a care plan in partnership with their healthcare professionals
- providing resources and knowledge for clients monitoring and managing the signs and symptoms of their condition
- encouraging clients to adopt lifestyles that promote risk-factor modification and focus on prevention and early intervention to promote health and wellbeing
- increasing client access to support services, including social and financial support.

Within Australia and New Zealand, addressing the health disparities of the Indigenous peoples is an important consideration in developing and evaluating nursing and midwifery models of care (Thompson et al 2011).

Approaches to coordination of care and teamwork

The approaches outlined above describe the relationship between the individual client and the nurse. A range of roles also exist for coordinating client care at an organisational level. At a macro level, where there is a focus on the development of policy and strategic directions at a government level, roles such as chief nursing officer (CNO) are pivotal in shaping workforce issues. At a meso level, directors of nursing function to develop professional nursing issues and strategic directions on an organisational basis, while at a micro level, the nursing unit manager (NUM) is responsible for directing and monitoring implementation of organisational policy and operational matters. Many organisations are focusing on decentralising decision-making and responsibility to an operational level. This has increased the nurse manager's responsibility for the unit or ward's budget, workforce performance and welfare of nursing staff, as well as monitoring the quality of patient care. The nurse manager has a multifaceted role of being an expert nurse, clinical leader and manager (Duffield et al 2009).

As you can see, the NUM position is a demanding and challenging role, incorporating a range of responsibilities. To function effectively in this role, the RN requires more than expert clinical and technical knowledge; they also need to be an effective communicator, demonstrate clinical leadership and have knowledge of financial and management principles. Box 8-1 describes the roles and responsibilities of the NUM. Because of the demands of this position, roles such as clinical coordinator, team leader, liaison nurse and team educator have been introduced into the clinical setting. In these roles, senior and expert nurses, many of whom are clinical nurse

BOX 8-1 Roles and responsibilities of the nursing unit manager

- Determine the vision and model of care for the clinical setting in consultation with the organisational goals and mission
- Identify best-practice standards and guidelines for the clinical discipline
- Develop a mechanism for monitoring professional standards and practice
- Continually evaluate nursing standards and practice and amend care plans accordingly
- Determine appropriate staff and skill-mix and engage in recruitment and retention issues
- Ensure that scheduling and rostering of staff is appropriate and consistent with the acuity and complexity of the client-mix
- Engage in negotiating professional goals with staff and actively monitoring these in regular appraisals
- Encourage and reinforce the use of clinical portfolios in appraisal and evaluation systems
- Establish and monitor mechanisms for communicating information internally within the nursing team and externally with other health and service providers
- Represent the clinical specialty and nursing role in interdisciplinary and organisational committees
- Provide clinical leadership in the clinical setting
- Communicate with clients and consumer representatives
- Promote a culture of evidence-based practice and reflective practice
- Manage the clinical setting within fiscal requirements
- Promote a culture of transparent and accountable practice
- Develop and monitor a business case for the clinical setting in consultation with the nursing team, consumer representatives and other health professionals
- Encourage and promote professional development and a culture of lifelong learning
- Promote a culture of collegiality and mutual respect among all team members
- Promote clinical care that is culturally competent and appropriate to client needs

BOX 8-2 Responsibilities of RNs in clinical settings

- Seek clarification of the vision for nursing and model of care in the clinical setting
- Identify the reporting and monitoring structure within the clinical setting
- Report and monitor actual and potential adverse events
- Document appropriately and accurately all clinical care and other relevant information
- Actively contribute to clinical evaluation and engage in quality improvement initiatives
- Engage in professional development activities
- Maintain a clinical portfolio and have a personal professional development plan
- Communicate effectively and accurately and promote a culture of accountability and transparency
- Function as an effective role model engaging in accountable, clinical practice models
- Identify preceptors and mentors to support your professional growth
- Provide clinical care that is culturally competent and appropriate to client needs
- Engage in ongoing professional development and lifelong learning

specialists, are responsible for coordinating and directing clinical care, usually on a shift basis. Often, in these roles the RN does not have a client-mix assigned to their direct care; as nursing skill-mix diversifies, the proportions of ENs and assistants in nursing are increasing in number in the workforce. Therefore, the RN may monitor and support clinical care on a ward or unit basis. In these models, delegation and monitoring skills are particularly important. It is also important to consider that nursing care is delivered on a 24-hour basis, so there is a need to ensure that there are adequate expert nursing knowledge and managerial skills available around the clock.

Nurses have a range of responsibilities associated with optimal client outcomes (Box 8-2). As you can see, every nurse has a responsibility to contribute collaboratively to the care team. Effective **teamwork** leads to improved staff job satisfaction, improved patient safety and improved **quality of care** (Rafferty et al 2001). Your capacity to be successful and enjoy your work environment will depend on your capacity to work in a team. Taking the time to evaluate your own working style is important in relation to how you will function in a team in the healthcare environment (Eng et al 2015).

Tools to support coordination of care and team work

A range of tools are available to support managing client care, and the Internet provides a rich and informative source. There are many websites that will provide useful resources to help in planning your care (see *Online resources*). For example, the Cochrane Collaboration and the Joanna Briggs Institute provide evidence-

based resources and best-practice information sheets that have been developed following a critical appraisal of the evidence using the systematic review process. Peak bodies nationally and internationally, such as the Royal College of Nursing Australia and Sigma Theta Tau International, provide rich and reliable information as well as the capacity for networking and information sharing.

Accessing accurate and timely information is important for making effective clinical decisions and monitoring clinical conditions. Communication of information across care settings, particularly from the acute care sector to the community, is also critical in coordinating care. Consequently, significant resources and focus are being placed on developing effective technological solutions for promoting high-quality client care (Hannan 2011). As a student nurse you need to develop and consolidate technological skills that allow you to work effectively with information technology solutions in addressing management of information. It is likely that in the future much of the work of the nurse will be undertaken in a technological milieu (Gray et al 2010).

Clinical practice guidelines and clinical care should be based upon the best available evidence in accordance with the client's values and clinical expertise. Accessing the vast amount of information is beyond the scope of the individual clinician, so a number of expert bodies have developed **clinical practice guidelines** to assist in providing evidence-based care. These are readily accessible through the National Health and Medical Research Council, the Joanna Briggs Institute and the Australian Resource Centre for Healthcare Innovations, as well as a range of peak bodies such as the National Heart Foundation and Cancer Australia. In New Zealand, peak bodies include the Health Research Council of New Zealand and the Cancer Society of New Zealand.

Clinical pathways are tools used to organise, sequence and integrate health care from a range of health and social service providers. These are derived through a process of negotiation, consensus and appraisal of best-practice guidelines. These tools describe the sequence of events necessary to identify anticipated client outcomes and achieve desired outcomes with optimal efficiency, along with also measuring variances that occur in the anticipated course of clinical care. Clinical pathways are sometimes referred to as critical pathways. Clinical pathways are used in both the acute and community-based settings to guide clinical care. They can be a valuable resource in achieving an integrated and coordinated approach to care.

A range of risk assessment tools is available to assist in planning and managing care. These can be used for predicting conditions such as delirium, risk of falls and pressure ulcers (Kennedy et al 2014). Remember that astute clinical assessment and anticipation of risk are key aspects of the RN's role (see Chapter 6). Valid and reliable assessment tools can assist you in clinical decision-making, particularly in your early years working as an RN. Learn to use these risk assessment tools to monitor your client's clinical condition and avoid adverse health outcomes.

• CRITICAL REFLECTION POINT

You have just received the morning shift handover report on your clients. You have been assigned the following clients:

- **Frederica, a 74-year-old woman, who is day 3 following a total hip replacement. She has an intravenous cannula and a patient-controlled analgesia infusion.**
- **Frank, a 72-year-old man admitted to hospital for a fractured femur, has new-onset shortness of breath and is becoming agitated.**
- **Rachel, a 64-year-old woman, was admitted to hospital with a stress spinal fracture as a consequence of bony metastases. She has a morphine infusion running and you note in handover that she has scored 7 on a 0–10 pain rating scale.**

In what priority order do you need to attend to these clients? Justify your answer.

Communication, collaboration and coordination among teams

Communicating with nursing colleagues and other members of the healthcare team is critical in delivering effective coordinated care. Increasingly, the quality of communication has been identified as a predictor of patient outcome. The handover process, team meetings, communication books and noticeboards are ways of communicating not only clinical but also organisational and operational information (Abraham et al 2014). As an RN, it is your responsibility to actively engage in communicating with the healthcare team to promote optimal client care. Ineffective communication is a root cause for adverse events (Lee et al 2014). Effective communication networks, clearly delineated staff roles and responsibility are important strategies in promoting the quality and safety of patient care. Implicit in creating effective communication networks is providing a vision and direction for the healthcare team through effective leadership, teamwork and a positive policy environment.

Leadership skills for nursing students

Contemporary clinical environments are placing increasing pressure on the RN to focus on clinical care and team coordination, rather than being solely responsible for a small number of patients, as in the total patient care models evident in previous decades. This is particularly the case in non-critical-care settings. In order to do this, the RN requires not only expert skills in clinical care, but also, equally importantly, needs to appraise the clinical situation, delegate appropriately and promote effective communication with clients, their families and healthcare professionals. Volunteers are also starting to play a larger role in healthcare delivery and often work within the organisation/community for long periods of time. Where appropriate, they also need to be included in team coordination (Phillips et al 2014). As a student you can develop your clinical leadership skills by using critical thinking strategies for making effective clinical decisions through astute clinical assessment, appraisal of the evidence and assessment of client needs (see Chapter 4); learning from your mistakes and those of others and actively seeking guidance and mentorship; and collaborating closely with professional nurses and striving to improve your performance during each client interaction. This can be as simple as taking the time to look up any terms or diagnostic tests you do not know about, or talking to clients about the aspects of clinical care that they find most satisfying. There are certain leadership skills that the nursing student can learn to use, including clinical care coordination, team communication, delegation and knowledge building. Seeking feedback from your preceptors, facilitators and fellow students can be useful in developing your communication and coordination skills. It is never too early to develop and refine your leadership skills, and often this is a process just as much of personal as of professional growth (Hinds et al 2015).

Measuring outcomes of nursing care

Nurses play a critical role in the quality and safety of clinical care. Adverse events in the clinical setting are the leading cause of death and injury, and are responsible for high healthcare costs as well as distress to families and clinicians. The reasons for the high rates of adverse events in the healthcare setting are multifactorial and can be attributed to system, clinician and client factors. Nursing models of care and systems for promoting information flow between healthcare providers are important strategies in preventing adverse events and promoting **patient/client safety** and quality of care. Impaired access to accurate, reliable and valid information to inform decision-making, as well as ineffective communication among the healthcare team, have been shown to cause adverse events, such as delays in diagnosis, inappropriate treatments and adverse health outcomes.

Measuring the impact of nursing interventions on client outcomes is becoming increasingly important, as there is a growing emphasis on evidence-based practice and monitoring client outcomes (see Chapter 7). It is often difficult to separate nursing from the inputs of other professional groups and incorporate patients' perspectives. As a consequence, there is an increasing focus on nurse-sensitive patient outcome indicators and on how these factors contribute to the quality of clinical care. Measurements, assessing both process and outcome measures of nursing care, are important for developing and evaluating approaches to nursing care delivery (Burston et al 2014).

For example, in a patient suffering from an acute myocardial infarction, the process measure can be the time to a definitive revascularisation strategy, such as thrombolysis or percutaneous coronary intervention; while an outcome measure can be in-hospital mortality. The impact of nursing can be evaluated in terms of costs, length of stay and **clinical outcomes**, as well as client and carer satisfaction. For evaluation of nursing outcomes to occur, there needs to be a culture that supports evaluation, as well as adequate infrastructure and resources.

Quality improvement processes for nurses

Nurses should strive to provide care which is evidence-based, culturally appropriate, client-centred and designed to achieve optimal clinical outcomes and organisational efficiencies. The primary goal of quality-improvement programs should be the ongoing improvement of the delivery, quality, efficiency and outcome of patient care and services. This is accomplished through a systematic examination of information generated through ongoing monitoring, evaluation and quality-improvement activities. Organisations should strive to promote a culture that enables critical review of practice and a no-blame culture promoting review and development of nursing practice. All quality activities should be benchmarked in accordance with core nursing competencies, scope of practice and regulatory, ethical and legal frameworks.

BOX 8-3 Examples of goals for improvement in clinical care

- Increase the rate of smoking cessation programs to clients identified as smokers
- Improve identification of patients at risk for falls
- Reduce use of restraints
- Initiate appropriate isolation precautions upon identification of established criteria
- Decrease medication errors
- Decrease delay in transfer to the clinical area from the emergency department
- Decrease the incidence of pressure ulcers

Box 8-3 provides examples of quality-improvement initiatives. Figure 8-1 provides a conceptual model for an iterative and reflective process for engaging in processes to improve nursing care delivery.

The Australian Council on Healthcare Standards (ACHS) is an independent, not-for-profit organisation dedicated to improving the quality of health care in Australia. It is the principal independent authority for measuring and implementing quality-improvement systems in Australian health care. The ACHS Evaluation and Quality Improvement Program (EQuIP) provides healthcare organisations with a continually updated framework to deliver a person-centred service focusing on the continuum of care. In addition to organisational quality indicators, there is an increasing emphasis on the unique role that nurses play in achieving optimal health-related outcomes. The EQuIP Quality Program uses a cycle (over 3 or 4 years, depending on the program) to assist members undertake self-assessment, an organisation-wide survey and ultimately a peer-reviewed survey to ensure they are working towards quality improvement.

• CRITICAL REFLECTION POINT

John is an RN working in a community nursing centre. He notices that the referrals from the acute aged care ward are not providing sufficient information to effectively prioritise and deliver care. He finds that he is wasting time chasing up discharge summaries and is concerned that the medication lists are not always appropriate. John raises this at the team meeting, and the NUM suggests that he liaise with the acute care ward to coordinate a quality project to improve the quality of the discharge summary.

1. **How would you advise John to approach this topic?**
2. **Who should John choose to be on the project team?**
3. **Can you suggest some data items that might reflect that the quality of the discharge summaries has improved?**

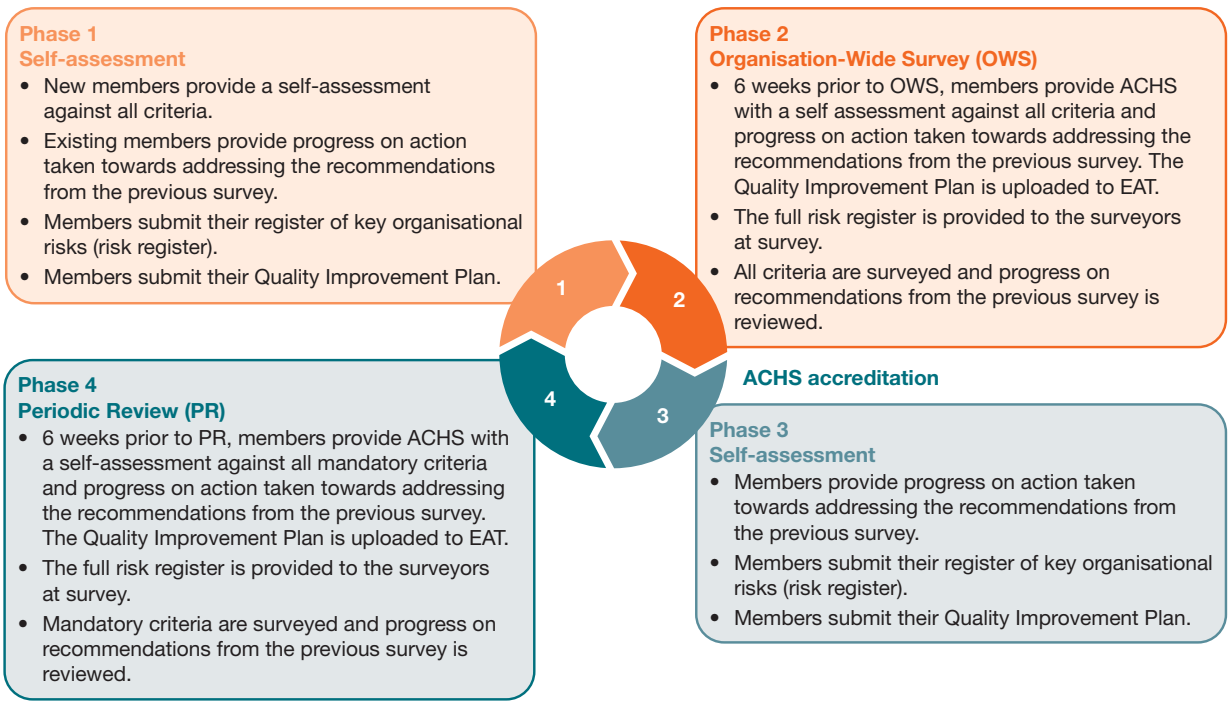

Figure 8-1 EQuIP6 quality cycle.

The Australian Council on Healthcare Standards (ACHS) 2016 The EQuIP guide, 6th edn. ACHS, Sydney.

Nursing-sensitive indicators

Increasing the emphasis on guaranteeing the quality of care, ensuring financial efficiencies and evaluating the diversity of skill-mix in the healthcare setting have led to the development of outcome indicators that are sensitive to nursing interventions and staffing levels. Nursing-sensitive outcomes are defined as changes in health status upon which nursing care has had a direct influence (Lindberg et al 2012). Variables affecting patient outcomes include diagnosis, socioeconomic factors, family support, age and gender, and the quality of care provided by other professionals and support workers.

Examples of **nursing-sensitive indicators** include:

- adverse events such as urinary tract infections, pressure ulcers, hospital-acquired pneumonia and deep vein thrombosis/pulmonary embolism
- wound infection and respiratory failure in surgical patients, and
- failure to respond to deterioration in clinical conditions such as shock, cardiac arrest and deep vein thrombosis, also known as failure to rescue.

The use of nursing-sensitive outcome indicators helps to focus attention on the safety and quality of patient care, and is important in demonstrating the critical difference that nurses make in providing safe and effective clinical care. Studies comparing staffing levels and patient outcomes show that when there is a greater proportion of RNs in the skill-mix, there are fewer adverse events, fewer complications, shorter lengths of stay, decreased mortality rates and even lower overall costs (Griffiths et al 2014). Higher levels of nursing personnel are associated with fewer adverse effects such as urinary tract infections, pneumonia and upper gastrointestinal bleeding.

Developing skills for complex and dynamic healthcare systems

The student nurse needs to develop and consolidate skills to develop, plan, implement and evaluate nursing care within complex and dynamic healthcare delivery systems. Importantly, this involves the capacity to access credible population data and evidence of effective clinical interventions. It is also important to recognise that nursing practice is undertaken in complex social, political and economic environments. For example, regulatory frameworks and policies determine the amount of resources allocated to healthcare services and also the level of nursing skill-mix (Casey et al 2015). For example, issues such as nurse prescribing are strongly linked to regulatory frameworks. As a consequence of regulatory frameworks and models of funding and reimbursement, these are critical factors in planning, managing and evaluating approaches to care. Being aware of factors external to nursing practice and developing skills for addressing these issues as a student nurse will lay a strong foundation for developing as an effective nurse clinician, administrator, educator and researcher. When planning a new nursing initiative, there are a number of factors that need to be considered. These include:

- developing a business case which includes costing factors such as staffing and equipment. A business case also involves examining the strengths, weaknesses, opportunities and threats of a planned approach to coordinating care. For example, a nurse undertaking a home visit in the community needs to be mindful of safety risks; introducing innovative strategies for pressure ulcer management may require additional expenditure for pressure-relieving devices
- demonstrating that nursing activities are conducted within professional, legal, regulatory and ethical frameworks. For example, nurses can only work within their scope of practice. When developing a model of care, nurses need to be mindful that they work within frameworks approved by regulatory and professional bodies
- considering how nursing initiatives affect other healthcare professionals. For example, an accelerated discharge plan may need the cooperation and collaboration of an interdisciplinary team of pharmacists, resident medical officers, administrative staff, general practitioners and community health teams
- undertaking coordination of care within a context of acceptable community standards and within a framework of cultural competence. For example, some cultural groups may not find it acceptable to have both men and women in the same ward or exercising together in cardiac rehabilitation settings.

Increasing burden of ageing and chronic care

Population ageing requires that healthcare services be configured to meet the needs of older persons within the acute care hospital environment. This is particularly relevant given that increased longevity is likely to increase mortality rates attributable to non-communicable diseases to 52 million by 2030 (WHO 2014). The Chronic Care Model (CCM), developed by Wagner, has been used by the World Health Organization (WHO) for the development of the Innovative Care for Chronic Conditions (ICCC)

framework (Nuño et al 2012). The WHO has promulgated the CCM as an organising conceptual framework for the development and delivery of integrated **chronic care** for community healthcare organisations and other healthcare organisations. This aims to strengthen partnerships, policy, advocacy, consistent financing, and allocation of resources across sectors (Hickman et al 2010). Through using a person-centred care approach, nurses can empower people and communities to be active in their healthcare journey, engage them in self-management strategies and promote adherence. This approach also requires nurses to be active in communicating across healthcare providers and services. Increasingly, there is a focus on the social determinants of health and how this impacts on health outcomes (Marmot et al 2005). The social determinants of health are the conditions in which people are born, grow, work, live and age. This means that economic policies and systems, development agendas, social norms, social policies and political systems can have an influence on the accessibility and type of health care. It is important to consider nursing within this context. In the United States, a striking example is the impact of the Affordable Care Act, not just on access to care but on models of nursing care (Koh et al 2010).

Positive practice environments

The environment in which nurses work is increasingly associated with favourable patient outcomes. Positive practice environments are endorsed by the International Council of Nurses (2011). Positive practice environments are characterised by supporting excellence, striving to ensure the health, safety and personal wellbeing of staff, supporting high-quality client care as well as enhancing motivation, productivity and performance of individuals (Adams et al 2006). These factors underscore the importance of policy, regulatory, legal and ethical frameworks that provide a strong foundation for healthcare delivery. They also emphasise the importance of quality improvement and reflective practice. In Australia, universal healthcare coverage is an important driver for ensuring optimal health outcomes, as it promotes models of care that are accessible and equitable. This allows the development of models of nursing care that promote continuity and coordination of care delivery.

The diversity and skill-mix of the healthcare team, including nursing roles, is rapidly changing (Davidson et al 2015). This makes it important to consider the attributes, scope of practice and key competencies of nursing roles. The work undertaken by nursing assistants is vastly different to that of the RN. Allocated responsibilities and activities are commensurate with level of education and level of responsibility for client care. Increasingly, the role of the RN is to engage in clinical decision-making, planning and coordination of care. This set of skills goes beyond advanced clinical knowledge; it includes communicating, delegating and coordinating, as well as promoting cohesion and collaboration between an increasing number of healthcare and social services. This requires that the nurse commit not only to acquiring clinical knowledge and skills, but also to engaging in personal development strategies to enable effective and active participation in the healthcare team. This entails using strategies such as appreciative inquiry, which promotes a manner of reflective review, to encourage positive relationships and build on the organisation's capacity for collaboration and change through critically evaluating activities and building upon strengths and capacities (Kavanagh et al 2010). As you move through your nursing career, it will be important to find positive practice environments and also recognise your individual contribution to making these supportive and enabling environments.

Nurses are expected to engage in client interactions in a manner that, both personally and professionally, will

BOX 8-4 Elements of positive practice environments

- Occupational health, safety and wellness policies that address workplace hazards, discrimination, physical and psychological violence and issues pertaining to personal security
- Fair and manageable workloads and job demands/stress
- Organisational climate reflective of effective management and leadership practices, good peer support, worker participation in decision-making, shared values
- Healthy work–life balance
- Equal opportunity and treatment
- Opportunities for professional development and career advancement
- Professional identity, autonomy and control over practice
- Job security
- Decent pay and benefits
- Safe staffing levels, recruitment and retention
- Support, supervision and a safe working environment
- Open communication and transparency
- Recognition programs
- Access to adequate equipment, supplies and support staff

International Council of Nurses. Online. Available: www.icn.ch/images/stories/documents/publications/fact_sheets/9d_FS-Positive_Practice_Environments.pdf; accessed 7 August 2015.

maintain public trust and confidence in the profession. Nurses have a responsibility to the individual, society and the profession to provide safe and competent nursing care. Professional behaviour is based upon principles of **accountability** (ultimate responsibility), autonomy, promoting trust among clients, monitoring of professional standards and scope of practice, observing ethical principles, taking personal responsibility for professional competence and adhering to accepted codes of practice (see Box 8-5).

The Australian Nursing and Midwifery Accreditation Council (ANMAC) is the independent accrediting authority for nursing and midwifery under the National Registration and Accreditation Scheme; it determines standards for accreditation, and accredits nursing and midwifery courses and providers. Nurses are also required to work within an ethical framework that reflects the prevailing social mores and legal context of Australian society (Chapter 9). A breach of this code may constitute professional misconduct or unprofessional conduct. It is useful to reflect upon the premises of professional practice and what distinguishes the RN's role from other providers of nursing care. Exploring the boundaries of professional practice of nursing roles will allow you to identify the skills and attributes of RNs and the factors that contribute to professional status and the associated accountabilities.

BOX 8-5 Code of professional conduct for nurses in Australia

1. Nurses practise in a safe and competent manner.
2. Nurses practise in accordance with the standards of the profession and broader health system.
3. Nurses practise and conduct themselves in accordance with laws relevant to the profession and practice of nursing.
4. Nurses respect the dignity, culture, ethnicity, values and beliefs of people receiving care and treatment, and of their colleagues.
5. Nurses treat personal information obtained in a professional capacity as private and confidential.
6. Nurses provide impartial, honest and accurate information in relation to nursing care and healthcare products.
7. Nurses support the health, wellbeing and informed decision-making of people requiring or receiving care.
8. Nurses promote and preserve the trust and privilege inherent in the relationship between nurses and people receiving care.
9. Nurses maintain and build on the community's trust and confidence in the nursing profession.
10. Nurses practise nursing effectively and ethically.

Nursing and Midwifery Board of Australia 2008 Code of professional conduct for nurses in Australia. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Codes-Guidelines.aspx; accessed 28 July 2015.

The role of the registered nurse

As you develop as a nursing professional, you need a clear understanding of how the role and responsibilities of the RN contribute to professional status. For example, key elements distinguishing the RN role from the enrolled nurse (EN) role are the capacity for the RN to be responsible for independent practice and the potential to plan and scope clinical care. All tiers of nursing are critical in developing clinical care; it is important that you obtain a clear understanding of the role and scope of each designation of nurse in the contemporary healthcare system.

The Nursing Council of New Zealand is the accrediting authority for New Zealand while the Nursing and Midwifery Board of Australia (NMBA) is the peak national nursing and midwifery organisation within Australia. This board sits within the Australian Health Practitioner Regulation Agency (AHPRA) (established in July 2010). In consultation with state and territory nursing and midwifery regulatory authorities, the NMBA strives to develop a national approach to nursing and midwifery professional standards. As part of this process, Registered Nurse Standards for Practice have been developed to ensure safe and effective care (NMBA 2016). RNs provide care in a wide range of settings, such as acute care, community, residential and extended-care settings, homes, educational institutions or other work settings. Care provided across these settings needs to be tailored and modified according to the practice setting and model of care delivery. Importantly, the regulatory body advocates that professional practice should be planned and evaluated within a context that considers societal and epidemiological trends in health and illness (Smith et al 2012).

The RN should:

- demonstrate competence in providing nursing care, as specified by the registering authority's licence to practise, educational preparation, relevant legislation, standards and codes and context of care
- practise independently and interdependently, assuming accountability and responsibility for their own actions
- delegate aspects of client care to ENs and health workers, considering their educational preparation and the context of care
- monitor and evaluate aspects of client care delegated to other nurses and healthcare professionals

- provide evidence-based nursing care to people of all ages and cultural groups, including individuals, families and communities
- promote and maintain health and prevention of illness for individuals with physical or mental illness, disabilities and/or rehabilitation needs
- provide effective, appropriate, ethical and acceptable palliative care at the end of life
- assess, plan, implement and evaluate nursing care in collaboration with the client and the multidisciplinary healthcare team so as to achieve goals and health outcomes
- recognise that ethnicity, culture, gender, spiritual values, sexuality, age, disability and economic and social factors affect an individual's responses and beliefs about health and illness, and plan and modify nursing care appropriately
- assume a leadership role in the coordination of nursing and health care within and across different care contexts to facilitate optimal health outcomes
- contribute to high-quality health care through promoting a culture of lifelong learning and professional commitment to nursing research, clinical supervision and development of policy and clinical practice guidelines.

• CRITICAL REFLECTION POINT

Tamara, a newly registered nurse, is working in a small regional hospital in the coronary care unit. A client she is caring for is suffering central chest pain and is diaphoretic. Tamara administers glyceryl trinitrate and performs a 12-lead electrocardiogram which shows ST-segment elevation across the anterior leads. She suspects that the client is suffering from an acute myocardial infarction and calls the medical officer on duty. After Tamara has related the information, the medical officer asks her to administer a bolus dose of thrombolytic therapy. She is certain this is beyond her scope of practice and tells the medical officer so. He becomes irate and argumentative.

1. **What would you do in Tamara's case?**
2. **Who would you contact to seek support and clarification?**
3. **How would you communicate with the medical officer in a collegial and professional manner?**

Box 8-6 lists the Australian Registered Nurse Standards for Practice (see Chapter 10 for further details of these (NMBA 2016) and Chapter 11 for details of New Zealand Competencies for Registered Nurses (NCNZ 2007b)).

You need to familiarise yourself with the standards and competencies relevant to the country in which you are studying/practising. As a student nurse, these standards and competencies will shape your professional goals and crystallise what the expectations will be of you when you enter the workplace. Although the list may be daunting, remember that nursing is a collegial profession where there is a strong emphasis on an integrated and collaborative approach to delivering nursing services. As a consequence, there are many people to help you in your professional journey, including clinical nurse educators, clinical nurse consultants, nursing practitioners and medical and allied health colleagues.

In New Zealand, the Nursing Council of New Zealand is the statutory body governing the practice of nurses that also monitors the standards of practice (NCNZ 2007a). As the heterogeneity of the healthcare workforce increases, along with acknowledgement of the importance of interdisciplinary care, teamwork is increasingly important (Davidson et al 2010, 2015, Riegel et al 2009).

BOX 8-6 Standards and competencies for registered nurses

a. Australian Registered Nurse Standards for Practice

Standard 1: Thinks critically and analyses nursing practice

Standard 2: Engages in therapeutic and professional relationships

Standard 3: Maintains capacity for practice

Standard 4: Comprehensively conducts assessments

Standard 5: Develops a plan for nursing practice

Standard 6: Provides safe, appropriate and responsive quality nursing practice

Standard 7: Evaluates outcomes to inform nursing practice

b. New Zealand Competencies for Registered Nurses

Domain 1: Professional responsibility

Domain 2: Management of nursing care

Domain 3: Interpersonal relationships

Domain 4: Interprofessional health care & quality improvement

Nursing and Midwifery Board of Australia (NMBA) 2016 Registered Nurse Standards For Practice. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards.aspx; accessed 14 June 2016. Nursing Council of New Zealand (NCNZ) 2007 Competencies for Registered Nurses. Online. Available: www.nursingcouncil.org.nz/Nurses/Scopes-of-practice/Registered-nurse; accessed 2 Feb 2016.

Skill-mix for the student nurse

The student nurse is defined as an undergraduate or graduate (pre-registration) student undertaking an approved program

of study to obtain a bachelor of nursing degree, whose clinical practice is under direct supervision by university faculty and facility-based clinical educators. Often during the undergraduate course there is a preoccupation with gaining competencies in technical skills, such as blood pressure assessment and inserting a nasogastric tube. However, it is just as important to develop a suite of skills that will prepare nurses to be effective and efficient members of the healthcare team and lifelong learners. Key skills that you need to develop are your capacity for effective communication (written, oral and non-verbal), for critical, reflective practice and for consciously engaging colleagues and mentors to stimulate and monitor your professional development.

BOX 8-7 Time management considerations in managing care

The more organised and focused your activities are, the more efficient you will be – this means taking time to plan, evaluate, reflect and seek advice.

Goal-setting

Review the goals of care for the day for your allocated clients and accommodate the processes required, for example, communication goals with different team members, internal and external, to enhance patient safety, providing handover and writing reports.

Time allocation

Anticipate how long it will take you to attend to planned activities, such as administration of medications, and contacting and communicating with team members.

Setting priorities

Using the process of prioritising the acuity of client needs, plan the activities for the day; for example, it is important to assess intravenous therapy and invasive treatments such as chest tubes at the beginning of your shift. A to-do list can be useful.

Allow for interruptions

Anticipate interruptions; these will occur. Try not to become annoyed or frustrated when they do occur. Also take the time for your meal breaks and attending to your professional development, such as attending in-service education; this will assist in improving your efficiency.

Evaluation

At the end of each day, take time to think about how effectively time was used. If you are having difficulties in managing your time, ask for help sooner rather than later. Also remember that handing over care to your nurse colleagues and different team members is an expected part of care delivery. Do not feel inadequate; develop skills for participating in a care delivery team and accept tasks graciously when they are given to you. Using an activity log can be a useful reflective practice strategy.

Managing your workload and time management can be challenging, particularly in the early period following registration. Being able to determine priorities based upon clinical assessment is an important skill to develop. Often you will need to be adaptive and flexible. It is important to determine the priorities at the beginning of each shift, to provide a baseline of the patients' clinical progress. Taking time to plan for your shift and seeking advice from other clinicians can increase your efficiency. Develop your own system to prioritise your work plan, such as a notebook with a checklist. As discussed in the section above, to be an effective practitioner it is imperative that you spend some time identifying and evaluating your work style. Box 8-7 will provide you with some additional strategies in planning care delivery.

Many new graduates take on existing practices in clinical areas because of power relationships and socialisation. It is important to evaluate all practices critically and strive to ensure that your nursing care is optimal in meeting the needs of clients, rather than a prevailing culture based upon historical care models.

It is also important to take care of your own physical and mental health to sustain your stamina in demanding clinical settings. Taking time to exercise and engage in stress management are important strategies in promoting your own health and being an effective role model to other staff members and clients.

Also take the time in your early career to critically evaluate the management and clinical styles of your peers. It is often through this reflective process that we develop and cultivate our own working style. Look for favourable role models and adopt their practices. If possible, it is also optimal to identify a mentor, an individual who can assist and support you in your career development.

Key concepts

- A positive practice environment is required to develop and sustain an effective and efficient nursing workforce.
- Evidence-based practice should be the platform for effective nursing care.
- Nurses work in a range of settings in independent, dependent and collaborative nursing roles.
- Acknowledging key competencies is an important step in becoming an RN.
- The nursing unit manager plays an important role in establishing a philosophy of nursing practice and monitoring nursing standards.
- Key competencies for the RN relate to professional practice, recognising their professional, legal, regulatory and ethical responsibilities.
- Coordination, organisation and provision of nursing care include the assessment of individuals/groups, planning, implementation and evaluation of care.

- Nurses make an important contribution to the interdisciplinary healthcare team to improve client outcomes.
- Nurses are required to develop and consolidate professional relationships with individuals and groups to optimise clinical care.
- Models of nursing care should be tailored to the needs of individuals and their families.
- Approaches to nursing care should be developed and evaluated within the context of the clinical setting, client needs, available nursing skill-mix and considering the strengths and weaknesses to approaching care delivery.
- Nursing management models are dependent on the organisational structure and vision, although key concepts relating to vision, leadership, reflective practice, commitment to evidence-based practice and supporting lifelong learning should be integral to all management models.
- Effective communication is critical in ensuring optimal patient care.
- Integrated quality-improvement initiatives are important in driving improvements in clinical care.

Online resources

Agency for Clinical Innovation: Online resources for the promotion of local innovation and improvement projects, and collaborative centres for healthcare providers, www.aci.health.nsw.gov.au

Australian Nursing and Midwifery Accreditation Council (ANMAC): Information on course accreditation services and standards; and skills assessment of local and international nurses, www.anmac.org.au

Cancer Australia: National government agency with information on cancer, research and clinical trials, canceraustralia.gov.au

Cancer Society of New Zealand: National government agency with information and support for patients and families, research, scholarships and advocacy, www.cancernz.org.nz

Cochrane Collaboration: Best available evidence: online database for a range of health-related topics; www.cochrane.org

Health Research Council of New Zealand: Supports research with potential to improve healthcare delivery and outcomes and economic gain; research funding body, www.hrc.govt.nz

International Council of Nurses: Information on strategies to promote quality nursing care and influence health policy; online forums for nurse advocacy and advancement, www.icn.ch

Joanna Briggs Institute: Research centre, including online database for evidence-based health care, research and education training (higher degrees) and short courses, www.joannabriggs.org

National Health and Medical Research Council: Information on NHMRC grants and funding rules, guidelines and applications, research translation initiatives, ethics, publications and health topics, www.nhmrc.gov.au

National Heart Foundation: Research and heart health-related information for consumers and health professionals, www.heartfoundation.org.au, www.heartfoundation.org.nz

Nursing and Midwifery Board of Australia: Information on health practitioner regulation requirements and registration information; professional guidelines and accreditation information, www.nursingmidwiferyboard.gov.au

Nursing Council of New Zealand: Information for nurses, employers and public on guidelines, resources and nursing-related publications, code of conduct and annual practising certificates, www.nursingcouncil.org.nz

Royal College of Nursing Australia: Information on education, learning resources, scholarships and events for the advancement of nursing leadership, www.rcna.org.au

Sigma Theta Tau International: STTI is the largest nursing Honour society in the world. Founded in 1922, STTI has approximately 490 chapters throughout 85 countries and supports the learning, knowledge and professional development of nurses, www.nursingsociety.org

References

Abraham J et al 2014 A systematic review of the literature on the evaluation of handoff tools: implications for research and practice. Journal of the American Medical Informatics Association 21(1):154–62.

Adams E et al 2006 Positive practice environments. Key considerations for the development of a framework to support the integration of international nurses. International Centre on Nurse Migration, Geneva.

Burston S et al 2014 Nurse-sensitive indicators suitable to reflect nursing care quality: a review and discussion of issues. Journal of Clinical Nursing 23(13–14):1785–95.

Casey M et al 2015 Nurses', midwives' and key stakeholders' experiences and perceptions of a scope of nursing and midwifery practice framework. Journal of Advanced Nursing 71(6):1227–37.

Cloninger CR et al 2015 A time for action on health inequities: foundations of the 2014 Geneva declaration on person- and people-centered integrated health care for all. International Journal of Person Centered Medicine 4(2):69–89.

Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing 2011 The future of nursing: leading change, advancing health. National Academic Press, Washington DC.

Crisp N et al 2014 Global supply of health professionals. New England Journal of Medicine 370(10):950–7.

Davidson P et al 2015 Nurses do not have proprietary rights on caring: but we do on clinical practice models. Journal of Nursing Management 23(4):409–10.

Davidson P et al 2013 Editorial: Looking to the future with courage, commitment, competence and compassion. Journal of Clinical Nursing 22(19–20):2665–7.

Davidson P et al 2010 A review of the cultural competence view of cardiac rehabilitation. Journal of Clinical Nursing 19(9–10): 1335–42.

Davidson P et al 2006 Beyond the rhetoric: What do we mean by a 'model of care'? Australian Journal of Advanced Nursing 23(3):47–55.

Duffield C et al 2009 Staff satisfaction and retention and the role of the nursing unit manager. Collegian 16(1):11–17.

Durey A 2010 Reducing racism in Aboriginal health care in Australia: where does culture education fit? Australian and New Zealand Journal of Public Health 34:S87–S92.

Ellerbe S 2012 Responding to health care reform by addressing the Institute of Medicine report on the future of nursing. JONA'S Healthcare Law, Ethics and Regulation 14(4):124–8.

Eng CJ et al 2015 Determinants of nursing competence of nursing students in Taiwan: The role of self-reflection and insight. Nurse Education Today 35(3):450–5.

Gray K et al 2010 Factors in the development of clinical informatics competence in early career health sciences professionals in Australia: a qualitative study. Advanced Health Science Education 16(1):31–46.

Griffiths P et al 2014 The association between patient safety outcomes and nurse/healthcare assistant skill mix and staffing levels and factors that may influence staffing requirements. SHTAC National Nursing Research Unit.

Halcomb EJ et al 2014 The evolution of nursing in Australian general practice: a comparative analysis of workforce surveys ten years on. BMC Family Practice 15(1):52.

Hannan TJ et al 2011 E-health in Australia: time to plunge into the 21st century. Medical Journal of Australia 194(4):211.

Hartgerink J et al 2014 The importance of multidisciplinary teamwork and team climate for relational coordination among teams delivering care to older patients. Journal of Advanced Nursing 70(4):791–9.

Henderson J et al 2014 How is primary health care conceptualised in nursing in Australia? A review of the literature. Health and Social Care in the Community 22(4):337–51.

Hickman L et al 2015 Multidisciplinary team interventions to optimise health outcomes for older people in acute care settings: A systematic review. Archives of Gerontology and Geriatrics, 61(3):322–9. doi: 10.1016/j.archger.2015.06.021.

Hickman L et al 2010 Can principles of the Chronic Care Model be used to improve care of the older person in the acute care sector? Collegian 17(2):63–9.

Hinds PS et al 2015 Creating a career legacy map to help assure meaningful work in nursing. Nursing Outlook 63(2):211–18.

Hobgood C et al 2010 Teamwork training with nursing and medical students: does the method matter? Results of an interinstitutional, interdisciplinary collaboration. Quality and Safety in Health Care 19(6):1–6.

International Council of Nurses 2011 Positive practice environments. Online. Available: www.who.int/workforcealliance/about/initiatives/PPEevaluation_2012.pdf; accessed 16 March 2016.

Jackson D et al 2014 Editorial: Nursing innovation and reform in health care. Contemporary Nurse 48(2):130–2.

Kavanagh T et al 2010 Process evaluation of appreciative inquiry to translate pain management evidence into pediatric nursing practice. Implementation Science 5(1):90.

Kennedy M et al 2014 Delirium risk prediction, healthcare use and mortality of elderly adults in the emergency department. Journal of the American Geriatrics Society 62(3):462–9.

Koh HK et al 2010 Promoting prevention through the affordable care act. New England Journal of Medicine 363(14):1296–9.

Lee A et al 2014 Root cause analysis of serious adverse events among older patients in the Veterans Health Administration. Joint Commission Journal on Quality and Patient Safety 40(6):253–62.

Lindberg M et al 2012 Ultrafiltration rate as a nursing-sensitive quality indicator in haemodialysis. International Journal of Nursing Studies 49(10):1320–4.

Marmot M et al 2005 Social determinants of health. Oxford University Press, Oxford.

Middleton S et al 2011 Implementation of evidence-based treatment protocols to manage fever, hyperglycaemia, and swallowing dysfunction in acute stroke (QASC): a cluster randomised controlled trial. The Lancet 378(9804):1699–706.

Mitchell GK et al 2008 Multidisciplinary care planning and teamwork in primary care. Medical Journal of Australia 188(8):S61.

Nuño R et al 2012 Integrated care for chronic conditions: the contribution of the ICCC Framework. Health Policy 105(1):55–64.

Nursing Council of New Zealand 2007 Framework for professional standards. Online. Available: www.hpm.org/download/48/framework-standards-march-2007.pdf; accessed 16 March 2016.

Nursing Council of New Zealand (NCNZ) 2007b Competencies for Registered Nurses. Online. Available: www.nursingcouncil.org.nz/Nurses/Scopes-of-practice/Registered-nurse; accessed 2 Feb 2016.

Nursing and Midwifery Board of Australia (NMBA) 2016 Registered Nurse standards for practice. Melbourne, NMBA. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards.aspx; accessed 14 June 2016.

O'Neill M et al 2008 Partners in care: investigating community nurses' understanding of an interdisciplinary team-based approach to primary care. Journal of Clinical Nursing 17(22):3004–11.

Parker R et al 2014 What primary health-care services are Australian consumers willing to accept from nurse practitioners? A National Survey. Health Expectations 17(5):733–40.

Pearce C et al 2011 Following the funding trail: Financing, nurses and teamwork in Australian general practice. BMC Health Services Research 11(1):38.

Phillips J et al 2014 Role ambiguity, role conflict, or burnout: are these areas of concern for Australian palliative care volunteers? Pilot study results. Am J Hosp Palliat Care 31(7):749–55.

Plever S et al 2010 The Queensland Mental Health Clinic Collaborative and the management of schizophrenia. Australasian Psychiatry 18(2):106–14.

Rafferty AM et al 2001 Are teamwork and professional autonomy compatible, and do they result in improved hospital care? Quality in Health Care 10(suppl 2):ii32–ii37.

Reeves S et al 2008 Interprofessional education: effects on professional practice and health care outcomes. Cochrane Database of Systematic Reviews (1):CD002213.

Riegel B et al 2009 State of the science promoting self-care in persons with heart failure: a scientific statement from the American Heart Association. Circulation 120(12):1141–63.

Sackett D et al 1996 Evidence based medicine: what it is and what it isn't. BMJ 312(7023):71.

Sacks GD et al 2015 Teamwork, communication and safety climate: a systematic review of interventions to improve surgical culture. BMJ Quality & Safety doi:10.1136/bmjqs-2014-003764.

Shamian J, Ellen M 2014 Advanced practice registered nursing: the global perspective. In Goudreau KA, Smolenski MC (eds), Health policy and advanced practice nursing: impact and implications. Springer, New York, pp. 337–48.

Smith PC et al 2012 Leadership and governance in seven developed health systems. Health Policy 106(1):37–49.

Thompson SC et al 2011 Not just bricks and mortar: planning hospital cancer services for Aboriginal people. BMC Research Notes 4(1):62.

WHO 2014 Global Status Report on Non-Communicable diseases. World Health Organization. Online. Available: http://apps.who.int/iris/bitstream/10665/148114/1/9789241564854_eng.pdf?ua=1; accessed 16 March 2016.

CHAPTER

9

Examining the ethical practice of nursing

Megan-Jane Johnstone

KEY TERMS

Bioethics, p. 141
Codes of ethics, p. 150
Cross-cultural ethics, p. 149
Deontological ethics, p. 146
Ethical issues, p. 152
Ethical principles/ principlism, p. 147
Ethics, p. 140
Moral accountability, p. 145
Moral conduct, p. 144
Moral decision-making, p. 146
Moral duty, p. 142
Moral principles, p. 142
Moral problem, p. 143
Moral rules, p. 150
Moral theories, p. 146
Morality, p. 140
Nursing ethics, p. 141
Responsibility, p. 145
Rights, p. 142
Sound (moral) justifications, p. 146
Teleological theory of ethics, p. 147
Utilitarianism, p. 147
Virtue ethics, p. 149

Learning outcomes

Mastery of content will enable you to:

- discuss the key terms listed and their relevance to guiding ethical professional conduct in nursing domains
- discuss the importance of ethics to, and in, the profession and practice of nursing
- examine critically what constitutes ethical professional practice
- discuss the notions of moral accountability and responsibility
- identify moral theories, which may be used to guide professional practice
- examine the nature and authority of nursing codes of ethics
- outline 10 moral problems that may arise in nursing and healthcare contexts
- discuss how moral problems can be distinguished from non-moral problems
- discuss five steps that may be taken to identify and deal with moral problems using processes of ethical reasoning
- apply one systematic model of moral decision-making to a clinical situation
- discuss critically at least six ethical issues of importance to the nursing profession.

When people enter the nursing profession they are required to make a commitment to upholding exemplary standards of ethical conduct – that is, standards that are above what would normally be expected of the 'ordinary person in the street'. The ethical standards that nurses are expected to uphold are prescribed in various codes of ethics, codes of conduct, standards for practice, and position statements which have been developed and published by recognised professional nursing organisations. Some examples can be found in the codes of ethics and codes of conduct published respectively by the International Council of Nurses (ICN 2012), the Nursing and Midwifery Board of Australia (NMBA) (NMBA 2008a, 2008b), the New Zealand Nurses Organisation (NZNO 2010), the Nursing Council of New Zealand (NCNZ 2012a) and other similar bodies (Box 9-1). A search of the home pages of the peak nursing organisations, which have developed and ratified these codes, reveals a range of associated guidance documents and position statements on issues with which nurses and student nurses ought to be familiar. Some examples include, but are not limited to, position statements on such issues as: the responsible use of social media in both personal and professional contexts, maintaining professional boundaries when entering into therapeutic relationships with patients, workplace bullying, professional and legal requirements for making voluntary and mandatory notifications of nurses whose conduct or practice places the safety of the public at risk, conscientious objection, and advertising regulated health services (including giving false or misleading information, testimonials, gifts, and encouraging indiscriminate or unnecessary use of services).

In addition to being expected to uphold exemplary standards of ethical professional conduct, nurses are required to also be able to identify and respond effectively to a wide range of ethical issues that may, and do, arise in nursing care and related healthcare contexts. How well nurses are able to respond to these requirements, however, will depend on their knowledge and understanding of what ethics is and how it can best be practised in a culturally, socially and geographically diverse world. Consider the case scenario in the *Clinical example* below.

Both the *Code of ethics for nurses in Australia* (NMBA 2008a) and the NZNO (2010) *Code of ethics* explicitly require nurses to respect the needs, values, culture and vulnerability of people in the provision of nursing care and to ensure that the care provided to patients is culturally informed, safe and appropriate. However, the Codes also require nurses to 'accept the rights of individuals to make

BOX 9-1 Website addresses for locating nursing codes of ethics and codes of conduct

International Council of Nurses (ICN)

www.icn.ch/icncode.pdf

www.icn.ch/who-we-are/code-of-ethics-for-nurses/

ICN (2012) Code of ethics for nurses

AHPRA Nursing and Midwifery Board of Australia (NMBA)

www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Codes-Guidelines.aspx

NMBA (2016) Registered nurse standards for practice

NMBA (2010) A nurse's guide to professional boundaries

NMBA (2008a) Code of ethics for nurses in Australia

NMBA (2008b) Code of professional conduct for nurses in Australia

Nursing Council of New Zealand (NCNZ)

www.nursingcouncil.org.nz/

www.nursingcouncil.org.nz/Nurses/Code-of-Conduct

NCNZ (2012a) Code of conduct for nurses

NCNZ (2012b) Guidelines: Professional boundaries

New Zealand Nurses Organisation (NZNO)

www.nzno.org.nz

www.nzno.org.nz/resources/nzno_publications

www.nzno.org.nz/Portals/0/publications/Code%20of%20Ethics%202010.pdf

NZNO (2010) Code of ethics

CLINICAL EXAMPLE

The case of 'Mr G'

'Mr G', a 69-year-old Greek-born man who had migrated to Australia from rural Greece and who spoke little English, was admitted to a major metropolitan hospital for follow-up assessment and treatment of a cancer-related illness. Unfortunately, test results revealed that his condition had unexpectedly worsened, that his prognosis was poor and that palliative care was his best option. Upon learning of this bad news, Mr G's family pleaded with the attending doctor not to tell their father that his medical condition had worsened and that his prognosis was poor. Mr G's eldest daughter explained to the doctor that were he to tell Mr G that his cancer had spread, 'this would destroy his hope and affect his quality of life'. She further explained that, in their Greek culture, 'it was wrong to tell someone they had terminal cancer'. The doctor objected to the daughter's request, however, arguing that the matter was 'not about culture, but about ethics' and that her father 'had a right to know' (Johnstone 2012, 2016).

Johnstone M 2016 Bioethics: a nursing perspective, 6th edn. Churchill Livingstone, Sydney; Johnstone M 2012 Bioethics, cultural differences and the problem of moral disagreements in end-of-life care: a terror management theory. Journal of Medicine and Philosophy 37(4):181–200.

informed choices in relation to their care'. In the *Clinical example* on the previous page, relating to Mr G's case, it seems that these two requirements clash, raising the important question of the right thing to do in this and similar scenarios (see also Johnstone 2012). When, if ever, should a family's pleas be taken into consideration in determining when (if at all), where, how and by whom a cancer diagnosis and poor prognosis should be disclosed to a patient? How are nurses and other members of the healthcare team to decide these things? Moreover, do they have the cultural competence necessary to enable them to engage in moral decision-making processes in a culturally meaningful, appropriate and morally safe way? In the case of the NZNO *Code of ethics*, another ethical dimension is added, since this Code also prescribes that nurses must recognise that many sociocultural groups 'place the importance of the collective on a par with the needs and rights of the individual' and that the rights of 'both the individual and the collective must be respected' (NZNO 2010:12).

Being able to respond to this and other kinds of case scenarios in a morally just, responsible and competent way requires nurses to have at least a working knowledge and understanding of:

- key terms and concepts commonly used in discussions on ethical issues in nursing practice
- the importance of ethics to the profession and practice of nursing
- what constitutes ethical professional practice
- notions of moral accountability and responsibility
- reliable guides to ethical professional conduct
- key moral theories that are commonly used to guide ethical decision-making and practice in nursing (including cross-cultural ethics)
- the nature and authority of nursing codes of ethics
- the kinds of moral problems that can and do arise in nursing and healthcare domains
- how moral problems can be distinguished from other kinds of problems (e.g. legal problems)
- processes for identifying and dealing with moral problems arising in practice contexts
- moral decision-making in practice contexts
- bioethical issues of importance to the nursing profession.

Without the requisite knowledge and understanding of these things, it would be very easy for nurses to 'rush to judgement' when engaged in moral decision-making and, as a consequence, make moral mistakes (i.e. do the wrong thing). If moral mistakes are made, this can result in morally significant harm to patients, their loved ones and also to healthcare providers. It is for this reason that nurses must make every effort, individually and collectively, to ensure that they are well informed about and adequately prepared to deal with the moral complexities and quandaries that are likely to arise in their practice and places of work.

Terms and concepts

To be able to discuss ethical issues in nursing in a meaningful way, it is important to have an understanding of such key terms and concepts as ethics, morality, bioethics, nursing ethics, moral principles, moral rules, moral rights and moral duties.

Ethics and morality

Ethics (which may be used interchangeably with the term 'moral') is a general term used for referring to various ways of understanding and examining the 'moral life' (Beauchamp & Childress 2013). More specifically, ethics involves thinking critically about and engaging in a systematic examination of what constitutes right and wrong/good and bad behaviour, and the bases upon which we might justify our judgements that an action or decision is 'morally right or wrong', all things considered. For example, a nurse may make the moral judgement that abortion is wrong and conscientiously object to assisting with an abortion procedure. Whether conscientious objection ought to be permitted, however, requires a critical examination of the bases on which the nurse has made that judgement, and the provision of sound (moral) justifications (reasons) for the action taken. Ethics, then, is concerned not just with giving values to certain things (e.g. abortion is right/wrong, good/bad), but also with *justifying* the bases on which judgements about these things might be made (Johnstone 2016, Kerridge et al 2013, LaFollette 2014).

It is important to clarify the use of the term '**morality**' in discussions on ethics. In some nursing texts, the terms 'ethics' and 'morality' are treated as though they refer to different things. This use, however, is incorrect and misleading. There is, in fact, no philosophically significant difference between the terms 'ethics' and 'morality', and hence they may be used interchangeably. The only distinction that may be drawn with validity between these two terms is that the word 'ethics' comes from the Greek *ethikos* (originally meaning custom or habit), and 'morality' from the Latin *moralitas* (also originally meaning custom or habit) (Johnstone 2016). Of course, today these terms refer to something much more sophisticated than merely custom or habit, as this chapter will show.

Bioethics

The term **bioethics** (from the Greek *bios* meaning life, and *ethikos*, *ithiki* meaning ethics) – literally, ethics in the realm of life – is a relatively new term that first found its way into public use in the early 1970s in the United States (Reich 1994). Although the term was originally defined to include environmental concerns, as it is used today its main focus is on (Reich 1995):

- the rights and duties of patients and healthcare professionals
- the rights and duties of research participants and researchers
- the formulation of public policy guidelines for clinical care and biomedical research.

Although originating in the United States, bioethics has developed and been institutionalised as a discipline in its own right in countries around the world (Düwell 2013); it has also developed as a major international movement of popular interest to professionals and laypersons alike. Today, issues most commonly the subject of bioethics debate in professional journals, as well as in the mass circulation media, include:

- abortion
- euthanasia and medically assisted suicide
- organ transplantation
- reproductive technology (including genetic engineering, surrogacy, ectogenesis, and embryonic and stem cell research)
- patients' rights to privacy and confidentiality
- informed consent
- the economic rationalisation of health care
- research ethics.

Nursing ethics

Contemporary nursing ethics has been profoundly influenced by the modern bioethics movement to the extent that some regard nursing ethics as being merely a subcategory of bioethics; that is, nursing bioethics. Despite the influence of bioethics on nursing ethics, it is important to acknowledge that the nursing profession has its own rich and distinctive history of identifying and responding effectively to ethical issues in nursing and health care. In addition to having its own distinctive history of professional ethics, nursing can be said to have developed its own distinctive (nursing) ethics as a discipline and field of inquiry (see Johnstone 2015a, 2015b, 2015c). Not only has this development been necessary, it was also inevitable. It has been necessary because 'a profession without its own distinctive moral convictions has nothing to profess' and will be left vulnerable to the corrupting influences of whatever forces are more powerful (be they social, political, legal or other in nature) (Churchill 1989). Furthermore, as Churchill (1989) has asserted in his classic article on the subject, 'Professionals without an ethic are merely technicians who know how to perform work, but who have no capacity to say why their work has any larger meaning.' Without meaning, there is little or no motivation to perform well.

What, then, is nursing ethics? **Nursing ethics** can be broadly defined as the examination of all kinds of ethical and bioethical issues from the perspective of nursing theory and practice, which in turn rest on the agreed core concepts of nursing, namely person, culture, care, health, healing, environment and nursing itself (or, more to the point, its end good), all of which have been comprehensively articulated in the nursing literature. In this regard, then, nursing ethics is not synonymous with, and indeed is greater than, an ethic of care, although an ethic of care has an important place in the general scheme of things, encompassing nursing and nursing ethics (Johnstone 2016).

Unlike other approaches to professional and healthcare ethics, nursing ethics recognises the 'distinctive voices' of nurses, and emphasises the importance of collecting and recording nursing 'stories from the field'. Like other approaches to ethics, however, nursing ethics also recognises the importance of providing practical guidance on how to decide and act morally. Drawing on a variety of ethical traditions, nursing ethics, at its most basic, could thus also be described as a nursing practice discipline that aims to provide guidance to nurses on how to decide and act morally in the contexts within which they work.

Moral principles

General standards of conduct that make up an ethical system are known as moral principles. To say that a principle is moral is merely to assert that it is a behaviour guide that entails particular imperatives or obligations; that is, to do or to refrain from something that may have a morally significant outcome. It is generally accepted that moral principles function by specifying that some type of action or conduct is prohibited, required or permitted in certain circumstances (Beauchamp & Childress 2013, Johnstone 2016). By this view, an action or behaviour is generally considered morally right or good if it accords with a given moral principle, and morally bad or wrong when it does not.

Moral principles commonly referred to in healthcare ethics include those of autonomy, non-maleficence, beneficence and justice (see Moral theories on p. 146).

To illustrate how moral principles work, consider the principle of autonomy. The principle of autonomy demands respect for individuals as self-determining choosers and is widely accepted as a general standard of moral conduct. Given this principle, conduct that respects an individual's self-determining choices (e.g. a patient's competent decision not to accept a recommended medical treatment) could be appraised as having accorded with the principle of autonomy and therefore as being morally 'right' and justified. Conversely, conduct that is disrespectful of an individual's choices (e.g. a competent patient's decision to refuse medical treatment is rejected and overridden by a professional caregiver) could be appraised as having violated the principle of autonomy and therefore as being morally 'wrong'. **Moral principles** thus not only guide conduct, they can also be appealed to for justifying the conduct in question.

Moral rules

Like moral principles, moral rules also have a place in making up a system or scheme for guiding moral action. And like moral principles, moral rules also function by specifying that some type of conduct is prohibited, required or permitted (Beauchamp & Childress 2013, Johnstone 2016). What distinguishes a moral rule from a moral principle, however, is its nature and force. Moral principles, for example, tend to be general in nature (e.g. do no harm; promote good). Moral rules, in contrast, are both derivative of, and justified by, parent principles and are very specific in their focus (e.g. do not kill others; do not tell a lie). It can be seen, then, that moral rules have a different force, sanctioning power, condition of existence, scope of application and level of concreteness from moral principles. In application, they are generally regarded as having less force than principles.

Rights

Common to discussions on nursing ethics is the notion of **rights** – including moral rights, human rights and patient or health consumer rights. An understanding of these key terms is, therefore, warranted.

Moral rights

These are to be distinguished here from other kinds of rights, such as civil rights, legal rights, institutional rights and the like. Moral rights generally entail a claim about some special entitlement or interest which ought, for moral reasons, to be protected. For example, people commonly claim rights to such special interests as life, freedom, fair treatment, bodily integrity, health and so on. The language used in asserting rights typically involves expressions like 'I have a right to …', 'You have a right to …', 'They have a right to …', and 'We have a right to …'.

Human rights

In contrast, human rights refer to a set of special interests that human beings (as opposed to non-human beings, such as animals) are entitled to claim by virtue of being human. Human rights can include moral rights, legal rights, civil rights and so on. A good example of human rights statements can be found in the United Nations (1948) Declaration of Human Rights. This declaration has influenced the development of nursing codes of ethics, not least the ICN's (2012) revised *Code of ethics for nurses*, the NMBA's *Code of ethics for nurses in Australia* (Nursing and Midwifery Board of Australia 2008a) and, to some extent, the NZNO's (2010) *Code of ethics*, which although not overtly informed by a human rights framework, nonetheless contain statements that prescribe the protection of rights (see Box 9-1).

Patient rights

Patient rights can be described as a subcategory of human rights, the global movement for which dates back to the late 1960s and early 1970s in the United States (d'Oronzio 2001). Statements of patient rights tend to entail statements about particular moral interests that a person might have in healthcare contexts and that require special protection when that person assumes the role of a patient. Patient rights that might be commonly claimed include the right to health care, the right to make informed decisions, the right to privacy and confidentiality, the right to dignity and the right to be treated with respect.

Moral duties

A **moral duty** (as distinguished from a legal duty, a civic duty and so on) is an action which a person is bound, for moral reasons, to perform. Language used in identifying duties typically involves expressions such as 'I have a duty …', 'You have a duty …', 'They have a duty …' and 'We have a duty …'. In a rights view of ethics, someone claiming a valid right supplies a moral reason for why another must act morally towards them. Because of this, moral duties are sometimes described as being correlative; that is, in relation to another's rights claims. To put this another way, if one person claims a right this may entail another having a correlative duty to respect and respond to that right. For example, if a patient claims the right to make an informed decision regarding nursing care, then an attending nurse could be said to have a correlative duty to respect and uphold that right. Moral reasons can also be supplied by an appeal to ethical principles. For example,

adoption of the principle of autonomy would impose on decision-makers a duty to uphold its prescriptions; namely, to respect people as self-determining choosers.

A critical task for decision-makers is deciding just what their duties are in given situations. Making the correct decision depends on determining what counts as an overriding moral reason for doing something (bearing in mind that moral reasons are generally regarded as being stronger or more pressing than other kinds of reasons, such as personal preferences, civic duty and group membership). For example, in the case of a rights claim being made, whether or not another has a corresponding duty will depend on whether the right being claimed is genuine, whether the entity has moral rights at all and whether an agent does in fact have a duty correlative to the rights claim being made.

Sometimes people confuse rights with duties, and vice versa. A useful way to guide an understanding of the distinction between rights and duties is to consider that when people claim a right they are making a claim with respect to their own interests; in contrast, when people claim a duty they are making a claim with respect to the interests of another or others.

The importance of ethics

Nursing has a profound ethical dimension. Its practice never occurs in a moral vacuum and is never free of moral risk (Johnstone 2016). Even the smallest of nursing actions (e.g. giving an aspirin tablet) could, potentially, result in significant moral consequences – bad as well as good. Moreover, as long as nurses work with and care for other people, they will never be able to avoid the moral problems and issues that will invariably arise during the course of their practice.

During their everyday practice, nurses will often be confronted by such questions as: 'What should I do in this situation?', 'How do I know I'm doing the right thing?', 'What are my moral obligations in this case?' The case of 'Ms Winnow', a competent patient with a health history of diabetes, obesity and large areas of skin breakdown who refused nursing care, helps to illustrate this point (Dudzinski & Shannon 2006). The care which Ms Winnow initially refused included being turned, having wound care for her decubitus ulcers and undergoing incontinence management. Ms Winnow's refusals left attending nurses confronted with the dilemma of, on the one hand, wanting to respect her wishes and yet, on the other, knowing that respecting her wishes would place her at further risk of harm and suffering – including further breakdown of her ulcerated skin. In this case, provocative questions arise: What should her attending nurses do? What are their moral obligations to Ms Winnow? And how are they to know that, whatever they decide to do, they have done the right thing, all things considered?

When encountering an ethical problem in the workplace, nurses often worry about whether the moral decisions they make are 'correct'; nurses are also known to experience feeling perplexed, stressed and even distressed when – for various reasons – they did not 'get it right' or were unable to carry out what they had carefully and conscientiously thought was the right thing to do. It is for these kinds of reasons that ethics has assumed paramount importance in nursing.

Moral conduct in nursing

Nurses face many complex and varied **moral problems** during the course of their practice, which cannot be ignored. Accordingly, there are stated expectations in nursing standards of conduct that nurses must be able to identify and respond appropriately to a range of ethical problems and issues in nursing and healthcare contexts. There is the additional expectation that nurses also must be able to demonstrate moral competence and capabilities in regard to these things.

'Competence' in nursing is generally taken as referring to a combination of essential skills, knowledge, attitudes and values expected of registered nurses. In the case of moral/ethical competence, nurses need to be able to demonstrate that they: have knowledge and understanding of the different ethical concepts and theories that are pertinent to ethical decision-making and conduct in nursing and healthcare contexts; have the capacity to engage in sound moral reasoning and decision-making; are well informed about common ethical issues arising in and affecting nursing and healthcare practice; have a working knowledge of codes of ethics, guidelines and standards of practice relevant to the profession and practice of nursing; and have a sound knowledge and understanding of the power dynamics of the social, cultural, political, legal and institutional environment in which ethical issues arise in nursing and their possible influence on the way in which ethical issues are perceived and addressed (Johnstone 2015d). Nurses need also to develop a set of moral skills, including assessment skills (e.g. being able to identify moral problems, correctly 'diagnose' the nature of the moral problems at hand, and access relevant resources to assist in addressing the problems identified); implementation skills (e.g. be able to apply their moral knowledge effectively to address the problems at hand and evaluate the success or otherwise of the outcomes of their interventions); and interpersonal skills (e.g. 'good' communication skills, ability to listen to

others, and the capacity to guide effective problem-solving with patients and other members of the healthcare team) (Johnstone 2015d).

In Australia, the specific standards pertaining to **moral conduct** expected of registered nurses are outlined in the NMBA's *Registered nurse standards for practice* (NMBA 2016). It is intended that these standards are read, interpreted and applied in conjunction with the NMBA's companion documents, including the *Code of ethics for nurses in Australia* (2008a) and the *Code of professional conduct for nurses in Australia* (NMBA 2008b). Taken together, the NMBA *Standards* and companion documents make it clear that registered nurses in all areas and levels of practice 'are accountable for their decisions, actions, behaviours and the responsibilities that are inherent in their nursing roles', and that, in fulfilling their roles, nurses must use ethical frameworks when making decisions. While all of the stated registered nurse standards have an ethical dimension, the particular standards that encompass the requirement for nurses to conduct themselves ethically are listed in Box 9.2.

In New Zealand, the specific moral competencies expected of registered nurses are outlined in the NCNZ's (2012b) *Competencies for registered nurses*. These standards require registered nurses to be able to demonstrate knowledge and judgement and be 'accountable for own actions and decisions, while promoting an environment that maximises patient safety, independence, quality of life and health'. The particular moral competencies (and related indicators) expected of a registered nurse are variously listed under *Domain 1: Professional responsibility* and *Domain 2: Management of nursing care*, and include the following:

- Accepts responsibility for ensuring that his/her nursing practice and conduct meet the standards of the professional, ethical and relevant legislated requirements.
- Maintains clear, concise, timely, accurate and current health consumer records within a legal and ethical framework.
- Discusses ethical issues related to healthcare/nursing practice (for example, informed consent, privacy, refusal of treatment and rights of formal and informal health consumers).
- Promotes a quality practice environment that supports nurses' abilities to provide safe, effective and ethical nursing practice.

BOX 9-2 Registered nurse standards for practice pertaining to ethical conduct

Standard 1: Thinks critically and analyses nursing practice

1.5 uses ethical frameworks when making decisions

Standard 2: Engages in therapeutic and professional relationships

2.1 communicates effectively, and is respectful of a person's dignity, culture, values, beliefs and rights

2.2 advocates on behalf of people in a manner that respects the person's autonomy and legal capacity

Standard 3: Maintains the capability for practice

3.4 accepts accountability for decisions, actions, behaviours and responsibilities inherent in their role, and for the actions of others to whom they have delegated responsibilities

Standard 6: Provides safe, appropriate and responsive quality nursing practice

6.1 practises in accordance with relevant policies, guidelines, standards, regulations and legislation.

Nursing and Midwifery Board of Australia (NMBA) 2016 Registered nurse standards for practice. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards.aspx; accessed 8 April 2016.

• CRITICAL REFLECTION POINT

Even when well informed about the ethical dimensions of nursing practice standards, nurses may still appeal more to their own values, beliefs and convictions rather than to a systematic application of ethics (concepts and theories) when making moral decisions. Take the time to think carefully about what the implications of this might be for patients and families who do not share the values, beliefs and convictions that attending nurses might be appealing to when making moral decisions about the patient's care and treatment.

Moral accountability and responsibility

In identifying and responding effectively to moral problems in the workplace and, indeed, when practising in a professional capacity generally, nurses are morally accountable and responsible for their actions (Johnstone 2016). Thus, when a nurse breaches the agreed ethical standards of the nursing profession, there is an expectation that they will be made to account for and, ultimately, be held responsible for their conduct. Moral accountability and responsibility, however, do not reside only in individual nurses. The nursing profession as a whole, and those charged with the responsibility of regulating it, are also morally accountable and responsible for their actions. This is an important point, since it has a significant bearing on the kinds of strategies that might otherwise be used to respond effectively to situations in which the agreed

RESEARCH HIGHLIGHT

Research focus

This systematic review of the literature synthesises the evidence obtained by empirical studies investigating how nurses' ethical competence and their capacity to fulfil their moral responsibilities as nurses are supported in practice contexts.

Research abstract

A key finding of the review was that, although ethical competence is an essential element of nursing practice, there is little evidence of support being provided to nurses enabling them to gain and develop this element of practice and to fulfil their moral responsibilities as nurses. Although nurses' ethical competence in terms of ethical decision-making, ethical sensitivity, ethical knowledge and engagement in ethical reflection have been studied, how to support these things has been the subject of recommendations only. Recommendations have typically included: ethics education, ethics rounds, ethics committees and ethics consultations.

Implications for ethics-based practice

- Processes for enabling nurses to develop their ethical competence and fulfil their moral responsibilities as nurses are under-investigated.
- To enable meaningful comparative research to be conducted, the conceptual, theoretical and practical perspectives of ethical competence require further scholarly inquiry.
- Further research is also required on the kinds of support that nurses need in order to maintain their ethical competence and fulfil their moral responsibilities in difficult work environments.

Reference

Poikkeus T et al 2014 A mixed-method systematic review: support for ethical competence of nurses. Journal of Advanced Nursing 70(2):256–71.

ethical standards of the profession are at risk of being or have already been breached.

Understanding the nature and moral implications of professional accountability and responsibility in nursing requires a commensurate understanding of moral theories of accountability and responsibility. For example, in the philosophical literature, accountability has classically been taken to mean:

> **[being] obliged to give satisfactory reasons for one's actions, to be capable of giving an explanation for one's actions, to be responsible for one's conduct, to be made to pay for one's conduct, or to reckon with the consequences of one's actions (Fry-Revere 1992).**

In turn, the notion of **responsibility** (of which accountability is a form) has been taken broadly to include not only one's 'intentional conduct' (i.e. a person's deliberate acts and omissions), but also:

> **anything with which one is seen to have a causal relationship (whether this perception is justified or not), including moral character, physical and psychological characteristics, salvation, and even unintentional effects on one's own life or the lives of others (Fry-Revere 1992).**

Drawing on both of the above accounts, moral theories of accountability hold that:

> **a person X, is accountable for his or her actions if X acted freely or intentionally and X's action or inaction is causally related to the outcome for which X is being held accountable (Fry-Revere 1992).**

Theories of **moral accountability** tend to emphasise accountability to oneself or to a superior entity. Either way, claims of moral accountability tend to assume that:

> **Human beings are free to act and cause events for which they are directly responsible and that some form of internal mechanism of accountability, whether based on conscience or belief, is essential to human interaction (Fry-Revere 1992).**

It can be seen, then, that the issues of moral accountability and responsibility have important implications for nurses. For example, an ongoing problem facing the nursing profession is that although nurses have enormous responsibilities as healthcare providers, they often lack the lawful authority they need in order to be able to fulfil these responsibilities in a safe and effective way (Johnstone 1994, 2016).

Guides to ethical professional conduct

As has previously been considered, when making moral judgements and decisions in nursing care domains, nurses are often faced with such perplexing questions as 'What should I do and what is the right thing to do in such-and-such situation?', 'Are my judgements and decisions morally correct, all things considered?', 'How should I decide?' and 'Have I done (am I doing) the right thing?'. These and similar questions become even more pressing when considered against the backdrop of stringent moral accountabilities and responsibilities otherwise expected of registered nurses.

Possible answers to these and related questions can be sought by appealing to moral theories and/or nursing codes of conduct, noting, however, that neither of these

is without some difficulties with respect to their moral authority and capacity to guide and justify particular actions in specific contexts. One of the ongoing challenges facing nurses and others is that even if a general ethical theory or 'perfect' code of conduct were available, it may still not be possible to find satisfactory answers to the questions and quandaries encountered during the course of one's everyday practice (Beauchamp & Childress 2013, Düwell 2013).

Moral theories

It is generally accepted that moral theory is crucial, not just for the purposes of guiding moral decision-makers in their thoughts and actions, but also for providing **sound justifications** for the decisions made and actions taken.

Moral problems frequently arise in healthcare contexts. This is not surprising given the culturally diverse range and complexity of the moral values that are operating and expressed in healthcare domains. Indeed, healthcare practice is profoundly value-laden in a morally significant sense, and hence it is inevitable that moral conflicts and disagreements will arise. Further, given the complexity of the values that operate in healthcare domains, it is inevitable that sometimes the choices made (by nurses as well as others) will be problematic, insofar as they may express moral values, beliefs and evaluations that are not shared by others or with which others do not agree.

When experiencing situations involving moral problems and disagreement, it is tempting for decision-makers to rely on their own ways of thinking and personal preferences to sustain the points of view they are advocating. Sometimes, however, a person's ways of thinking and personal preferences may not be reliable or worthy action guides because these can result from prejudice, self-interest or ignorance. Thus, decision-makers need to look elsewhere to justify their moral choices and actions. Ethical/moral theory is commonly regarded as a reliable source from which such justifications can be sought.

There are a number of different **moral theories** that can be appealed to for guiding and justifying **moral decision-making** and conduct, all of which, to varying degrees, have both formed the basis of and influenced the development and practice of nursing ethics. Notable among these are deontological ethics, teleological or consequentialist ethics, ethical principlism, moral rights theory, virtue ethics and cross-cultural ethics. A brief summary of each of these theories is outlined below.

Deontological ethics

According to **deontological ethics**, duty is the basis of all moral action. Taken at its most basic, deontology asserts that some acts are obligatory (duty-bound) regardless of their consequences. For example, a deontologist might assert that one has a duty to always tell the truth. By this view, the deontologist is duty-bound to always tell the truth, even when doing so might have horrible consequences. An important question to ask here is: How do we know what our duty is?

One possible answer to this question can be found in classical deontological theory that derives from religious ethics and is otherwise known as 'divine command theory'. According to this view, it is God's command that determines our moral duties. If, for example, God commands 'Thou shalt not kill', 'Thou shalt not steal' and the like, then conduct that accords with (obeys) these commands is morally praiseworthy (right and justified). Conduct that contradicts God's commands, in contrast, warrants condemnation (as wrong and unjustified). This is because and only because it is God's command (Morriston 2009, Wainwright 2005).

There are many examples of deontological ethics influencing decision-making in healthcare domains. For example, Jehovah's Witnesses refuse life-saving blood transfusions on the grounds that to accept such treatment would be tantamount to violating God's command that prohibits taking blood. Another example can be found in a deontological adherence by some doctors and surgeons to the preservation of 'medically hopeless' human life whatever the costs (read 'consequences'), resulting in the administration of 'futile' medical treatment to patients, sometimes even against their will (Schneiderman & Jecker 2011).

Another answer can be found in what is otherwise known as ethical rationalism. This view dates back to the work of the 18th-century German philosopher Immanuel Kant, who held that the supreme principle of morality was reason, the ultimate end of which is goodwill. According to a 1972 translation, Kant stated that reason is free (autonomous) to formulate moral law and to determine just what is to count as being an overriding moral duty. Kant held duty to be that which is done for its own sake, and 'not for the results it attains or seeks to attain' (Kant 1972). Kant further believed that moral considerations (duties) were always overriding in nature – in other words, should take precedence over other considerations.

In terms of determining what one's actual duty is, Kant suggested that this can be done by appealing to some formal (reasoned) principle or maxim. In choosing such a maxim, however, Kant warned that we must take care not to choose something that would privilege our interests over the interests of others. Kant's solution to this problem was to establish a universally valid law

called the 'categorical imperative'. This law states: 'Act only on that maxim through which you can at the same time will that it should become universal law' (Kant 1972). In other words, we should act only on maxims that we are prepared to accept as holding for everybody (including ourselves) throughout space and time. A variation of Kant's law can be found in what is popularly known as the Golden Rule: 'Do unto others as you would have them do unto you.'

Teleological ethics

According to teleological theory (also known as consequentialism), actions can be judged right and/or good only on the basis of the consequences they produce. In this respect, teleology denies everything that deontology asserts.

The most popularly known **teleological theory of ethics** is utilitarianism, which has as its central concern the general welfare of people as a whole, rather than of individuals. In short, **utilitarianism** views the world not in terms of certain individual rights which people may or may not claim, but in terms of the collective and overall welfare and interests of people generally (a consequentially 'good outcome'). The perspective of utilitarianism is persuasive in that it promotes a universal point of view; namely, that one person's interests cannot count as being superior to the interests of another just because they are personal interests. To put this in another way, I cannot claim that my interests are more deserving than your interests are, just because they are my interests.

Classical utilitarianism, first advanced by the English philosopher Jeremy Bentham (1748–1832) and later modified by the work of the British philosopher John Stuart Mill (1806–73), holds roughly that moral agents have a duty to 'maximise the greatest happiness/good for the greatest number' (Bentham 1962, Mill 1962). This view has resulted in classical utilitarianism being dubbed the 'greatest happiness principle'. Because of difficulties associated with calculating both individual and collective happiness and unhappiness, and the problem of individual interests being sacrificed for the collective whole, classical utilitarianism theory has been largely abandoned in favour of recent utilitarian theory. Of particular note is 'preference utilitarianism', which views the maximisation of individual preferences as being of intrinsic value rather than the maximisation of happiness per se. This is because, as Beauchamp and Childress (1989) have classically explained, 'what is intrinsically valuable is what individuals prefer to obtain, and utility is thus translated into the satisfaction of those needs and desires that individuals choose to satisfy.'

Preference utilitarianism is also considered more plausible because it is relatively easy to calculate what people's preferences are – all we have to do is to ask people what it is they prefer. And where their preferences are at odds with ethical conduct we have no obligation to respect them. This position, however, rests on assumptions about the 'use' of utility and its supposed intrinsic value, which some contend it does not have.

Ethical principlism

One of the most popular ethical theories used today when considering ethical issues in nursing and health care is the theory of ethical principlism. **Ethical principlism** is the view that ethical decision-making and problem-solving are best undertaken by appealing to sound moral principles (Beauchamp & Childress 2013). The principles most commonly used are those of autonomy, non-maleficence, beneficence and justice.

Autonomy

As a concept, autonomy refers to a person's self-contained and independent ability to decide. As a principle, autonomy prescribes that people ought to be respected as self-determining choosers and that it is wrong to violate a person's considered and autonomous choices. This is so even if we do not agree with another's choices and regard them as foolish, provided they do not interfere significantly with the moral interests of others. Applied in nursing and healthcare contexts, the principle of autonomy imposes on healthcare professionals a moral obligation to respect patients' choices regarding recommended medical treatment and associated care. Further, this obligation holds even if attending healthcare professionals do not agree with the choices that patients make.

Non-maleficence

Maleficence refers to harm or hurt, so non-maleficence means to avoid harm or hurt. Simply stated, the principle of non-maleficence prescribes 'do no harm'. Applied in nursing and healthcare contexts, the principle of non-maleficence would provide justification for condemning any act that unjustly injures a person or causes a person to suffer an otherwise avoidable harm. Harm, in this instance, may be broadly taken as involving the invasion, violation, thwarting or 'setting back' of a person's significant welfare interests to the detriment of that person's wellbeing.

Beneficence

The principle of beneficence, similar in meaning to the word 'benefit', entails a positive obligation to 'act for the benefit of others'; that is, to promote their welfare and wellbeing

(Beauchamp & Childress 2013). Thus, it prescribes 'do good'. Beneficent acts can include such virtuous actions as care, compassion, empathy, sympathy, altruism, kindness, mercy, love, friendship and charity (Johnstone 2016), all of which stand to find ready application in nursing and healthcare contexts.

Justice

The principle of justice can be conceptualised in a variety of ways. For example, justice can be interpreted as involving retribution (retributive justice, e.g. 'an eye for an eye'), an equal distribution of benefits and burdens (distributive justice), justice as mercy, justice as harmony, justice as equality ('equals must be treated equally, and unequals unequally'), justice as fairness, justice as what is deserved ('just deserts'), and justice as inclusiveness, fellowship, compassion and respect (Beauchamp & Childress 2013, Nussbaum 2006, Sen 2009). Justice has also been conceptualised controversially as a basic human need (Johnstone 2011a, Taylor 2006). The conceptualisations of justice most commonly used in health care are those of justice as fairness (an intuitive sense of justice) and as an equal distribution of benefits and burdens (a rationalistic sense of justice). For example, on the basis of both an intuitive and a rational appeal to the principle of justice, it might be concluded that it is manifestly unfair and disproportionately burdensome to withhold life-saving treatment (e.g. cardiac surgery) from those who cannot afford to pay for such treatment. Such an action stands as being burdensome since it places the poor in a disadvantaged position in relation to the rich – the poor stand to suffer a burden of compromised life expectancy (which the rich do not) on account of their inability to pay. At an intuitive level, such a situation does not feel right in that it feels 'unfair'.

Although vulnerable to criticism on a variety of accounts, ethical principlism has increasingly come to replace more classical theoretical approaches to identifying and resolving moral problems in healthcare contexts. Since ethical principlism is widely appealed to in the healthcare and related ethics literature, it is important that nurses have at least a working knowledge and understanding of this approach. It is necessary for nurses to be aware, however, that principlism is not without its limitations. As the cases of 'Mr G' and 'Ms Winnow', considered earlier, have demonstrated, applying these principles in practice can be difficult and may not result in the moral outcomes either desired or intended.

Moral rights theory

Another popular and commonly used moral theory is that of moral rights theory, a form of deontological ethics. Moral rights have been particularly influential in the development of discourses on patients' rights and the development of various codes and charters outlining patients' rights in health care. As discussed earlier, a moral right is a special interest that a person may have and which ought to be protected and upheld for moral reasons. Moral rights are generally distinguished from legal rights (sometimes also called civil rights or statutory rights), which refer to certain entitlements that a person or legal entity has under law and which are recognised and protected by laws sanctioned by the state. The right to vote is an example. Although moral and legal rights sometimes overlap, they can also conflict, which is one of the reasons why care must be taken to distinguish between them when making and justifying moral decisions (Johnstone 2016).

There is no simple thesis of moral rights (Campbell 2006, Dyck 2005). Indeed, there are a number of bases on which an entity could validly claim moral rights, including natural law, common humanity, rationality and interests.

Natural law

By this view, rights are the product of the laws of nature and apply equally to everybody; thus everybody is subject to them, just as they are to the laws of nature (e.g. gravity).

Common humanity

All human beings have rights equally, just by virtue of being human. This is because being human is not something over which human beings have control.

Rationality

Only people who are capable of rational, autonomous thought are entitled to claim rights. This means, controversially, that entities such as babies, unconscious people, people with severe brain injuries and the like are excluded from having rights.

Interests

In order to have rights an entity must have interests, and in order to have interests an entity must have the capacity to be benefited or harmed; this, in turn, presupposes sentience (the capacity to experience pleasure and/or pain) (Feinberg 1979). This classic view is commonly seen as being among the most tenable theses of moral rights, since it is more inclusive than the other theories; for example, it includes both the rational and the non-rational, and other species besides human beings.

Virtue ethics

In recent times there has been a resurgence of virtue theory in ethics and a re-examination of the importance

of 'characterological excellence' in determining ethical conduct (Oakley 2006, Van Hooft 2014). This is made manifest by the expression of such moral virtues as care, compassion, kindness, empathy, sympathy, altruism, generosity, respectfulness, trustworthiness, personal integrity, wisdom, courage and fairness. Virtue theorists claim that without the characterological excellence of virtue, 'a person could, robot-like, obey every moral rule and lead the perfectly moral life', but in doing so would be acting more like 'a perfectly programmed computer' than a morally responsible human being (Pence 1991). There is a sense in which being moral involves much more than merely following rules; the missing link, claim virtue theorists, is character. On this point, Pence (1991) writes:

> we need to know much more about the outer shell of behaviour to make such judgments, that is, we need to know what kind of person is involved, how the person thinks of other people, how he or she thinks of his or her own character, how the person feels about past actions, and also how the person feels about the actions not done.

Virtue ethics is particularly relevant to nursing and to nursing ethics since virtuous conduct is intricately linked to therapeutic healing behaviours and the promotion of human health and wellbeing.

The nursing profession's well-articulated ethic of care (regarded by many influential nurse theorists as the moral foundation, essence, ideal and imperative of nursing) is consistent with a virtue theory of ethics (see the classic works of the following nurse theorists: Benner & Wrubel 1989, Gaut 1991, Gaut & Leininger 1991, Leininger 1988, 1990, Roach 1987, Watson 1985a, 1985b). Significantly, virtue ethics is enjoying a renaissance in the nursing ethics literature – particularly in regard to the issue of caring for vulnerable and marginalised groups of people at risk of being treated as 'different' by healthcare providers (Armstrong 2006, 2007).

Cross-cultural ethics

As highlighted by the 'Mr G' case discussed on p. 139, another perspective on ethics and bioethics that warrants consideration by nurses is cross-cultural ethics. The basic assumptions of **cross-cultural ethics** reflect the views that:

- ethics is very much a product of the culture, society and history from which it has emerged
- all cultures have a moral system, but what this system is and how it is applied will vary across, and sometimes even within, different cultures
- there is no such thing as a universal ethic; that is, one ultimate standard of moral conduct which applies to all people equally regardless of their individual circumstances, context and culture – in other words, a 'one size fits all' approach to ethics (Johnstone 2012, 2016).

In any culturally diverse society it is imperative that a culturally informed, knowledgeable and sensitive approach to health care is taken (Johnstone 2012, Johnstone & Kanitsaki 2008). One reason for this is that a failure to adopt such an approach can result in otherwise serious moral harm being caused to people. Cross-cultural ethics, therefore, goes far beyond merely considering and critiquing the nature and content of mainstream ethical theories; it also involves a systematic examination of the moral implications of cultural and linguistic diversity in healthcare domains; for example, the extent to which patients of non-English-speaking and diverse cultural backgrounds suffer unnecessarily on account of the cultural and language differences between them and their professional carers (see de Bruijne et al 2013, Divi et al 2007, Johnstone & Kanitsaki 2006, 2009a, Suurmond et al 2010).

Nurses and other healthcare workers have a stringent moral responsibility to avoid and/or prevent the otherwise avoidable moral harms that can result from a failure to take into account the language and cultural needs of their patients (Johnstone & Kanitsaki 2006, 2008, 2009a). The harmful aftermath of racism in health care is a particular example of this. Racism in nursing and health care is a problem that has not been formally recognised as an important ethical professional issue (Johnstone & Kanitsaki 2009b, 2010). A cross-cultural approach to ethics would not only help identify the existence of racism in nursing and healthcare contexts, but also guide an effective response for dealing with it and, if not successful in eradicating it, at least minimise its harmful consequences to patient health.

WORKING WITH DIVERSITY

Truth-telling around cancer and other life-limiting diagnoses stands as one of the most controversial issues in cross-cultural health care. Research has shown that truth-telling is not just an issue for people from Greek backgrounds, but also for people from other traditional cultural backgrounds (e.g. Iranian, Pakistani, Japanese, Italian, Korean, Chinese). In these cases, truth-telling about a diagnosis of serious life-limiting illnesses (especially cancer-related illnesses) is regarded as harmful, 'undesirable' and hence to be avoided – most notably on the grounds that it could undermine the ill loved one's hope and the will to live (Johnstone 2012, 2016). Problems most commonly arise in situations where the healthcare provider (e.g. doctor, nurse) does not share the same cultural background as the patient and family, whose cultural world views are unfamiliar and even confronting to them and which they do not understand.

Implications for practice

There are a number of questions that nurses can ask when participating in moral decisions about the care and treatment of people from diverse cultural backgrounds, and which will assist them to check that they are 'on the right track'. These questions are:

- Is my understanding of this person's values and value systems such that it entitles me to override her or his family's requests or instructions?
- Can I by way of a third party (such as an interpreter) really ensure that the interventions or communications being proposed will result in benefits not harms to that person?
- Are my values and frame of reference the only ones that warrant overriding consideration in this relationship?
- How do I know my judgements in this relationship are morally and culturally appropriate? In short, how do I know I am right? (Johnstone 2016 – with reference to Kanitsaki 1989).

• CRITICAL REFLECTION POINT

Think of a situation in which you either observed or directly experienced behaviour that was prejudicial and/or discriminatory towards either yourself or another person. Reflect on how this experience or observation affected you – what thoughts and emotions did you have? How did you feel about it? How did you respond? If you did not respond, reflect on why you did not respond. Then consider how you would respond if placed in a similar situation again. Would your response be the same, or would it be different? Reflect on the rationale for your answers.

Nursing codes of ethics

Nursing codes of ethics have long featured as guides to ethical professional conduct in nursing. Just what they are, however, and how they function have not always been clearly understood.

As discussed extensively elsewhere (Johnstone 2016), a code may be defined as a conventional set of rules or expectations devised for a select purpose. By this view, a code of professional ethics could be described as a document laying out a set of **moral rules** and/or expectations devised for the purposes of guiding ethical professional conduct. Although **codes of ethics** are not fully developed systematic theories of ethics, they nevertheless tend to reflect a rich set of moral values that have been expressed and explained through a process of extensive consultation, debate, refinement, evaluation and review by practitioners over time.

Codes can be either prescriptive or aspirational in nature. In the case of prescriptive codes, provisions are 'duty-directed, stating specific duties of members' (Skene 1996). In contrast, aspirational codes are 'virtue-directed, stating desirable aims while acknowledging that in some circumstances conduct short of the ideal may be justified' (Skene 1996). Either way, codes of ethics have as their main concern directing 'what professionals ought and ought not to do, how they ought to comport themselves, what they, or the profession as a whole, ought to aim at' (Lichtenberg 1996).

In Australia, for example, the NMBA's *Code of ethics for nurses in Australia* (NMBA 2008a) and *Code of professional conduct for nurses in Australia* (NMBA 2008b) make explicit the ethical standards that Australian nurses are expected to uphold in the interests of promoting and protecting the moral interests and welfare of consumers, and the actions that must be taken against nurses if these agreed standards are breached; similarly, the NZNO's (2010) *Code of ethics* and the NCNZ's (2012a) *Code of conduct for nurses* (see Box 9-1).

Historically, the professional–patient relationship has been a special one in which certain privileges have been accorded to the attending professionals in return for the special (read 'expert and often essential') services they provide to their patients in the community at large. The professional–patient relationship has also tended to be an unequal relationship, with the professional usually holding the balance of power. This imbalance of power has been implicated in both potential and actual vulnerability of patients when seeking and receiving professional services. Although the nature of the professional–patient relationship has changed dramatically in recent decades, it nevertheless remains characterised by an imbalance of power involving, among other things, an imbalance of knowledge and legitimated authority to use knowledge.

This imbalance of power has helped to create a demand and given rise to an expectation among members of the community that professionals ought to, and will, submit to a system of rules imposing a greater constraint on their professional conduct than would otherwise be imposed on the conduct of ordinary (lay) people. All in all, there has emerged a general expectation that professionals will act in a supremely ethical manner when rendering services to patients.

Over the past several decades, recognition of the responsibility of professionals to act in an ethically exemplary manner has seen considerable attention being given to devising and agreeing to a system of rules to govern both personal and professional conduct (Coady & Bloch 1996, Kerridge et al 2013). A code of ethics serves this purpose by providing a clear and singular guide to conduct.

Codes of ethics serve a variety of functions. Key among them are to maintain ethical standards of conduct and to help the regulation of ethical professional conduct. These outcomes are thought to be achieved by the direct and the indirect value of codes in fostering and maintaining the standards of ethical professional conduct by cultivating moral character, by articulating certain characteristics and ideals of a profession, by facilitating the internalisation of these values and ideals by members of the professional group in question, and by prescribing and proscribing conduct that is otherwise not amenable to legislation, by specifying rules of conduct; for example, 'Nurses will keep in confidence information gained in the professional–patient relationship'.

A characteristic feature of codes of ethics is their voluntariness. What this means is that persons subscribing to or upholding the terms of a given code of ethics do so free from any coercive or manipulative influences. In other words, compliance is and ought to be both autonomous and voluntary.

Like other moral action guides, however, codes are not without their limits. Problems include their having limited moral authority (being mostly a statement of rules, codes cannot override the demands of a more systematic and reflective system of moral principles and standards) and limited practical application (e.g. codes may offer very little practical guidance on how to make sound moral decisions when dealing with complex ethical issues and/or particular situations). The case of Mr G (p. 139), underscores this point.

Despite these limits, codes of ethics and, of relevance to this discussion, nursing codes of ethics have an important role to play in regard to:

- advising the public of the values and ideals it can expect of nurses when delivering care to patients
- informing nurses of the values and ideals they are expected to uphold upon becoming members of the broader nursing profession
- providing standards against which nurses' conduct can be measured and, if found to be in breach of these standards, censured via the lawful processes of disciplinary action.

Moral problems in nursing

When delivering nursing care to patients, nurses will encounter moral problems. These problems range from the relatively simple to the extraordinarily complex, and can cause varying degrees of perplexity and distress in those who encounter them. Nurses, like other healthcare professionals, have a fundamental and unavoidable moral responsibility to be able to identify and respond effectively to the moral problems they encounter – which includes self-care (Johnstone 2016).

The ability of nurses to deal effectively with the problems they encounter will depend on:

- their ability to correctly identify a given moral problem
- the level to which they are prepared educationally, psychologically and emotionally to be able to respond to various moral problems as they arise and are identified
- the extent to which institutional norms and practices are supportive of the moral authority and experience of nurses to deal with moral problems in the workplace
- the extent to which other legal processes recognise and are responsive to the moral authority of nurses and the ethical standards of the nursing profession generally.

Nursing point of view

When moral problems arise in healthcare contexts, the nurse's observations and considered judgements (the 'nursing point of view') can play a vital role in the correct identification and mitigation of the problems at hand. Since nurses may be involved in very intimate physical acts with patients, such as bathing, feeding and special procedures, information that is not generally solicited by other attending healthcare workers, including doctors and social workers, is often revealed to nurses by patients and their families. Details about family life at home, information about coping styles or personal preferences, and details about fears and insecurities may come out during nursing interventions. Such information can be vital to ensuring sound moral decision-making concerning patient care.

On the other hand, it is important for nurses to remember that care of any one patient has become multidisciplinary and fragmented. The nursing point of view is part of a larger picture that is best built by all members of the healthcare team, including the patient and family. Managers and administrators from different professional backgrounds may also contribute to 'moral conversations', as they are able to bring knowledge of systems, allocation of resources, financial possibilities or constraints to the decision-making process.

Wherever moral problems arise, the nursing point of view is valuable and often essential. It is both an obligation and a privilege for the professional nurse to accumulate information on the issues, examine personally held moral values and beliefs, and share knowledge with patients and with colleagues in an effort to overcome the difficult issues that often underlie and/or constitute moral problems.

Distinguishing moral problems from other kinds of problems

Being able to identify and respond effectively to moral problems in professional practice requires an understanding of what a moral problem is and how it might be distinguished from other kinds of problems, such as a legal problem or a clinical problem.

It is generally accepted that a moral problem has as its central concerns:

- the promotion and protection of people's genuine wellbeing and welfare, including their interests in not suffering unnecessarily
- responding justly to the genuine needs and significant moral interests of different people
- determining and justifying what constitutes right and wrong conduct in a given situation (Johnstone 2016).

Nurses are fundamentally involved with promoting and protecting people's genuine wellbeing and welfare and, in achieving these ends, responding justly to the genuine needs and interests of different people. And so long as nurses work and interact with people in a professional capacity, they will continue to be involved in the promotion and achievement of these moral ends.

Moral problems (also called **ethical issues**) fall roughly into three categories:

1. those that involve procedural difficulties associated with the actual identification and satisfactory resolution of moral problems in nursing and healthcare contexts, such as unethical conduct, moral impairment, moral incompetence, moral disagreement and ethical dilemmas
2. those that involve everyday ethical issues that arise in face-to-face 'hands-on' encounters with patients and co-workers
3. the more 'exotic' issues of applied ethics involving bioethical issues, such as patients' rights to informed consent, confidentiality or euthanasia/assisted suicide.

Identifying and responding effectively to moral problems in nursing

All nurses are expected to be able to correctly identify and effectively respond to moral problems in the workplace. The kinds of problems that may be encountered are summarised below.

Moral unpreparedness

A person is not adequately prepared educationally, psychologically or emotionally to deal with a presenting moral problem. When faced with a moral problem a morally unprepared nurse may not take appropriate action to remedy a troubling situation on the grounds of 'I did not know what to do'.

Moral blindness

A nurse (or other member of the healthcare team) is blind to the ethical dimensions of a presenting problem; for example, they may wrongly regard the problem at hand as a clinical or technical problem requiring only a clinical solution, not a moral one. By analogy, like a colour-blind person who cannot see certain colours, a morally blind person cannot see the moral dimensions of a given situation or problem. Take, for example, a medical decision not to resuscitate a patient. This may be construed as simply 'good medical practice' and, as such, outside the concerns of ethics, regardless of the fact that such a decision may have been based firmly on quality-of-life considerations and made without the patient's knowledge or consent.

Moral indifference

A nurse (or other member of the healthcare team) is largely unconcerned about the demands of ethical professional conduct. A nurse who is morally indifferent may, for example, demonstrate a lack of interest in or concern about a patient's wellbeing and/or welfare. The morally indifferent nurse might refrain from engaging in any discussions or activities aimed at patient advocacy, or disregard a patient's pain and discomfort.

Amorality

A nurse or other member of the healthcare team literally has no morality. As the word itself suggests, there is an absence of morality in these people.

Immorality/unethical conduct

A nurse or other member of the healthcare team accepts ethical standards of conduct, but nevertheless deliberately violates them. An example is the case of a nurse who steals money from an elderly patient or fraudulently uses her credit card.

Moral complacency

A nurse or other member of the healthcare team is unwilling to accept that their moral beliefs and viewpoints may be mistaken. Such a nurse is reluctant to accept that their point of view is often just one among many that deserves to be considered, compared and contrasted. For example, a morally complacent nurse may hold firmly to the view that it is morally wrong to perform resuscitation

on people over the age of 75 (regardless of the person's wishes to the contrary), since they are already old, at the end of their lives and should not be troubled by having to decide such burdensome issues.

Moral fanaticism

A nurse or other member of the healthcare team uncritically holds extreme moral views. For example, a nurse might uncritically and fanatically uphold the view that, irrespective of their stated cultural values and beliefs and expressed wishes, people diagnosed with cancer should be told their cancer diagnosis by an attending doctor. Moreover, such information should be communicated 'directly' and 'frankly' to the person by the doctor, regardless of the person's or the family's wishes in regard to what information should be given, when, where, how and by whom. Such a nurse might further hold the view that 'even if this information may result in causing the patient otherwise preventable distress, they should still be told directly whether they wish it or not, whether the family is there or not, because "they have a right to know". And this is just the way it should be.'

Moral disagreement

Nurses or other members of the healthcare team may disagree about the morally correct course of action to take in a given case. Disputing parties may share and subscribe to common moral standards, but disagree as to:

- when one set of standards should override another set, for example, whether the principle of autonomy is stronger than the principle of non-maleficence in a situation involving the disclosure of a poor diagnosis to a patient
- what should count as acceptable exceptions and limitations to applying the standards in question; for example, a nurse might be willing to act as a patient's advocate but only so long as their own significant moral interests are not compromised; another nurse might not subscribe to this limitation
- whether a given set of standards should be chosen at all; for example, two nurses might disagree that the moral principle of autonomy ought to be given consideration in the euthanasia debate.

Moral disagreement may also arise when disputing parties do not agree on any ethical standards at all.

Moral dilemmas

Nurses or other members of the healthcare team may find themselves between what is colloquially referred to as 'a rock and a hard place'. Broadly speaking, a moral dilemma may be described as a situation involving a choice between what seem to be two equally undesirable alternatives. Moral dilemmas commonly take one of three forms:

1. Where there exists a logical incompatibility between two or more moral principles; for example, in the context of informed decision-making, where the information being disclosed is potentially harmful it may not be possible to uphold both the principle of autonomy (i.e. respect a patient as a self-determining chooser) and the principle of non-maleficence (i.e. protect the patient from otherwise avoidable harm) (refer to the case of Ms Winnow, discussed earlier).
2. When competing moral duties exist and a nurse cannot fulfil both, they must choose which duty to fulfil; for example, in a life-and-death situation a nurse might feel duty-bound to protect both a patient and the chosen carers from the harm of suffering associated with the crisis at issue. That might not be possible and no matter what strategies the nurse uses, someone is going to suffer. Here the nurse might ask: 'Which duty ought I to fulfil?'
3. When competing and conflicting interests exist; for example, two patients may have equally deserving rights claims and a nurse may be in a position to respond to only one of these claims at a time. Abortion is a good example here, especially in cases where the rights of the mother might compete with the rights of a fetus and/or the father. Here the nurse might ask: 'Whose interests ought I to uphold?'

Moral stress, distress and perplexity

A nurse or other member of the healthcare team may experience stress, distress and perplexity on account of having identified a given moral problem but been largely unsuccessful in resolving it. These states can manifest as emotional turbulence, indignation, incredulity, rage and outrage, anger, despair and an overwhelming and paralysing sense of hopelessness. Some scholars have labelled these states controversially as 'moral distress'. Whether this labelling is correct, however, remains a point of contention (see *Nursing ethics* 2015 'Special issue: Moral distress').

Processes of ethical reasoning and decision-making

Moral problems, like other kinds of problems, can be approached using a systematic and critically reflective decision-making process. Like the clinical reasoning process that is used in nursing, identifying and resolving moral problems in healthcare contexts involves at least five steps captured in Figure 9-1 and outlined in Box 9-3.

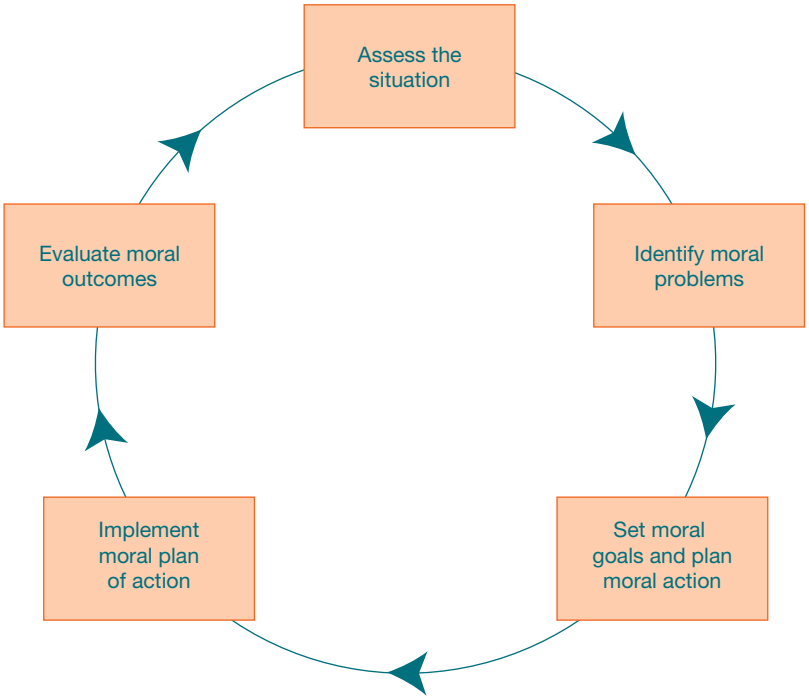

Figure 9-1 Moral decision-making.

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BOX 9-3 Ethical reasoning process

1. Assessing the situation

Every effort is made to obtain all the relevant information pertaining to the case to enable a proper assessment of the nature of the problem that is presenting and whether, indeed, it is a moral problem at all. Sometimes what seems like a moral problem may, in fact, be a legal problem or a clinical problem or a problem of some other practical non-moral nature.

2. Identifying and analysing the moral problem

The information collected is appraised and a careful judgement made on the nature of the problem at hand. It might be concluded on the basis of the information that has been collected and appraised that the moral problem at hand involves a case of, for example, unethical conduct or a full-blown ethical dilemma; conversely, the problem at hand may be shown to involve little more than a breakdown in communication, hence not requiring a moral remedy per se.

3. Setting moral goals and planning an appropriate course of action

A specific plan of action is devised to resolve the moral problem(s) identified. If the problem involves a moral dilemma or a moral disagreement, then the plan of action will have as its focus, for example, an attempt to resolve the impasse that has arisen and to find a satisfactory solution; that is, achieve 'good' outcomes that can be justified on moral grounds.

4. Implementing the plan of action

The decision-maker engages in the implementation of the plan of action; that is, 'sets the wheels in motion', Depending on the problem(s) identified, this could involve a range of actions, including reporting the matter to a supervisor or manager, and even seeking the involvement of an institutional ethics committee for advice.

5. Review and evaluation of moral outcomes of the actions taken

A review is undertaken and an assessment is made with respect to whether the desired moral outcomes of the actions taken were achieved. If the evaluation proves negative, then the whole situation needs to be re-appraised using the same systematic process. Critical questions need to be asked about 'What went wrong'? What can be done to improve the situation? What are the lessons to be learnt from this scenario to prevent reoccurrences of similar situations?

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This approach to ethical reasoning and decision-making is by no means the only one that might be used to deal with moral problems. Nevertheless, it is a useful approach and one that is relatively easy to use. It does, however, presuppose that decision-makers have at least a working knowledge and understanding of ethics and the ability to think critically when applying ethics to and in professional practice. What follows is an outline of the application of this process to a clinical example (review Box 9-3 before studying the application of the process in the following *Clinical example*).

CLINICAL EXAMPLE

The case of 'Mrs B'

On your ward, a 35-year-old woman ('Mrs B') has been hospitalised in the final stages of a struggle with brain cancer. She is a single mother, with two young children at home. Despite treatment, the tumour continues to grow and the medical team has agreed that further treatment would be futile. You have cared for 'Mrs B' during past admissions, and during one especially open discussion, she expressed wishes to explore 'do not resuscitate' (DNR) directives. During the current admission, her medical consultant is out of town. The attending on-call doctor does not know the patient personally, but he has spent some time with her. He has reviewed the clinical data and agrees that 'Mrs B' is entering advanced stages of her disease. In his opinion, however, 'Mrs B' is not ready to discuss end-of-life issues. In fact, he states that on being offered the option to discuss DNR, 'Mrs B' declined. You have asked him to convene a family conference to discuss DNR directives but he refuses to do so.

Applying the ethical reasoning process to the *Clinical example*

Step 1 Assess the situation and ask: what are the relevant facts of this case?

What may at first appear to be a question of ethics may not be such at all, and may be resolved by clarifying one's knowledge base about clinical facts and reviewing policy and procedure, standards of care and other relevant information. When it can be shown, however, that perplexing questions remain about the patient's genuine wellbeing and welfare (including her interests in not suffering unnecessarily), that the genuine needs and significant moral interests of different people are at stake and in need of protection, and that assistance is required in determining and justifying what constitutes right and wrong conduct in the situation at hand, then it is evident that a moral problem exists. The next step is to ascertain what kind of moral problem exists. This is crucial to the moral decision-making process, since unless the type of moral problem is correctly identified, any plan of action risks failing to achieve a satisfactory moral outcome.

Further review of the available information will probably not contribute to a resolution of the problem, but it is important to review the information carefully to make this determination. It is evident that there is disagreement, but this does not revolve around whether the patient is in a seriously ill state, so further clinical information will not change the basic question: Should the patient have an opportunity to discuss the 'do not resuscitate' (DNR) directive at this time? The question is perplexing. Basically, two professional team members disagree on an assessment of a patient's readiness to confront the very difficult issues around dying. The answer to the question concerning the patient's readiness has important implications for her wellbeing and welfare. If she is not ready, then raising the issues may cause anguish and fear in the patient and her family. If she is ready, and the team avoids discussion, she may suffer unnecessarily in silence. If she is very close to death, then the lack of a DNR directive will necessitate the application of cardiopulmonary resuscitation (CPR), which could also result in harmful moral consequences. Knowing that CPR can cause pain and is not without risks, its application in a situation where further life is unlikely could prolong suffering and reduce dignity.

In assessing the situation at hand, it is necessary for the nurse to gather as much relevant information as possible. Since resolution of moral problems may arise from unlikely sources, it is helpful to incorporate as much knowledge as possible at every step of the process. At this point, the information could include looking at laboratory and test results, the clinical state of the patient in question and perhaps current literature about the diagnosis or condition of the patient. It may include careful investigation of the psychosocial concerns of the patient and of the patient's significant others. A patient's cultural, religious and family orientation is part of the nurse's assessment.

In this scenario, all the clinical information pertinent to the case would be obtained. It might be helpful to determine if the patient retains most cognitive functions, even though her brain tumour is aggressive. A review with the attending medical consultant might result in agreement that she is fully competent, but definitely afraid and overwhelmed by the prognosis. Since the problem seems to exist because two professionals do not agree on a patient's state of mind, it may be helpful to reassess the patient, or even to request that an independent person assesses the patient's readiness to discuss end-of-life issues. Sometimes, family members or significant other people in

the patient's life will hold important clues to a patient's state of mind and also how best to approach a given situation in a culturally informed and appropriate manner. In addition to this, the moral standards that are guiding the decision-making should be clarified. What might be at issue in this case is a moral disagreement about the appropriateness of appealing to and applying the respective moral principles of autonomy and non-maleficence. Thus, what might initially look like a disagreement in professional opinion may in fact be much more than that – it may also involve a fundamental disagreement in moral viewpoint, or moral disagreement.

Step 2 Indentify and analyse (diagnose) the moral problem

Once the nurse is satisfied that the problem is a moral problem rather than some other kind of problem, for example, a disagreement about the patient's health status which could be clarified by appeal to the clinical facts of the case, then it becomes necessary to make a more definitive moral diagnosis. The possibilities, as have been shown above, can include one or more of the following:

- moral unpreparedness
- moral blindness
- moral indifference
- amorality
- moral complacency
- moral fanaticism
- moral disagreement
- moral dilemmas
- 'moral' stress, distress and perplexity.

The *Clinical example* meets the criteria for a moral problem. However, a more definitive moral diagnosis is needed. One possibility is that this case exemplifies a moral disagreement, since both doctor and nurse share a common moral commitment to preventing harm to the patient, but disagree on how this harm prevention might be achieved – the doctor believes that imposing unwanted information (though crucial to informed decision-making) on the patient could result in her being caused unnecessary harm, whereas the nurse believes that withholding the information could likewise result in her being caused unnecessary harm. This situation could also be said to pose an ethical dilemma, since both doctor and nurse are situated between 'a rock and a hard place' and confronted by the question, 'What ought I to do?' Further information about the case might result in still other moral diagnoses being made.

Step 3 Setting moral goals and planning action

Once all the relevant information has been gathered and a correct moral diagnosis made, attention can then shift to more specific questions such as: Should this patient discuss the DNR directive at this time? What are the benefits and what constitute the risks of a DNR order at this time? An important question also seems to involve the patient's current state of mind: Is she afraid to speak? Is she feeling cut off from her normal network, including her medical consultant? Are these feelings contributing to confusion about DNR decisions? Has she been approached in a culturally informed and appropriate (culturally competent) manner?

Once these and similar questions are raised, it becomes easier to consider possible courses of action. What action is, in fact, planned will depend on still further questions being asked.

Other questions and possible courses of action could include: Should you initiate a discussion with the patient independently of the doctor? Would you be outside your professional domain if you facilitated a DNR directive? What if your assessment was incorrect: would you contribute not to the dignity but to the distress of the patient? The answers to these questions may be elusive, since they depend on an understanding of the patient's views and wishes that are not necessarily obvious. Even if legally the nurse cannot actually write a DNR directive, this fact does not relieve the nurse of moral questions since the ability to influence an attending doctor's or a patient's decision regarding DNR remains. On considering these and similar questions, you might set the following goal and strategies:

- Goal: to achieve an outcome that genuinely maximises the patient's best interests (wellbeing and welfare) and otherwise avoidable harmful moral consequences.
- Strategies: seek a meeting of the healthcare team to discuss the case and to work collaboratively to achieve a 'best outcome'. This step represents the most important and delicate part of the process. Team members could be approached informally on a one-to-one basis within the ward setting and invited to attend. Team members might also be requested by a manager to attend a meeting. Whatever meeting takes place, the nurse has an obligation to articulate and justify the moral stance he/she is taking.

Alternatively, if efforts at the ward level fail to achieve a resolution, it may be necessary to refer the case to a unit or institutional ethics committee for guidance on how best to deal with the problem. If an ethics committee meeting is convened, the discussion will usually be multidisciplinary in focus. A facilitator or chairperson will ensure that all points of view are examined, and that all pertinent issues are identified. A decision or recommendation is the usual outcome of discussion. In the best of circumstances,

participants discover a course of action that meets criteria for acceptance by all. Occasionally, however, participants may leave the discussion disappointed or even opposed to the decision. But in a successful discussion, all members will have agreed on an action or decision that can be implemented.

Step 4 Implement plan of action

Once the nurse has formulated a plan of action, it is then possible to implement it. In this case, the nurse may embark on discussions with members of the healthcare team. In other words, the nurse engages in the moral actions that have been planned.

The discussion focuses on the disagreement between the nurse's assessment and the doctor's regarding the patient's readiness to discuss end-of-life issues. The approach to moral decision-making might include a discussion of the principles of autonomy, beneficence and non-maleficence: Does the patient want something different from what she is expressing? Is the team approaching the patient in a culturally appropriate manner? Which plan would provide the most good for this patient, a DNR directive or no directive? Would a direct discussion with the patient promote wellbeing or anguish? Should the discussion be held with her family first?

With several members of the healthcare team present, the discussion proceeds. In the end, the team proposes a formal meeting with the patient, where you, the nurse, the attending doctor and a supportive family member are all present. This proposed course of action will maximise the support of the patient's existing network. In a trusting environment, the patient is most likely to express her fears, insecurities and wishes most accurately. Team members agree to keep the discussion open-ended and exploratory. Rather than asking if the patient wants a DNR directive written, perhaps the team could wait for her to bring up the issue. In this way, the team could be assured of her consent and willingness to participate in the discussion.

Step 5 Evaluate the moral outcomes of the action taken

After implementing the planned moral course of action, the nurse should evaluate whether the projected moral goals and the desired moral outcomes were achieved.

At the meeting, the patient in fact opens up. She expresses relief at the chance to explore her options and feelings. Pain management issues are clarified. She wants to discuss a DNR directive, but requests a visit from her priest before making a final decision. The goal of maximising the patient's best interests has been achieved. The possibility of harmful moral consequences to the patient has, it seems, been averted.

If the moral goals of action have not been achieved, then the process will need to begin again with questions asked as to why a desired moral outcome was not achieved. For example, it may transpire that not all the relevant facts of the matter were obtained and consequently the problem was misdiagnosed.

RESEARCH HIGHLIGHT

Research focus

This literature review provides a comprehensive analysis of the literature on nurses' ethical reasoning and decision-making and the processes they use to implement their decisions in practice.

Research abstract

A key finding of this review was that nurses engage in a complex process of reasoning, decision-making and implementation in their practice. However, their process of decision-making was more strongly influenced by personal and contextual factors, rather than cognitive reasoning. That is, nurses in the studies reviewed tended to decide and justify their moral decisions by appealing to their own personal values, convictions and beliefs, rather than selecting ethical theories. Nurses' ethical practice was also found to be influenced by their work environment. When nurses encountered difficult working environments they often capitulated to the decisions made by others, which in turn led nurses to behave in a conformist rather than an individually accountable and critically reflective way.

Implications for ethics-based practice

The review has yielded important insights into nurses' ethical practice and the way nurses decide and act when working in difficult environments.

To improve understanding of nurses' ethical practice, further research is required on the link between how nurses reason and how they ultimately behave in practice.

Reference

Goethals S, Gastmans C, Dierckx de Casterlé B 2010 Nurses' ethical reasoning and behaviour: A literature review. Int J Nurs Stud 47(5):635–50.

• CRITICAL REFLECTION POINT

There will be times when you will have to make an ethical decision about patient care. Take the time to think carefully about the ethical decision-making process that has been presented in this chapter and then reflect on how, if at all, you would use it to guide your ethical decision-making in practice. Consider also what other approaches you might take. In either case, reflect on how you would determine whether or not – using the decision-making process selected – you have made the 'right decision'.

Bioethical issues in nursing

Since the inception of bioethics as a discipline in the early 1970s, a number of bioethical issues have emerged that are of particular relevance to nurses. Key among these are the issues of informed consent, confidentiality, quality of life, DNR directives, euthanasia/assisted suicide and resource allocation in health care. New and emerging ethical issues include the problems of equity and social justice associated with the health impacts of climate change, peak oil, pandemic influenza, and anti-microbial resistance (AMR) (see Johnstone 2016 for further discussion on these issues).

Informed consent

The main aims of informed consent processes are to promote and protect the patient's right to self-determination and to remind healthcare practitioners of their duty to provide patients with the information necessary to make intelligent choices about whether to accept recommended care and treatment (Düwell 2013). The main way of meeting these goals has been to share knowledge about clinical findings and management plans as they are implemented. In certain well-defined situations, the patient must provide written evidence of consent, such as consent to a surgical procedure or consent to participate in an experimental regimen.

Obtaining informed consent prior to a medical procedure is standard practice in Australian and New Zealand jurisdictions. Moreover, healthcare providers go to great lengths to share information that promotes informed decision-making. Institutional policies and civil law protect the patient's right to informed consent. Its practice represents a clear effort to respect the autonomy of patients, and in this way also represents a fundamental paradigm shift from medical paternalism ('doctor knows best') that was once characteristic of healthcare practice (Düwell 2013), to patient and carer participation ('patients are "expert" in their own conditions' and can/should actively participate in decision-making and negotiate their health care) (Bellows et al 2015, Hernan et al 2014, WHO 2013).

A commitment to the concept of informed consent does not ensure a lack of controversy. The concept depends on a certain level of competence on the part of the provider to communicate well, and also depends on a level of competence on the part of the patient to understand. It is not always easy to secure these competencies. Furthermore, studies on communication skills demonstrate that healthcare providers are more likely to share information with patients who have similar cultural backgrounds to the provider. Providers may be more likely to give directives or advice than truly share knowledge with patients who they perceive to be less educated or less intelligent and, in the case of patients who do not speak English or do not speak it proficiently, may even fail to communicate relevant information at all (Johnstone & Kanitsaki 2006, 2009b).

For consent to be properly informed it must satisfy the criteria in Box 9-4.

Confidentiality

It is generally accepted that nurses, like other members of the healthcare team, have a stringent moral duty to keep secret any private information gained in the professional–patient relationship. Nursing codes of ethics make explicit the nurse's duty in this regard, and make it clear that nurses must exercise critical judgement if and when disclosing otherwise confidential information to a third party. The main aim of the rule of confidentiality is to protect patients against the morally harmful consequences that can occur when unconsented disclosures are made.

BOX 9-4 Criteria for informed consent

- The patient was given relevant information to enable an intelligent choice to be made. Relevant information may be taken as referring to any information that would make a material difference to the choices being made.
- The patient understood the information disclosed.
- The patient's consent was given voluntarily; that is, it was provided in a context that was free of coercive and/or manipulative influences.
- The patient was competent to exercise the choices made.
- The patient gave consent and understood the implications of doing so; that is, in consenting, the patient was consenting to something (e.g. a medical procedure) being done to them

Beauchamp T, Childress J 2013 Principles of biomedical ethics, 7th edn. New York, Oxford University Press; and, Kerridge I et al 2013 Ethics and law for the health professions, 4th edn. Federation Press, Sydney.

An unconsented disclosure of, for example, a patient's newly diagnosed HIV-positive status could result in the patient being rejected by family and friends and hence left without social support at a time when it is most needed. It might also result in the patient losing his/her job, which although illegal still happens, compounding their loss of social support.

Confidentiality is not, however, an absolute principle. What this means is that although, as a general rule, we ought to keep information gained in the professional–patient relationship secret, there may be times when disclosing such information is morally warranted. Indeed, it is generally recognised and accepted that sometimes there may be overriding moral reasons for disclosures. For example, where such disclosures could otherwise help prevent harm to innocent others. If a patient disclosed that, for example, he intended to act out a revenge fantasy and kill someone he disliked, then the duty to keep this information confidential could be overridden by a stronger duty to warn the intended victim. In cases involving known or suspected cases of child abuse or elder abuse, disclosures might not only be morally warranted but legally mandated as well.

Quality of life

It is difficult to imagine a concept with a more personal, or more elusive, definition than quality of life. For each individual, quality of life is something that is intensely personal and particular. Yet society uses quality-of-life measures to help determine the benefits of medical intervention and, as a result, discussions about quality of life abound (Jecker et al 2011, Kerridge et al 2013). Some social scientists have proposed formulas or other objective measuring devices that can be applied to individual and group situations, and to whole populations. These formulas might take into account the age of the patient, ability to live independently and ability to contribute to society in a gainful way. Such a formula might help a committee determine, for example, the relative merits of giving an organ to one recipient over another. Or, a quality-of-life measure could help a patient and family decide on the merits of a certain risky intervention, such as organ transplant or experimental drug management. The question of quality of life is paramount to discussions about so-called medically futile treatment, euthanasia/medically assisted suicide, and DNR directives.

Given the diverse ways in which the notion of quality of life can be defined, it is important that nurses are clear about what they mean by this concept and that they ensure they do not inadvertently impose their views about what quality of life is on the patient (Johnstone 2016).

Do not resuscitate (DNR) directives

At some stage during their practice, nurses will encounter patients who have been made the subject of a 'do not resuscitate' or DNR directive. A DNR directive (also sometimes written as a 'do not attempt resuscitation' (DNAR) or 'not for resuscitation' (NFR) directive) is made by an attending medical officer, and typically prescribes that in the event of a cardiac or respiratory arrest, no emergency resuscitation or life-supporting measures will be initiated. In other words, were the patient to suffer a cardiac or respiratory arrest, CPR would not be performed. The issue of DNR has long been a controversial bioethical issue for nurses, as discussed elsewhere (Johnstone 2016). One reason for this has been that, at least in the past, it was not uncommon for DNR directives to be given without the patient's knowledge or consent. This was often justified on the questionable grounds that such knowledge would only cause the patient unnecessary distress. Other problems related to DNR directives are listed in Box 9-5.

Today, the issue of DNR is discussed more openly with patients and their families as well as with members of the healthcare team. Nevertheless, the issue remains problematic and continues to invite debate in both the bioethics and the nursing ethics literature. Even though there have been notable improvements in the development and operationalisation of DNR policies and practices in local healthcare institutions, research has shown that wide variations continue to exist (Brown et al 2014, Hayes 2012, Sidhu et al 2007).

BOX 9-5 Other problems related to DNR directives

- Lack of institutional policies and guidelines for prescribing DNR.
- The use of vague criteria for deciding whether a patient ought to be made the subject of a DNR directive.
- Poor communication of medical decisions surrounding DNR practices.
- Poor documentation processes; for example, in the past, a DNR directive was commonly communicated via the use of coloured dots (usually black ones) being placed on the patient's chart or against their names on the ward admission board.
- Nurses being left to carry a disproportionate burden of responsibility with respect to the execution of such directives.

Johnstone M 2016 Bioethics: a nursing perspective, 6th edn. Churchill Livingstone, Sydney.

Euthanasia/medically assisted suicide

Euthanasia/medically assisted suicide involves the deliberate administration of a lethal substance to end a patient's life, usually in a clinical context (Johnstone 2016). Some people request euthanasia in instances where they have come to view their life or suffering as 'unbearable'. Over the past decade supporters of euthanasia have advocated 'advance euthanasia directives' (also called 'pre-emptive euthanasia') whereby requests for euthanasia are made in advance of an anticipated state of suffering (mental or physical) being experienced (Hertogh 2009). Nurses, like others in the community, hold diverse values, opinions and beliefs about the moral permissibility of euthanasia/medically assisted suicide and whether it should be legalised. Of particular concern to nurses in Australia and New Zealand (where euthanasia is illegal) is the confronting question of whether the nursing profession should formally and publicly support calls for the legalisation of euthanasia/medically assisted suicide and whether nursing organisations should adopt a formal policy position to this effect (Johnstone 2016). Also confronting is the question of whether nurses should themselves assist with performing euthanasia in the event of it being made legal. Nurses and professional nursing organisations have an obvious stake in the outcome of the euthanasia/medically assisted suicide debate. Accordingly, nurses have a moral and professional responsibility to ensure that they are kept well informed about the issues in question and keep abreast of developments discussed critically in the legal and bioethics literature. This includes questioning public opinion, which indicates nothing more than a certain percentage of the population holding a particular opinion on the matter. Whether public opinion (which currently favours the legalisation of euthanasia) has the authority to prescribe a society's moral values is another matter entirely (Johnstone 2016).

Access and equity in health care

Access and equity in health care are poised to become the most pressing ethical issues in the 21st century. This is because over the next 40 years, population ageing, the increasing burden of chronic disease, the possible health consequences of climate change and the depletion of the world's non-renewable resources (e.g. petroleum) will all place unprecedented and overwhelming demands on the healthcare system and the individuals comprising it. In the case of population ageing, people over the age of 65 years are expected to become frequent users of the public health system and 'real health spending' during the period 2010 to 2050 will increase exponentially for this population group (Johnstone 2010, 2016, Johnstone & Kanitsaki 2009c). Critics contend that the costs associated with an ageing population and the associated burden of chronic disease will be so high that the level of health care currently being provided will not be sustainable. The future will therefore be one in which 'tough moral choices' will have to be made.

Adding to the problem of future access to and equity in health care is the potential negative impact of climate change. Experts predict that climate change will see a significant increase in illness and deaths from frequent and severe heat-waves, vector-borne diseases, and other extreme weather events (McMichael et al 2006). Peak petroleum (the point at which the world's oil reserves begin to decline, which some say may already have been reached) will also affect healthcare delivery in deleterious ways (Frumkin et al 2007, 2009, Hess et al 2011, Schwartz et al 2011). This is because healthcare services are utterly dependent on petroleum products (e.g. medical supplies and equipment, pharmaceuticals, transportation and service delivery, and energy) without which they will come to a halt (Johnstone 2011b).

In order to mitigate the negative impact of these developments, authorities have increasingly emphasised the need for healthcare reform and a more responsive and better coordinated healthcare system. Healthcare reform, in this instance, has been clarified to include making adjustments to healthcare spending in order to obtain 'better value for money'. Some argue, however, that healthcare reform is not just a matter of making the system 'work better'. Callahan suggests, for example, that if the common good is to be achieved we need to rethink some of our fundamental values about health and health care. This, he suggests, is going to require a 'cultural revolution' in our thinking about medical technology, progress, dying, death and ageing, because the brutal reality is that 'there are no reliable or seriously envisioned practical and politically accepted means of managing costs anywhere near the extent that is necessary' (Callahan 2009). He further argues that when the costs of the benefits of medical technology begin to exceed what a community or nation can afford, then questions need to be raised about when 'enough is enough' and how the point of 'enough' might be determined (Callahan 2009).

The complexities associated with an ageing population, the increasing burden of chronic disease, climate change and the depletion of the world's non-renewable resources raise critical questions about how prepared the nursing profession is to respond to what have been termed the 'three Rs' (Wynia 2007) when faced with 'extreme events', that is: *rationing* (e.g. of medications, mechanical life support), *restrictions* (e.g. on people's access to and from

healthcare services) and *responsibilities* (of healthcare professionals to continue providing care and treatment when resources are scarce or depleted).

The ethical consequences of these evolving scenarios are likely to be incremental, rather than sudden. Even so, without forward planning encompassing a comprehensive vulnerability analysis, nurses will not be well placed to prepare for or mitigate the tough ethical challenges and choices that lie ahead.

Being ethical in extreme situations can be particularly challenging because it may not be clear what is the right thing to do. Considering ethical quandaries in advance will help mitigate this difficulty. In the meantime, it is timely for attention to be given to the following questions:

- What steps need to be taken now to ensure the development of a viable and sustainable healthcare system that is responsive and well coordinated to meet the needs of future generations?
- Will the solutions proposed be effective and just?
- What processes do the nursing profession need to engage in if it is to contribute meaningfully to public policy debate and agenda setting for achieving a sustainable and just healthcare system for all people across the life span?

• CRITICAL REFLECTION POINT

Review the six commonly identified ethical issues in nursing. Then reflect on how important you believe these issues really are to the profession and practice of nursing and what other issues ought also to be placed on the nursing ethics agenda for consideration and debate by nurses. Then compare these to the 'everyday ethical issues in nursing' which have been presented in this chapter. Reflect on whether you agree or disagree with this list and the rationale for your response.

'Everyday' ethical issues in nursing

As well as having to deal with the procedural issues of ethics – that is, identifying ethical issues and responding to them effectively – and the 'life and death' issues commonly associated with the discipline of bioethics, nurses have to grapple with 'everyday' ethics. Everyday ethics in nursing derives from the experiences of nurses (and their patients) in day-to-day 'hands-on' practice. Unlike the more 'exotic' issues of bioethics (discussed above), everyday ethics in nursing concern such things as:

- moral boundaries of nursing
- catalysts to moral action (e.g. the look of suffering in a patient's eyes)
- operating moral values (e.g. sympathy, empathy, compassion)
- ethical decision-making processes in nursing and healthcare contexts
- barriers to ethical practice
- need for cathartic moral talking
- self-care.

When nurses talk about everyday ethical issues, their conversations are not about the so-called paramount or exotic issues of bioethics (such as abortion and euthanasia), but about the more fundamental issues of (Johnstone 2016):

- how to help a patient in distress in the 'here and now'
- how to stop 'things going bad for a patient'
- how to best support a relative or chosen carer during times of distress and when the 'system' appears to be against them
- how to make things 'less traumatic' for someone who is suffering
- how to reduce the anxiety and vulnerability of the people being cared for
- where nurses can get help for their own distress
- how to make a difference in contexts where indifference to the moral interests of others is manifest.

The moral responsibility of nurses to engage in 'self-care' (see Value statement 4 of the *Code of ethics for nurses in Australia* (NMBA 2008a)) is another 'everyday' issue that is finding its way into the conversation of nurses.

The above concerns are just as worthy of attention by nurses and others as are the more 'exotic' issues of bioethics. The everyday ethical issues identified constitute an important component of nursing ethics and warrant in-depth consideration in the interests of promoting ethical practice in nursing and related care contexts.

Conclusion

The courage, moral wisdom and intelligence to act, both as an advocate for patients and as a professional member of the healthcare team, come only after a committed effort to learn and to understand ethical issues in nursing and health care. The professional nurse has an important point of view regarding patients, the healthcare system that supports patients and the institutions that constitute the healthcare system. The nurse both owes a duty and enjoys a privilege to articulate that point of view. Learning the language and practice of ethics is a part of the skill necessary to exercise this duty and privilege. In addition, review and contemplation of various ethical constructions of different issues assist nurses in the formulation of considered ethical professional points of view, a necessary ingredient in the negotiation of difficult ethical situations.

Key concepts

- Ethics involves thinking critically about and engaging in a systematic examination of what constitutes right and wrong/good and bad conduct, and the bases upon which we might justify our judgements about the ideals of right and wrong conduct.
- Bioethics refers specifically to ethical issues that arise in the context of biomedical research and healthcare service delivery.
- Nursing ethics involves the examination of all sorts of ethical issues from the perspective of nursing theory and practice.
- A code of ethics is a conventionalised set of rules or expectations devised for the purposes of guiding ethical professional conduct.
- The study of ethics, bioethics and nursing ethics is of fundamental importance for members of the nursing profession.
- Nurses are morally accountable and morally responsible for their actions.
- Nurses maintain ethical competence in practice and assume responsibility for nursing judgements.
- Nurses have a professional ethical responsibility to patients, the profession and society to provide safe, high-quality healthcare and to maximise patient wellbeing and welfare.
- Common ethical principles used to guide decision-making and conduct in health care are autonomy, beneficence, non-maleficence and justice; they are not, however, the only guides to moral conduct and may even be inappropriate for guiding decision-making in some cultural contexts.
- Rights and duties are also important considerations in guiding moral decision-making and conduct in healthcare settings.
- Ethics is the product of the culture and times from which it has arisen and is fundamentally concerned with the promotion of human wellbeing and welfare.
- Moral problems can arise when practitioners lack educational preparation for dealing with ethical issues in the workplace. These include differences in moral values, beliefs and attitudes, and commitment with respect to performing one's moral duty. Professional role change, technological advances and social issues also challenge unthinking perspectives about what constitutes the moral life.
- Moral problems can be resolved by using a systematic process for moral decision-making and action. Critical thinking, moral intuition and emotion are all-important to the decision-making process.
- Moral problems may occur in any segment of the healthcare delivery system.
- Moral mistakes can be made when nurses and allied health workers 'rush to judgement' and rely on personal opinion, values and beliefs rather than evidence and sound moral theory to guide their moral decision-making and actions.
- The nurse's observations and considered judgements (the 'nursing point of view') can play a vital role in the correct identification and resolution of moral problems.

Online resources

Global Alliance for the Rights of Older People (GAROP) – information and resources on the rights of older people to be free of discrimination and to have their human rights respected; co-participant in global campaign calling for the development of a Convention on the Rights of Older People, www.rightsofolderpeople.org/

HelpAge International – information and resources concerning the global campaign calling for the development of a Convention on the Rights of Older People together with the creation of a new special rapporteur on older people's rights who would report to the Human Rights Council, www.helpage.org/what-we-do/rights/towards-a-convention-on-the-rights-of-older-people/

People's Health Movement – resources and information including Charters and Declarations (including the People's Charter for Health), position statements, newsletters, videos, photographs and other publications on people's right to health, www.phmovement.org/en

The Virtues Project – resources and information including publications, posters, audiovisual material, and a list of 52 virtues which are presented as core ingredients that people may use to 'create a culture of character'. Some examples of the better known moral virtues include: altruism, caring, compassion, cooperation, courage, diligence, empathy, excellence, fairness (justice), forgiveness, friendship, generosity, kindness, love, loyalty, personal integrity, reliability, respectfulness, sympathy, trustworthiness and wisdom, www.virtuesproject.com/

World Health Organization (WHO) Quality Rights Project – resources and information on the Quality Rights Project, which aims to 'improve the quality and human rights conditions in mental health and social care facilities and empower organizations to advocate for the rights of people with mental and psychosocial disabilities'. It is envisaged that the Project will leave a lasting legacy of respect for the human rights of people with mental illnesses and psychosocial disabilities, www.who.int/mental_health/policy/quality_rights/en/

References

Armstrong A E 2007 Nursing ethics: a virtue-based approach. Palgrave/Macmillan, Houndmills, Basingstoke.

Armstrong A E 2006 Towards a strong virtue ethics for nursing practice. Nursing Philosophy 7(3):110–24.

Beauchamp T, Childress J 2013 Principles of biomedical ethics, 7th edn. Oxford University Press, New York.

Beauchamp T, Childress J 1989 Principles of biomedical ethics, 3rd edn. Oxford University Press, New York.

Bellows M, Burns KK, Jackson K et al 2015 Meaningful and effective patient engagement: what matters most to stakeholders. Patient Experience Journal 2(1):18–28.

Benner P, Wrubel J 1989 The primacy of caring. Menlo Park, CA, Addison-Wesley, Nursing Division.

Bentham J 1962 An introduction to the principles of morals and legislation (reprinted from 1789 edn). Utilitarianism (reprinted from 1859 edn). In: Warnock M (ed) Utilitarianism. Fontana Library/Collins, London.

Brown M, Ruberu R, Thompson CH 2014 Inadequate resuscitation documentation in older patients' clinical case notes. Internal Medicine Journal 44(1):93–6.

Callahan D 2009 Taming the beloved beast: how medical technology costs are destroying our healthcare system. Princeton University Press, Princeton.

Campbell T 2006 Rights: a critical introduction. Routledge, London.

Churchill L 1989 Reviving a distinctive medical ethic. Hastings Center Report 19(3):28.

Coady M, Bloch S (eds) 1996 Codes of ethics and the professions. Melbourne University Press, Melbourne.

de Bruijne MC, van Rosse F, Uiters E et al 2013 Ethnic variations in unplanned readmissions and excess length of hospital stay: a nationwide record-linked cohort study. European Journal of Public Health 23(6):964–71.

D'Oronzio JC 2001 A human right to healthcare access: Returning to the origins of the patients' rights movement. Cambridge Quarterly of Healthcare Ethics 10(3):285–98.

Divi C et al 2007 Language proficiency and adverse events in US hospitals: a pilot study. Int J Qual Healthcare 19(2):60.

Dudzinski D, Shannon, E 2006 Competent patients' refusal of nursing care. Nursing Ethics 13(6):608–21.

Düwell M 2013 Bioethics: methods, theories, domains. Routledge, New York.

Dyck A 2005 Rethinking rights and responsibilities: the moral bonds of community. Georgetown University Press, Washington DC.

Feinberg J 1979 The rights of animals and unborn generations. In: Wasserstrom RA (ed) Today's moral problems. Macmillan, New York.

Frumkin H et al 2009 Energy and public health: the challenges of peak petroleum. Public Health Rep 124:5–19.

Frumkin H et al 2007 Peak petroleum and public health. JAMA 298(14):1688–90.

Fry-Revere S 1992 The accountability of bioethics committees and consultants. University Publishing Group, Frederick.

Gaut D 1991 The presence of caring in nursing. National League for Nursing Press, New York.

Gaut D, Leininger M 1991 Caring: the compassionate healer. National League for Nursing Press, New York.

Goethals S, Gastmans C, Dierckx de Casterlé B 2010 Nurses' ethical reasoning and behaviour: A literature review. International Journal of Nursing Studies 47(5):635–50.

Hayes B 2012 Clinical model for ethical cardiopulmonary resuscitation decision-making. Internal Medicine Journal 43(1):77–83.

Hernan A, Walker C, Fuller J et al 2014 Patients' and carers' perceptions of safety in rural general practice. Medical Journal of Australia 201(3):S60–S63.

Hertogh C 2009 The role of advance euthanasia directives as an aid to communication and shared decision-making in dementia. J Med Ethics 35(2):100–3.

Hess J et al 2011 Petroleum and healthcare; evaluating and managing healthcare's vulnerability to petroleum supply shifts. Am J Public Health 101(9):1568–79.

International Council of Nurses (ICN) 2012 The ICN code of ethics for nurses. ICN, Geneva.

Jecker N et al 2011 Bioethics: an introduction to the history, methods, and practice, 3rd edn. Jones & Bartlett, Sudbury MA.

Johnstone M 2016 Bioethics: a nursing perspective, 6th edn. Churchill Livingstone, Sydney.

Johnstone M 2015 Moral competence in nursing. Austral Nurs & Mid J 22(10):33.

Johnstone M 2012 Bioethics, cultural differences and the problem of moral disagreements in end-of-life care: a terror management theory. Journal of Medicine and Philosophy 37(4):181–200.

Johnstone M 2011a Nursing and justice as a basic human need. Nurs Philosophy 12:34–44.

Johnstone M 2011b Peak oil and healthcare without plastic. Austral Nurs J 18(10):29.

Johnstone M 2010 Healthcare justice for the ageing. Austral Nurs J 17(9):29.

Johnstone M 1994 Nursing and the injustices of the law. WB Saunders/Baillière Tindall, Sydney.

Johnstone M (ed) 2015a Nursing Ethics, Volume I: Developing theoretical foundations for nursing ethics. Sage Publications, Oxford.

Johnstone M (ed) 2015b Nursing Ethics, Volume II: Nursing ethics pedagogy and praxis. Sage Publications, Oxford.

Johnstone M (ed) 2015c Nursing Ethics, Volume III: Politics and future directions of nursing ethics. Sage Publications, Oxford.

Johnstone M, Kanitsaki O 2010 The neglect of racism as an ethical issue in healthcare. J Immigrant Minority Health 12:489–95.

Johnstone M, Kanitsaki O 2009a Ethics and advance care planning in a culturally diverse society. J Transcultural Nurs 20(4):405–16.

Johnstone M, Kanitsaki O 2009b The spectrum of 'new racism' and discrimination in healthcare: a reappraisal. Collegian 16(2):63–9.

Johnstone M, Kanitsaki O 2009c Population ageing and the politics of demographic alarmism: implications for the nursing profession. Austral J Adv Nurs 26(3):86–92.

Johnstone M, Kanitsaki O 2008 Cultural diversity and the Australian healthcare system. In: Barrowclough S, Gardner H (eds) Analysing Australian health policy: a problem orientated approach. Elsevier, Sydney.

Johnstone M, Kanitsaki O 2006 Culture, language and patient safety: making the link. Int J Qual Healthcare 18(5):383.

Kant I 1972 The moral law (trans Paton HJ). Hutchinson University Library, London.

Kerridge I et al 2013 Ethics and law for the health professions, 4th edn. Federation Press, Sydney.

LaFollette H (ed) 2014 Ethics in practice, 4th edn. Blackwell, Malden MA.

Leininger M 1990 Ethical and moral dimensions of care. Wayne State University Press, Detroit.

Leininger M 1988 Care: the essence of nursing and health. Wayne State University Press, Detroit.

Lichtenberg J 1996 What are codes of ethics for? In Coady M, Bloch S (eds) Codes of ethics and the professions. Melbourne University Press, Melbourne.

McMichael AJ et al 2006 Climate change and human health: present and future risks. Lancet 367(9513):859–69.

Mill JS 1962 Utilitarianism (reprinted from 1859 edn). In: Warnock M (ed) Utilitarianism. Fontana Library/Collins, London.

Morriston W 2009 What if God commanded something terrible? A worry for divine-command meta-ethics. Religious Stud 45:249–67.

New Zealand Nurses Organisation (NZNO) 2010 Code of ethics. NZNO, Wellington.

Nursing ethics 2015 Special issue: Moral distress Feb 22(1).

Nursing and Midwifery Board of Australia (NMBA) 2016 Registered Nurse standards for practice, NMBA, Canberra. Available at: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards.aspx; accessed 23 May 2016.

Nursing and Midwifery Board of Australia (NMBA) 2008a Code of ethics for nurses in Australia. NMBAC, Canberra.

Nursing and Midwifery Board of Australia (NMBA) 2008b Code of professional conduct for nurses in Australia. NMBA, Canberra.

Nursing Council of New Zealand (NCNZ) 2012a Code of conduct for nurses. NCNZ, Wellington.

Nursing Council of New Zealand (NCNZ) 2012b Competencies for registered nurses. NCNZ, Wellington.

Nussbaum M 2006 Frontiers of justice: disability, nationality, species membership. The Belknap Press of Harvard University Press, Cambridge MA.

Oakley J 2006 Virtue ethics and professional roles. Cambridge University Press, Cambridge.

Pence G 1991 Virtue theory. In Singer P (ed) A companion to ethics. Wiley-Blackwell, Oxford.

Poikkeus T et al 2014 A mixed-method systematic review: support for ethical competence of nurses. Journal of Advanced Nursing 70(2):256–71.

Reich W 1995 The word 'bioethics': the struggle over its earliest meanings. Kennedy Inst Ethics J 5(1):19.

Reich W 1994 The word 'bioethics': its birth and the legacies of those who shaped it. Kennedy Inst Ethics J 4(4):319.

Roach MS 1987 The human act of caring: a blueprint for the health professions. Canadian Hospital Association, Ottawa.

Schneiderman L, Jecker N 2011 Wrong medicine: doctors, patients and futile treatment, 2nd edn. Johns Hopkins University Press, Baltimore/London.

Schwartz BS et al 2011 Public health and medicine in an age of energy scarcity: the case of petroleum. Am J Public Health 101(9):1560–7.

Sen A 2009 The idea of justice. Allen Lane, London.

Sidhu NS et al 2007 'Not-for-resuscitation' orders in Australian public hospitals: policies, standardised order forms and patient information leaflets. Med J Austral 186(2):72–5.

Skene L 1996 A legal perspective on codes of ethics. In: Coady M, Bloch S (eds) Codes of ethics and the professions. Melbourne University Press, Melbourne.

Suurmond J et al 2010 Explaining ethnic disparities in patient safety: a qualitative analysis. American Journal of Public Health 1;100 Suppl 1:S113–17.

Taylor A (ed) 2006 Justice as a basic human need. Nova Science Publishers, New York.

United Nations 1948 The United Nations Declaration of Human Rights. United Nations, New York.

Wainwright WJ 2005 Religion and morality. Ashgate, Aldershot.

World Health Organization (WHO) 2013 Exploring patient participation in reducing health-care-related safety risks. Geneva, WHO. Online. Available: www.euro.who.int/en/publications/abstracts/exploring-patient-participation-in-reducing-health-care-related-safety-risks; accessed 29 Dec 2015.

Van Hooft S (ed) 2014 Handbook of virtue ethics. Acumen, Durham.

Watson J 1985a Nursing: the philosophy and science of caring. Colorado Associated University Press, Boulder.

Watson J 1985b Nursing: human science and human care: a theory of nursing. Appleton-Century-Crofts, Norwalk.

Wynia M 2007 Ethics and public health emergencies: encouraging responsibility. Am J Bioethics 7(4):1–4.

CHAPTER

10

Practising nursing within Australian regulatory frameworks

Mary Chiarella and Amanda Adrian

Learning outcomes

Mastery of content will enable you to:

- recognise and define key terms and principles
- explain the legal concepts that apply to nurses
- describe the legal responsibilities and obligations of nurses
- identify sources for standards of care for nurses
- define the legal aspects of nurse–patient, nurse–doctor, nurse–nurse and nurse–employer relationships
- give examples of legal issues that arise in nursing practice.

KEY TERMS

Assault and battery, p. 178
Brain death and organ donation, p. 182
Caring for persons who are dying, p. 182
Community health nurses, p. 187
Confidentiality and privacy, p. 177
Consent, p. 178
Continuing professional development, p. 167
Critical care nursing, p. 189
Documentation, p. 176
Do not resuscitate (DNR), p. 186
Dying with dignity, p. 181
Emergency departments, p. 187
Floating, p. 187
Giving information, p. 179
Guiding principles for safe, professional practice, p. 168
Hospital in the home, p. 190
Law of contract, p. 184
Legal and professional boundaries (of nursing), p. 168
Legal issues, p. 187
Legal liability in nursing, p. 171
Legal responsibilities, p. 183
Medical and surgical units, p. 188
Mental health legislation, p. 189
Negligence, p. 172
No cardiopulmonary resuscitation (No CPR), p. 186
Nurse–doctor relationship, p. 184
Nursing children, p. 187
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Regulation of the nursing profession, p. 166
Remote area nurse, p. 190
Right to refuse treatment, p. 181
Sources of law, p. 170
Staff shortages, p. 186
Standards of care, p. 176
Tort, p. 172
Vicarious liability, p. 171

Safe nursing practice requires an understanding of the legal framework within which nurses must function. As with all aspects of nursing today, an understanding of the implications of the law supports and informs critical thinking on the nurse's part. Nurses need not fear the law, but instead view the information that follows as the framework for understanding what can reasonably be expected by society from professional nurses. It is important to be aware that the laws in our society are constantly changing to meet the needs of the people they are intended to protect. This is particularly so in the area of health, where rapid developments in healthcare technology pose unforeseen ethical dilemmas for clinicians and the community, many of which have to be resolved by legal determinations, either through the courts or through the passing of new legislation. In 1970, Justice Windeyer made the observation that the 'law march[es] with medicine but in the rear and limping a little' (*Mount Isa Mines Limited v Pusey* (1970)). In addition, the community is becoming better informed about their rights to health care. Although federal laws apply to all states and territories, there are variations in state and territory laws across the country that will have implications for nursing practice. It is therefore important that nurses familiarise themselves with the laws in the jurisdiction(s) where they work and also those that might relate to their profession and particular specialist area of practice.

As midwifery is now regulated as a separate profession, unless there is a matter that overlaps both nursing and midwifery, this chapter will only discuss matters relating to nursing.

Regulation of nursing in Australia

The **regulation of the nursing profession** in Australia is now part of a national registration and accreditation scheme (NRAS) under the Health Practitioner Regulation National Law (the National Law) as in force in each state and territory. The nursing and midwifery professions have separate registers but are governed by a single national board – the Nursing and Midwifery Board of Australia (NMBA). The Australian Health Practitioners Registration Authority (AHPRA) administers the NRAS on behalf of the 14 national boards, one of which is the NMBA.

The primary purpose of the Australian (and most other) regulatory schemes is to protect the community from people not 'suitably trained and qualified to practise in a competent and ethical manner' (s. 3(2)(a) National Law). The area of law that governs the regulation of their conduct and practice is known as a **protective jurisdiction** and the agencies, boards and other instruments created by it, all exist to protect the community from the risk of harm. This form of occupational regulation provides:

- a barrier to entry to the professions by untrained persons
- the establishment of codes and standards for professional education, conduct, ethics and practice
- mechanisms for these codes and standards to be enforced
- an avenue for consumers to have complaints against nurses and midwives addressed (N3ET 2006).

There are two entry portals into the nursing profession: as a registered nurse (RN); and as an enrolled nurse (EN). In addition, it is also possible for an RN to later become endorsed as a nurse practitioner (NP).

Once students have successfully completed their education program they apply for registration as an RN or EN. This process requires the student to provide evidence in two areas: the first is evidence that they have the requisite academic qualifications and have demonstrated all the relevant standards for practice and/or competencies to practise as a new graduate and beginning practitioner (NMBA 2016); the second is evidence that they meet the registration standards related to English language (NMBA 2015a), professional indemnity insurance standard (NMBA 2012) and criminal history (NMBA 2015b).

Students enrolled in nursing programs are also required to be registered from first year. However, the obligation to register students is on education providers, who are responsible to ensure they have provided the AHPRA, on behalf of the NMBA, with the details of all students enrolled in an approved program of study or who are undertaking clinical training. An 'approved' program of study is one that is accredited by the Australian Nursing and Midwifery Accreditation Council (ANMAC) and approved by the NMBA. Students are registered in the interests of community safety. Student registration allows the NMBA to act on matters relating to students with health impairments or when convictions of a serious nature may affect community safety. Unlike the register for registered nurses, the student register is not published on the NMBA or AHPRA websites and is not publicly available, nor is it accessible to education providers, health services or students. Under the National Law, information on the student register must remain confidential (NMBA 2015c). For registered nurses, renewing registration each year requires nurses to attest they are continuing to practise competently and ethically, meeting the initial standards for registration and, in addition, maintaining and developing their professional knowledge, skills and expertise by also meeting the recency of practice standard (NMBA 2010a)

and the **continuing professional development** standard (NMBA 2010b).

The safety and quality framework

The NMBA also provides guidance for practising safely and ethically to meet the expectations of the community and the nursing profession. This guidance in Australia is set out in a safety and quality framework and includes a number of key documents that contain strong statements about the standards expected of the nurse. Students enrolled in nursing programs are also expected to conduct themselves according to these codes and standards and their continuing enrolment and student registration is contingent on behaving in a professional manner, even as students.

Professional conduct

Professional conduct is the manner in which a person behaves while acting in a professional capacity as a nurse. It is generally accepted that, when performing their duties and conducting their affairs, professionals will uphold exemplary standards of conduct, commonly taken to mean standards not generally expected of lay people or the 'ordinary person in the street'. The *Code of professional conduct for nurses in Australia* (NMBA 2013a) forms one of the key elements of the safety and quality framework for the nursing profession in this country. The purposes of the Code are to:

- outline a set of minimum national standards of conduct that members of the nursing profession are expected to uphold
- inform the community of the standards of professional conduct it can expect nurses in Australia to uphold
- provide consumer, regulatory, employing and professional bodies with a basis for evaluating the professional conduct of nurses.

The conduct statements contained in the *Code of professional conduct for nurses in Australia* are set out in Box 10-1.

Each of the conduct statements is accompanied by a series of explanations to further clarify their meaning.

Ethical behaviour

Ethical behaviour is the necessity to 'respect, promote, protect and uphold the fundamental rights of people who are both the recipients and providers of health care'. The *Code of ethics for nurses in Australia* (NMBA 2013b) forms another of the key elements of the safety and quality framework for nurses in Australia. Like the *Code of professional conduct*, *the Code of ethics* addresses the ethical challenges that confront nurses in their professional and personal lives as an RN. The purposes of the *Code of ethics for nurses in Australia* are to:

- identify the fundamental ethical standards and values to which the nursing profession is committed, and that are incorporated in other endorsed professional nursing guidelines and standards of conduct
- provide nurses with a reference point from which to reflect on the conduct of themselves and others
- guide ethical decision-making and practice, and
- indicate to the community the human rights standards and ethical values it can expect nurses to uphold.

The *Code of ethics for nurses in Australia* contains a number of value statements, each with explanatory notes.

Standards for practice

These are the core standards or competencies by which performance is assessed to obtain and retain registration as an RN, EN or NP, and outline the standards expected for the application of knowledge, skill, judgement and care in the practice of nursing. In Australia, these have traditionally been titled 'national competency standards'.

BOX 10-1 Professional Conduct Statements

- Nurses practise in a safe and competent manner.
- Nurses practise in accordance with the standards of the profession and broader health system.
- Nurses practise and conduct themselves in accordance with laws relevant to the profession and practice of nursing.
- Nurses respect the dignity, culture, ethnicity, values and beliefs of people receiving care and treatment, and of their colleagues.
- Nurses treat personal information obtained in a professional capacity as private and confidential.
- Nurses provide impartial, honest and accurate information in relation to nursing care and healthcare products.
- Nurses support the health, wellbeing and informed decision-making of people requiring or receiving care.
- Nurses promote and preserve the trust and privilege inherent in the relationship between nurses and people receiving care.
- Nurses maintain and build on the community's trust and confidence in the nursing profession.
- Nurses practise nursing reflectively and ethically.

Nursing and Midwifery Board of Australia (NMBA), Australian College of Nursing and Australian Nursing Federation 2013b Code of Professional Conduct for Nurses in Australia (rebranded).

However, they are now known as 'standards for practice' (RN – NMBA 2016, EN – NMBA 2011, NP – NMBA 2014). The purpose of these standards is to provide an evidence base to describe the core standards for practice for each professional group within nursing. The standards are regularly updated and reviewed and can be used by educators, governments, nursing professionals, employers and regulators to prepare and assess the performance of a nursing professional.

Decision-making framework (DMF)

Nurses, particularly RNs, often lead a team of health professionals and other workers. This team may include other RNs, ENs and assistants in nursing (AINs), as well as other staff such as porters and care assistants. In addition, nurses work closely with other health professionals such as medical practitioners, physiotherapists, pharmacists and other allied health staff. Work sometimes flows seamlessly between these groups based on issues such as the context of practice and patient needs. However, it is sometimes difficult for nurses to make decisions as to when to make and accept delegations of care and the purpose of the DMF is to provide advice and guidance in relation to making and accepting delegations (NMBA 2013c).

Boundaries of professional practice

Professional boundary violations have been a recurrent source of notifications to nursing regulatory bodies in Australia. Professional nurses must understand the **legal and professional boundaries** of their daily nursing practice. Such an understanding, combined with a sound ethical compass, good judgement and clinical skills, supports safe and appropriate nursing practice.

Nurses have previously identified four categories of concern in relation to setting **professional boundaries** and the risks of boundary violations (ANMC 2007). These were: therapeutic relationships, access to or disclosure of information, gifts or services and financial relationships, and dual relationships. One frame of reference that can be used to illustrate the range of professional behaviour is the 'continuum of professional behaviour' contained in the document *A nurse's guide to professional boundaries* on the NMBA website (NMBA 2013d). The concept is that professional behaviour exists on a continuum from under-involvement to over-involvement. In the centre of that continuum is the 'zone of helpfulness', which is delimited by flexible boundaries. The **guiding principles for safe, professional practice** have been derived from the categorisation of reported behaviours and are used in conjunction with a framework for boundary decision-making, which was also developed as part of the study. The 16 principles of safe practice provide a set of guidelines based on the collective wisdom of experienced nurses to help other nurses in establishing and maintaining professional boundaries (NMBA 2010b).

The application of the safety and quality framework to clinical practice

These documents have been developed to assist nurses in their daily practice. They are not prescriptive but principle based, and their intent is to enable nurses to reflect on the complex and sometimes difficult professional and ethical issues they encounter in clinical practice. Should a nurse be called to account for their practice in a court, tribunal or other regulatory body, these are the documents that will inform the standards against which they would be judged.

Complaint and disciplinary procedures

The National Law also establishes complaint and disciplinary procedures to ensure the protection of the community from nurses who, for whatever reason, may be unsuitable or unable to safely, competently or ethically practise. The registering authority has wide-ranging powers to ensure the protection of the community, from requiring nurses to undertake additional education to the ultimate sanction of removal of a nurse's name from the register. By far the most common form of sanction or legal involvement for a nurse in Australia is to be involved in professional disciplinary proceedings, a far more common occurrence than civil proceedings. It is important for nurses to appreciate that the registering authorities regard their duty to protect the public very seriously through the hearing of legitimate complaints. Complaints may be about a range of matters and, while not all complaints proceed to disciplinary hearings, all complaints will be the subject of a preliminary investigation and consideration by the regulatory authority. A range of processes is available to the NMBA on receipt of a complaint, ranging from a determination to do nothing about the complaint to a decision to have the complaint heard before a disciplinary hearing. The outcome of a disciplinary hearing may result in sanctions to protect the public, ranging from conditions being placed on the nurse's ability to practise at one end of the spectrum to removal of their name from the register or roll at the more serious end.

Under the legislation, practitioners, employers and education providers are all mandated by law to report *notifiable conduct* relating to a practitioner or, in the case

of a student, an impairment that may place the public at substantial risk of harm.

Notifiable conduct, in relation to a registered healthcare practitioner, means the practitioner has:

a. practised the practitioner's profession while intoxicated by alcohol or drugs; or

b. engaged in sexual misconduct in connection with the practice of the practitioner's profession; or

c. placed the public at risk of substantial harm in the practitioner's practice of the profession because the practitioner has an impairment; or

d. placed the public at risk of harm because the practitioner has practised the profession in a way that constitutes a significant departure from accepted professional standards (s. 140 National Law) (AHPRA 2014a).

It should also be noted that notifications and complaints are managed differently in New South Wales and Queensland, with state legislation working alongside the National Law in a co-regulatory way. In NSW, the Nursing and Midwifery Council (NMC) carries out its regulatory functions in conjunction with the Health Care Complaints Commission established under the Health Care Complaints Act 1993 (NSW) (AHPRA 2014b).

In Queensland, complaints are received by the Office of the Health Ombudsman (OHO) under the Health Ombudsman Act 2013 (Qld). The OHO assesses the severity and determines which complaints go to the NMBA, and those to be managed by the OHO. When complaints are referred to the relevant national boards (which AHPRA will manage on their behalf), the process that is followed is the same as in other states and territories (AHPRA 2014a).

Notifications or complaints about nurses generally fall into the three categories of performance:

1. **Performance** – where it is alleged the standard of a nurse's performance has fallen significantly below the standard reasonably expected, given the individual nurse's level of training or experience. As a result of a performance assessment, the NMBA can take a number of actions including referring the matter to a performance and professional standards panel, imposing conditions on/accepting an undertaking from the practitioner, cautioning the practitioner, requiring the practitioner to undergo a health assessment or referring the matter to a tribunal (AHPRA 2013).
2. **Professional conduct –**
   a. ***Unprofessional conduct*** of a nurse means professional conduct that is of a lesser standard than that which might reasonably be expected of the health practitioner by the public or the practitioner's professional peers (s. 5 National Law).
   b. ***Professional misconduct*** of a registered health practitioner is the more serious of the two categories and relates to unprofessional conduct by the practitioner that amounts to conduct that is *substantially* below the standard reasonably expected of a registered health practitioner of an equivalent level of training or experience. Complaints that are substantiated can result in the suspension or cancellation of the practitioner's registration (s. 5 National Law).

   Conduct issues are generally related to behavioural acts or omissions. Following investigation of a complaint, disciplinary action may be taken by a professional standards committee or tribunal, depending on the seriousness of the complaint (AHPRA 2014b).
3. **Health –** Complaints about health matters concerning nurses relate to physical or cognitive impairment, substance abuse and/or mental illness. A non-disciplinary Impaired Registrants Panel (IRP) may be established to assess the physical or mental impairment of the nurse and determine a course of action. This may result in assisting impaired nurses to manage their condition while they remain employed or there may be a recommendation to make their registration conditional, for example, suspension (AHPRA 2013).

The NMBA and the Nursing Council have the power to take immediate action to suspend or place conditions upon the practice of a nurse if they are provided with information that the conduct, health or performance of a nurse is likely to pose a serious risk to the community. The NMBA can also accept an undertaking from a nurse and the surrender of their registration (s. 155 National Law).

This is only an interim step, while a complete investigation can take place and other action can occur after a formal hearing by a committee, panel or tribunal. Table 10-1 lists situations where the NMBA and the Nursing Council may take immediate action.

This is a serious step and not taken lightly by the NMBA or Council. The threshold to take immediate action is necessarily high and to do so the NMBA must reasonably believe that:

- because of their conduct, performance or health, the nurse poses a 'serious risk to persons' and that it is necessary to take immediate action to protect public health or safety, or
- the nurse's registration was improperly obtained, or
- the nurse's registration was cancelled or suspended in another jurisdiction (s. 156 National Law).

TABLE 10-1 Matters the NMBA may consider require immediate action

CATEGORY	EXAMPLE
Police charges	Particularly offences relating to a health practitioner's work or professional practice, for example, assaulting a patient.
Patient outcome	A patient has died unexpectedly or a routine operation has had severe adverse outcomes.
Drugs	Notified by a practitioner, or an independent body. Includes accusations of self-administering, and inappropriate prescribing of illicit or prescription drugs.
Alcohol	Allegations of presenting to work under the influence of alcohol.
Sexual behaviour	Inappropriate touching or professional/sexual boundary violation.
Theft	Stealing drugs from the workplace.
Health	Impairments – serious (e.g. involuntary admission to hospital under the Mental Health Act) or concerns about memory/behaviour.
Breach of conditions	A practitioner has conditions on their registration and the conduct/incident described may breach registration conditions.

Australian Health Practitioner Regulatory Agency (AHPRA) 2013 Fact Sheet: Immediate action, June. Melbourne. Online. Available www.ahpra.gov.au/Notifications/Fact-sheets/Immediate-action.aspx; accessed 16 July 2015.

Comprehensive information about the notifications process, investigation, panels and tribunals is available through the NMBA and AHPRA websites.

In relation to registered students, the NMBA's focus is mainly on managing notifications. This applies to those students who have a health impairment to such a degree that there may be substantial risk of harm to the community; have been found guilty of an offence punishable by 12 months imprisonment or more; have a conviction of, or are the subject of, a finding of guilt for an offence punishable by imprisonment; or contravened an existing condition or undertaking (NMBA 2015c).

Sources of law

If nurses are to understand and comply with the law, they must be able to find it. The two major **sources of law** are legislation and case law. *Legislation* includes both primary legislation, such as statutes or Acts of Parliament, and secondary legislation, such as regulations and by-laws. The government makes primary legislation, either at federal level or at state and territory level. The federal government makes legislation governing, for example, the operation of Medicare (Human Services (Medicare) Act 1973 (Cth)), whereas the state or territory governments make legislation governing, for example, the management of the hospitals and health services (Health Administration Act 1982 (NSW)), as well as the legislation previously mentioned regulating the nursing and midwifery practitioners (Health Practitioner Regulation National Law 2009 as in force in each state and territory).

Case law as a source is usually referred to as common law. It consists of the individual decisions made by judicial decision-makers, such as judges in courts of law and other legal hearings. It is sometimes called 'interstitial law' because, like interstitial fluid, it fills the gaps left by the legislative sources of law. Examples of common law include famous cases like the Australian High Court decision in *Rogers v Whitaker* (1992) in which the High Court determined the extent of the medical practitioner's duty to advise a patient before performing surgery. At state level, case law includes both tribunal decisions and appeals against the decisions of disciplinary tribunals, such as *Nursing and Midwifery Board of Australia v Buckby* [2015] WASAT 19 (9 March 2015).

Figure 10-1 provides a useful schema for understanding common law.

The regulation of nurses and midwives through the National Law is in the areas of administrative law and protective law. However, at the third level, the common law is classified into the two main areas of criminal and civil law. *Criminal law* can be defined as 'essentially rules of behaviour, backed up by the sanction of punishment, which govern our conduct in the community, having regard to other people and their property' (Staunton & Chiarella 2013). There are laws relating to misuse of controlled substances, such as drugs of addiction, which provide examples of criminal law that impinge on nursing practice, for example, the Drugs Misuse Act 1986 (Qld). It is usually the role of the police to enforce criminal law and they have extensive powers to be able to do so.

In contrast, *civil law* deals with the resolution of private disputes between individual persons and/or organisations. Civil law has many divisions within it, such as family law, industrial law, land and environment law, and workers' compensation. There is also what is known in civil law

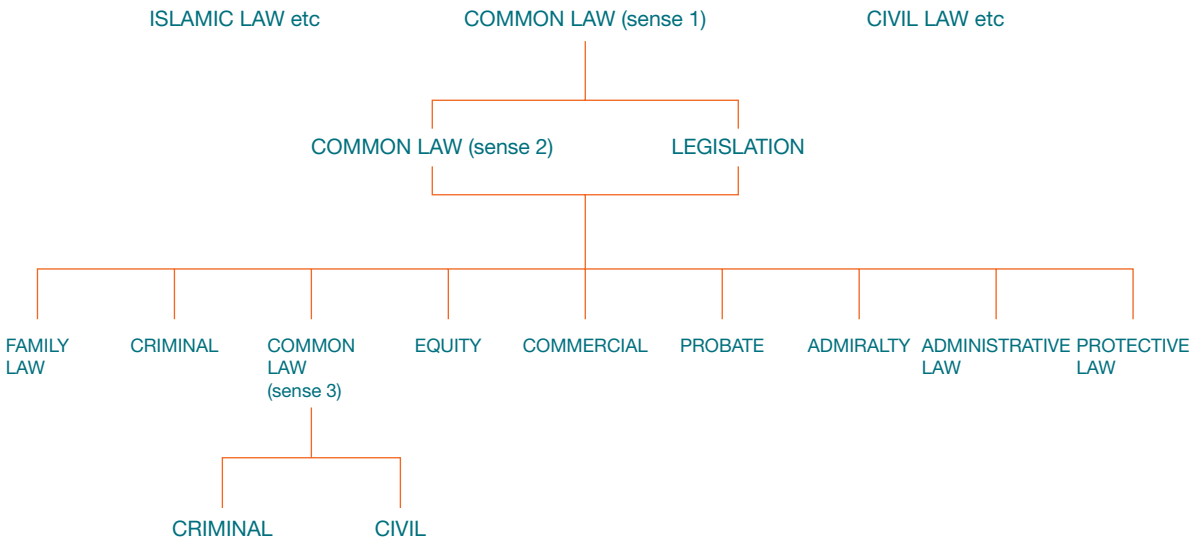

Figure 10-1 Common law and sources of law.

Chisholm R, Nettheim G 2012 Understanding law, 8th edn. LexisNexis Butterworths, Chatswood.

as a common-law division which deals with the most recognised common-law principles, such as contract law, negligence, defamation or nuisance (Staunton & Chiarella 2013). Generally, violations of civil law cause harm or damage to people or property. Civil law remedies often involve payment of compensation, but other remedies may involve reinstatement in a job, as in the industrial courts.

Legal liability in nursing

Legal liability in nursing means that an individual is subject to a legal obligation. One of the important distinguishing features of the breach of a legal obligation is that there is usually some form of legal action for its breach. There are four potential legal actions available to patients who might suffer an adverse event as a result of their healthcare experience:

- punish offenders and deter potential offenders (criminal law)
- compensate injured victims (civil law)
- protect the public against incompetent or grossly deficient moral qualities or technical proficiency (protective law – professional misconduct)
- provide information and review decision-making procedures (administrative law).

The first three remedies or legal actions are divided into the divisions of criminal law, civil law and protective law, and have already been discussed in this chapter. Administrative law remedies only occasionally affect the individual nurse and will not be discussed further here.

The way in which liability is apportioned always depends on the facts of the case and the extent of culpability of each person involved. In criminal and professional misconduct cases, the nurse is personally liable for their wrongs if found to be the culpable party, and is the person who has to undergo the punishment in a finding of criminal liability. In professional misconduct cases, it is the nurse who personally has to answer to the disciplinary tribunal; and who could be subject to conditions being imposed on their registration, or could even lose registration in a finding of professional misconduct. It is clear that such outcomes will affect the nurse directly, and so these two remedies (criminal and professional misconduct) are categorised as ones for which the nurse is personally liable.

In civil cases, in which compensation of the injured party is the remedy, unless the nurse is self-employed or practising outside the scope of their employment conditions, it is most likely that the employer would be held to be what is known as 'vicariously liable' for the wrongs of the nurse. **Vicarious liability** is based on the principle that you are responsible for the actions of those you engage to do your work for you and has its roots in the existence of the special relationship between employer and employee, where the employer is liable for the wrongful acts of the employee provided that they were performed in the course of the employee's employment (Adams 2003). The underlying purpose of the doctrine is to ensure that people who have a legal right to receive compensation are able to receive it, as it is likely to be difficult to obtain compensation payments

from the average employee (Staunton & Chiarella 2013). In Australia, most nurses are employees and are therefore subject to the doctrine of vicarious liability for civil wrongs, such as the tort (wrongful act) of negligence. This does not absolve a nurse from responsibility for their acts, even though they would not have to provide the compensation personally, as they would still have to appear in court and give evidence about their conduct. They might also be subject to criticism from the judges and suffer industrial consequences, such as losing their jobs, depending on the seriousness of the problem. If the matter raises an issue of the professional conduct of the nurse, they may also have a complaint made against them, which is dealt with in the protective jurisdiction of the disciplinary tribunal.

It is possible that an employer might seek to recover some or all of the compensation paid out to the injured party on behalf of the employee nurse, and the employer has the right to do so at common law (*Lister v Romford Ice and Cold Storage Co.* (1957)). In practice, this is rarely done, since there is very little point in seeking money from people who are unable to pay. Some states have even passed legislation to prevent an employer from doing so; in NSW, for example, the Employees Liability Act 1991 states that if the employee commits a tort in circumstances where the employer would be vicariously liable, the employee does not have to indemnify or pay any contribution to the employer in respect of the liability incurred (s. 3). The only exceptions to this are if the conduct of the employee was serious and wilful misconduct or did not occur in the course of, and did not arise out of, the employment of the employee (s. 5); or if the employee was already independently insured or indemnified (s. 6). If no such provision exists, personal professional indemnity insurance would be required. The national registration scheme requires all healthcare professionals to ensure and confirm they have professional indemnity insurance (PII), either through their employer or personally, before they practise (s. 109 National Law). The only exception is in the case of midwives providing homebirth care, as no insurance is available. However, they are required to have insurance for ante-partum and post-partum care, and are also expected to comply with the NMBA's safety and quality framework (s. 284 National Law). Similarly, nurses who are self-employed are personally liable for their own actions and require their own insurance. All states and territories have now developed a statutory basis for civil negligence which provides for similar, although not identical, civil liability arrangements in each jurisdiction (Australian Government Treasury 2004).

Torts

A **tort** is a civil wrong committed against a person or property. The most important torts involving nurses are negligence and trespass to the person. Defamation is also of limited concern for nurses, although the need for confidentiality ought normally to override any risk of defamation. In relation to the purposes of the law of torts, it has been argued that 'the first of these purposes is the pursuit of corrective justice. This entails the normative proposition that innocent people should not bear the financial burden of harm caused by the negligent actions of another. The second purpose relates to tort law's role in setting standards of conduct' (Grey 2006:557). Whichever purpose is relevant, the actual outcome of a compensation claim is to shift the financial burden of injury from the one who suffered it to the one who was responsible for its cause.

Negligence

The tort of **negligence** relates to incidents where a person has suffered an injury to themselves or their property as a result of another person's act or omission that fell below an expected standard of care. For an action in negligence to succeed, the person complaining of the injury must prove, to a requisite standard of proof, that:

1. the person or organisation causing the injury owed them a duty to take reasonable care (known as a duty of care)
2. there was a breach of that duty, and
3. the damage that the injured person suffered occurred as a reasonably direct result of the breach of duty (Staunton & Chiarella 2013).

In negligence, it does not matter that the person who caused the injury did not mean to do so, because the purpose of the action is to recover damages for the injury.

For Australian nurses, although there are very few negligence cases involving nurses, the sorts of acts or omissions that might give rise to an action in negligence have included such diverse matters as:

- failure to question further a wrong medical order for ear drops, causing the recipient to go deaf – *Henson v Board of Management of Perth Hospital* (1939)
- failure to adequately sterilise a container for eye drops, leading to the child suffering from defective eyesight – *Smith v Browne & ors* (1974)
- failure to give an immunisation injection in the proper place, leading to severe scarring – *Stepanovic v ACT* (1995)
- failure to account for the swabs accurately during an operation, leading to a swab being left in a patient's

abdomen – *Langley & anor v Glandore Pty Ltd (in Liq) & anor* (1997); *Elliott v Bickerstaff* [1999].

It is important to realise that it is not the severity of the injury that determines the question of negligence (although it will be critical to the extent of the compensation), but rather the question of whether there was a departure from the proper standard of care that caused the patient's injury. Even with the best care in the world, sometimes in health care there are tragic outcomes that are not foreseeable.

The best way for nurses to avoid being involved in actions related to negligence is by maintaining contemporary and professional standards of care; providing care that is safe and within the limits of their own competence; communicating carefully and coherently with other healthcare providers; documenting assessments, interventions and evaluations fully; and developing and maintaining respectful and positive relationships with patients. Good communication and relationships are critical in this regard. Failure in doctor–patient communications has been stated not only to lead to generalised patient dissatisfaction, but also to increase the risk of litigation should the patient suffer an injury or other adverse event while in hospital (Australian Commission for Safety and Quality in Health Care 2008). Overall, the Australia community thinks very highly of nurses – in ethics and honesty polls, nurses regularly come high on the list of people Australians trust (Roy Morgan 2015). Nurses must justify this faith in them by ensuring that they deliver safe and appropriate nursing care.

Students' participation in the delivery of nursing care

As noted above, students enrolled in nursing programs in Australia are required to be registered to be able to participate in the essential workplace experience components of their education. Nursing students are expected to uphold professional standards when practising in the clinical areas, should be carefully supervised when learning new skills and should otherwise practise within the limits of their competence.

Patients are entitled to receive a safe standard of care, regardless of whether the care is delivered by a registered or a student nurse. However, if students were not allowed to touch patients, they would never properly learn nursing skills or the nuances of clinical decision-making in a 'real' environment. Similarly, experienced nurses have a professional obligation to share their knowledge and expertise to assist less-experienced nurses to give optimal patient care. Both experienced nurses and nursing students are jointly responsible for ensuring that students are properly supervised and are never placed in a situation where the patient's wellbeing might be at risk in any way. When students are learning a new clinical skill the supervising clinician must ascertain whether or not the student is adequately prepared to undertake the procedure. They should have had previous practice in the nursing laboratories, and should be carefully supervised by an experienced and competent nurse, either from the faculty or from the clinical environment where the student is working. If students feel uncertain for any reason, it is their responsibility to advise the supervising nurse of their concerns. Faculties of nursing need to make specific arrangements with facilities where students are placed regarding supervision and liability for any adverse events that may occur. All supervising staff, be they faculty or clinical, need to be very clear about their responsibilities towards the students and the patients in their care.

Many nursing students find work as assistants in nursing or as nurses' aides when not attending classes. However, it is important to recognise that, although such employment will undoubtedly provide valuable experience in interpersonal skills and basic nursing care, the student is employed as an unqualified member of staff and must not take on responsibilities outside the scope of that employment, just because it is possible to do so by virtue of their educational program. In such a situation, the employing authority whose staff assigns such work to students may be liable for any adverse events that occur because of the delegation, as may the students themselves if they practise outside the scope of their employment. Valuable advice on the delegation and acceptance of authority for registered nurses, midwives and students can be found in the decision-making frameworks for nurses and midwives endorsed by the NMBA (NMBA 2013c).

Standards of care

Section 39 of the National Law provides that the Board may develop and approve codes and guidelines and section 41 of the National Law provides:

> **An approved registration standard for a health profession, or a code or guideline approved by a National Board, is admissible in proceedings under this Law or a law of a co-regulatory jurisdiction against a health practitioner registered by the Board as evidence of what constitutes appropriate professional conduct or practice for the health profession.**

The most important sets, standards, codes and guidelines approved by the NMBA for nurses to be aware of are the registration standards and those identified as part of the safety and quality framework discussed above:

- The *Code of professional conduct for nurses in Australia* (NMBA 2013a).
- The *Code of ethics for nurses in Australia* (NMBA 2013b).

- *Decision Making Frameworks* (DMF) (NMBA 2013c).
- *A nurse's guide to professional boundaries* (NMBA 2013d).
- The standards for practice/competency standards for RNs, ENs and NPs identified earlier (RN – NMBA 2016, EN – NMBA 2011, NP – NMBA 2014).

The national standards for practice/nursing competencies have been accepted by the NMBA for registration as the minimum competencies to be demonstrated by nurses for entry to the practice of nursing. It is expected that all nurses, registered and enrolled, will be able to demonstrate these competencies, with experienced nurses achieving higher standards than beginning practitioners. All education providers must demonstrate that nursing education programs leading to registration or enrolment enable students to meet these standards for practice/competencies, and all graduating nurses have to be able to meet these criteria to be eligible for entry to the registers. These standards have been used in courts of law to determine appropriate standards of practice, for example, *HCCC v Kocsis* [2011]. Box 10-2 below outlines the current national standards for RNs.

In a recent decision of the Western Australian State Administrative Tribunal (WASAT) *Nursing and Midwifery Board of Australia v Buckby* [2015] WASAT 19, the Tribunal relied on the *Code of professional conduct for nurses in Australia* (NMBA 2013a), the *Code of ethics for nurses in Australia* (NMBA 2013b) and *A Nurse's guide to professional boundaries* (NMBA 2013d) to find the conduct of the nurse in that case was in breach of the standards outlined in these codes and guidelines to such an extent that:

> **The practitioner's conduct would reasonably be regarded by his professional brethren of good repute and competency as dishonourable. The practitioner's conduct would incur strong criticism from them. His conduct was an egregious departure from the elementary and generally acceptable standards of nurse practitioners[1] [*sic*]. His conduct and comments portray indifference to Patient A [and B] and to … [their] vulnerable state and were an abuse of the privileges which accompany registration as a nurse practitioner [*sic*].**
>
> **The Tribunal finds the practitioner guilty of professional misconduct.**

1. The nurse was a registered nurse, **not** a nurse practitioner in this case.

BOX 10-2 Registered nurse standards for practice

Standard 1: Thinks critically and analyses nursing practice

RNs use a variety of thinking strategies and the best available evidence in making decisions and providing safe, quality nursing practice within person-centred and evidence-based frameworks.

The registered nurse:

1.1 accesses, analyses, and uses the best available evidence, that includes research findings, for safe, quality practice

1.2 develops practice through reflection on experiences, knowledge, actions, feelings and beliefs to identify how these shape practice

1.3 respects all cultures and experiences, which includes responding to the role of family and community that underpin the health of Aboriginal and Torres Strait Islander peoples and people of other cultures

1.4 complies with legislation, regulations, policies, guidelines and other standards or requirements relevant to the context of practice when making decisions

1.5 uses ethical frameworks when making decisions

1.6 maintains accurate, comprehensive and timely documentation of assessments, planning, decision-making, actions and evaluations, and

1.7 contributes to quality improvement and relevant research.

Standard 2: Engages in therapeutic and professional relationships

RN practice is based on purposefully engaging in effective therapeutic and professional relationships. This includes collegial generosity in the context of mutual trust and respect in professional relationships.

The registered nurse:

2.1 establishes, sustains and concludes relationships in a way that differentiates the boundaries between professional and personal relationships

2.2 communicates effectively, and is respectful of a person's dignity, culture, values, beliefs and rights

2.3 recognises that people are the experts in the experience of their life

2.4 provides support and directs people to resources to optimise health-related decisions

2.5 advocates on behalf of people in a manner that respects the person's autonomy and legal capacity

2.6 uses delegation, supervision, coordination, consultation and referrals in professional relationships to achieve improved health outcomes

2.7 actively fosters a culture of safety and learning that includes engaging with health professionals and others, to share knowledge and practice that supports person-centred care

2.8 participates in and/or leads collaborative practice, and

continued

2.9 reports notifiable conduct of health professionals, health workers and others.

Standard 3: Maintains the capability for practice

RNs, as regulated health professionals, are responsible and accountable for ensuring they are safe, and have the capability for practice. This includes ongoing self-management and responding when there is concern about other health professionals' capability for practice. RNs are responsible for their professional development and contribute to the development of others. They are also responsible for providing information and education to enable people to make decisions and take action in relation to their health.

The registered nurse:

3.1 considers and responds in a timely manner to the health and wellbeing of self and others in relation to the capability for practice

3.2 provides the information and education required to enhance people's control over health

3.3 uses a lifelong learning approach for continuing professional development of self and others

3.4 accepts accountability for decisions, actions, behaviours and responsibilities inherent in their role, and for the actions of others to whom they have delegated responsibilities

3.5 seeks and responds to practice review and feedback

3.6 actively engages with the profession, and

3.7 identifies and promotes the integral role of nursing practice and the profession in influencing better health outcomes for people.

Standard 4: Comprehensively conducts assessments

RNs accurately conduct comprehensive and systematic assessments. They analyse information and data and communicate outcomes as the basis for practice.

The registered nurse:

4.1 conducts assessments that are holistic as well as culturally appropriate

4.2 uses a range of assessment techniques to systematically collect relevant and accurate information and data to inform practice

4.3 works in partnership to determine factors that affect, or potentially affect, the health and wellbeing of people and populations to determine priorities for action and/ or for referral, and

4.4 assesses the resources available to inform planning.

Standard 5: Develops a plan for nursing practice

RNs are responsible for the planning and communication of nursing practice. Agreed plans are developed in partnership. They are based on the RNs appraisal of comprehensive, relevant information, and evidence that is documented and communicated.

The registered nurse:

5.1 uses assessment data and best available evidence to develop a plan

5.2 collaboratively constructs nursing practice plans until contingencies, options priorities, goals, actions, outcomes and timeframes are agreed with the relevant persons

5.3 documents, evaluates and modifies plans accordingly to facilitate the agreed outcomes

5.4 plans and negotiates how practice will be evaluated and the time frame of engagement, and

5.5 coordinates resources effectively and efficiently for planned actions.

Standard 6: Provides safe, appropriate and responsive quality nursing practice

RNs provide and may delegate, quality and ethical goal-directed actions. These are based on comprehensive and systematic assessment, and the best available evidence to achieve planned and agreed outcomes.

The registered nurse:

6.1 provides comprehensive safe, quality practice to achieve agreed goals and outcomes that are responsive to the nursing needs of people

6.2 practises within their scope of practice

6.3 appropriately delegates aspects of practice to enrolled nurses and others, according to enrolled nurse's scope of practice or others' clinical or non-clinical roles

6.4 provides effective timely direction and supervision to ensure that delegated practice is safe and correct

6.5 practises in accordance with relevant policies, guidelines, standards, regulations and legislation, and

6.6 uses the appropriate processes to identify and report potential and actual risk related system issues and where practice may be below the expected standards.

Standard 7: Evaluates outcomes to inform nursing practice

RNs take responsibility for the evaluation of practice based on agreed priorities, goals, plans and outcomes and revises practice accordingly.

The registered nurse:

7.1 evaluates and monitors progress towards the expected goals and outcomes

7.2 revises the plan based on the evaluation, and

7.3 determines, documents and communicates further priorities, goals and outcomes with the relevant persons.

Nursing and Midwifery Board of Australia (NMBA) 2016 Registered nurse standards for practice. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards.aspx; accessed 14 June 2016.

In addition, as nurses begin to specialise and become more advanced in their practice, there are specialist standards developed by the specialist nursing organisations that advise nurses as to the level of care they are expected to provide. These, too, can be used to assess appropriate standards for practice in a court of law. Other sources of information regarding **standards of care** are policy and procedure manuals, government policy documents and circulars and other guidance that may be added from time to time by the NMBA and can be found on the NMBA website at: www.nursingmidwiferyboard.gov.au.

The best way for nurses to keep up to date with the standards required of them for professional practice is to keep abreast of the current literature, both professionally and in their field of practice; to access online learning opportunities; and attend seminars and conferences relevant to their area of practice. As noted above, there is a requirement for nurses to meet the continuing professional development registration standard for them to renew their registration each year (NMBA 2010b). This is particularly important today with the increasing emphasis on evidence-based practice, and the means of this supporting quality and safety improvement (ACSQHC 2011).

Nurses also need to know and comply with the policies and procedures of their workplace and jurisdiction. They must be aware of the common sources of adverse events, such as medication errors, falls and pressure-area injuries, and must be particularly vigilant regarding the potential for such adverse events to occur. The Australian Commission on Safety and Quality in Health Care (ACSQHC) is an important source of national standards in health care in Australia and has been very active in developing evidence-based standards in important areas including infection control, medication safety, clinical handover, falls prevention and pressure injuries (ACSQHC 2008, 2014).

Document, document, document

If a nurse does become involved in any form of judicial hearing, there is no doubt that good-quality **documentation** will help the nurse defend their conduct in the case. There have been cases in which the nursing records were so complete that the nurse's account of the facts in dispute were accepted in preference to anyone else's account (e.g. *Briffet v Gander and District Hospital Board and ors* (1992); *Spasovic v Sydney Adventist Hospital* [2003]). When the nursing records have been poor, however, the nurse's accounts of any facts in dispute have often been discredited, to the detriment of the nurse (e.g. *Laidlaw v Lion's Gate Hospital* (1969)).

Most states and territories have policies regarding the writing, storage and access to healthcare records and there are many texts that provide useful advice on documentation. Staunton and Chiarella (2013) provide sound guidance for any nurse when writing records. These points are summarised in Box 10-3. There is no doubt that careful, well-written records significantly assist in good patient care, as they provide an accurate account of the care the patients have received, the patients' condition and progress, and care they need to receive in the future. Such information helps clinicians assess patients accurately, evaluate the success or appropriateness of the care given to date, and plan and implement relevant future care. When patients receive well-documented, high-quality care, the likelihood of any complaints or litigation is significantly reduced.

BOX 10-3 Guidelines for documentation and report writing

- Reports are accurate, brief and complete.
- Handwritten records are legible.
- Reports are objective – record only what you saw, heard or did.
- Reports are made at the time of an assessment, treatment, care or incident.
- Avoid making notes and transcribing these onto a patient's healthcare record at a later time.
- Abbreviations are only used if they are universally accepted or authorised by the health service.
- If healthcare terminology is used you are sure of the exact meaning.
- Any errors are corrected by drawing/striking a line through the incorrect component and noting who made and when the correction was made whether in handwritten or electronic records – the corrected component should remain readable.
- Electronic records are checked for errors generated by predictive text or auto-correct.
- Always check the patient's name, healthcare record number and other identifying data on the record before entering any information and ensure that information is on every page of any record you create.
- No entry should be made concerning a patient's assessment, treatment, care or incident on behalf of another nurse or health professional except in circumstances where authorised, for example, observing and recording active management during a cardiac arrest.

Adapted from Staunton P, Chiarella M 2013 Law for nurses and midwives, 7th edn. Elsevier, Sydney.

Confidentiality and privacy

The legal obligations of **confidentiality and privacy** necessarily arise when creating, managing or using healthcare records. However, these two areas deal with matters that are broader than healthcare records, as they go to relationships, trust and having adequate information to provide safe, competent care to patients while ensuring their dignity and integrity is maintained. Although these two concepts are often used interchangeably, they have in fact quite distinct meanings and should be distinguished. 'Confidentiality refers specifically to restrictions upon private information revealed in confidence where there is an explicit or implicit assumption that the information shared will not be disclosed to others' (Kerridge et al 2013: 298), whereas 'Privacy refers to one's ownership of one's body or information about one's self' (Kerridge et al 2013: 298). The expectations of both privacy and confidentiality give rise to legal obligations in Australia.

With regard to privacy, the Privacy Act 1988 (Cth) regulates the handling of personal information by Australian Government agencies and some private sector organisations, requiring agencies to conform to a set of 13 National Privacy Principles (NPPs) when dealing with personal information. These NPPs cover issues including collection, use, disclosure, quality and security of data, as well as issues such as access and openness. State and territory legislation also places similar obligations on agencies and organisations, including private hospitals and health services. This applies to any sensitive information and certainly applies to patient healthcare records and health information.

In relation to confidentiality, there is a range of different common law and statutory mechanisms for imposing confidentiality obligations on nurses. At common law, there are expectations in *contract* (often the nurse's employment contract will contain a confidentiality clause) and *tort* (the standard of care expected of a nurse would include a duty of confidentiality). Under statute, there are several statutory provisions at state and territory level that impose a duty of confidentiality. To illustrate, 'human tissue and public health' statutes (e.g. the Transplantation and Anatomy Act 1978 (ACT)) in all states and territories impose a duty of confidentiality regarding particular pieces of sensitive information. Such a requirement seems quite obvious; after all, patients would not feel able to tell healthcare professionals their most intimate and private details if they could not expect that they would be treated in the strictest confidence. When nurses need to share information that patients have disclosed to them in confidence, such as with other healthcare professionals, they have to seek the patient's permission to do so. Likewise, when another healthcare professional reveals information about a person to the nurse, the nurse must always treat the information as confidential unless advised otherwise.

For nurses there are also the legal and professional obligations imposed on them as the principles of privacy and confidentiality are distilled in the codes of professional conduct and ethics for nurses in Australia and the national standards for practice/competency standards. For example, the *Code of professional conduct for nurses in Australia* notes that nurses have ethical and legal obligations to protect the privacy of patients receiving treatment and care. Information obtained in the course of the relationship between nurses and patients must be kept confidential and restricted to use for professional purposes only (NMBA 2013a, 2013b). Gossiping in the work tearoom about 'interesting patients' or 'amusing moments', or sharing these on social media may seem reasonable, but they are explicit breaches of privacy. They could lead to nurses having a complaint made about their conduct under the National Law (such as in the case of *HCCC v Burggraaff* [2012]), or being dealt with in the court system for a breach of confidentiality or privacy.

There are some exceptional circumstances when healthcare professionals are required by law to disclose highly sensitive information, such as in cases of child abuse or notifiable diseases. The important thing to remember about these exceptions to the duty of confidentiality is that they are not general exceptions. The duty to notify confidential information is always limited to the specific people or authorities that need to know the information, and the extent of the information to be notified is also always limited to the very specific information that is required. The protection of authorised persons who make disclosures under such legislation is usually dealt with as protection from prosecution under the general common law and legislation, for example, under the Public Health and Wellbeing Act 2008 (Vic).

• CRITICAL REFLECTION POINT

Think about the complexity surrounding confidentiality and privacy in nursing practice, where nurses become aware of a great deal of information relating to their patients. What do you think the challenges of maintaining confidentiality and privacy might be in situations where:

1. **You are asked by a relative about something to do with a patient for whom you are caring.**
2. **You overhear colleagues discussing confidential information in a public area.**
3. **A patient reveals information concerning their behaviour that has a potentially detrimental effect on the treatment, but asks you not to tell anyone.**

4. **You are present in the operating theatre when you are asked to take photos on your mobile phone of a patient with a large anatomical deformation and email them to the registrar who has never seen such a thing before. Subsequently, you see them posted on a social media site.**
5. **A famous person is admitted to the unit you are working in and you continue to receive calls from people asking how they are.**

Assault and battery

The terms **assault and battery** might evoke concepts of incredibly violent acts, but they have rather different meanings in civil law, and form part of a group of torts known as 'trespass to the person'. These tort laws exist mainly to protect an individual's personal space, and to deliver compensation when that personal space is violated. Professor Fleming (1998:24) explains that the tort of battery is committed 'by intentionally bringing about a harmful or offensive contact with the person of another. The action serves the dual purpose of affording protection to the individual, not only against bodily harm, but also against any interference with his person which is offensive to a reasonable sense of honour and dignity'. An assault occurs when an individual experiences the threat of such a battery occurring. Ian Kennedy (1984) made the observation that 'the tort of battery exists to keep us free from unconsented-to touchings'.

It is quite clear that nurses may be involved in many procedures that could, in some circumstances, be an interference with the person and offensive to a reasonable sense of honour and dignity. But, of course, the important thing about the personal care nurses provide and the procedures they perform for patients is that these are normally carried out with the patient's **consent**. This is the critical factor in relation to trespass to the person. If the patient consents to the touching or the contact, then there is no battery. Of course, it is important that the patient understands what that touching entails. For example, if a nurse asked to take a patient's pulse and the patient agreed, expecting that the nurse was going to take the radial pulse, but the nurse had in mind the femoral pulse and proceeded to place their hand in the patient's groin, the patient would be rightfully aggrieved that they had not been informed that such a personal intrusion was to occur. In the Australian High Court decision in *Rogers v Whitaker* (1992) at 633, it was held that 'the patient's consent to the treatment may be valid once he or she is informed in broad terms of the nature of the procedure which is intended'.

Obtaining consent

When any healthcare professional wishes to touch a patient, normally there is a requirement for **consent** to be obtained.

On most occasions the patient is able to give consent and it is important to know the requirements for valid consent:

1. Consent must be freely and voluntarily given.
2. Any consent given is given when the person has been provided with adequate information about the procedure, its benefits, side effects, complications and alternate treatments, and has had their questions answered.
3. The person giving consent must: have the legal capacity to give it, that is, be of age, and this varies from state to state/territory; have the mental capacity to understand the intended procedure (Staunton & Chiarella 2013).

In addition, it is important to know how consent may be given, so that nurses know when they have obtained it.

The requirements for a valid consent are exactly the same, regardless of how the consent is given, whether implied, verbal or in writing. An *implied consent* may be given if, for example, a patient rolls up their sleeve and holds out their arm to receive an injection. However, as previously stated, the nurse must be sure that the information which has been given to elicit the implied consent is adequate for the patient to understand exactly how the 'touching' is to occur. A *verbal consent* is the most common type of consent given in nurse–patient interactions. Normally the nurse explains to the patient what is about to happen and the patient agrees verbally to the nurse proceeding. Sometimes the patient may ask questions; for example, if the nurse intends to change a dressing on the patient's wound, the patient might ask whether the procedure will hurt, how long it will take or what the wound might look like. It is important that the nurse takes the time to answer these questions carefully and honestly, otherwise the patient's consent to proceed could be invalid. It is also important to ensure that patients understand what is being explained to them. Patients may be hearing-impaired, or may have difficulty with the language or terminology the nurse is using. Telling a person that sutures are about to be removed or that a cannula will be inserted may be as unhelpful as saying nothing at all.

Written consent is the form of consent used for all major procedures, for any procedure carrying a level of risk and for any experimental procedures. Organisations usually have specific consent forms that try to ensure that all the requirements for valid consent are covered,

and also that the requirements for information-giving are met. The critical factor regarding written consent is that the consent form is only as good as the consent it represents. If the consent itself is invalid for any of the reasons discussed above, having a completed form will be of little benefit. Notwithstanding this fact, the purpose of having written consent forms is to provide evidence of a valid consent. It is anticipated that the requirement to fill out the consent form will act as a trigger to healthcare professionals to obtain a valid consent. This will require them to ensure that the appropriate level of information is provided and an adequate level of understanding is achieved, and will provide evidence that such was the case in the event of any future dispute. Many state and territory health departments have developed stringent and complex policies regarding the obtaining of written consent for procedures, and have designed their own consent forms to ensure some degree of uniformity in the documentation of consent. Usually, medical practitioners obtain written consent for procedures, as they perform most of the major invasive procedures. In some instances, nurses may be called to witness signatures on consent forms, but it should be clear from the discussion above that this is not the same as obtaining consent from the patient.

It is also important to be sensitive to the cultural issues of consent. For example, although in Australia there is a strong Western emphasis on individuality and the right of individuals to make decisions concerning their own health care, in other cultures decisions about such important matters might be made on a far more collective basis. However, the decision to involve others still rests with the patient.

The major exception where the valid consent of the person concerned is not required is in an urgent or emergency situation, when there are both common-law and statutory exceptions to that requirement. For example, under section 174(1) of the Children and Young Persons (Care and Protection) Act 1998 (NSW), a medical practitioner may carry out medical treatment on children or young people without their or their parents' consent if the medical practitioner is of the opinion that it is necessary, as a matter of urgency, to treat them in order to save their life or to prevent serious damage to their health. Also, if the patient is a child, or is unable to give consent due either to intellectual impairment or to some other form of mental incapacity, respective state and territory legislation enables others to give consent on behalf of that person. Sometimes the authority to give consent may be delegated to a parent or spouse, but on other occasions, where the procedure to be carried out may have significant consequences for the individual (such as sterilisation of a person with an intellectual disability), the state or territory legislation may assign the giving of consent to a court or statutory authority. It is important for nurses to know the relevant provisions relating to obtaining consent when the patient lacks capacity to consent.

CRITICAL REFLECTION POINT

- **Reflect on what you now consider consent to be within the context of nursing practice.**
- **What is the nurse's scope of responsibility when giving information to a patient about forthcoming surgery?**
- **What should you do if you come to the conclusion the patient does not have a clear understanding about the procedure for which they have signed a consent form?**

The right of the patient to receive information

Although the discussion about a patient's right to receive information is situated with consent in this chapter, it is not related to the tort of battery. Instead, it is part of the tort of negligence. However, because obtaining consent and **giving information** often go together, it seems most appropriate to discuss it at this point. In the previously mentioned case of *Rogers v Whitaker* (1992), the High Court, after determining the requirements for consent, went on to say that in addition to receiving sufficient information to give consent, the patient also had the right to be warned of any material risks involved in a procedure. Failure to warn a patient of a material risk, which led to the patient suffering damages unexpectedly as a result of undergoing the procedure, would constitute negligent advice. The High Court defines material risk in two ways: 'a risk is material if, in the circumstances of the particular case, a reasonable patient in the patient's position, if warned of the risk, would be likely to attach significance to it or if the medical practitioner is or should reasonably be aware that the particular patient, if warned of the risk, would be likely to attach significance to it' (*Rogers v Whitaker* (1992), at 632, 634). Because these requirements seemed so broad (the risk that the 'particular patient' was not warned about in the *Rogers v Whitaker* case was a 1 in 14,000 risk), the National Health and Medical Research Council (NHMRC 2004) developed guidelines for medical practitioners on giving information to patients. Section D of these guidelines sets out general principles about the information that doctors should normally discuss with patients. The guidelines also provide useful advice on how to communicate and how to identify a material risk (Box 10.4).

Although these guidelines are directed at medical practitioners, they apply equally to a nurse or midwife who is going to perform a significant procedure on a patient.

BOX 10-4 General guidelines for medical practitioners on giving information to patients

Information to be given

Doctors should normally discuss the following information with their patients:

- the possible or likely nature of the illness or disease
- the proposed approach to investigation, diagnosis and treatment:
  - what the proposed approach entails
  - the expected benefits
  - common side effects and material risks of any intervention
  - whether the intervention is conventional or experimental
  - who will undertake the intervention
- other options for investigation, diagnosis and treatment
- the degree of uncertainty of any diagnosis arrived at
- the degree of uncertainty about the therapeutic outcome
- the likely consequences of not choosing the proposed diagnostic procedure or treatment, or of not having any procedure or treatment at all
- any significant long-term physical, emotional, mental, social, sexual or other outcome which may be associated with a proposed intervention
- the time involved
- the costs involved, including out-of-pocket costs.

Informing patients of risks

Doctors should give information about the risks of any intervention, especially those that are likely to influence the patient's decisions.

Known risks should be disclosed when an adverse outcome is common even though the detriment is slight, or when an adverse outcome is severe even though its occurrence is rare. A doctor's judgement about how to convey risks will be influenced by:

- the seriousness of the patient's condition; for example, the manner of giving information might need to be modified if the patient were too ill or badly injured to digest a detailed explanation
- the nature of the intervention; for example, whether it is complex or straightforward, or whether it is necessary or purely discretionary. Complex interventions require more information, as do interventions where the patient has no illness
- the likelihood of harm and the degree of possible harm; more information is required the greater the risk of harm and the more serious it is likely to be
- the questions the patient asks; when giving information, doctors should encourage the patient to ask questions and should answer them as fully as possible. Such questions will help the doctor to find out what is important to the patient
- the patient's temperament, attitude and level of understanding; every patient is entitled to information, but these characteristics may provide guidance to the form it takes
- current accepted medical practice.

National Health and Medical Research Council (NHMRC) 2004 General guidelines for medical practitioners on providing information to patients. © Commonwealth of Australia, 2015. http://www.nhrmc.gov.au/guidelines-publications/e57

Indeed, they set the standard of care for information-giving. It is important to remember that nurses are often significant secondary information-givers. Therefore, they also need to take reasonable care to ensure that the information they give conforms to the standard established by the courts and the NHMRC. A number of health services and other organisations have now developed helpful information in electronic form or printed booklets for patients who are undergoing particular procedures or treatments. Although these are no substitute for direct communication, they are often a useful complement.

The patient's right to refuse treatment

Because touching a patient without consent constitutes a battery, it follows that if a patient does not consent to be touched, treatment cannot proceed. In addition, patients who are being treated can revoke their consent at any time (refuse treatment) and, provided that they are competent to do so, that is, they are of legal age and sound mind, they are perfectly entitled to do so. There are, however, certain statutory provisions, such as section 21 of the Human Tissue Act 1985 (Tas), that make it possible for a medical practitioner to override a parent's wishes based on religious beliefs, if the medical practitioner believes that the child's life may be in danger. This is a complex area of law and requires further reading that cannot be provided in this chapter (e.g. Kerridge et al 2013, Staunton & Chiarella 2013).

Dying with dignity

The consequences of patients refusing treatment can vary from simply seeking an alternative form of treatment, such as medical management rather than surgery, to choosing palliative care until death. As long as patients understand the nature and consequences of their decisions, they are legally able to make such decisions, regardless of the consequences. Although at present in Australia there is no legal right to die per se, it seems obvious that this

right to refuse treatment, whether situated in common law or expressly provided in legislation, may lead to a person's death. Problems arise because many people who find themselves in life-threatening situations have never contemplated the need to refuse treatment; for example, a young person in a car accident. Other people may no longer be mentally competent when the time comes and there may be different views on whether or not to continue treatment; and there may be others still who would not have wished to continue with treatment had they been given the choice, but there is no way of asking them, and their relatives are often reluctant to let go.

In the past, if a person was dying, the major concerns were often how long the process would take and what it would be like. The prospect that death could be postponed by artificial life-support measures such as ventilators, inotropes, tube/parenteral feeding was undreamed of, as was the notion of cardiopulmonary resuscitation (CPR). Determining when a person ought to be 'allowed' to die was not an issue, as there came a stage (generally earlier rather than later) where medical and nursing measures to save life were exhausted and the person simply died. The medical and nursing staff did all they could, and death took its natural course. This is, of course, still the case in many developing countries where there are simply neither the financial resources nor the equipment to prolong life or extend the dying process as we can in developed countries.

However, given our ability to maintain life-support measures for long periods of time, the dilemma for nurses and doctors is more pronounced, and questions such as 'How far should we go in resuscitation?', 'When ought we to maintain life?' and 'If we can do it, should we do it?' dominate the debate. In earlier times when CPR first became popular, it seemed that clinicians felt they ought to resuscitate almost everyone, regardless of age and diagnosis, and often irrespective of their wishes. If they were in an acute unit in the health service (and, indeed, sometimes even if they were not), to save lives was considered the main responsibility of the clinical team. Death was almost an admission of failure rather than a part of life, because the technology was available to at least try to do something about it.

On the whole at that time, resuscitation was carried out automatically and rarely discussed with patients or their families beforehand. If any discussion did ensue, it was more likely to occur with the family than with the patient, whose wishes were often not taken into consideration. The feeling was that, because it was possible to prolong life, there was an obligation to try to do so.

The other problem, going hand in hand with whether one ought to withhold life-sustaining treatment, was the question of whether to withdraw life-sustaining treatment after it had been instituted. One of the ways of managing this problem was the development of the legal concept of *brain death*, which was incorporated into human tissue transplantation legislation. Obviously, if someone were legally dead while on a life-support system, taking them off the life-support system did not kill them. Difficulties arose with people who were not brain dead, but in a persistent vegetative state. If life support were withdrawn, these people may well die, and if so would that mean that they had been killed and, further, that the nursing staff or the medical staff had killed them?

It is not necessary to go into the intricacies of murder and manslaughter here, but there is no doubt that both acts and omissions that cause death have been held to be ways of committing murder. Thus, if one intentionally committed an act that caused a person's death or omitted to do something and a person died because of this omission, arguably one could be charged with murder under the criminal law. There are, of course, many counter-arguments relating to issues of causation in cases of people who are terminally ill, but it has been a concern for healthcare professionals, and continues to be so (O'Neill & Peisah 2011). When the emphasis was placed solely on the responsibility of the healthcare professionals to save life, the situation was at risk of becoming ridiculous. At best, it placed unrealistic expectations on health care, and at worst, it denied the reality of death as a normal part of the life cycle.

Two events occurred that brought a degree of sanity to the situation and restored the balance in practice somewhat. The first was the publication of the work of Elizabeth Kübler-Ross in relation to death and dying (Kübler-Ross 1993). She enabled death to be viewed as a meaningful experience – **dying with dignity** – rather than as a medical failure. This approach enabled palliative care to become a more respectable area of practice. The second was the increasing recognition by the courts of patients' rights and patient autonomy in the United States, Canada, England and Australia during the 1970s and 1980s. After all, as previously noted, if patients do not wish to be touched, they have a legal right not to be, and this is protected by the tort of trespass to the person, specifically in civil actions in battery. At common law, however, the requirement for a patient's consent to be touched can be overridden in an emergency. Also, the person has to be mentally competent in order to give or withhold that consent.

Because some terminally ill patients are no longer mentally able to withhold their consent at the time when they might wish to do so, statutory mechanisms have been developed in most states and territories to give legal effect

to their wishes after they have ceased to be competent. South Australia pioneered this legislation with the Natural Death Act 1983. Basically, this statute enabled people who were terminally ill to give advance notice in writing of their intent to refuse extraordinary life-sustaining treatment. The statute gave definitions for both terminal illness and life-sustaining treatment, and there was some criticism of the legislation because of the narrowness of these definitions. The Northern Territory has enacted a similar model in its Natural Death Act 1988. The South Australian legislation has since been repealed in favour of the Consent to Medical Treatment and Palliative Care Act 1995.

In 1988 the Victorian parliament passed a revolutionary piece of legislation, the Medical Treatment Act 1988. The Act was much wider in its scope than was the original South Australian legislation and established the right of a patient to register, by certificate, a refusal to accept medical treatment. It also enacted a new offence of 'medical trespass' and provided protection for doctors and other healthcare professionals who act in reliance on a certificate. Although the term 'medical treatment' is defined within the legislation, the right to refuse treatment is unqualified to the extent that a person may refuse treatment generally or specifically but cannot refuse palliative care. The Act was amended in 1990 to enable a person to appoint an agent to carry out the wishes should the patient become incompetent, and has continued to have minor amendments since. In Western Australia the Guardianship and Administration Act 1990 (WA) and the Civil Liability Act 2002 (WA) enable people to develop advance health directives under Part 9B.

Not all states have passed legislation, enabling patients to make decisions in advance about their treatment. New South Wales has guidelines in place, meaning patients have no statutory right to refuse treatment, decide issues or provide advance directives concerning their care when they are terminally ill; however, the common-law right to refuse treatment still exists. The NSW Health guidelines are: *Using advance care directives (NSW)* (2005a) and *Guidelines for end-of-life care and decision-making* (2005b). Both provide valuable advice to clinicians, patients and families on the law and practice surrounding end-of-life decision-making. In addition there is now the opportunity for people in NSW to engage in advance care planning, providing the opportunity for patients, families and clinical staff to engage in regular conversations about their wishes for end-of-life care at key milestones in their life.

Euthanasia, which was briefly legalised under the Northern Territory Rights of the Terminally Ill Act (1995), is no longer legal in any state or territory, although continues to be discussed in a number of jurisdictions. Nurses who may wish to actively help a person die need to understand that they would currently be in breach of the criminal law. Although there continue to be compelling moral debates on this matter in the medical and nursing press, the legal situation is unambiguous.

Caring for the dying

In **caring for persons who are dying**, the nurse's responsibilities are to treat each patient's wishes and concerns with respect and to ensure that they are able to discuss their wishes with the senior medical and nursing staff responsible for their care. Careful documentation of such discussions and their outcomes is critical. Good palliative care is essential in terms of pain and symptom relief. Nurses need to concentrate on the quality of life for each dying person and on helping them to resolve their own issues and concerns to enable them to die peacefully. Providing adequate and appropriate pain relief is considered to be a legitimate act, even if the drugs may be seen to have the double effect of shortening the patient's life (Reid et al 2008). It is a privilege to nurse a person who is dying, and nurses should treat this time as a very important one for patients and their loved ones. When a patient dies, there may be special religious or cultural rituals relating to the care of the body, and nurses should take great care to acquaint themselves with the particular requirements for each patient.

Brain death and organ donation

Each state and territory has developed identical requirements for the management of **brain death and organ donation** to enable organ donors and organ recipients to be matched across state and territory boundaries. Each state and territory has a transplant coordinator, who has a record of all those waiting for organ transplants. When donor organs become available, it is the role of the transplant coordinator to ensure that the best available tissue match is made, which may require transporting the donor organs to very distant parts of Australia.

The criteria for the identification and pronouncement of brain death are very strict and the process is highly technical, and only senior medical practitioners with the requisite qualifications are able to make such a pronouncement. After the pronouncement of brain death, raising the question of organ donation must be handled with great sensitivity, and all involved must learn to manage the situation with great tact and compassion. Accuracy of information is critical, as is the need for confidentiality. There are courses for healthcare practitioners and others involved in health care to help them manage the care of donors and their families appropriately.

These days, some people have already made the decision to donate some or all of their organs, and this information may be recorded on their driver's licences. However, even when this is the case, the donor family may have difficulty coming to terms with the fact that their loved one is dead, and may wish to revoke the wishes of their loved one. Consideration of their needs is paramount at such a time.

The coroner and coroner's court

The coroner, and the coroner's court in most states and territories, is a specialist agency and court established to investigate certain types of deaths and in some jurisdictions, fires and explosions. The purpose of these investigations is to consider ways that similar deaths and fires may be prevented in the future.

Special categories of death must be reported to the court and the coroner must investigate and review a number of these.

In NSW the following deaths are reportable to the coroner and a certificate as to the cause of death should not be issued:

- the death was unexpected
- the death was violent or unnatural (e.g. homicide; suicide; drug, alcohol and poison related deaths)
- the death resulted, directly or indirectly, from an accident or injury, even if there is a prolonged interval between the incident and death (e.g. drownings; deaths caused by a traumatic event such as a motor vehicle accident)
- the death occurred during or following a health-related procedure where the death is or may be causally related to the procedure and a registered medical practitioner would not, immediately before the procedure was undertaken, have reasonably expected the death
- a Medical Certificate of Cause of Death has not been signed and is not likely to be signed (e.g. where an opinion about the probable cause of death cannot be formed)
- the person had not been attended by a doctor in the last six months
- the identity of the person is unknown
- the death occurred in custody
- the person was in, temporarily absent from or residing at a declared mental health facility within the meaning of the Mental Health Act 2007 (NSW) for the purpose of receiving care, treatment or assistance (Coroners Act 2009 (NSW)).

When a death is reported, the coroner investigating a death must find, if possible:

- the identity of the deceased person
- how the death occurred
- the date, place and cause of death
- the details needed to register the death with the Registry of Births, Deaths and Marriages (Coroners Court of Victoria 2015).

It is important that nurses understand the coronial jurisdiction as a nurse may become involved in coronial inquiries by the very nature of nursing work. Many situations merely require a nurse to give evidence as a witness to what occurred and will have no professional consequences for the nurse. However, matters where the investigation reveals evidence such as poor documentation of clinical assessments, adverse events involving nurses leading to a patient's death and breakdown in communication between members of a clinical team are just a few examples where nurses may find themselves subject to criticism of their care. The findings from a coronial inquest may have serious implications for a nurse and lead to a complaint being made about a nurse's conduct; civil proceedings being commenced against a nurse; and/or a criminal charge being laid against a nurse where the conduct or omission has been serious enough to be deemed as criminal.

Nurses should be aware of situations where the death of a patient may give rise to a coroner's inquest as legal advice may be necessary and a draft statement prepared at the time of the patient's death rather than having to rely on their memories a long time after the event, sometimes many years. Health service policy should also provide guidance (Staunton & Chiarella 2013). Other guidance may be obtained from nursing professional associations.

Legal relationships in nursing practice

The law of contract

Nursing practice has **legal responsibilities**. 'A contract is an agreement that gives rise to rights and obligations between the parties to the agreement, and such rights and obligations will be protected and enforced by law' (Staunton & Chiarella 2013). Most people enter into numerous contracts every week of their lives, from buying goods at the supermarket to buying a new car or taking on a new job. Patients enter into a contract when they go into hospital or visit their medical practitioner, although this is not usually spelt out in the case of public patients. Private patients are often far more aware of their

contractual relationships with the health service, as they have to sign forms agreeing to pay for the services they receive, albeit usually through their private healthcare funds. Nevertheless, in both public and private healthcare encounters, such contracts exist and bring with them express and implied terms and conditions with which the parties to the contract are expected to comply. A good example of such a term or condition is that a person is entitled to safe and appropriate care while in hospital. There are many rules relating to the **law of contract** that have been developed through common law, but there are an increasing number of statutory provisions governing the law of contract.

A very important form of contract for nurses is their contract of employment. This is covered by an area of law known as industrial law, governing the relationships between employer and employee. Although this area of law goes well beyond the scope of this textbook, there are a range of common-law and statutory obligations that are imposed on the employee and employer that are worthy of documenting here (see Box 10-5).

In Australia, an industrial award, which is negotiated between the nurses' trade union and the relevant employer, covers almost all nurses' working conditions, whether they work for public or private hospital authorities. The award can cover any aspect of employer–employee relations, from overtime to education. These awards are ratified by industrial commissions and are binding on the employers.

Relationships between nurses and other health professionals

The **nurse–doctor relationship** has a great deal in common with the roles these professionals play. Whether it is termed comfort or counselling, good nurses and doctors do it. Whether it is termed preliminary patient assessment or provisional diagnosis, good nurses and doctors do it. But at some point in clinical management the two can and do diverge, with the doctors focusing on the treatment and the nurses focusing on the patient's existence, and it is important to recognise that each has specific responsibilities and authority in their areas. Most of the time, the best interest of the patient (to be cured of whatever condition led them into the doctor's care in the first place) unites nurses and doctors in their work. The doctors plan and order various forms of treatment, much of which is carried out by the nursing staff, who also monitor and optimise the quality of the patient's existence

BOX 10-5 Employee and employer obligations under common law and/or statute

Employee's obligations

1. The employee has a duty to obey all lawful and reasonable directions of the employer. The significant words are 'lawful' and 'reasonable'. In most workplaces many of the employer's lawful and reasonable commands are conveyed to the employee via written policies, procedures and protocols and the employee is required to comply with them. What would be reasonable depends on the facts and circumstances of the situation under consideration.
2. The employee has a duty to display due care and diligence in the performance of his or her work and to perform it competently.
3. The employee has a duty to account to the employer for all moneys and property received in the course of employment.
4. The employee has a duty to make available to the employer any process or product invented by the employee in the course of employment.
5. The employee has a duty to disclose to the employer information received by the employee relevant to the employer's business.
6. The employee has a duty to be faithful and loyal to the employer's interests.
7. The employee has a duty to indemnify the employer for financial liability incurred by the employer on his or her behalf under the doctrine of vicarious liability. This common-law duty is generally not enforced by the employer and, in New South Wales, South Australia, the Northern Territory and the Commonwealth, specific statutory provisions have been introduced to prohibit the employer from enforcing the employee's duty to indemnify.

Employer's obligations

Generally speaking, an employer's obligations have been almost totally reinforced by the creation of industrial agreements and by statute. The employer's obligations may be generally expressed as:

- The duty to pay salary or wages and provide any other conditions of employment agreed upon or expressly provided for by statute or otherwise.
- The duty to provide a safe system of work.
- The duty not to discriminate against people in employment on various grounds such as sex, religion, race or disability.

Adapted from Staunton P & Chiarella M 2013 Law for nurses and midwives, 7th edn. Sydney, Elsevier. pp. 183–4.

while this therapy is going on. Usually, if the treatment is unsuccessful, both doctors and nurses are able to agree when 'enough is enough'; aggressive treatment is discontinued and palliative care is implemented. At this stage, the patient's existence becomes the critical focus, and it is fair to say that doctors are often advised by nurses in such situations on what is the best course of treatment. Indeed, a key role for nurses is to report information about a patient's progress to the medical staff, and nurses have often been severely criticised for failing to do so (Chiarella 2002).

Issues that nurses highlight as being particularly problematic are related to feelings that the patient's existence is being made so intolerable by the treatment and cure that it should stop, or that the treatment is not effecting a cure and is not likely to do so. This difficulty is compounded if in the nurse's view the patient would have a better remaining existence if they were palliated, but the doctors wish to persist with the treatment. These are very difficult issues for nurses, as patients and their relatives quite understandably are hopeful of treatment and cure. But one of the characteristics of the nursing role is intimacy (Chiarella 1990), and one of the conditions with which nurses are profoundly intimate is human suffering. When nurses have to witness the suffering of patients and relatives at an acutely intimate level, they often come to experience the suffering vicariously. This is both a disadvantage and an advantage. It is a disadvantage because sometimes they know how much the patient is suffering despite their best efforts and, because they cannot relieve the patient's suffering, they do not wish them to have to go on. The patient's suffering becomes the nurse's suffering, and it is difficult for the nurse to bear. It is also difficult because so often the patients cannot give them any indication of their views; the nurses rely on the wishes of relatives and loved ones or the people responsible for their care. But it is also an advantage, because often nurses are so 'in tune' with their patients that they are able to bring the unique knowledge related to the extent of their experience to the situation. They know exactly how well skin integrity is maintained, how bruised they are from repeated injections, what happens to their blood pressure and pulse when they are moved, whether or not their pain is being managed effectively and how they tolerate suctioning. Such insights can be critical to patient management and nurses are entitled to insist that they be brought into the planning equation. It is important to be aware that if nurses feel strongly about a matter relating to patient care, they are entitled to speak strongly about it. In addition, if nurses cannot tolerate the patient's suffering, they are entitled to ask for relief both for themselves and for the patient. It becomes extremely difficult, however, if the relatives and the doctors still have treatment and cure as the priority while only the nurses have quality of existence as the priority. In such a situation it may be necessary to accept that what is occurring is a difference of priority, rather than a case of right and wrong. But if the relatives are ambivalent and the nurses believe firmly that the doctor is wrong (this would be the exception rather than the rule), they should take their views as high as is necessary to have their concerns heard.

Nurses are under no obligation to obey any order that they believe, on reasonable grounds, might cause harm to the patient. Indeed, they are under an obligation to do no harm to the patient and should take any such concerns to their nursing supervisor.

It is also important that nurses take great care when receiving verbal orders from doctors regarding treatment, such as telephone orders or emergency orders. The proper course of action with all medical orders is that they be recorded in the notes or on the prescription sheet by the medical practitioner. When this is not possible, the nurse should carefully repeat the order to the doctor, preferably in the presence of a second person, and then record the order in the nursing record. The doctor should then verify that order within 24 hours.

The same principles apply for relationships between nurses and other health professionals. Increasingly, nurses are working closely with other health professionals in acute, primary healthcare, aged care and other areas of the health system. While there is a greater emphasis on inter-professional learning and practice, it is important that nurses maintain the integrity of their professional judgement and care for patients in these settings and that good communication is maintained with patients and all members of the clinical team.

Do not resuscitate orders

Particular care is needed with respect to CPR. CPR is an emergency procedure and as such is provided without requiring a patient's consent. The purpose of CPR is to recommence cardiac output or respiration by artificial means until such time that the cause of the cardiac or respiratory arrest can be treated. It is important to recognise that it is not always successful, and for people with terminal illnesses it may not be the treatment of choice.

To institute CPR routinely for all patients begs the question of whether or not there are worse injuries than death; whether the indignity of resuscitation itself might be worse than allowing a person to die. The duty of care to the patient need not always involve prolonging

life. Sometimes, to prolong life unnecessarily might of itself constitute an injury and, when the decision is not a balance of positive outcomes but rather a balance of negative outcomes, a dignified and peaceful death may be the better choice.

The NSW Health *Guidelines for end-of-life care and decision-making* (2005) are particularly helpful in advising how decisions to palliate, rather than to resuscitate, ought to be written. It recommends that the term '**No cardiopulmonary resuscitation** (**No CPR**)' should be used, as it is less ambiguous than the orders of '**Do not resuscitate (DNR)**' or 'Not for resuscitation (NFR)'.

The document explains that a 'No CPR' order may still mean that the patient receives maximum therapeutic care, short of CPR. The treating clinician and treating team should reassure the patient, or their family, that all comfort and other appropriate care will be provided. The use of the old term (DNR) was a negative concept, implying that there was really only one form of action, that of resuscitation. The term implied that staff members were doing nothing. But as all palliative care clinicians know, even after the oncologists or the surgeons announce that there is nothing more to be done, this is manifestly not so – there is much to be done. At this stage patients require palliative care, reconciliation, preparation and much loving and even laughing. The *Guidelines for end-of-life care and decision-making* take cognisance of that fact. They offer advice on both the content and the wording of documentation. It is critical that decisions not to resuscitate are clearly and unambiguously documented. The advice is extremely pragmatic and valuable, and acknowledges the valuable role that healthcare professionals take in caring for the dying (Box 10-6).

BOX 10-6 Guidelines for No Cardiopulmonary Resuscitation (No CPR)

The term *No Cardiopulmonary Resuscitation (No CPR)* order is preferred as less ambiguous than Do Not Resuscitate (DNR) or Not For Resuscitation (NFR) orders and the interventions to which they apply.

The principles for withholding CPR are consistent with those for withdrawing life-sustaining treatment as outlined in these guidelines. Decisions relating to withholding CPR should be made on an individual basis, not involving blanket decisions or policies, for example, related to age or disability.

A No CPR order may be compatible with providing the patient with maximum therapeutic care, short of CPR. The treating clinician and treating team should reassure the patient, or their family, that all comfort and other appropriate care will be provided. No CPR orders should be clearly written in the patient's medical notes as with other treatment decisions. Use of covert symbols on charts, medical notes or wristbands is not appropriate. Where the decision to apply a No CPR order has not been discussed with the patient because they lack decision-making capacity, that fact should be documented.

Where no explicit decision has been made about the appropriateness, or otherwise, of attempting resuscitation of the hospitalised patient, then resuscitation should be commenced until a senior doctor is available who should determine, based on the likely prognosis, whether CPR should continue and then direct the team accordingly. Where paramedics have been called to a patient whose condition has deteriorated and cardiac arrest occurs, there is a presumption that emergency medical care is appropriate.

NSW Health 2005a Using advance care directives (NSW). Sydney, NSW Health.

• CRITICAL REFLECTION POINT

- **What is your personal reaction to the idea of No CPR or NFR orders?**
- **How do your personal reactions fit with your duty of care to patients with No CPR orders?**

Workload problems

Workload problems, such as **staff shortages** or a nursing skill-mix inadequate for patient care, are worrying for nurses, as these situations cause nurses to be concerned that they will not be able to deliver optimal-quality care, or worse, that something might go wrong, leading to an adverse event concerning a patient. However, financial pressures on the health services continue to mean that, on occasion, nurses may face unavoidable shortages. As a result of pressure through the various industrial awards and industrial action, each state and territory has developed strategies to address workload difficulties. Pressure to introduce nurse-to-patient ratios is increasing with some states and territories introducing the requirements into the regulation of public health services, for example, the Safe Patient Care (Nurse to Patient and Midwife to Patient Ratios) Act 2015 (Vic).

When nurses are concerned that patient care might be at risk from staff shortages or incorrect skill-mix, it is their legal responsibility to bring the matter to the attention of the nursing supervisor. If an adverse event were to occur as a direct consequence of, say, a shortage of staff, and the nurse had foreseen that this might be the case but had not advised the supervisor, the nurse might be found to be negligent, particularly if the supervisor could have assigned staff from another ward to assist the nurse had the shortage been reported. Nursing management needs to know about staff shortages. It is possible that they will

be able to reassign staff or organise agency staff; but if they are unaware of the situation, they can do nothing. If management is unable to find extra staff for the unit, the concerned nurse should keep a written record of the expression of concern, as it is evidence of the fact that the authorities were alerted to the problem, which is the expected behaviour of a reasonable nurse. If the nurse is faced with the situation where staffing is short and no further staff can be found, the responsibility is to prioritise those aspects of the patient's care that are required for safety, and to ensure that such care is delivered over and above the other care that nurses would normally provide for the patient's wellbeing and general hygiene. However difficult the situation may be, it is important for the nurse to remember not to allow frustration to affect the relationship with the patient.

Floating or relieving

Nurses are sometimes moved from the specialty in which they work to another area to alleviate staffing difficulties (sometimes called **floating** or relieving). Although management might be required to do this to provide safe staffing levels, it is important for all nurses to recognise the limitations of their competence and to advise management and other staff on the unit to which they are moved of their inexperience or lack of current knowledge about the specialty area. If management decides to move them despite this limitation, the nurse should make a personal file note of any objections and concerns. If nurses are regularly moved in a particular place of employment, management has a responsibility to educate staff about the specialties to which they are likely to be moved.

Legal issues in nursing specialties

Within every specialty area there are legal issues that affect nursing practice. Some of the more common **legal issues** follow.

Primary healthcare/community health nursing

Nurses work in various healthcare settings other than hospitals. Included in **primary healthcare** or community health settings are occupational and industrial sites where nurses provide preventive and ongoing primary healthcare to workers. Nurses also work in public or community health when preventive services such as immunisation and child screening are provided in homes, schools and clinics. In such situations nurses often work as autonomous practitioners. As always, they are accountable for the judgements they make and their treatment and care in whatever community setting they work, and must work collaboratively with other healthcare team members to ensure that the care they provide is timely and appropriate.

A wide range of laws apply to the practice of nurses working in primary healthcare settings. In addition to all the laws that have been discussed to date, they may be subject more directly to a range of public health legislation, such as reporting of suspected child abuse, notification of infectious diseases and intervention in relation to workplace safety. **Community health nurses** working with families and young children are also expected to play a role in encouraging immunisation. Public health legislation is enacted at state, territory and federal level, with the Commonwealth alone having responsibility for 30 statutes that affect the health of the community (Bidmeade & Reynolds 1997).

Nursing in emergency departments

Nurses working in **emergency departments** are at the front line of hospital care. Triage nurses in particular have significant responsibilities for ensuring patients who present to emergency are prioritised as to when and how quickly they see a medical practitioner or a nurse practitioner. Emergency departments are one of the areas where NPs are beginning to take on significant complementary roles to tackle waiting times and blocks to accessing hospital facilities (e.g. lack of beds, equipment or nursing staff).

The threat of violence can also be a problem for emergency nurses, as patients and relatives who present to emergency may be under the influence of alcohol or other drugs. Nurses working in emergency departments need to be aware of hospital protocols for dealing with aggressive and/or intoxicated patients. Another difficulty that emergency nurses can encounter is when patients wish to leave the emergency department without being fully screened or treated. Patients of sound mind who wish to leave are, of course, perfectly entitled to do so. However, if possible the nursing and/or medical staff should try to explain the possible consequences of leaving before their assessment or treatment is complete. Such premature departures need to be carefully documented by the staff involved. Incident reports must also be used for such purposes.

Nursing children

There are several significant legal matters concerned with **nursing children**. When children are admitted to hospital, great care must be taken to ensure that they do not come to any harm. Treatment rooms and medications must be kept securely fastened, and wards must be secure

to prevent children wandering off. In addition, visitors to children's units must be carefully screened to avoid potential abductions.

The most obvious legal issue is that the child does not possess legal capacity to consent to treatment, and each state and territory therefore has legislation governing the ability of a parent or guardian to consent on behalf of the child. As far as the law is concerned, a child is a person under the age of 18 years. However, most legislation provides for a child over the age of 16 years to give consent (e.g. see the South Australian Consent to Medical Treatment and Palliative Care Act 1995). In addition, there is a common-law acceptance that children under the age of 18 years can give consent providing they understand the nature and consequences of the treatment and it is in the best interests and wellbeing of the child to have the proposed treatment (*Gillick v West Norfolk and Wisbech AHA* (1985); *Department of Health and Community Services (NT) v JWB (Marion's case)* (1992)).

There have also been instances where the wishes of the parent or guardian in relation to the treatment of a child have been overturned. The question of blood transfusions has already been discussed. A NSW case in 1982 overturned the decision of the guardian of a 15-year-old girl to refuse her a termination of pregnancy. The guardian was the then Minister for Youth and Community Services, the girl being a ward of the state; but a judge overturned his decision, finding that the termination was in the girl's best interests (*K v Minister for Youth and Community Services* (1982)). As with all other emergency situations, there is no requirement for consent to treat a child in an emergency.

Another major issue when nursing children is the requirement to report suspected child abuse under the various state and territory child protection legislation. Child abuse invariably includes psychological as well as physical abuse, and neglect. Healthcare professionals are often under a mandatory statutory duty to report reasonable suspicion; but even where the statutory duty is discretionary, there are often government policies that impose a mandatory duty to report. As long as the report is made in good faith, the notification and any accompanying report are protected from civil action, such as defamation (Staunton & Chiarella 2013). If child abuse is suspected, there are provisions to remove a child from the parents and to detain a child without parental consent for examination and treatment.

Medical/surgical nursing and gerontological nursing

Many people in acute **medical and surgical units** are likely to be older persons. In addition, as a result of the decreased length of hospital stay and the high dependency levels of patients, many residential aged care facilities resemble medical/surgical units, as residents leave hospital earlier and may still be unwell at this stage. Over the past 25 years, the quality of care available for older persons in aged care facilities has been a matter of concern. The Australian Government has now taken over as the sole regulator for aged care in Australia and the Aged Care Act 1997 (Cth) is the principal piece of legislation governing the care of older persons living in residential aged care facilities or receiving aged care services funded by government. Section 54(1)(b) provides that the responsibilities of an approved provider in relation to the quality of the aged care that the approved provider provides is to maintain an adequate number of appropriately skilled staff to ensure that the care needs of care recipients are met. This legislation has replaced the significantly more prescriptive state and territory legislation that required the involvement of qualified nurses in the delivery of nursing care in these facilities. For example, nursing care was defined as 'nursing care given by or under the supervision of a registered nurse' under section 3 of the now repealed Nursing Homes Assistance Act 1974 (Cth). Likewise, under the Private Health Facilities Act 2008 (NSW), there are provisions to ensure that the director of nursing of an establishment is a suitably qualified registered nurse (s. 37).

The Quality Care Principles 2014 (Cth) are subordinate legislative instruments made under the Aged Care Act 1997 (Cth) and set out the responsibilities of approved providers in providing care and services for residential and home care. The principles: specify the care and services that an approved provider of residential care is to provide; set out the accreditation standards that must be met by a residential care service to achieve accreditation; specify the care and services that an approved provider of home care is to provide; set out the home care standards that a home care provider is expected to meet as a part of quality review.

While arguably this legislation has substantially contributed to moving towards improving the provision of quality of aged care services at a national level, what has been controversial about the introduction of this federal legislation, designed to provide a homelike environment for residents, is that more and more unskilled workers are being employed to meet the increasingly very high care needs of the residents. These care needs are those that have been generally recognised as nursing care. However, fewer and fewer registered nurses are being employed in these services and there is increasing concern about the diminution in the quality of care provided. These are often frail aged people with chronic and complex care needs

and multiple medications, needing the coordination and care that has traditionally been the role of the qualified nurse. Clinical management of dementia, palliation and dying, depression, poor skin integrity, incontinence, poor nutrition and compromised mobility, to name only some, are all aspects of expert nursing care. The registered nurses who do work in these facilities have increased supervisory and decision-making responsibilities that command their attention in relation to meeting their legal and professional responsibilities to the persons in their care.

Another controversial issue when caring for the elderly is the question of restraint. Many now believe that the use of restraint for managing confused older persons is inappropriate and that with proper nursing care and adequately designed facilities it is much safer not to restrain people in any way. Although the national aged care regulatory system has come some way towards addressing this problem, not all older people are cared for in appropriately designed facilities and there are still occasions when the decision is made to restrain an older, confused patient or resident. Such decisions must be made with extreme care, as restraint is a significant infringement of one's personal space and liberty and could constitute trespass to the person. The only valid reasons for restraining a person are either to protect them from harm or to protect others from harm, including the staff. Restraint must never be used as a matter of convenience. NSW Health has produced an excellent guideline entitled *Working with people with challenging behaviours in residential aged care facilities – using appropriate interventions and minimising restraint* (2006).

Critical care nursing

Critical care nursing requires highly specialised skills in the use of advanced patient monitoring and the care of patients and relatives when the patient is critically ill. Staffing ratios in an intensive care unit need to be significantly higher than in a general ward, often one nurse to one patient. One of the important issues for the intensive-care nurse is to remember not to become completely reliant on the technology to assess and make judgements about the patient's condition. There have been significant incidents when the patient was not progressing well and the equipment was faulty and did not record the patient's deterioration – a careful examination of the patient rather than the machine would have revealed that there was a problem. Another important issue for nurses assigned to work in critical care is that they acknowledge the limitations of their competence, particularly if they are asked to relieve there due to a shortage of staff.

Perioperative nursing

The term **perioperative nursing** encompasses anaesthetic and recovery room care, as well as operating room nursing (*peri* means 'around' or 'beyond', so refers to all nursing associated with a surgical operation). For anaesthetic and recovery room nurses, the comments are very similar to those for intensive-care nurses, since there are many similarities in the type of work that these nurses do. There is no doubt that perioperative nurses carry significant legal liability for the smooth running of the operative procedure, particularly in relation to the swab and instrument count. In a Queensland Supreme Court decision, it was held that the scrub nurse (i.e. the nurse scrubbed and gowned to assist the surgeon) was the 'primarily responsible accounting party' (*Langley & anor v Glandore Pty Ltd (in Liq) & anor* (1997)). Similarly, in *Elliott v Bickerstaff* [1999], the Court held that the surgeon was entitled to rely on the nurse's sponge count. The Australian Confederation of Operating Room Nurses (ACORN) has developed standards for many of the procedures for which nurses are responsible in the operating rooms, and the swab and instrument count standards were those used to assess the requisite standard of care in *Langley & anor v Glandore Pty Ltd (in Liq) & anor* (1997).

Mental health nursing

Following the report of the inquiry into the tragedy of Chelmsford in the 1970s (Slattery 1990), where psychiatric patients were given experimental treatments in unsafe conditions, leading to many deaths over a long period, most states and territories have enacted **mental health legislation** that pays careful regard to the rights of people with mental illness. Some legislation contains specific provisions that express the intent of parliament in relation to the care of mentally ill persons. For example, the Mental Health Act 2000 (Qld), dealing with the care of mentally ill people, specifically states in section 4 that:

> **The purpose of this Act is to provide for the involuntary assessment and treatment, and the protection, of persons (whether adults or minors) who have mental illnesses while at the same time:**
>
> **a. safeguarding their rights and freedoms; and**
>
> **b. balancing their rights and freedoms with the rights and freedoms of other persons.**

All the state and territory legislation makes provision for voluntary and involuntary patients to be treated for mental illnesses, and pay careful attention to their ability to consent to treatment. Although there are situations identified within the legislation where patients may be restrained and/or treated without their consent, these provisions usually relate only to situations in

which patients pose an imminent and serious threat to themselves or others. There are also special provisions in the legislation regarding some of the more controversial forms of therapy, such as electroconvulsive therapy and psychosurgery. Nurses who are working in mental health must be aware of the relevant legislation (see Staunton & Chiarella 2013).

Hospital in the home and outreach services

One of the more recent developments in Australia is the concept of acutely ill patients being cared for at home (**hospital in the home**) by a combination of visiting specialist nurses, other health professionals and family or carers. Sometimes the nurses who visit the patients at home are hospital-based clinical specialists or nurse practitioners who have a dual role of specialist nursing care and family and patient education. In other situations, community or primary healthcare nurse specialists or nurse practitioners who have formed a rapport with the patient and family while in hospital deliver the care. Still other services provide a combination of the two. Although many patients prefer to be cared for in this way and tremendous advances have occurred in the management of patients undergoing renal dialysis and even of ventilated patients at home, such arrangements place considerable strain on the family and carers, who must also be the focus of the outreach nurse's attention during visits. Careful documentation and prompt referral in such situations are vital.

Remote area nursing

Because of the size of Australia, many nurses work in remote outposts or in communities where there are no medical practitioners, or indeed other health professionals living in the community. In such situations, the **remote area nurse** may be the only healthcare professional available to care for all health emergencies. These nurses usually have access to medical advice via telephone (e.g. from the Royal Flying Doctor Service) and are able to evacuate patients by aeroplane in serious emergencies. However, most of the time these nurses are sole practitioners and have to be able to manage a wide range of conditions across the spectrum of health conditions, injuries and events, including childbirth. Until recently, nurses in such situations often acted perilously close to the edge of the law, using clinical protocols and guidelines to enable them to prescribe, order diagnostic tests and make referrals when necessary. However, today most states and territories have either introduced or are working towards legislation to enable expert clinicians to become authorised as nurse practitioners. This will mean that they are legally able to prescribe a relevant range of medications, order pathology and radiology and make referrals necessary to their specialty area of practice and appropriate for the local conditions where the clinician practises. The first legislation to enable these changes to occur was the Nurses Amendment (Nurse Practitioners) Act 1998 (NSW). Changes to the Poisons and Therapeutic Goods Act 1966 (NSW) now enable the director-general to authorise a nurse practitioner, or class of nurse practitioners, to possess, use, supply or prescribe any poison or restricted substance for the purposes of the practice of a nurse practitioner's profession (s. 17A). All other jurisdictions have now legislated to provide for the regulation of nurse practitioners. In addition, since November 2010, privately practising nurse practitioners and eligible midwives now have access to items under the Medical Benefits Schedule (MBS) and can also write prescriptions for which their patients will receive subsidised medications under the Pharmaceutical Benefits Scheme (PBS).

Professional involvement of nurses

In all of the above specialties, it can be seen that nurses are expected to have specialist as well as good general nursing knowledge. Such knowledge is not gained unless nurses have **professional involvement** in ongoing education and debate. It is also critical for nurses to be involved in their professional and industrial organisations. These organisations influence the development of policy and law relating to nursing practice. If clinical nurses do not get involved, the law and policy that is developed will not reflect reality, or may advantage other professional groups to the detriment of nurses. Nurses must be willing to represent nursing and the patient's perspective when appropriate on boards and committees. As a professional group, nurses spend more time directly with patients than any other group, and thus have an important perspective to offer on all aspects of health care.

For nurses to renew their registration each year they must continue to meet the NMBA requirements to continuing professional development (NMBA 2010b).

Key concepts

- Nurses today understand their legal obligations and responsibilities to patients to ensure high-quality patient care.
- The civil law is concerned with the protection of people's private rights, whereas the criminal law system deals with the rights of individuals and society; the

protective jurisdiction is to protect the rights of the community more generally.

- Practising nurses practise according to the requisite standards of care, usually available online through the Nursing and Midwifery Board of Australia (NMBA) standards for practice/competencies, codes of conduct and ethics, the standards developed by professional organisations and the policies and procedures of jurisdictions and employing institutions.
- Registered and enrolled nurses are licensed to practise by the NMBA; the regulatory authorities determine the criteria for accreditation of education programs leading to entry, but all beginning practitioners must be able to demonstrate that they meet the relevant NMBA standards for practice/competencies.
- Nursing students are expected to uphold professional standards when practising in the clinical areas, should be carefully supervised when learning new skills and should otherwise practise within the limits of their competence.
- Nurses are responsible for performing all nursing care correctly and exercising professional judgement as they carry out medical orders. Nurses are not expected to carry out a medical order that they believe on reasonable grounds might harm the patient.
- All patients are entitled to confidential health care and freedom from unauthorised release of information. Unless there is a requirement by law to release confidential information, such information should be disclosed only with the patient's consent.
- Patients may not be touched without their consent, except in an emergency. Obtaining a patient's valid consent to be touched is a defence to an action in battery.
- Patients are entitled to be advised of all material risks inherent in a proposed procedure. Failure to advise a patient of a material risk may result in an action for negligent advice.
- Patients have a right to be treated with reasonable care. Nurses must avoid any act or omission that might reasonably be foreseen to cause damage or injury to the patient. Failure to do so would result in an action for negligence.
- If nurses are found to be criminally or professionally liable for their wrongful acts, they will personally bear the penalty for their behaviour; however, because most nurses are employees, their employing authority is usually vicariously liable for any wrongful acts that might incur civil liability. If a nurse is self-employed, the nurse bears personal liability for any civil wrongs. This may also be the case if the nurse is independently insured or if the act or omission constitutes gross or wilful misconduct.
- Legal issues surrounding the death of a patient require careful documentation of the events leading to death, and respectful and compassionate care of the patient and family before and after death.
- Competent adults may consent to donate any or all of their organs, as may relatives after death has been declared. Situations involving organ donation require sensitive and compassionate management.
- If nurses are concerned about staffing levels or skill-mix, they advise their nursing management formally of their concern. If nothing can be done to alleviate the situation, they keep a personal record of their expression of concern.
- All nurses know the laws that apply to their area of practice and know how to remain up to date with changes in the law and attendant policy.

Online resources

Australian legislation and cases relating to nurses and health professionals: http://www.austlii.edu.au/

Information about notifications, complaints, investigation, panels and tribunals for health professionals in Australia: http://www.ahpra.gov.au/Notifications.aspx

Nursing education and accreditation standards and guidelines: http://www.anmac.org.au/

Relevant codes, standards and guidelines for nursing and midwifery in Australia: www.nursingmidwiferyboard.gov.au/codes-guidelines-statements/codes-guidelines.aspx

References

Adams KL 2003 The high court on vicarious liability. Aust J Labour Law 16(2):214–25.

Australian Commission on Safety and Quality in Health Care (ACSQHC) 2014 NSQHS Standards in 2013: Transforming the safety and quality of health care, October. Sydney, ACSQHC. Online. Available: www.safetyandquality.gov.au/wp-content/uploads/2014/10/NSQHSS-in-2013-Transforming-the-safety-and-quality-of-health-care.pdf; accessed 17 July 2015.

Australian Commission on Safety and Quality in Health Care (ACSQHC) 2011 National Quality and Safety Health Service Standards. Sydney, ACSQHC. Online. Available: www.safetyandquality.gov.au/wp-content/uploads/2011/01/NSQHS-Standards-Sept2011.pdf; accessed 17 July 2015.

Australian Commission on Safety and Quality in Health Care (ACSQHC) 2008 Windows into safety and quality in healthcare 2008. Sydney, ACSQHC. Online. Available: www.safetyandquality.gov.au/wp-content/uploads/2008/01/Windows-into-Safety-and-Quality-in-Health-Care-2008-FINAL.pdf; accessed 17 July 2015.

Australian Government Treasury 2004 Reform of liability insurance law in Australia. Canberra, Australian Government. Online. Available: http://archive.treasury.gov.au/contentitem.asp?ContentID=799; accessed 17 July 2015.

Australian Health Practitioner Regulatory Agency (AHPRA) 2014a National Board guidelines for registered health practitioners: Guidelines for Mandatory Notifications, March. Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Codes-Guidelines.aspx; accessed 16 July 2015.

Australian Health Practitioner Regulatory Agency (AHPRA) 2014b How do notifications and complaints work in NSW and

Queensland? 30 June. Melbourne. Online. Available: www.ahpra.gov.au/Notifications/About-notifications.aspx#how; accessed 16 July 2015.

Australian Health Practitioner Regulatory Agency (AHPRA) 2013 Fact Sheet: Immediate action, June. Melbourne. Online. Available: www.ahpra.gov.au/Notifications/Fact-sheets/Immediate-action.aspx; accessed 16 July 2015.

Australian Health Practitioner Regulatory Agency (AHPRA) 2013 A guide for practitioners: Notifications in the National Scheme, March. Melbourne. Online. Available: www.ahpra.gov.au/Notifications/Fact-sheets.aspx; accessed 16 July 2015.

Australian Nursing and Midwifery Council (ANMC) 2007 Background paper to A Nurse's Guide to Professional Boundaries. Canberra.

Bidmeade I, Reynolds C 1997 Public health law in Australia: its current state and future directions. AGPS, Canberra.

Chiarella M 2002 The legal and professional status of nursing. Churchill Livingstone, Edinburgh.

Chiarella M 1990 Imaging nursing – reflecting and projecting. Aust Health Rev 13(4):299.

Chisholm R, Nettheim G 2012 Understanding law, 8th edn. LexisNexis Butterworths, Chatswood.

Coroners Court of Victoria website 2015. www.coronerscourt.vic.gov.au/home/about+us/; accessed 4 Oct 2015.

Grey A 2006 Harriton v Stephens: life, logic and legal fictions. Sydney Law Rev 28(3):545–60. Online. Available: http://sydney.edu.au/law/slr/slr28_3/Grey.pdf; accessed 18 July 2015.

Kennedy I 1984 The patient on the Clapham omnibus. Med Law Rep 47:454.

Kerridge, I, Lowe M, Stewart C 2013 Ethics and law for the health professions, 4th edn. The Federation Press, Sydney.

Kübler-Ross E 1993 On death and dying. Maxwell Macmillan International, New York.

National Health and Medical Research Council (NHMRC) 2004 General guidelines for medical practitioners on providing information to patients. Canberra, NHMRC. Online. Available: www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e57_guidelines_gps_information_to_patients_150722.pdf; accessed 15 July 2015.

National Nursing and Nursing Education Taskforce (N^3ET) 2006 Towards consistent regulation of nursing and midwifery practice in Australia: A select analysis of the legislation and professional regulation of nursing and midwifery in Australia; citing, Department of Human Services Victoria (2003) Regulation of the health professions in Victoria: A Discussion Paper, Melbourne, 17.

NSW Health 2005a Using advance care directives (NSW). Sydney, NSW Health. Online. Available: www.health.nsw.gov.au/policies/gl/2005/GL2005_056.html; accessed 16 July 2015.

NSW Health 2005b Guidelines for end-of-life care and decision-making. Sydney, NSW Health. Online. Available: www.health.nsw.gov.au/policies/gl/2005/GL2005_057.html; accessed 15 July 2015.

NSW Health 2006 Working with people with challenging behaviours in residential aged care facilities–using appropriate interventions and minimising restraint, GL2006_014, August. Sydney, NSW Health. Online. Available: www.health.nsw.gov.au/policies/gl/2006/pdf/GL2006_014.pdf; accessed 16 July 2015.

Nursing and Midwifery Board of Australia (NMBA) 2016 Registered nurse standards for practice. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards.aspx; accessed 14 June 2016.

Nursing and Midwifery Board of Australia (NMBA) 2015a Registration Standard: English Language Skills, 1 July. Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Registration-Standards.aspx; accessed 16 July 2015.

Nursing and Midwifery Board of Australia (NMBA) 2015b Registration Standard: Criminal History for Registered Health Practitioners, 1 July. Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Registration-Standards.aspx; accessed 16 July 2015.

Nursing and Midwifery Board of Australia (NMBA) 2015c Fact Sheet: Student registration, updated March 2015. Melbourne. Available: www.nursingmidwiferyboard.gov.au/Registration-and-Endorsement/Student-Registration/Fact-sheet-FAQ-student-registration.aspx; accessed 4 Oct 2015.

Nursing and Midwifery Board of Australia (NMBA) 2014 Nurse Practitioner Standards for Practice, 1 January. Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Codes-Guidelines/nurse-practitioner-standards-of-practice.aspx; accessed 16 July 2015.

Nursing and Midwifery Board of Australia (NMBA) 2013a Code of professional conduct for nurses in Australia (rebranded). Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Codes-Guidelines.aspx#professionalconduct; accessed 16 July 2015.

Nursing and Midwifery Board of Australia (NMBA), Australian College of Nursing and Australian Nursing Federation 2013b Code of professional conduct for nurses in Australia (rebranded). Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Codes-Guidelines.aspx#professionalconduct; accessed 16 July 2015.

Nursing and Midwifery Board of Australia (NMBA) 2013c Decision making frameworks for nurses and midwives (rebranded). Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Codes-Guidelines.aspx#decisionmakingframework; accessed 16 July 2015.

Nursing and Midwifery Board of Australia (NMBA) 2013d A nurse's guide to professional boundaries. Melbourne, NMBA. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Codes-Guidelines.aspx; accessed 16 July 2015.

Nursing and Midwifery Board of Australia (NMBA) 2012 Professional indemnity insurance arrangements registration standard. Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Registration-Standards.aspx; accessed 16 July 2015.

Nursing and Midwifery Board of Australia (NMBA) 2011 National competency standards for the enrolled nurse (rebranded). Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Codes-Guidelines.aspx#competencystandards; accessed 16 July 2015.

Nursing and Midwifery Board of Australia (NMBA) 2010a Recency of practice registration standard. Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Registration-Standards.aspx; accessed 16 July 2015.

Nursing and Midwifery Board of Australia (NMBA) 2010b Continuing professional development registration standard. Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Registration-Standards.aspx; accessed 16 July 2015.

O'Neill N, Peisah C 2011 Capacity and the law. Sydney University Press Law Books, Sydney. Online. Available: www.austlii.edu.au/cgi-bin/sinodisp/au/journals/SydUPLawBk/2011/16; accessed 22 July 2015.

Reid CM et al 2008 Opioid analgesics for cancer pain: symptom control for the living or comfort for the dying? A qualitative study to investigate the factors influencing the decision to accept morphine for pain caused by cancer. Ann Oncol 19(1):44–8.

Roy Morgan Research 2015 Roy Morgan Image of Professions Survey 2015 – Nurses still easily most highly regarded – followed by Doctors, Pharmacists & School Teachers. Online. Available: www.roymorgan.com/~/media/files/findings%20pdf/2015/april/6188-image-of-professions-2015-april-2015.pdf; accessed 18 July 2015.

Slattery AO, The Honourable Mr Acting Justice JP 1990 Report of the Royal Commission into Deep Sleep Therapy. HMSO, Sydney.

Staunton P, Chiarella M 2013 Law for nurses and midwives, 7th edn. Elsevier, Sydney.

Cases

Briffet v Gander and District Hospital Board & ors (1992) 103 Nfld and PEIR and 326 APR 271.

Denis Stepanovic by his next friend and father Dragisa Stepanovic v The Australian Capital Territory, Unreported, Supreme Court of the ACT, November 3 1995, Miles CJ, No SC 296 of 1987.

Department of Health and Community Services (NT) v JWB (Marion's case) (1992) 175 CLR 218.

Elliott v Bickerstaff [1999] NSWCA 453.

Gillick v West Norfolk and Wisbech AHA (1985) 3 All ER 402.

HCCC v Brown [2011] NSWNMT 1 (13 January 2011).

HCCC V Burggraaff [2012] NSWNMT 4 (1 June 2012).

HCCC v Kocsis [2011] NSWNMT 19 (8 July 2011).

Henson v The Board of Management of Perth Hospital & anor (1939) 41 WALR 15.

K v Minister for Youth and Community Services (1982) 1 NSWLR 311.

Laidlaw v Lion's Gate Hospital (1969) 70 WWR 727, 739.

Langley & anor v Glandore Pty Ltd (in Liq) & anor (1997) Aust Torts Reports 81–448.

Lister v Romford Ice and Cold Storage Co (1957) AC 555.

Mount Isa Mines Limited v Pusey (1970) 125 CLR 383.

Nursing and Midwifery Board of Australia v Buckby [2015] WASAT 19 (9 March 2015).

Rogers v Whitaker (1992) 175 CLR 479.

Smith v Browne and ors (1974) VR 842.

Spasovic v Sydney Adventist Hospital [2003] NSWSC 791 (12 September 2003).

Stepanovic v ACT (1995) ACTSC 115.

Legislation

Aged Care Act 1997 (Cth)

Quality Care Principles 2014 (Cth)

Children and Young Persons (Care and Protection) Act 1998 (NSW)

Civil Liability Act 2002 (WA)

Consent to Medical Treatment and Palliative Care Act 1995 (SA)

Coroners Act 2009 (NSW)

Drugs Misuse Act 1986 (Qld)

Employees Liability Act 1991 (NSW)

Guardianship and Administration Act 1990 (WA)

Health Administration Act 1982 (NSW)

Health Practitioner Regulation National Law 2009 (Qld)

Human Services (Medicare) Act 1973 (Cth)

Human Tissue Act 1985 (Tas)

Medical Treatment Act 1998 (Vic)

Mental Health Act 2000 (Qld)

Natural Death Act 1983 (SA)

Natural Death Act 1988 (NT)

Nurses Amendment (Nurse Practitioners) Act 1998 (NSW)

Nursing Homes Assistance Act 1974 (Cth)

Poisons and Therapeutic Goods Act 1966 (NSW)

Privacy Act 1988 (Cth)

Private Health Facilities Act 2008 (NSW)

Public Health and Wellbeing Act 2008 (Vic)

Rights of the Terminally Ill Act 1995 (NT)

Safe Patient Care (Nurse to Patient and Midwife to Patient Ratios) Act 2015 (Vic)

Transplantation and Anatomy Act 1978 (ACT)

CHAPTER

11

Acting in accordance with New Zealand regulatory frameworks

Elaine Papps

Learning outcomes

Mastery of content will enable you to:

- recognise and define key terms and concepts
- explain the legal concepts that apply to nurses
- describe the legal responsibilities and obligations of nurses
- identify standards of care relevant for nurses
- define the legal aspects of nurse–patient and nurse–employer relationships
- provide examples of legal issues that arise in nursing practice.

KEY TERMS

Competence, p. 195
Confidentiality and privacy, p. 201
Consent, p. 203
Discipline, p. 198
Documentation, p. 201
Law of contract, p. 204
Legal issues, p. 205
Mental health (nursing), p. 206
Negligence, p. 199
Nursing care of children, p. 205
Professional boundaries (of nursing), p. 204
Professional misconduct, p. 199
Regulation of the nursing profession, p. 195
Right to refuse treatment, p. 203
Standards, p. 199
Tort, p. 200

The healthcare system in New Zealand is governed by many laws and legal frameworks. Nurses, like all other healthcare professionals, must practise safely and within the boundaries of the law. Nurses are held accountable for their practice by healthcare consumers, employers and the Nursing Council of New Zealand (NCNZ), as well as other agencies, such as the Health and Disability Commissioner and the Health Practitioners Disciplinary Tribunal.

This chapter provides a synopsis of laws that nurses in New Zealand encounter in everyday nursing practice. While this list is not exhaustive, the areas that are outlined and discussed should assist with identifying how the law in health care provides protection for the public and for healthcare professionals. Statutes and codes that form part of legal frameworks are written in rather formal language, and in some places legal language is used to discuss various laws and codes. Critical thinking exercises at various points in the chapter should assist you to reflect on the meaning of laws and codes, and how they affect nursing practice. All cases and legislation (Acts) referred to are listed in the references, along with web addresses. In addition, endnotes (indicated by a superscripted letter in the text) give additional information on particular points.

Regulation of nursing in New Zealand

Regulation of the nursing profession in New Zealand is governed by the Health Practitioners Competence Assurance Act 2003 (HPCAA). The enactment of the HPCAA repealed previous legislation governing healthcare professions. For nursing and midwifery this was the Nurses Act 1977 and its amendments and regulations, which had its origins in the Nurses Registration Act 1901. The principal purpose of the HPCAA is to 'protect the health and safety of the public by providing mechanisms to ensure that health practitioners are competent and fit to practise their professions'. It does this by establishing regulatory authorities which register and regulate healthcare practitioners. Under the HPCAA, there are now separate authorities for nursing and midwifery. The NCNZ continues to be the authority for nurses, and the Midwifery Council regulates midwives. This chapter focuses on nursing.

The HPCAA requires regulatory authorities to prescribe scopes of practice, and outlines that a regulatory authority may describe a scope of practice in any way it thinks fit, in one or more of the following ways:

a. by reference to a name or form of words that is commonly understood by persons who work in the health sector

b. by reference to an area of science or learning

c. by reference to tasks commonly performed

d. by reference to illnesses or conditions to be diagnosed, treated, or managed (HPCAA 2003, s. 11(2)).

The NCNZ has three scopes of practice with the following titles:

- registered nurse (RN)
- enrolled nurse (EN)
- nurse practitioner (NP).

Each of these scopes of practice has associated competencies – *Competencies for registered nurses* (2007), *Competencies for enrolled nurses* (2012a) and *Competencies for the nurse practitioner scope of practice* (2012b). The scope of practice and competencies for RNs are outlined in Box 11-1. All of these competencies may be revised from time to time and are always available from the New Zealand Nursing Council website (see the list of *Online resources* at the end of this chapter).

Continuing competence and annual practising certificates

The HPCAA requires regulatory authorities to 'set standards of clinical competence, cultural competence, and ethical conduct to be observed by health practitioners of the profession' (HPCAA 2003, s. 118(i)). However, the HPCAA does not provide a definition of competence, as this is the responsibility of regulatory authorities (Vernon et al 2012). The NCNZ defines **competence** as 'the combination of skills, knowledge, attitudes, values and abilities that underpin effective performance as a nurse' (NCNZ n.d.). As nurses work in a variety of roles, in order to determine whether a nurse requires a practising certificate the NCNZ has defined nursing practice as when a nurse is:

> [u]sing nursing knowledge in a direct relationship with clients or working in nursing management, nursing administration, nursing education, nursing research, nursing professional advice or nursing policy development roles, which impact on public safety (NCNZ n.d.).

The NCNZ has developed and implemented a Continuing Competence Framework, which has been in place since 2004. This framework requires nurses to demonstrate annually that they remain competent and fit to practise. The three current requirements of the Continuing Competence Framework are:

- evidence of ongoing professional practice. This refers to nursing practice according to the definition of practising – a minimum of 60 days or 450 hours within the preceding 3 years

BOX 11-1 Nursing Council of New Zealand scope of practice and competencies for registered nurses

Registered nurse scope of practice

Registered nurses utilise nursing knowledge and complex nursing judgement to assess health needs and provide care, and to advise and support people to manage their health. They practise independently and in collaboration with other health professionals, perform general nursing functions and delegate to and direct enrolled nurses, healthcare assistants and others. They provide comprehensive assessments to develop, implement and evaluate an integrated plan of health care, and provide interventions that require substantial scientific and professional knowledge, skills and clinical decision-making. This occurs in a range of settings in partnership with individuals, families, whanau and communities. Registered nurses may practise in a variety of clinical contexts, depending on their education preparation and practice experience. Registered nurses may also use this expertise to manage, teach, evaluate and research nursing practice. Registered nurses are accountable for ensuring all health services they provide are consistent with their education and assessed competence, meet legislative requirements and are supported by appropriate standards. There will be conditions placed on the scope of practice of some registered nurses according to their qualifications or experience limiting them to a specific area of practice.

Competencies for registered nurses

Domains of competence

There are four domains of competence for the registered nurse scope of practice. Evidence of safety to practise as a registered nurse is demonstrated when the applicant meets the competencies within the following domains:

Domain one: Professional responsibility

This domain contains competencies that relate to professional, legal and ethical responsibilities and cultural safety. These include being able to demonstrate knowledge and judgement and being accountable for own actions and decisions, while promoting an environment that maximises client safety, independence, quality of life and health.

Domain two: Management of nursing care

This domain contains competencies related to client assessment and managing client care, which is responsive to the consumers' needs, and which is supported by nursing knowledge and evidence-based research.

Domain three: Interpersonal relationships

This domain contains competencies related to interpersonal and therapeutic communication with health consumers, other nursing staff and interprofessional communication and documentation.

Domain four: Interprofessional health care and quality improvement

This domain contains competencies to demonstrate that, as a member of the healthcare team, the nurse evaluates the effectiveness of care and promotes a nursing perspective within the interprofessional activities of the team.

Each of the domains of competence has associated indicators. Further information is available on the Nursing Council of New Zealand website. Available: www.nursingcouncil.org.nz/Nurses/Scopes-of-practice/Registered-nurse; see also Nurses Scopes of Practice. Online. Available: www.nursingcouncil.org.nz/Nurses/Scopes-of-practice; accessed 2 Nov 2015.

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- evidence of ongoing professional development. This refers to ongoing education – a minimum of 60 hours in the last 3 years
- evidence of meeting the Council's competencies for the nurse scope of practice. This involves a self-declaration that states the nurse meets the Council's competencies for their scope of practice (Vernon et al 2011).

Each year the NCNZ requires 5% of nurses applying for practising certificates to complete an audit. Nurses who are enrolled in employer Professional Development and Recognition Programme (PDRP) recertification programs approved by the NCNZ are not selected for audit. Nurses who have not been practising for more than 3 years or have not completed the required amount of professional development will be assessed individually and may be



Figure 11-1 Nurses need to demonstrate annually that they remain competent and fit to practise.

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RESEARCH HIGHLIGHT

Research focus

Continuing competence of registered nurses, enrolled nurses and nurse assistants in New Zealand.

Research abstract

The aim of this study was to explore nurses' perceptions, understanding of, and satisfaction with, the Nursing Council of New Zealand (NCNZ) Continuing Competence Framework (CCF); and the effectiveness of associated processes. A response rate of 43% was obtained (n = 1157) when a random sample of New Zealand nurses was sent a web-based survey designed to determine their satisfaction with the NCNZ CCF. The majority of participants believed that the CCF contains appropriate indicators for ascertaining continuing competence, and there were no suggested changes to the three indicators of competence (self-declaration, evidence of practice hours, and evidence of ongoing professional development).

Conclusion

The authors found that although CCF indicators cannot guarantee that a nurse is safe to practise on any given day, nurses who participated in this research believed they demonstrated continuing competence.

Reference

Vernon R, Chiarella M, Papps E 2013 Assessing the continuing competence of nurses in New Zealand. Journal of Nursing Regulation 3(4):19–24.

issued with an interim practising certificate until all requirements are met.

Under the HPCAA, regulatory authorities may decline to issue an annual practising certificate if it is believed that an applicant:

- **has failed to maintain the required standard of competence**
- **has failed to comply with a condition included in the scope of practice**
- **has failed to satisfactorily complete a competence program ordered by the authority**
- **has not held a practising certificate or practised lawfully for the preceding 3 years, or**
- **is unable to perform the functions required for the applicant's profession because of some mental or physical condition (HPCAA 2003, s. 12(4)).**

The required standard of competence is defined as 'the standard of competence reasonably to be expected of a health practitioner practising within that health practitioner's scope of practice' (HPCAA 2003, s. 5(1)).

Registration of nurses from Australia or other countries

The Trans-Tasman Mutual Recognition Act 1997 (TTMRA), which came into force on 1 May 1998, allows the reciprocal regulation of nurses and midwives in New Zealand and Australian states. Under the TTMRA, Australian nurses who wish to register in New Zealand must give written notice to the NCNZ that they wish to be registered in New Zealand. Once the relevant registration authority has received an application, it has 1 month to confirm registration and decide whether to impose conditions. Conditions may be imposed for the purpose of:

- achieving equivalence of occupation
- imposing on the applicant's NZ registration a condition that applies to the applicant's registration in Australia, or
- any other purpose relating to the implementation of the TTMRA principles in respect of occupations.

If the registration of an Australian nurse is cancelled or suspended, or is subject to a condition on disciplinary grounds or because of pending or completed criminal, civil or disciplinary proceedings, their New Zealand registration is affected in the same way. The New Zealand authority may reinstate registration or waive conditions if it is satisfied that it is appropriate to do so in the circumstances.

For any nurses other than those registered under the TTMRA, the standards applied as entry criteria for New Zealand registration are qualifications equivalent to New Zealand qualifications. The NCNZ must be satisfied that applicants have the required New Zealand competencies for their scope of practice. Information about internationally qualified nurses and their regulation in New Zealand is available on the NCNZ website (see *Online resources*).

Competence notifications and reviews

A healthcare practitioner may voluntarily notify the relevant authority if they consider that another healthcare practitioner (not necessarily of the same profession) poses a risk of harm to the public by practising below the

required standard of competence (HPCAA 2003, s. 34). The Health and Disability Commissioner (see below) is required to notify the relevant authority if they have reason to believe that the practitioner may pose a risk to the public. Employers are required to make a notification if the practitioner has resigned or has been dismissed for reasons relating to competence. There is no mandatory requirement on other practitioners, but the HPCAA provides authority to make a notification and protection from liability as long as the notification is made in good faith.

Once a competence notification has been received, the registration authority must make inquiries into the notification to determine whether or not a competence review should take place. The NCNZ generally asks for further information from the nurse and the employer to enable it to make this assessment. If there are reasonable grounds for believing that the practitioner poses a risk of serious harm to the public, the Act allows the relevant authority to suspend the practitioner pending a review (HPCAA 2003, s. 39). Information about the NCNZ's review process is available on its website (see *Online resources*).

Health notifications

Section 48 of the HPCAA requires any healthcare practitioner with reason to believe that another healthcare practitioner (whether of the same profession or not) is unable to practise because of a mental or physical condition to notify the relevant authority. A mental or physical condition includes a condition or impairment caused by alcohol or drug abuse.

Practitioners who have a health condition are required to undergo an examination by a medical practitioner, who provides a report for the regulatory authority. The authority then meets with the practitioner to discuss that report. The authority's role is to determine whether the practitioner has a mental or physical condition that means they are unable to perform the functions of nursing or midwifery. The authority may suspend the practitioner, include conditions in their scope of practice or take no further action on the notification. Any suspension or conditions may be revoked or reviewed once the authority is satisfied that it is appropriate and in the public interest to do so. Information about the NZNZ's health process is available on its website (see *Online resources*).

Complaints about nurses

Complaints about nurses may result in disciplinary action. Nurses are disciplined under the HPCAA in the same way as all other healthcare practitioners. If the Registrar of the NCNZ receives a complaint about a nurse and the conduct of that nurse has affected a healthcare consumer, the complaint must be referred to the Health and Disability Commissioner under the Health and Disability Commissioner Act 1994 (HDCA). The Commissioner may decide to investigate the conduct or refer the matter to the relevant authority if the appropriateness of the conduct, fitness to practise (health) or competence of the practitioner is in doubt.

If a complaint has been referred to the Registrar of the NCNZ by the Health and Disability Commissioner, or the conduct does not affect a healthcare consumer, it may be referred to a Professional Conduct Committee (PCC). PCCs also consider court convictions and other grounds of **discipline** (see below). Court convictions that are considered by PCCs are those where the penalty for the offence is 3 months imprisonment or an offence against the legislation listed in the HPCAA (HPCAA, s. 67). A PCC will investigate the complaint and provide the practitioner with an opportunity to respond in person and/or in writing to the information gathered during that investigation. The PCC will then decide whether or not there is sufficient evidence of an offence and whether the conduct is sufficiently serious to lay a charge. Charges are heard before the Health Practitioners Disciplinary Tribunal (HPDT). A PCC may also make recommendations to refer a practitioner for competence review, or to be considered under the health process, or that conditions be included in the practitioner's scope of practice. It may also recommend that the complaint is referred to the police or for conciliation or that the practitioner is counselled (receives a letter of education). Information about the NCNZ's disciplinary processes is available in the publication *Complaints and discipline process* on its website (see *Online resources*).

• CRITICAL REFLECTION POINT

The Health Practitioners Competence Assurance Act 2003 allows some conduct that falls below a standard expected of a registered nurse to be managed through the remedial competence review process rather than by a disciplinary process. Think about the following questions:

1. **Whose interests are being addressed in such situations?**
2. **How does this provide protection to the public?**
3. **Why is competence for nurses and other healthcare practitioners enshrined in legislation?**

Health and Disability Commissioner

Reference has been made above to the Health and Disability Commissioner. This role was established in

BOX 11-2 Code of Health and Disability Consumers' Rights

There are 10 rights in the Code of Health and Disability Consumers' Rights:

Right 1	Right to be treated with respect.
Right 2	Right to freedom from discrimination, coercion, harassment and exploitation.
Right 3	Right to dignity and independence.
Right 4	Right to services of an appropriate standard.
Right 5	Right to effective communication.
Right 6	Right to be fully informed.
Right 7	Right to make an informed choice and give informed consent.
Right 8	Right to support.
Right 9	Rights in respect of teaching or research.
Right 10	Right to complain.

Full details about the Code of Rights is located on the Health and Disability Commissioner website. Online. Available: www.hdc.org.nz/media/24833/leaflet%20code%20of%20rights.pdf; accessed 2 Nov 2015.

Health and Disability Commissioner website, www.hdc.org.nz/media/24833/leaflet%20code%20of%20rights.pdf.

1994 with the enactment of the HDCA (see Burgess 2008), and provided for the 1996 Code of Health and Disability Services Consumers' Rights (the Code of Rights). All healthcare practitioners are called 'providers' under the HDCA and have a duty to give effect to the rights of patients (consumers). These rights are codified in the Code of Rights, which is a regulation made under the HDCA (Box 11-2). This Code may be revised from time to time. The Commissioner publishes an annual report, which explains the Commissioner's role and discusses complaints and their resolution from the previous year (see *Online resources*).

When, after investigation, the Commissioner is of the opinion that the nurse is in breach of the Code of Rights, recommendations may be made by the Commissioner to the provider or the matter may be referred to the Director of Proceedings (DP). The DP has discretion as to whether to lay a charge of professional misconduct before the HPDT and/or to bring proceedings against a healthcare practitioner in the Human Rights Review Tribunal. The Human Rights Review Tribunal has the power to award up to NZ$200,000 compensation to a patient/consumer whose rights under the Code of Rights have been breached. If the injury is covered under the Injury Prevention, Rehabilitation and Compensation Act 2001, this compensation may be barred unless there was flagrant disregard of a consumer's rights.

Health Practitioners Disciplinary Tribunal

The HPCAA established a single multidisciplinary tribunal (HPDT), which is separate to the registration authorities. When a disciplinary charge is being considered, the Tribunal will consist of a legal chair, a layperson and three registered members of the relevant healthcare profession. Disciplinary charges relate to professional misconduct, which is defined in the HPCAA as:

- any act or omission that amounts to malpractice or negligence in the scope of practice the practitioner is registered in at the time the conduct occurred
- any act or omission that has brought or was likely to bring discredit to the profession that the health practitioner practised at the time that the conduct occurred (HPCAA 2003, s. 100(1)).[a]

Negligence and *malpractice* have been interpreted as conduct in the performance of a practitioner's professional role, and arise when a practitioner has breached a professional duty. The test is an objective one and the guide is the **standards** applied by competent, ethical and responsible practitioners. For a finding of **professional misconduct** to be made, the behaviour must fall well short of conduct that is considered acceptable and must not be inadvertent error, oversight or carelessness.

In order to satisfy a charge of *bringing discredit on the profession*, there has to be a professional aspect to the conduct complained of. The complaint must refer to conduct which affects professional or public confidence, and may include behaviours related to the practitioner's work or professional standing. The HPDT's role in considering professional misconduct charges is to determine whether the conduct that is the subject of the charge is proved and that it amounts to professional misconduct. The onus of proof is on the PCC or the DP who prosecutes the charge, and the standard of proof is the civil standard – the balance of probabilities.

Other grounds on which a nurse may be disciplined are if they have been convicted of an offence that reflects adversely on fitness to practise, have practised without holding a current practising certificate, have performed a healthcare service outside their scope of practice, have failed to observe any conditions included in their scope of practice or have breached an order of the HPDT.

The purpose of disciplinary proceedings is to:

- enforce high standards of propriety and professional conduct
- ensure that no person who is unfit because of their conduct is permitted to practise

- protect the public and the profession against practitioners who are unfit to practise
- enable the profession to ensure that the conduct of members conforms to the standards generally expected of them.

The HPDT has a number of penalties available to it:

- Cancellation of registration.
- Suspension of registration (3 years).
- Inclusion of conditions in a practitioner's scope of practice (for 3 years after commencing practice after the order is made).
- Censure.
- Fine (up to NZ$30,000).
- Awarding costs and expenses of investigation, prosecution and hearing.

Decisions made by the HPDT are available on its website (see *Online resources*).

Sources of law

Most law affecting healthcare practitioners in New Zealand is found in legislation (Box 11-3).

BOX 11-3 Sources of law

Most laws affecting healthcare practitioners in New Zealand are found in legislation, namely:

- Health and Disability Commissioner Act 1994
- Health and Disability Commissioner (Code of Health and Disability Services Consumers' Rights) Regulation 1996
- Health Information Privacy Code 1994
- Health Practitioners Competence Assurance Act 2003
- Human Rights Act 1993
- Injury Prevention, Rehabilitation and Compensation Act 2001
- Intellectual Disability (Compulsory Care and Rehabilitation) Act 2003
- Medicines Act 1981 and its Regulations
- Mental Health (Compulsory Assessment and Treatment) Act 1992
- New Zealand Bill of Rights Act 1990
- New Zealand Public Health and Disability Act 2000
- Privacy Act 1993.

New Zealand laws relating to the misuse of controlled substances and drugs include the Misuse of Drugs Act 1975 and the Medicines Act 1981 and Regulations.

Legal liability in nursing

In Australia, parties may seek to recover compensation for personal injury through civil actions in tort, usually in negligence. However, New Zealand law generally prohibits claimants from seeking compensation for personal injury through a civil action in the courts. This is because it has a no-fault compensation scheme administered by the Accident Compensation Corporation (ACC). If claimants are covered for their personal injury by the ACC legislation, currently found in the Injury Prevention, Rehabilitation and Compensation Act 2001 (IPRCA). They are then barred from seeking compensation through any other means.

Treatment injury

Under changes made to the IPRCA, which came into force on 1 July 2005, *treatment injury* is personal injury suffered by a person caused by treatment (previously referred to as 'medical misadventure'). Personal injury caused 'wholly or substantially by a gradual process, disease or infection' is excluded from the definitions of personal injury. However, if the injury is a treatment injury, the development or progression of a disease or infection may amount to 'physical injury' where it is caused by treatment or by the failure to diagnose or treat a physical condition. There is now no requirement to find fault by a registered healthcare professional for cover to be provided, which brings medical misadventure in line with other accidents under the scheme. However, if the ACC believes that there is a risk of harm to the public by a registered or unregulated healthcare practitioner as a result of information gathered in the course of assessing claims, it must report that risk to the relevant authorities, which includes regulatory authorities. The ACC gains assistance in determining whether or not it should report events from the New Zealand Ministry of Health's sentinel/serious events threshold (Ministry of Health 2001).

Exemplary damages

ACC legislation does not bar claims for exemplary (punitive) damages. Exemplary damages may be awarded where the conduct that led to the injury was 'outrageous' and calls for punishment. This has been interpreted to include conduct that was intentional wrongdoing or conscious recklessness, or where the practitioner has departed so far and so flagrantly from professional standards or standards of care that the conduct calls for punishment.

Torts

A **tort** deals with a wrong committed by one person against another. In health care, issues of negligence, defamation,

and assault and battery are important for nurses to be aware of. While these may seem to be alarming terms in relation to nursing practice, they are managed through mechanisms and processes, such as standards of care, confidentiality and privacy, and informed-consent processes.

Negligence

The test for negligence at common law is that a duty to take reasonable care is owed; that the duty was breached; that some loss or harm occurred; and that the loss or harm was caused by the breach. In *Staite v Psychologists Board*,[b] Young J stated that he did not believe professional negligence, in the sense of simple carelessness, could be invoked to support a disciplinary charge in circumstances where an action for 'professional negligence' could not have been brought because the law would not have recognised a duty to take reasonable care. This duty of care, to the standard of the reasonable practitioner, is a requisite element of a negligence action.

Standards of care

As mentioned earlier, under the HPCAA 2003, the NCNZ is required to set standards of 'clinical competence, cultural competence and ethical conduct' (HPCAA 2003, s. 118(i)). Guidelines as to what is reasonable and the minimum standards of practice and/or care for nurses can be found in the publications listed in Box 11-4. These standards and guidelines may be revised from time to time.

It is important for nurses to understand that any or all of these guidelines may be referred to by the Health and Disability Commissioner or in proceedings in respect of complaints against nurses before the HPDT (refer to the HPDT website in *Online resources* for further examples).

BOX 11-4 Guidelines and standards for nurses

New Zealand Nurses Organisation's *Code of ethics* (2010), www.nzno.org.nz/Portals/0/publications/Code%20of%20Ethics%202010.pdf

Nursing Council of New Zealand

The following link outlines the standards and competencies the Nursing Council of New Zealand expects of nurses: www.nursingcouncil.org.nz/Nurses

Code of Conduct standards and guidelines (includes *Guidelines: Professional Boundaries* and *Guidelines: Social Media*)

Scope of practice competencies and guidelines

Guidelines for practice

Guidelines for Cultural Safety, the Treaty of Waitangi and Māori Health

The need for careful documentation

The Health Information Privacy Code 1994 issued under the Privacy Act 1993 regulates health information.[c] In particular, Rule 8 of the Health Information Privacy Code provides that a health agency holding health information must not use that information 'without taking such steps as are in the circumstances reasonable to ensure that, having regard to the purpose for which the information is proposed to be used, the information is up-to-date, accurate, complete, relevant and not misleading'.[d]

Documentation is a significant component of nursing practice. It is important to be aware that health records may be used in investigations of complaints by a number of authorities, including the Health and Disability Commissioner, the Privacy Commissioner, regulatory authorities and the police. Health records may also be obtained through the Official Information Act 1982, and through subpoena (Burgess 2008).

The New Zealand Nurses Organisation (2003) has produced some useful guidelines on the need for careful documentation (see *Online resources*).

Confidentiality and privacy

The principles pertaining to **confidentiality and privacy** are found in common law and statute, and both apply in New Zealand. The law relating to disclosure of health information and a patient's right to protection against interference with their privacy is contained in the Health Information Privacy Code 1994 and later commentary. That Code is subject to all other legislation and there are numerous statutory provisions which require that health information must be made available and/or disclosed (ss. 22C, 22D, 22F and 22G of the Health Act 1956, among others).[e] Other statutes also require practitioners to disclose health information when child abuse is suspected; see sections 49, 52, 53 and 56 of the Children, Young Persons and Their Families Act 1989.

Health Information Privacy Code

In general, this Code requires health information to be collected for lawful and necessary purposes from the individual concerned. At the time when it is collected, the individual must be made aware that the information is being collected, the purpose of the collection and who will receive the information.

Health information must be collected without unreasonable intrusion on the individual's personal affairs,

and must be collected lawfully and fairly in a situation in which that person feels comfortable. The information must be protected by reasonable safeguards against loss, unauthorised access, modification, disclosure and other misuse, and disposed of in a manner that preserves the individual's privacy. Where information can be readily retrieved, the individual may be entitled to have access to that information, and may request correction of that information. Information must not be kept longer than is necessary for the purposes for which it is lawfully used and, if collected for one purpose, should not be used for another unless authorised or it is necessary because of a threat to public or individual health and safety. Unique identifiers (numbers) may only be assigned where necessary to enable a health agency to carry out its functions more efficiently. All health information is subject to the limits on disclosure imposed by the Code for a 20-year period from the date of death.

Complaints about breaches of the Health Information Privacy Code may be made to the Privacy Commissioner. The Commissioner may investigate the complaint if it falls within their jurisdiction and form a provisional opinion as to whether an interference with privacy has occurred. Any practitioner who has a complaint made against them is provided with the opportunity to provide a response to the complaint before the Commissioner reaches a provisional opinion. The parties are also invited to respond to the provisional opinion and to reach a settlement about the alleged breach. The Commissioner may then make a final opinion, which is advisory only, and may make recommendations. The Privacy Commissioner may refer the matter to the Proceedings Commissioner who may issue proceedings in the Human Rights Review Tribunal if a settlement cannot be reached. If the Tribunal is satisfied on the civil standard that a breach of privacy has occurred, it may make orders, declarations or award damages and costs. It has the power to award damages up to NZ$200,000. More information on the Privacy Commissioner and the Health Information Privacy Code is available on the Privacy Commissioner's website (see *Online resources*).

The Health (Retention of Health Information) Regulations 1996 impose obligations on practitioners to retain health records/information for a minimum period of 10 years from the last date of treatment or care. The Public Records Act 2005 may require some health records to be transferred to Archives New Zealand for future reference.

Privileged communications

Communications made by a patient to a healthcare practitioner for the purposes of treatment or examination or where that person is caring for the patient are legally protected by confidentiality and privacy law only to a certain extent, and there are numerous exceptions to the general confidentiality rule. However, in the case of communications made to a medical practitioner or clinical psychologist, there are some instances where the confidentiality of such communications is totally protected and the medical practitioner or clinical psychologist cannot disclose them even in court (Evidence Act 2006, s. 59).



Figure 11-2 Nurses need a sound understanding of informed consent in relation to their practice.

iStockphoto/fotostorm.

• CRITICAL REFLECTION POINT

Confidentiality can be complex in nursing practice, and there are numerous challenges that arise when nurses need to maintain confidentiality. Reflect on what you think the challenges of maintaining confidentiality might be in situations where:

1. **You are in the staff cafeteria and overhear colleagues discussing confidential information about a well-known local identity.**

2. **You are asked by a colleague from another area of the hospital you are working at for information about a patient you are caring for.**
3. **A relative asks you for information about the prognosis of a patient you are caring for.**

Discuss your reflections with fellow students, clinicians and your lecturers and generate strategies for dealing with these and similar situations you may encounter.

Obtaining consent

Nurses provide a range of care and treatment in nurse–patient interactions. Usually, verbal **consent** is given when a nurse explains an intended action or procedure. If the nurse does not explain and/or provide the opportunity for a patient to ask questions about what the nurse is going to do and if, for example, this might be painful, informed consent could arguably be invalid. In New Zealand, the requirements for obtaining consent are found in Rights 5, 6 and 7 of the Code of Rights. In particular, Right 7(1) provides that consumers have a right to make an informed choice and give informed consent except where any enactment, common law or provision in the Code of Rights provides otherwise. A consumer is presumed to be competent to make an informed choice and give informed consent unless there are reasonable grounds to believe that they are not competent. Where a consumer has diminished competence, they have the right to make an informed choice and give consent to the extent appropriate to their level of competence.

If a consumer is not competent, and there is no other person entitled to consent on their behalf, services can be provided where they are in the best interest of the consumer and reasonable steps have been taken to ascertain the consumer's views, and where the provider believes the services to be consistent with any choice the consumer would have made or are views of other suitable people interested in the consumer's welfare (Right 7(4)). Where a consumer is not capable of consenting on their own behalf, there is no common-law rule that enables a spouse or next-of-kin to give effective consent on their behalf. Under the Protection of Personal and Property Rights Act 1988 (the PPPRA), a Family Court may appoint a welfare guardian for an incapacitated adult if the consumer wholly lacks the capacity to make or communicate decisions and if the appointment is the only satisfactory way to ensure appropriate decisions are made. The PPPRA also provides for the appointment of an enduring power of attorney, where a competent person is able to confer powers to an 'attorney' which continue in the event that the person becomes incapacitated. This power in relation to personal care and welfare only comes into force when the consumer becomes incapacitated.

The right of the patient/consumer to receive information

Right 6(1) of the Code of Rights entitles the consumer to receive information that a reasonable person in the circumstances would expect to receive. That information must include:

- an explanation of their condition
- an explanation of the options available; namely, assessment of expected risks, side effects, benefits and costs of each option
- advice of the estimated time within which actual services will be provided
- notification of any proposed research or teaching
- any other information required by legal, professional, ethical and other relevant standards
- the results of tests and procedures.

Right 6(3) entitles the consumer to receive information on the provider's identity and qualifications and recommendations as to how to obtain another opinion and test results. Consumers are entitled to receive a written summary of the information upon request.

The right to refuse treatment

In New Zealand, a patient's 'right to refuse any medical treatment' is enshrined in section 11 of the New Zealand Bill of Rights Act 1990. Right 7(7) of the Code of Rights provides consumers with 'the right to refuse services and withdraw consent to services'. In addition, the Code of Rights provides that consumers have a right to have services provided in a manner that respects the dignity and independence of the individual (Right 3). Consumers can also use an advance directive in accordance with the common law if they so wish (Right 7(5)). The **right to refuse treatment** should be an informed choice, so full information about the likely outcome of not receiving the treatment should be provided.

The law relating to refusal of services on behalf of someone who is not competent to make a choice, however, is not as straightforward. In most cases, the courts will override parents who refuse life-prolonging treatment for their children. For example, in the case of *Healthcare Otago v Williams-Holloway*,[f] parents refused treatment for their three-year-old son to receive his third cycle of chemotherapy to treat a neuroblastoma of the jaw. The High Court intervened, and by order placed the child in the custody of the Director-General of Social Welfare and issued a warrant authorising police or social welfare authorities to locate and apprehend the child for the purpose of treatment (the boy had been taken into hiding by his parents). In a recent decision by the High Court of

New Zealand (*Auckland District Health Board v James Dee* [2015] NZHC 304 (27 February 2015), the High Court of New Zealand assumed legal guardianship of a nine-year-old boy in order to ensure that he received recommended medical treatment. The boy had been diagnosed with HIV when an infant; however, the parent and guardian of the child did not accept the diagnosis, and subsequently the boy did not receive prescribed antiretroviral medication.

Use of human tissue and organ donation

The legislation regulating the removal, use and transplantation of body parts in New Zealand can be found in the Human Tissue Act 2008, the Code of Rights and common law. This law is complex and includes addressing sensitive cultural and spiritual needs, values and beliefs. It is suggested that interested readers refer to the link given in *Online resources*. Keenan (2010) also discusses the issues surrounding the use of human tissue and organ donation.

Legal relationships in relation to employment

The law of contract

Contract between a healthcare practitioner and the patient

The **law of contract** between provider and patient/consumer is set out in Right 4 of the Code of Rights, which provides consumers with a legal right to services of an appropriate standard. This includes the right to have services provided with reasonable skill and care that comply with legal, professional, ethical and relevant standards, which are consistent with the consumer's needs and which are provided in a manner that minimises the potential harm to, and optimises the quality of life of, the consumer (Rights 4(1), 4(2), 4(3) and 4(4)). Consumers also have the right to cooperation among providers to ensure quality and continuity of services (Right 4(5)).

Additional obligations placed on healthcare professionals, including nurses, in respect of the care of consumers are:

- the right to be treated with respect (Right 1)
- the right to freedom from discrimination, coercion, harassment and exploitation (Right 2)
- the right to effective communication (Right 5).

Nurses also have an obligation to maintain clear **professional boundaries**. In 2012, the NCNZ published a guideline for this, *Guidelines: professional boundaries* in association with a revised *Code of conduct for nurses*.

Employment contracts and related matters

Employed nurses in New Zealand have employment agreements with their employers that are governed by the Employment Relations Act 2000 (ERA), the Holidays Act 2003, the Parental Leave and Employment Protection Act 1987, the Minimum Wages Act 1983 and the Wages Protection Act 1983. The ERA provides for two types of employment agreement – an individual employment agreement and a collective employment agreement. Collective employment agreements can be negotiated only through a registered trade union.

A number of multi-employer collective agreements (MECAs) are in place in New Zealand, negotiated by the New Zealand Nurses Organisation (NZNO), a union and professional organisation that represents both nurses and midwives. Membership details of NZNO can be viewed on its website. Other unions include the New Zealand Public Service Association (PSA), which covers healthcare practitioners working in the public sector. Nurses may also apply for membership of the College of Nurses Aotearoa (NZ) Inc., a professional organisation that provides indemnity insurance but is not a union. Nurses who are employed in mental health may belong to Te Ao Maramatanga (New Zealand College of Mental Health Nurses).

An employee who believes there is 'serious wrongdoing' in or by an organisation may disclose information to an appropriate person and be protected from prosecution, civil liability or professional disciplinary action for doing so. The Protected Disclosures Act 2000 applies to both public and private sector organisations.[g] The employee must take these concerns through an established internal procedure or may take their concerns directly to the head of the organisation. If the concerns of the employee are not resolved using these methods, the employee may disclose those concerns to others, including the Ombudsman or a cabinet minister. The purpose of this whistle-blowing legislation is to facilitate disclosure and investigation of matters of serious wrongdoing in or by an organisation and to provide protection for employees who may – provided they make the disclosure in accordance with the Act – disclose such matters, including matters constituting a serious risk to public health or safety. The legislation resulted from a case where a nurse reported his concerns about the release of a dangerous psychiatric patient from hospital to the Opposition Spokesperson for Justice (*Pugmire v Good Health Wanganui Ltd (No 2)* [1994] 1 ERNZ 174). The nurse was suspended by his employer and then dismissed for his actions.

The Safety in Employment Act 1992 requires that employers ensure the safety of employees, but also places an obligation on employees. Section 19 of this Act notes that:

> **Every employee shall take all practicable steps to ensure**
>
> **a. The employee's safety while at work (including by using suitable protective clothing and protective equipment provided by the employer) ... and**
>
> **b. That no action or inaction of the employee while at work causes harm to any other person.**

Further information about issues in employment law in New Zealand is discussed in Keenan (2010).

Legal issues in nursing specialties

In New Zealand, nurses working in community or specialty health settings must also be aware of the wide range of legislation affecting their practice, particularly public health laws, which place mandatory obligations on healthcare professionals in some circumstances.[h] The ageing population means that there is an increasing number of older people in residential and continuing care facilities, and although there is no specific legislation in New Zealand relating to aged care, the Health and Disability Services (Safety) Act 2001certifies and monitors the provision of care in the aged residential care sector (see *Online resources*).

Nursing children

Several **legal issues** relate to the **nursing care of children**. Of particular note is that there is no age of consent under the Code of Rights. A child is presumed competent until otherwise assessed, and a competent child has the right to make an informed choice and give or refuse consent (Right 7(2)). The test is whether a child or young person is competent to make an informed choice and give informed consent. This provision is for the purpose of Code of Rights liability. The informed consent provisions of the Code of Rights have effect unless any other legislation or the common law provides otherwise; there are numerous statutes relating to the provision of services for children and young people that do provide otherwise.

At common law, the capacity to consent to treatment is not dependent on someone being above a certain age. However, the younger the child and the more important the decision, the less likely that the child will be considered competent to give consent. Under section 36 of the Care of Children Act 2004, young people over 16 years of age can consent or refuse to consent to healthcare procedures. As with any adult, a healthcare practitioner can overturn this right if there are reasonable grounds for believing that a person is not competent. A young person who is married, living in a civil union or living with a de facto partner is also able to give or refuse consent to healthcare procedures. A female child of any age can give consent to the termination of her pregnancy or a refusal to a termination (Care of Children Act 2004, s. 38).

Under section 37 of the Care of Children Act 2004, no civil, criminal or disciplinary proceedings may be brought against a person for the administration of a blood transfusion to a person under the age of 18 years by reason of the lack of consent of a person whose consent is required by law. No consent is required for the examination of children (on a court order) on suspicion of child abuse or neglect (Children, Young Persons and Their Families Act 1989, s. 49); the child is entitled to have an adult present during the examination (s. 54).

• CRITICAL REFLECTION POINT

In the paragraph above, there is reference to consent in relation to the administration of a blood transfusion in relation to individuals under the age of 18 years. Discuss with a colleague the reasons this might be the case.

Reference is also made about consent not being required for the examination of children where abuse or neglect is suspected. What reasons behind the rationale for this are apparent to you?

Where the Chief Executive of Social Welfare has been appointed sole guardian of the child, consent can only be given by the Chief Executive (Children, Young Persons and Their Families Act 1989, s. 110(2)(a)); a child aged 14 years or over can apply to the court to overturn a refusal of consent by the Chief Executive in respect of any important matter which affects the child (s. 116).

Under section 125 of the Health Act 1956, authorised persons, including some nurses, may examine children attending a school or early-childhood education centre, and may notify the child's parent or guardian of any condition that is affecting the health or normal development of the child or of any disease or defect from which the child may be suffering.

Section 4 of the Contraception, Sterilisation and Abortion Act 1977 permits a parent or guardian, medical practitioner or carer of any mentally subnormal female to administer any contraceptive to that female if it is considered in the best interests of the female to do so. A female is mentally subnormal if she is suffering from subnormality of intelligence as a result of arrested or incomplete development of mind to the extent that she is incapable of living an independent life or of guarding herself against serious exploitation or common physical dangers, or to the extent that she is incapable of

understanding the effective use of contraceptives or the desirability or need for their use.

It is not possible for any person to consent to the sterilisation of another person if that other person lacks the capacity to consent on their own behalf by reason only of their age (Contraception, Sterilisation and Abortion Act 1977, s. 7). Where a patient lacks the capacity to consent to an abortion because of mental incapacity, the certifying consultants must consult with a medical practitioner or another qualified and experienced person in the field who is able to make an assessment of the patient's condition and the likely effect on it of the continuance of the pregnancy or an abortion (Contraception, Sterilisation and Abortion Act 1977, s. 34).

Useful information about consent issues in child and youth health is available on the Ministry of Health's website and from the Office of the Children's Commissioner (see *Online resources*).

The Vulnerable Children Act (2014) has recently been introduced into New Zealand legislation. The focus of this Act is better protection for children from neglect and abuse (see *Online resources*).

Mental health nursing

In New Zealand, rights for the mentally ill are provided for in the Code of Rights in the same way as for any other consumer of healthcare services. Where a person has such a severe mental illness that it amounts to a mental disorder within the meaning of the Mental Health (Compulsory Assessment and Treatment) Act 1992 to the extent that the person requires compulsory assessment or treatment, then that person has additional rights under that Act (Part VI, ss. 64–75).

Standards and guidelines are important documents for nurses and other healthcare practitioners working in the **mental health** area, and are available through simple web searches or via the Ministry of Health website (see *Online resources*). These standards and guidelines may be revised from time to time.

Professional responsibility of nurses

All nurses, irrespective of where they practise nursing, have a professional responsibility to be acquainted with the law that relates to health care and nursing practice and are accountable under that law. While employers may provide education and training for nurses in this regard, it is important for nurses to be aware that it is their individual responsibility to maintain competence in and currency with legal and professional issues.

Disclaimer

This chapter is intended to provide a first point of reference for matters in respect of legal implications in nursing practice. It should not be acted or relied upon as a substitute for professional legal advice. Specialist legal advice should always be sought in relation to any particular circumstances.

Online resources

The websites provided here give links to documents related to issues discussed in this chapter.

Nursing Council of New Zealand (NCNZ)

Information relating to the competence, health and conduct of a nurse can be found at: www.nursingcouncil.org.nz/General-Public/Concerns-about-a-nurse

Information about standards and guidelines can be found at: www.nursingcouncil.org.nz/Publications/Standards-and-guidelines-for-nurses

International registration www.nursingcouncil.org.nz/Nurses/International-registration

Other organisations

Health and Disability Commissioner; Code of Health and Disability Services Consumers' Rights available as a leaflet, www.hdc.org.nz/media/24833/leaflet%20code%20of%20rights.pdf

Health Practitioners Disciplinary Tribunal; detailed information about the way in which the Tribunal has addressed various complaints and disciplinary actions for all healthcare practitioners, including nurses, www.hpdt.org.nz

Ministry of Health: Assessment and management of people at risk of suicide, www.health.govt.nz/publication/assessment-and-management-people-risk-suicide

Guidelines for discharge planning for people with mental illness, www.moh.govt.nz

Guidelines for medical practitioners using sections 110 and 110A of the Mental Health (Compulsory Assessment and Treatment) Act 1992, www.health.govt.nz/publication/guidelines-medical-practitioners-using-sections-110-and-110a-mental-health-act-1992

Guidelines for the role and function of duly authorised officers under the Mental Health (Compulsory Assessment and Treatment) Act 1992, www.health.govt.nz/publication/guidelines-role-and-function-duly-authorised-officers

Health and Disability Services (Safety) Act, www.health.govt.nz/our-work/regulation-health-and-disability-system/certification-health-care-services/health-and-disability-services-safety-act

Information about consent in child and youth health, www.health.govt.nz/publication/consent-child-and-youth-health-information-practitioners

Information on standards, www.health.govt.nz/our-work/regulation-health-and-disability-system/certification-healthcare-services/health-and-disability-services-standards

Involving families: guidance for involving families and whanau of mental health consumers/tangata whaiora in care, assessment and treatment processes, www.health.govt.nz/publication/involving-families

Making links: guidelines on service coordination for children and young people with severe mental health problems, www.moh.govt.nz/moh.nsf/Files/newftres/$file/newftres.pdf

National Mental Health Sector Standard: He Whariki Oranga Hinengaro, New Zealand Standard NZS 8141:2001, http://shop.standards.co.nz/scope/NZS8143-2001.scope.scope.pdf

New Zealand Nurses Organisation; information about the crucial nature of appropriate documentation by health professionals, www.nzno.org.nz/Portals/0/publications/Documentation,%202010-09.pdf

Office of the Children's Commissioner; a further useful resource in relation to consent in child and youth health, www.occ.org.nz/childrens-rights-and-advice/health-rights/

Overview of the health system, www.health.govt.nz/new-zealand-health-system/overview-health-system

Privacy Commissioner; including information on the Health Information Privacy Code, http://privacy.org.nz

Residential care and health of older people, www.health.govt.nz/our-work/life-stages/health-older-people/long-term-residential-care/residential-care-questions-and-answers

Vulnerable Children Act (2014), www.legislation.govt.nz/act/public/2014/0040/latest/DLM5501618.html See also Children's Action Plan, http://childrensactionplan.govt.nz/legislation-/legislation-guide/

Notes

a. For examples of cases that have been found to amount to professional misconduct and upheld by the High Court on appeal, see *Collie v Nursing Council of New Zealand* [2001] NZAR 74 (registered nurse working as a practice nurse found guilty of professional misconduct for accepting gifts from an elderly couple totalling NZ$25,000); *Harangi Biddle v Nursing Council of New Zealand*, HC Wellington, France J, 4 March 2003, AP 90/02 (registered midwife found guilty of professional misconduct for failing to assess and investigate a mother's concerns about postpartum symptoms). Findings of professional misconduct are reported in the *New Zealand Gazette* and in *Kai Tiaki: Nursing New Zealand*, the journal of the New Zealand Nurses Organisation.

b. *Staite v Psychologists Board*, HC Christchurch, Young J, 18 December 1998, P 52/98 22p.

c. Health Information Privacy Code 1994 issued by the Privacy Commissioner under the Privacy Act 1993 contains 12 rules that apply to health information about identifiable individuals.

d. Deciding what are reasonable steps will depend on the proposed use to be made of the information and its impact on the patient: for example, the case of *P v J* 27/10/98, High Court Auckland 117/98, where the High Court held that there was no interference with the privacy of the complainant who was concerned that her mental health background – and in particular a referral letter from a GP to a psychiatrist that the complainant said was not accurate – would affect her ability to get a job.

e. For example, section 22C of the Health Act 1956 provides that health information can be disclosed to specified persons including a medical officer of a penal institution, a probation officer, a social worker, the police, a Ministry of Health employee, the Ministry of Agriculture and Fisheries, the Land Transport Safety Authority; section 22D provides for disclosure to the Minister of Health by District Health Boards; section 22F provides for disclosure to other providers of health services on request for diagnostic and other treatment purposes.

f. *Healthcare Otago Ltd v Williams-Holloway* [1999] NZFLR 804, 812; and for other cases where the Court has ordered treatment against parents' wishes, see, for example, *Re J* [1996] 2 NZLR 134(CA), 3-year-old had life-threatening nosebleed; *Re P* [1992] NZFLR 95, twins born at 26/40 gestation needed blood transfusions; *Re CL* [1992] NZFLR 352, 4-year-old needed blood during congenital heart defect correction; *THJL v SL & LL* 4/11/97 Salmon J, High Court Auckland, M708/97, testicular biopsy ordered on 2-year-old and orchidectomy if malignant; *Re Norma* [1992] NZFLR445, chemotherapy ordered for 19-month-old Samoan girl with likely Ewing's sarcoma; *Auckland Healthcare Services v Lui* 11/7/96, High Court Auckland, M812/96, repair of partially detached retina ordered for 12-year-old boy. The High Court assumed legal guardianship of a 9-year-old boy in order to ensure that he received antiretroviral medication; *Keane, J, Auckland District Health Board v James Dee* [2015] NZHC 304 (27 February 2015). www.nzlii.org/cgi-bin/download.cgi/cgi-bin/download.cgi/download/nz/cases/NZHC/2015/304.pdf. For full discussion of the New Zealand legal position when parents refuse treatment for their children, see Manning (2001); the issues are also discussed in Chapter 7 in Keenan (2010).

g. The Protected Disclosures Act 2000 applies to both public and private sector organisations and the term 'serious wrongdoing' encompasses the following:

   a. an unlawful, corrupt or irregular use of public funds or public resources

   b. an act, omission or course of conduct that constitutes a serious risk to public health or public safety or the environment

   c. an act, omission or course of conduct that constitutes a serious risk to the maintenance of law, including the prevention, investigation and detection of offences and the right to a fair trial

   d. an act, omission or course of conduct that constitutes an offence

   e. an act, omission or course of conduct by a public official that is oppressive, improperly discriminatory or grossly negligent, or that constitutes gross mismanagement.

h. Section 77 of the Health Act 1956 empowers a Medical Officer of Health to enter any premises and examine any person believed to be suffering from, or recently exposed to, an infectious disease. Section 79 empowers a Medical Officer of Health to isolate a person to a hospital or other suitable place to prevent the spread of an infectious disease. This was used in May 1999 in Christchurch to prevent two intellectually disabled men from spreading AIDS. See also section 59 of the Tuberculosis Act 1948, which permits detention of patients in hospital; section 125 of the Health Act 1956, which permits examinations of children in public or private schools; and the Mental Health (Compulsory Assessment and Treatment) Act 1992 and the Alcoholism and Drug Addiction Act 1996, which permit detention for treatment.

References

Burgess M 2008 A guide to the law for nurses and midwives. Pearson Education, Auckland.

Keenan R (ed) 2010 Health care and the law, New Zealand, 4th edn. Brookers Ltd, Wellington.

Manning J 2001 Parental refusal of life-prolonging treatment for children: a report from New Zealand. J Law Med 8(3):263–85.

Ministry of Health (MOH) 2001 Reportable events guidelines. MOH, Wellington. Online. Available: www.health.govt.nz/publication/reportable-events-guidelines; accessed 7 Jan 2016.

Nursing Council of New Zealand (NCNZ) 2012a Competencies for enrolled nurses. NCNZ, Wellington. Online. Available: http://www.nursingcouncil.org.nz/Nurses; accessed 27 July 2016.

Nursing Council of New Zealand (NCNZ) 2012b Competencies for the nurse practitioner scope of practice. NCNZ, Wellington. Online. Available: www.nursingcouncil.org.nz/Nurses; accessed 27 July 2016.

Nursing Council of New Zealand (NCNZ) 2007 Competencies for registered nurses. NCNZ, Wellington. Online. Available: www.nursingcouncil.org.nz/Nurses; accessed 27 July 2016.

Nursing Council of New Zealand (NCNZ) n.d. Definition of practising. NCNZ, Wellington. Online. Available: www.nursingcouncil.org.nz/Nurses/Annual-practising-certificates; accessed 7 Jan 2016.

Nursing Council of New Zealand (NCNZ) n.d. Guidelines for competence assessment. NCNZ, Wellington. Online. Available: www.nursingcouncil.org.nz/Nurses/Continuing-competence/Competence-assessment; accessed 7 Jan 2016.

Vernon R, Chiarella M, Papps E 2013 Assessing the continuing competence of nurses in New Zealand. Journal of Nursing Regulation 3(4)19–24.

Vernon R et al 2012 Continuing competence for practice. In: Chang E, Daly J (eds) Transitions in nursing. Churchill Livingstone, Sydney, pp. 341–56.

Vernon R et al 2011 Confidence in competence: legislation and nursing in New Zealand. Int Nurs Rev 58(1):103–8.

Cases

Auckland District Health Board v James Dee [2015] NZHC 304 (27 February 2015)

Auckland Healthcare Services v Lui 11/7/96, High Court Auckland, M 812/96

Collie v Nursing Council of New Zealand [2001] NZAR 74

Harangi Biddle v Nursing Council of New Zealand, High Court Wellington, France J, 4 March 2003, AP 90/02 (Midwife)

Healthcare Otago Ltd v Williams-Holloway [1999] NZFLR 804, 812

P v J 27/10/98, High Court Auckland, 117/98

Pugmire v Good Health Wanganui Ltd (No 2) [1994] 1 ERNZ 174

Re CL [1992] NZFLR 352

Re J [1996] 2 NZLR 134

Re Norma [1992] NZFLR 445

Re P [1992] NZFLR 95

Re V [1993] NZFLR 369

Staite v Psychologists Board, High Court Christchurch, Young J, 18 December 1998, P 52/98

THJL v SL & LL 4/11/97, Salmon J, High Court Auckland, M708/97

Legislation

All of the following Acts can be accessed through www.legislation.govt.nz/default.aspx

Alcoholism and Drug Addiction Act 1966

Care of Children Act 2004

Children, Young Persons and Their Families Act 1989

Contraception, Sterilisation and Abortion Act 1977

Employment Relations Act 2000

Evidence Act 2006

Health (Retention of Health Information) Regulations 1996

Health Act 1956

Health and Disability Commissioner Act 1994

Health and Disability Commissioner (Code of Health and Disability Services Consumers' Rights) Regulations 1996

Health and Disability Services (Safety) Act 2001

Health Information Privacy Code 1994 and commentary [2008 edition] 2008

Health Practitioners Competence Assurance Act 2003

Holidays Act 2003

Human Rights Act 1993

Human Tissue Act 2008

Injury Prevention, Rehabilitation and Compensation Act 2001

Medicines Act 1981

Mental Health (Compulsory Assessment and Treatment) Act 1992

Minimum Wages Act 1983

Misuse of Drugs Act 1975

New Zealand Bill of Rights Act 1990

New Zealand Public Health and Disability Act 2000

Official Information Act 1982

Parental Leave and Employment Protection Act 1987

Privacy Act 1993

Protected Disclosures Act 2000

Protection of Personal and Property Rights Act 1988

Public Records Act 2005

Safety in Employment Act 1992

Trans-Tasman Mutual Recognition Act 1997

Tuberculosis Act 1948

Vulnerable Children Act 2014

Wages Protection Act 1983

CHAPTER

12

Placing communication at the centre of person-centred care

Jane Stein-Parbury

Learning outcomes

Mastery of content will enable you to:

- understand professional obligations to become skilled at communication
- recognise the process and content aspects of interpersonal communication
- explain how conflict styles affect collaboration with healthcare colleagues
- understand different types of nursing knowledge
- appreciate the importance of communication in the development of therapeutic relationships with clients and their families
- identify significant features and therapeutic outcomes of nurse–client helping relationships
- list nursing focus areas within the four phases of a nurse–client helping relationship
- differentiate authoritative and facilitative therapeutic communication techniques
- describe qualities, behaviours and communication techniques that affect professional communication
- relate emotional intelligence to communication competence
- understand how reflective practice promotes communication competence.

KEY TERMS

Active listening, p. 226
Authoritative interventions, p. 226
Collaboration with colleagues, p. 217
Communication, p. 210
Emotional intelligence, p. 232
Empathy, p. 228
Facilitative interventions, p. 226
Healthcare environments, p. 213
Interpersonal communication, p. 221
Intrapersonal communication, p. 221
Knowing the patient, p. 212
Mental models, p. 218
Non-verbal communication, p. 222
Paraphrasing, p. 229
Patient-centred communication, p. 213
Presence, p. 227
Self-disclosure, p. 231
Sympathy, p. 228
Team collaboration, p. 217
Therapeutic communication techniques, p. 225
Verbal communication, p. 221

Communication and person-centred nursing practice

Interpersonal communication involves the capacity to convey thoughts, feelings and attitudes through spoken, written and non-verbal means in order to exchange ideas and construct human meaning. Most professional people are required to be effective communicators in the conduct of their work, and the nursing profession is no different. However, the content and process of communication varies across professions according to the particulars of context. For example, professional engineers are often required to communicate effectively through technical report writing; computer programmers are required to communicate through symbolic languages unique to the computing world; and salespeople must acquire skills of persuasion in order to be successful.

While the skills of effective communication may be similar to those in other professions, the knowledge and attitudes required for therapeutic intentions are particular to the nursing context. For example, a nurse encouraging a depressed client to engage in physical exercise may use persuasive communication techniques that are similar to those of a salesperson. However, the intention of encouraging a depressed client to be active is based on knowledge that physical movement affects mood; that is, persuasion is used for the purpose of helping the client. Person-centred care means that communication is always 'for' the client; the nurse is morally positioned to communicate in a manner that serves the client's best interest. Clients perceive that good communication with nurses is centred on their needs and concerns (McCabe 2004). Therefore, effective communication is a core element in person-centred care (Kitson et al 2013).

This chapter presents the basic aspects of effective and therapeutic communication within the context of person-centred nursing practice. The qualities, behaviours and communication techniques described characterise professionalism in therapeutic relationships with clients and collaborative relationships with colleagues. Although the terms 'client' and 'patient' are often used interchangeably, the same principles can be applied when communicating with any person in any nursing context.

The context of nursing practice

Some aspects of **communication** stand out as more relevant than others; it is therefore important to consider the particular aspects of effective professional communication within the context of nursing practice. In the particular context of nursing, effective interpersonal communication

RESEARCH HIGHLIGHT

Research focus

In order for nurses to communicate effectively with patients they need a clear understanding of what constitutes 'effective' communication from a variety of perspectives. Previous studies have examined patients' perspectives, but it is also important to understand nurses' perceptions of effective communication. Participants in this study, clinicians and educators, identified what they considered to be effective communication.

Research abstract

Participants viewed videos of simulated interactions between nurses and patients. They recorded their observations of the interactions in relation to what they considered effective and less effective communication, and how they would provide feedback to the nurse in the video. They then participated in focus group interviews which were audio-recorded and analysed thematically. The findings were reported as four main themes: approach, manner, technique and communication. Approach included the degree of person-centredness evident and was considered the overarching theme; manner included engagement, being friendly and tone of voice; techniques included types of questions, explaining and checking understanding; and communication included non-verbal and verbal behaviour.

Evidence-based practice

- The extent to which nurses engage the patient during interactions is central to effective communication.
- Focusing on the patient's concerns and needs is not only evidence of effective communication but also of the degree of patient-centredness in interactions.
- Nurses understand that effective communication includes both techniques/skills and general demeanour.
- Nurses should neither devalue nor diminish the importance of how they approach patients during interpersonal encounters.

Reference

O'Hagan et al 2014 What counts as effective communication in nursing? Evidence from nurse educators' and clinicians' feedback on nurse interactions with simulated patients. J Adv Nurs 70(6):1344–56.

is required for the exchange of health-related information, the promotion of therapeutic relationships with clients and the development of collaborative relationships with other healthcare professionals. Nurses must be competent in the use of effective interpersonal communication skills and knowledgeable about healthcare matters, while simultaneously assuming an attitude of being 'for' the client. Focusing attention on the client is central to communication in nursing practice (O'Hagan et al 2014).

The competent nurse is able to therapeutically adjust and accommodate the use of effective communication skills in response to specific clinical contexts. Context helps to shape client needs. For example, a client who is undergoing diagnostic tests for possible cancer does not need detailed information about managing the possible side effects of radiotherapy (as might a client about to undergo radiotherapy). Such information might increase client anxiety during the diagnostic phase of an illness.

In addition to influencing the content of communication, context also affects the processes of communication. For example, intensive-care nurses rely on non-verbal communication from their patients when interacting with patients who are rendered speechless by mechanical ventilation, and community nurses spend much time enabling client self-care through health education communication. Consideration of context requires critical thinking about what is of benefit in meeting client needs, and such thinking is based on the nurse's understanding of the therapeutic value of communication.

Why nurses need to communicate

A public expectation that nurses are effective communicators is embedded into standards for practice for nurses (Nursing and Midwifery Board of Australia (NMBA) 2006, Nursing Council of New Zealand (NCNZ) 2007, see also Chapters 10 and 11), and professional codes of ethics and conduct (Australian Nursing and Midwifery Council (ANMC) 2008a, 2008b, Nursing Council of New Zealand 2009, see also Chapter 9). Standards for practice include the nurse's ability to collect relevant information from clients about their functional health status, and effective communication is required to elicit such data during client interactions. Standards for practice also require a professional nurse to provide relevant healthcare information to clients and their families in an effort to facilitate their understanding of health events and encourage their active participation in healthcare decisions. Effective communication is essential to the provision of such information. Enabling therapeutic relationships with clients through communication is one way that nurses demonstrate expected public standards of professional competency and conduct. The reason that communication is built into standards for practice and codes of conduct in nursing is that effective communication promotes client health and wellbeing (Fleischer et al 2009).

Dynamics of interpersonal communication

Interpersonal communication operates at two levels: *content* and *process*. The content level encompasses what is being discussed; that is, the subject matter. For example, when interviewing a client for the first time the content will most likely involve a history of the client's health status and immediate care needs. The content level of communication is easily identified. The second level, that of process, is more subtle. This level involves *how* something is communicated rather than *what* is being communicated. For example, if the nurse conducting an initial interview with a client does so in a cold, clinical manner by simply asking a series of questions that follow a pre-set format, the client may not perceive the nurse to be genuinely concerned and caring. In this way the process level reveals the nature of the relationship between nurse and client. Content and process go hand in hand. For example, if the nurse is warm and open, demonstrating genuine interest in the client (process level), then clients are likely to be willingly forthcoming with information about their health status and concerns (content level).

Interpersonal communication is effective when meanings are shared between people. Messages that are sent are received with understanding when the person receiving the message understands the intent of the sender. However, interpersonal communication is not quite this straightforward. The intention of the sender of a message may not be easily understood by the receiver; and the receiver also has intentions that might not be clear to the sender. There are numerous aspects to consider in being an effective communicator.

Effective communicators are those people who can assert their own ideas while being able to respond with understanding to other people's ideas. That is, skilled communicators are able to blend and balance two basic types of communication techniques: *responsive* and *assertive*. Responsive techniques facilitate mutual understanding between people; that is, from the same point of view. For example, a nurse who expresses empathy towards the suffering of a client is being responsive. Responsive techniques operate from an empathic understanding of a health event from the client's perspective. In contrast, assertive techniques offer new insights and information from the nurse's knowledge and professional perspective, for example, health teaching and

education. Assertive techniques promote understanding of differing points of view.

Skills in being both responsive and assertive are what constitute effective communication in nursing practice (Figure 12-1). Nurses who are skilled at being assertive yet are not responsive are at risk of being too domineering, and may not take into consideration the feelings and personal perspectives of clients. Such nurses may expect clients to simply 'do as they are told'. Nurses who are skilled at being responsive yet are not assertive are at risk of becoming overly accommodating, and may not challenge a client's faulty thinking or misinformation. Moreover, assertive skills are required when collaborating with other healthcare professionals, as nurses present their views of client care from a nursing perspective. Nurses who are skilled in assertive communication techniques are more likely to advocate for clients and peers who are vulnerable, afraid or experiencing a threat to their human rights (MacDonald 2007).

Generally speaking, assertive skills are often used when advocating for clients while responsive skills are employed for the purpose of building relationships with patients and their families, which are based on the nurse's understanding of their needs, concerns and desires. Developing such understanding is the heart of person-centred care. In recent reviews of the concept of patient-centred care, communication is consistently identified as a key element (Constand et al 2014, Kitson et al 2013, Sidani & Fox 2014). This is because person-centred care is based on collaboration between clients and healthcare professionals in which clients are active participants in their care. Therefore, nurses must use communication and relationship-building skills in order to understand what clients desire in order to respond to their needs 'as they perceive them to be'.

Knowing the patient

Through communication the nurse comes to know the patient/client, not only as a patient or client, but also as a person with a unique perspective and life history. Termed '**knowing the patient**', this concept entails understanding what the health situation means to the client (Zolnierek 2014). By understanding the situation from the client's point of view, nurses are able to not only individualise care but also create a relationship based on empathic understanding (Bundgaard et al 2012, Mantzorou & Mastrogiannis 2011). Knowing the patient as a person is a critical aspect of safety and quality in nursing practice; more importantly, it is the essence of person-centred care.

Liaschenko and Fisher (1999) offer a useful schema to understand the meaning of knowing the patient. They describe three types of knowledge that nurses use in the conduct of their work. The first is termed *case knowledge*, and encompasses objective facts such as anatomy and physiology, disease processes and pharmacokinetics. The next is *patient knowledge*, which includes understanding how a client is responding to a particular health event, for example, side effects of medications and the experience of pain. The third type is *person knowledge*, which includes an intimate understanding of the person's life history, their values and belief systems and their familial connections. Patient knowledge includes both physiological as well as emotional responses, which can be observed; however, person knowledge requires communication with the client. Figure 12.2 illustrates that the three types of knowledge intersect; it is in the intersecting spaces that nurses work. They use all three types of knowledge in a holistic manner.

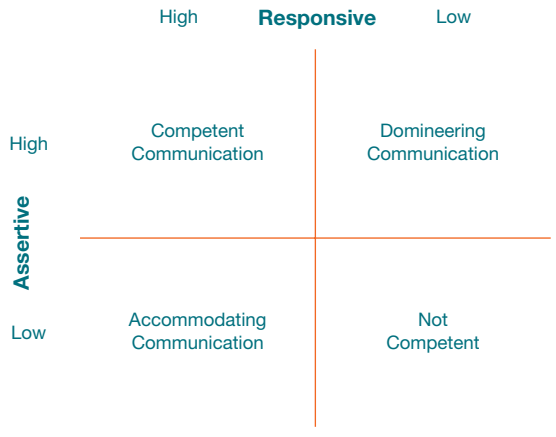

Figure 12-1 **Communication competence.**

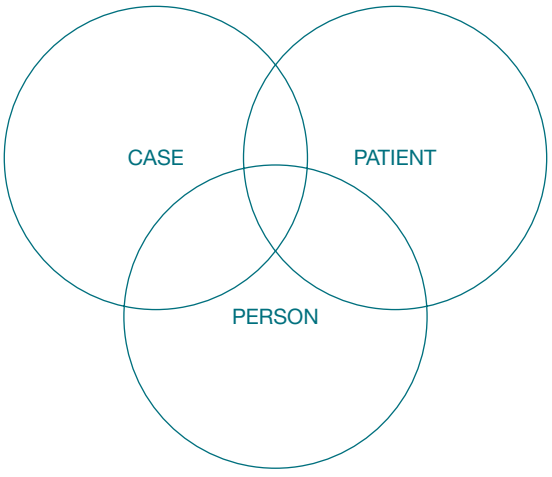

Figure 12-2 **Types of nursing knowledge.**

According to this schema, the concept of 'knowing the patient' is encapsulated in patient and person knowledge. The degree to which a nurse comes to 'know the patient' varies with context. For example, in a study conducted in an outpatient endoscopy clinic, the nurse identified 'knowing the patient' in a practical sense, for example, their immediate concerns about the procedure they were about to undergo (Bundgaard et al 2012). In an emergency situation, it is unlikely that person knowledge will be of critical relevance (unless making a decision to cease treatment).

Patient-centred communication

Current efforts in healthcare systems reform are aimed at making communication, and care itself, more patient-centred (Newell & Jordan 2015, van Dulmen 2011). Being patient-centred means that the needs and expectations of patients are placed at the heart of communication and, more importantly, their voice in decision-making about their care is heard and heeded. **Patient-centred communication** contrasts with what has been a more traditional style focused on biomedical matters such as signs and symptoms. In nursing practice, being patient-centred contrasts with being task-focused. There is evidence to suggest that patient-centred communication increases not only patient satisfaction but also adherence to treatment and general improved health (Charlton et al 2008, Newell & Jordan 2015); the reason is that patients become more active participants in their own care.

While it may seem obvious that patient-focused communication should be standard, studies have demonstrated that communication often does not take into account what patients want and how they feel (Bolster & Manias 2010, Nordehn et al 2006). What is important to realise is that patients have varying desires to participate in care; some want to follow orders and 'toe the line', while others want to make decisions for themselves (Tobiano et al 2015). Patient-focused communication establishes the degree to which the patient desires to participate and their preferences for treatment.

Using a patient-focused approach to communication not only results in understanding how patients want to participate in care, but also includes understanding their nursing care needs, such as sleep problems, anxiety and pain. Unfortunately, such understandings are not always evident, as nurses often misperceive, underestimate or overestimate patient needs (Florin et al 2005, Sobo 2004). For this reason it is important that nurses share their perceptions with patients, clarify their understanding and paraphrase what the patient seems to be communicating. All of these skills are reviewed later in the chapter.

Healthcare environments and communication

Current **healthcare environments** can work against effective communication, especially when there is an emphasis on task completion and a sense of little time to do so. There are often competing demands in actual nursing practice that limit nurses' capacity to spend time interacting and developing therapeutic relationships with clients. Most of the time nurses only interact with patients in hospital when performing a task or function (McCabe 2004, Newell & Jordan 2015). Lack of time is a factor that is often espoused by nurses as they perceive that communication that is focused on relationship-building takes more time than that focused on tasks (Chan et al 2012). The espoused professional value of the importance of therapeutic relationships is often at odds with the values of tasks needed to be completed in set timeframes, especially in organisational settings such as hospitals. In current healthcare systems, which are focused on efficiency, there is little value given to the importance of communication, and relating to and coming to know the patient is often not viewed as nursing 'work' (DeFrino 2009). Professional nurses must learn to reduce this variance by remaining true to the value placed on communicating with and relating to clients, in the knowledge that this is central to therapeutic practice. More importantly, they should be active in healthcare reform to redress the devaluing of communication with clients.

Communication and interpersonal relationships

At the core of nursing are caring relationships formed between nurses and clients, and communication is the means of establishing these relationships and coming to know the client. The knowledge gained about the client through relational work is at the heart of nursing practice, and the communication skills required are not simply a matter of 'being nice' to patients but rather are a professional duty (DeFrino 2009). The nurse's ability to relate to others rests on effective interpersonal communication, which includes being able to take the initiative in establishing and maintaining communication, to be authentic (one's self), and to respond appropriately to the other person.

Professional relationships are created through the nurse's application of knowledge, understanding of human behaviour and communication, and commitment to the moral stance of being 'for the client'. Having a philosophy based on caring and respect for others will help the nurse

be more successful in establishing relationships of this nature with clients. Being responsive to client needs is basic to therapeutic communication. Nurses also communicate in the context of other professional relationships that may require an emphasis on being assertive. For example, when collaborating with a multidisciplinary healthcare team, nurses must be able to assert their views from the perspective of nursing knowledge.

Nurse–client relationships

Helping relationships with clients are central to therapeutic nursing practice. In such relationships, the nurse assumes the role of professional helper and comes to know the client as an individual who has unique health needs, human responses and patterns of living. Knowing the client is a central caring behaviour that also functions as an aid to clinical problem-solving and decision-making and is also central to client participation in care (Zolnierek 2014). Through knowing the client, nurses are able to understand health events from the experience of the client, adapt their care to the unique needs of the individual and judge how a person is responding to healthcare events. This type of knowing requires effective communication between nurse and client so that mutual understanding can be achieved.

Therapeutic and social relationships

Communication involves complex social activity more than other aspects of nursing practice, such as technical proficiency and skills. Through communication, nurses relate to a variety of people during direct client care and within healthcare organisations. However, the social activity in nursing is different from other forms of social activity, such as friendships. Communication in nursing is professional and therapeutic, and is thus different from communication in friendships.

In therapeutic nurse–client relationships there is an explicit timeframe, a goal-directed approach and a high expectation of confidentiality. The nurse establishes, directs and takes responsibility for the interaction, and the client's needs take priority over the nurse's needs. In acting in the client's best interest, the nurse maintains professional boundaries.

There are clear legal boundaries, as nurses must practise within the scope of their professional knowledge and skill, while codes of conduct (ANMC 2008a, NCNZ 2009) specify ethical boundaries. However, professional boundaries are not always as clearly laid out as geographical ones, for example those between countries. Nurses cross professional boundaries when they do not act in the best interest of the patient (Hartlage 2012), but rather act in a manner that meets their own needs, such as the need to be liked. Having a sexual relationship with a client is a clear boundary violation, as it is focused on the nurse's needs. More subtly, nurses can cross boundaries when they burden clients with their own problems, such as being short-staffed and under pressure. The relationship is always 'for the patient' and this is the best principle to follow in maintaining professional boundaries.

The relationship is also characterised by the nurse's non-judgemental acceptance of the client. Acceptance conveys a willingness to hear a message or to acknowledge feelings. It does not mean the nurse must always agree with the other person or approve of the client's decisions or actions.

A therapeutic relationship between nurse and client does not just happen – it is created with care and skill and is built on the client's trust in the nurse. In her seminal work, Patricia Benner (1984) prefers not to use the term 'therapeutic' because of its association with psychotherapy, yet describes a helping role of the nurse in a similar fashion. She states that 'helping encompasses transformative changes in meanings, and sometimes simply the courage to be with the client, offering whatever comfort the situation allows' (Benner 1984:48). A helping relationship between nurse and client is one in which the nurse comes to understand the patient as a person with a unique point of view. Forming such relationships enables nurses to provide care that is individualised to that person and their family, therefore providing person-centred nursing care.

The nurse–client relationship is characterised by a natural progression of four goal-directed phases that often begin before the nurse meets the client, and continue until the caregiving relationship ends (Box 12-1). Even a brief interaction uses an abbreviated version of the same *pre-interaction*, *orientation*, *working* and *termination* phases. For example, the nursing student may gather client information to prepare in advance for caregiving, meet the client and establish trust, accomplish health-related goals through use of the nursing process and say goodbye at the end of the day.

Socialising is often an important initial component of interpersonal communication. It helps people get to know one another and relax. It is easy, superficial and not deeply personal, whereas therapeutic interactions are often more intense, difficult and uncomfortable. A nurse often uses social conversation to help the client feel comfortable and lay a foundation for a closer relationship. Clients value nurses being 'friendly and chatty' (Henderson et al 2007, McCabe 2004). An informal and warm communication style helps establish trust, but nurses must get beyond social conversation to talk about issues or concerns

BOX 12-1 Phases of the helping relationship

Pre-interaction phase

Before meeting the client, the nurse:

- reviews available data, including the medical and nursing history
- talks to other caregivers, who may have information about the client
- anticipates health concerns or issues that may arise
- identifies a location and setting that will foster comfortable, private interaction
- plans enough time for the initial interaction.

Orientation phase

When the nurse and client meet and get to know one another, the nurse:

- sets the tone for the relationship by adopting a warm, empathetic, caring manner
- recognises that the initial relationship may be superficial, uncertain and tentative
- expects the client to test the nurse's competence and commitment
- closely observes the client and expects to be closely observed by the client
- begins to make inferences about client messages and behaviours
- assesses the client's health status
- prioritises the client's problems and identifies the client's goals
- clarifies the client's and nurse's roles
- forms contracts with the client that specify who will do what
- lets the client know when to expect the relationship to be terminated.

Working phase

When the nurse and client work together to solve problems and accomplish goals, the nurse:

- encourages and helps the client to express feelings about their health
- encourages and helps the client with self-exploration
- provides information needed to understand and change behaviour
- encourages and helps the client to set goals
- takes actions to meet the goals set with the client
- uses therapeutic communication skills to facilitate successful interactions
- uses appropriate self-disclosure and confrontation.

Termination phase

During the ending of the relationship, the nurse:

- reminds the client that termination is near
- evaluates goal achievement with the client
- reminisces about the relationship with the client
- separates from the client by relinquishing responsibility for their care
- achieves a smooth transition for the client to other caregivers as needed.

affecting the client's health. During social conversation, clients may ask personal questions about the nurse's family, place of residence and so on. Students often wonder if it is appropriate to reveal such information; that is, to self-disclose. In an attempt to 'be professional' they sometimes assume it is inappropriate to share anything of themselves. Although a high degree of self-disclosure is characteristic of intimate friendships, it does not fit the context of a therapeutic relationship; however, nurses can use self-disclosure to benefit the relationship with the client, provided they remain professional and do not overstep their professional boundaries (Stein-Parbury 2014).

Nurses often encourage clients to share personal stories; in doing so, nurses come to understand the context of other people's lives and learn what is meaningful for them from their perspective. For example, a nurse asked a client to tell about a time in his life when he had to make a hard decision. He related the following story:

> **When I was a young man, I worked on the family farm. An uncle died and left me some money. All of a sudden I could afford to go to the city for a university education, but Dad didn't want me to go because he needed me there. I had to decide whether to stay or go, and it was hard, because at first I just wanted to get away. I talked to our priest, and he said it was up to me, to pray about it and then do what my heart told me to. So I stayed. Oh, I've thought from time to time what might have been, but I never regretted it. I've had a good life on the land.**

From this brief story, the nurse understood that it was important to the client to put his family's needs above his personal desires, and that seeking spiritual guidance was an important component of his decision-making.

Nurses also provide information and use strategies that help clients understand and change behaviour. The nurse also acts as an advocate to keep the client informed of healthcare alternatives and give support in decision-making. For example, the nurse can ask clients and family members for input and suggestions about goals, interventions and evaluation of the plan of care. This type of mutuality (give-and-take, creative mutual exchanges) has been shown to balance power and respect, and to promote productive provider–client communication (Tejero 2012). It gives the other person a greater sense of purpose and

direction, encourages personal responsibility for health, helps establish priorities for care, gives the opportunity for self-expression and strengthens the client's problem-solving ability. This depends on the vulnerability of the client; that is, the degree to which personal resources are available, adequate and appropriate to the situation at hand. Information is one such possible resource.

Nurse–family relationships

Providing person-centred health care is not only focused on individual clients, but also includes involving families, which is being family-centred (see also Chapter 15). The same principles that guide one-to-one helping relationships apply when the client is a family unit, although communication within families requires additional understanding of the complexities of family dynamics, needs and relationships. For example, when communicating with families there is often a 'spokesperson' who may be the primary carer, but could also be the family member who is most knowledgeable about health matters or who knows the client most intimately.

Family members have needs for collaboration and involvement in care when their loved ones are in need of health care (Bauer & Nay 2011, Tallon et al 2015, Wong et al 2015). This is especially true when their loved one is in a highly vulnerable state, such as being a patient in an intensive care unit, being a child in hospital or experiencing cognitive impairment in dementia. The communication needs that are most relevant to family members are the need for information about their family member's situation. Nurses are well placed to provide such information, especially as families have the most contact with nursing staff in the majority of healthcare settings.

In addition to their need for information, families require emotional support from nurses. Such support is perceived when nurses listen to their concerns (Tallon et al 2015). It is important for nurses to explore these concerns through clarifying and asking relevant questions. Often, their concerns are related to the need for information and assurance as to their loved one's comfort and wellbeing.

While it is important that nurses recognise and meet the needs of families, it is equally important that they understand that families are an important source of

RESEARCH HIGHLIGHT

Research focus

Patients admitted to an intensive care unit (ICU) are critically ill and often unable to speak because they are mechanically ventilated (with a tube in their airway). The involvement of family members is paramount, not only because they are distressed but also because they are in a position to provide comfort to their family member. For this reason they rely on nurses to keep them informed of their family member's situation, and nurses can turn to them for information about their family member. It is important that nurses understand the communication needs of families whose loved one is in ICU. This study is an exploration of families' experiences of interpersonal interactions with ICU staff.

Research abstract

This study was an exploration of the experiences of family members of critically ill patients who were admitted to an ICU in a major metropolitan Australian hospital. In-depth interviews that focused on the participants' experiences when interacting with ICU staff were conducted with 12 participants. Data were analysed based thematically on the principles of grounded theory, with three major themes identified. The first was 'obtaining information', which included strategies used to obtain information and using nurses as communication channels. The second theme related to the type of language used, such as using lay terms and being open and honest. The final theme was 'supportive communication', which was reassuring to the participants.

Evidence-based practice

- Obtaining information is very important to families and they usually turn to nurses to gain such information.
- Families want honest communication and do not want information 'sugar-coated' by nurses in an effort to avoid distressing them.
- The language used in conveying information to families needs to be provided in a way that they understand so nurses need to be mindful about using 'medical jargon'.
- Families found it reassuring when the provided information was consistent.
- Families felt support when nurses responded to their non-verbal cues that indicated they were distressed, anxious or confused.
- Although this study involved critically ill patients, the findings are not confined to ICU. They are relevant to any area of nursing.

Reference

Wong et al 2015 Families' experiences of their interactions with staff in an Australian intensive care unit (ICU): A qualitative study Intensive Crit Care Nurs 31:51–63.

information about clients. They are in a position to provide relevant health information and insights into the person who is the client. In addition, they are often in a position to act as advocates and speak on behalf of the client (Stein-Parbury et al 2015).

Healthcare team relationships

Nurses are members of a larger healthcare community and often function in roles that require interaction with multiple healthcare team members. The basic elements of effective communication that apply to the nurse–client relationship are also relevant in relationships with colleagues. That is, nurses must be responsive in understanding the views of their professional colleagues, and they must also be assertive in stating their views about client care. Communication in relationships with colleagues may be geared towards team-building, facilitating group process, collaboration, consultation, delegation, supervision, leadership and management. Various communication skills are needed, including presentational speaking, persuasion, group problem-solving, providing performance reviews and writing business reports.

Both social and therapeutic interactions are needed between the nurse and other healthcare team members to build morale and strengthen relationships within the work setting. Nurses need friendship, support, guidance and encouragement from one another to cope with the many stressors imposed by the nursing role, and must extend the same caring communication used with clients to build positive relationships with colleagues and co-workers.

Collaboration in healthcare team communication

In the contemporary healthcare climate there is a focus on enhancing teamwork and interprofessional collaboration that is focused on improved quality and safety. In part this is due to reports that demonstrate that poor and inadequate interprofessional communication is a major factor in events that result in patient harm (Brock et al 2013). Pannick et al (2014) identified that staff communication and **collaboration with colleagues** was a major theme in a review of evidence related to quality and safety of general medical units, rather than specialised units that have more stable teams such as intensive care or operating theatre units. Therefore, improving collaborative teamwork as a way to enhance positive patient outcomes is receiving attention because this is believed to have a greater effect than other strategies (Barrow et al 2015).

Team collaboration works best when members of the team are able to communicate effectively and

RESEARCH HIGHLIGHT

Research focus

While teamwork in health care is considered important, relying on traditional concepts about 'teams' (such as sports teams) does not take into account that healthcare professionals have different professional backgrounds, perspectives and identities. In addition, traditional notions of 'teams' do not address the social structures and culture of healthcare organisations, for example, the hierarchical nature of most hospital systems. More importantly, healthcare teams are often assembled 'ad hoc' with fluid and changing membership.

Research abstract

In this New Zealand study, 14 senior medical registrars and consultants and 17 nursing managers, clinical nurse consultants and nurse practitioners were interviewed. The interviews were focused on how the participants viewed interprofessional, collaborative practice and their ways of working as team members. The findings revealed that nurses and doctors used different parameters in evaluating each other's ability to contribute to care decisions. While they both recognised that biomedical discourse was dominant, the doctors recognised that it is the nurses who have intimate knowledge of the patient, as a person not as a disease. In addition, doctors perceived that nurses had a holistic view while theirs was more focused on the illness and treatment. While doctors were more individualistic and autonomous in their approach to care, nurses were viewed as collectivist and protocol-driven.

Evidence-based practice

- Simply having a shared goal, such as the delivery of quality patient care and good communication, is not sufficient for creating a functioning interprofessional team.
- Nurses and doctors operate from different professional perspectives, with nurses having knowledge of the person who is the patient.
- Nurses should value their knowledge of the patient as important information to contribute when collaborating with other healthcare professionals.

Reference

Barrow M et al 2015 Collaborating in healthcare delivery; exploring conceptual differences at the 'bedside'. J Interprof Care 29(2):119–24.

develop an understanding of each other's perspective. In doing so they develop what is termed a 'shared mental model' (McComb & Simpson 2013). Effective collaboration in the form of interdisciplinary rounds has proven to be an effective way to decrease errors and improve patient safety; these rounds work best when there are structured systems for the communication of patient information. Such systems are 'shared **mental models**', which have been shown to improve quality and safety. One of the most widely used formats is the ISBAR tool, which is used for patient handover, as described in Skill 12-1.

SKILL 12-1

Patient handover

Delegation and other considerations

Patient handover can be conducted by any healthcare professional providing care for the patient. Where possible, the registered or enrolled nurse who is providing direct care for the patient should be the one to provide the handover. If this is not the case, the nurse in charge or a senior nurse familiar with the patient should provide handover.

Equipment

- Patient handover sheet
- Patient bedside folder or charts
- ISBAR checklist

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
Critical decision point: Prior to handover, review all your patients and charts to ensure the information that you are going to give is accurate and up to date.	
1. Inform the patient prior to starting handover that during the change of shift you will be informing the oncoming nurse about their progress and any updates to their care plan.	An increasing number of healthcare facilities conduct handover at the bedside. To a patient who is new to the ward or unfamiliar with the handover procedure, this may be confronting or confusing. Remember to ensure patient confidentiality when conducting a bedside handover – all confidential information should be discussed later and in a private area (Higgs et al 2012).
2. Assess patient comfort, offer toileting and provide analgesia where appropriate.	It is important that you make sure your patient is comfortable and pain-free prior to handover. Although standardised handovers are designed to shorten handover, delays are possible (Street et al 2011).
3. Gather all appropriate documentation including patient handover sheet, patient folders or notes and ISBAR checklist.	Ensuring that all required information is available will prevent interruptions and ensure smooth delivery of patient information.
Critical decision point: Prior to commencing handover, it is important to identify that both healthcare professionals know and are familiar with the ISBAR checklist.	

STEPS	RATIONALE
4. Commence handover of your patient following each key characteristic of the ISBAR mnemonic.	
a. Identify – identify yourself, your role, your ward or location – identify the name, role of the receiver – identify the patient: include name, patient ID number, date of birth, age, gender.	Introducing yourself professionally improves collegiality and ongoing or future working relationships. To prevent errors, use a minimum of three (3) identifiers for each patient, when handing over (South Australia Health 2012).
b. Situation – inform the receiver of the reason for the patient's admission (or for your call if handover is external) – provide any additional patient information, including health status.	Explain to the receiver what is happening to the patient and why you are providing handover. Depending on the location and mode of communication, the situation may be obvious.
c. Background – provide relevant details such as presenting complaint, past history, assessment, investigations and any interventions.	Explain the story of the patient and identify the current problem, relevant information and any interventions (medication, IV fluids, CT scans) that have been completed (LeMone et al 2014, Marshall et al 2009).
d. Assessment – provide an outline of what you believe is wrong with the patient. Give your assessment of the patient's current health status.	It is important to utilise critical thinking based on the assessment of the patient, and not an opinion. Make sure this information is clear and not confusing to the receiver.
e. Request – state what you want from the receiver. Make sure the receiver understands what is being asked of them.	Be specific about what you want from the receiver – patient transfer, patient review, medication or patient handover.

■ **Critical decision point: Depending on the health profession (medical officer, registered nurse, physiotherapist), the purpose of the handover and the information received may vary; however, the overall structure of the information received should be standardised.**

RECORDING AND REPORTING

- Record assessment findings in patient's healthcare record following local hospital policy and protocols.
- Report any abnormal data following comprehensive assessment to the senior nurse, acute pain service or another appropriate medical officer.

HOME CARE CONSIDERATIONS

- Has a discharge plan been created?
- Has the client received information about the ongoing plan and follow-up arrangements?
- Do the family or significant others have concerns or need information to help with the plan?

Nursing knowledge and healthcare team collaboration

When nurses collaborate with other healthcare professionals they bring knowledge that is specific to the practice of nursing. While nurses can communicate their knowledge of the patient's clinical condition (case knowledge), their focus is related more to the patient and person knowledge. Their focus on patient knowledge means that they will bring an understanding of how the patient/client is responding to their clinical condition and its treatment, for example, the degree of distress experienced or a side effect of medication. In addition, they are likely to know the private, idiosyncratic world of the patient (person knowledge), including their values and belief systems. It is for this reason that interprofessional communication can break down because different professionals operate from a different, albeit potentially compatible, knowledge base (Barrow et al 2015, Stein-Parbury & Liaschenko 2007); they do not share the same 'mental model'.

The potential breakdown in communication may result in conflict between professionals because they simply do not fully understand the perspective of the other and do not make the communicative effort to build mutual understanding. Conflict in communication is not necessarily negative; in workplace situations it can be positive as multiple perspectives are brought to bear in solving problems.

Collaboration and conflict

When conflict does arise, there are a number of ways that a healthcare professional can respond. They can become:

- **aggressive and competitive – not attending to others' concerns and running rough shod over others;**
- **passive and avoidant – not engaging and evading the conflict;**
- **accommodating and submissive – neglecting own concerns and acquiescing to others;**
- **compromising and finding the middle ground – partially satisfying both concerns; or**
- **collaborative and understanding – fully satisfying both concerns (Thomas & Killman 1977).**

These ways of responding in a conflict situation directly relate to communication competence as depicted in Figure 12-3. An aggressive response is domineering communication; a submissive response is accommodation communication. Avoiding or evading conflict is considered to be ineffecitive at resolving conflicts. The competent communicator will approach conflict in a collaborative way. A compromising response relates to all aspects of communication competence. Finding a middle ground through compromise, negotiating a 'give-and-take' solution, may work in some contexts, such as conflict over workload; but a compromise in the healthcare setting may jeopardise patient safety and wellbeing. Collaboration, where all voices are heard and understood, including the patient's viewpoint and wishes, has been shown to result in quality and safety in the healthcare arena (Pannick et al 2014).

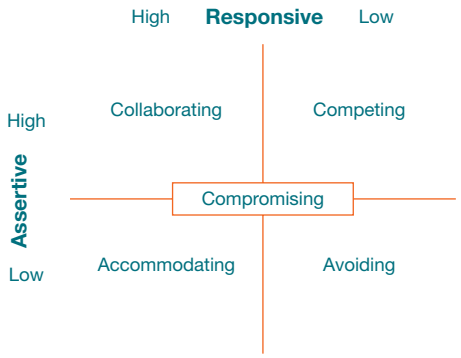

Figure 12-3 Styles of conflict responses.

Adapted from Thomas KW, Kilmann H 1977 Developing a forced-choice measure of conflict-handling behavior: the 'mode' instrument. Educ Psychol Meas 37(2): 309–25.

Evidence shows that nurses who work in a clinical setting tend to be accommodating and submissive when dealing with interprofessional conflict (Iglesias & de Bengoa Vallerjo 2012, Kaitelidou et al 2012, Mahon & Nicotera 2011). They are likely to meet conflict in the workplace in a passive manner, rather than with active and assertive attempts to collaborate. While this tactic may keep the peace, failing to express a viewpoint that is different from others' can result in poor quality health care. People who use passive strategies are seen as more likeable and this may be one reason nurses behave this way. Another reason is that nurses are trained to communicate therapeutically; they focus on feelings, rather than finding solutions to conflict (Northam 2009). Because they are caring and compassionate towards patients, nurses may suffer under what Street (1992) has termed the 'tyranny of niceness'. That is, they may think that active assertion, which is required for successful negotiation, is not compatible with being a caring person (McCartan & Hargie 2004).

• CRITICAL REFLECTION POINT

View the video clip titled 'Just a Routine Operation' which can be found at https://www.youtube.com/watch?v=JzlvgtPIof4

After viewing, consider the following questions:

1. **How did the nurses respond to this critical situation? What did they do? What did they say? Note especially**

when they brought the tracheostomy trolley into the room.

2. **How did the doctors respond to the nurses in this situation, especially when they brought in the tracheostomy trolley and discussed the intensive care unit (ICU) bed? What evidence was there that they heard and registered what the nurses said?**
3. **Why did the nurse cancel the ICU bed after she had booked it for the patient? What made her think that she was overreacting to the situation?**
4. **What could the nurses have done differently in this situation?**

Not only are passive strategies, such as avoiding and giving in, not always successful in resolving the conflict, but they are also associated with increased stress and decreased mental wellbeing in nurses (Chang et al 2007). Therefore, it is important that nurses learn how to deal with workplace conflict through the use of assertive skills. When used deliberately, compromising and acquiescing can be assertive in their own right; however, more active assertion is often required when dealing with workplace conflict. Successful resolution of conflicts can bring people closer and adds to satisfaction and creativity in the workplace; when handled poorly, conflicts can create extra strain and tension. More importantly, workplace conflict affects patient outcomes and leads to errors (Northam 2009).

Levels of communication

Nurses use different levels of communication in their professional role. The nurse's communication skills need to include techniques that reflect competence at each level.

Intrapersonal communication

Intrapersonal communication is a powerful form of communication that occurs within an individual. This level of communication is also called self-talk, self-verbalisation, self-instruction, inner thought and inner dialogue. People's thoughts strongly influence perceptions, feelings, behaviour and self-concept. Intrapersonal communication creates a set of conditions through which life is experienced. Nurses should be aware of the nature and content of their thinking and try to replace negative, self-defeating thoughts with positive assertions. Positive self-talk can be used as a tool to improve the nurse's or client's health and self-esteem. Self-instruction can provide a mental rehearsal for difficult tasks or situations so individuals can deal with them more effectively. Nurses and clients can use intrapersonal communication to develop self-awareness and a positive self-concept that will enhance appropriate self-expression.

Interpersonal communication

Interpersonal communication is one-to-one interaction between the nurse and another person that often occurs face to face. It is the level most often used in nursing situations and lies at the heart of nursing practice. It takes place within a social context and includes all the symbols and cues used to give and receive meaning. Since meaning resides in persons and not in words, messages received may be different from messages intended. Nurses work with people who have different opinions, experiences, values and belief systems, so meaning must be validated or mutually negotiated between participants.

Small-group communication

Small-group communication is interaction that occurs when a small number of people meet together. This type of communication is usually goal-directed, and requires an understanding of group dynamics. When nurses work on taskforces or committees, lead client support groups, form research teams or participate in client care conferences, a small-group communication process is used. Small groups are more effective when they are a workable size, have an appropriate meeting place, suitable seating arrangements, and cohesiveness and commitment among group members (Hybels & Weaver 2008). Small-group communication is effective when the group achieves its objectives in a manner that is inclusive of all members and results in satisfaction with decision-making processes.

Forms of communication

Messages are conveyed verbally and non-verbally, concretely and symbolically. As people communicate, they express themselves through words, movements, voice inflection, facial expressions and use of space. These elements can work in harmony to enhance a message, or conflict with one another to contradict and confuse it.

Verbal communication

Verbal communication uses spoken or written words. Verbal language is a code that conveys specific meaning as words are combined. The most important aspects of verbal communication are discussed below.

Vocabulary

Communication is unsuccessful if people cannot translate each other's words and phrases. When a nurse cares for a client who speaks another language, an interpreter may be necessary. Even those who speak the same language use variations of certain words: dinner may mean a noon meal to one person and the last meal of the day to another.

Medical jargon (technical terminology used by healthcare providers) may sound like a foreign language to clients unfamiliar with the healthcare setting, and should be used only with other healthcare team members. Children have a more limited vocabulary than adults. They may use special words to describe bodily functions or a favourite blanket or toy. Teenagers often use words in unique ways that are unfamiliar to adults.

Meanings of words and phrases

A single word can have several meanings. The *denotative meaning* is shared by individuals who use a common language: 'tennis' has the same meaning for everyone who speaks English, but the word 'drug' may have different meanings to a healthcare professional and to a layperson. The *connotative meaning* is the shade or interpretation of a word's meaning influenced by the thoughts, feelings or ideas people have about the word. Families who are told a loved one is in a serious condition may believe that death is near, but to nurses 'serious' may simply describe the nature of the illness. Nurses should carefully select words that cannot be misinterpreted, especially when explaining a client's medical condition or therapy. Even a much-used phrase such as 'I'm going to take your observations', can be unfamiliar to an adult or frightening to a child.

Clarity and brevity

Effective communication is simple, brief and direct. Fewer words result in less confusion. Speaking slowly and using examples to make explanations easier to understand achieves clarity. Repeating important parts of a message also clarifies communication. Phrases such as 'you know' or 'okay?' at the end of every sentence detract from clarity. Brevity is achieved by using short sentences and words that express an idea simply and directly. 'Where is your pain?' is much better than 'I would like you to describe for me the location of your discomfort'.

Timing and relevance

Timing is critical in communication. Even though a message is clear, poor timing can prevent it from being effective. For example, the nurse should not begin routine teaching when a client is in severe pain or emotional distress. Often the best time for interaction is when a client expresses an interest in communicating. If messages are relevant or important to the situation at hand, they are more effective. When a client is facing emergency surgery, discussing the risks of smoking is less relevant than explaining how to keep the lungs clear postoperatively.

Non-verbal communication

Non-verbal communication is message transmission through body language, without using words. Non-verbal communication often reveals true feelings because it is hard to control: a colleague who says nothing is wrong but has tears in her eyes is probably in distress. Non-verbal cues add depth to verbal messages and help the nurse judge their reliability. Becoming an astute observer of non-verbal behaviour takes practice, concentration and sensitivity to others. Nurses should avoid sending 'mixed messages' through non-verbal communication.

Intonation

Tone of voice dramatically affects a message's meaning. Depending on intonation, even a simple question or statement can express enthusiasm, anger, concern or indifference. The nurse must be aware of voice tone to avoid sending unintended messages. For example, clients may interpret a nurse's patronising tone of voice as condescending, and further communication may be inhibited. A client's voice tone often provides information about their emotional state or energy level.

Posture and gait

The ways people sit, stand and move reflect attitudes, emotions, self-concept and health status. For example, an erect posture and a quick, purposeful gait communicate a sense of wellbeing and confidence. Leaning forwards conveys attention. A slumped posture and slow, shuffling gait may indicate depression, illness or fatigue.

Facial expression

The face is the most expressive part of the body. Facial expressions convey emotions such as surprise, fear, anger, disgust, happiness and sadness. Some people have an expressionless face, or flat affect, which reveals little about what they are thinking or feeling. An inappropriate affect is a facial expression that does not match the content of a verbal message, such as smiling when describing a sad situation. People can be unaware of the messages their expressions convey. For example, a nurse may frown in concentration while doing a procedure and the client may interpret this as anger or disapproval. Clients often closely observe nurses. Although it is hard to control all facial expression, the nurse should develop awareness of meanings that are conveyed through facial expression.

Eye contact

People signal readiness to communicate through eye contact. Maintaining eye contact during conversation

shows respect and willingness to listen. Eye contact also allows people to closely observe one another. Lack of eye contact may indicate anxiety, defensiveness, discomfort, or lack of confidence in communicating. However, in some cultures, eye contact with a person who is considered superior can be interpreted as offensive and disrespectful (see Chapter 14).

Gestures

Gestures emphasise, punctuate and clarify the spoken word. Gestures alone carry specific meanings, or they may create messages with other communication cues. A finger pointed towards a person may communicate several meanings, but when accompanied by a frown and a stern voice, the gesture becomes an accusation or threat. Pointing to an area of pain may be more accurate than describing the pain's location.

Territoriality and personal space

Territoriality is the need to gain, maintain and defend one's right to space. Territory is important because it provides people with a sense of identity, security and control. *Territory* can be separated and made visible to others, such as a fence around a yard or a bed in a hospital room. *Personal space* is invisible, individual and travels with the person. During interpersonal interaction, people maintain varying distances between one another depending on their culture, the nature of their relationship, and the situation (Chapter 14). When personal space is threatened, people respond defensively and communicate less effectively. This is especially important when interacting with a client who is in bed, as 'standing over' them is often intimidating. Situations dictate whether the interpersonal distance between nurse and client is appropriate. Examples of nursing actions within zones of personal space are listed in Box 12-2, along with zones of touch. Nurses often move into clients' territory and personal space due to the nature of caregiving. The nurse must convey confidence, gentleness and respect for privacy, especially when actions require intimate contact or involve a client's vulnerable zone.

BOX 12-2 Zones of personal space and touch

Zones of personal space

Intimate zone (0–45 cm)
Holding a crying infant
Performing physical assessment
Bathing, grooming, dressing, feeding and toileting a client
Changing a client's dressing

Personal zone (45 cm–1.2 m)
Sitting at a client's bedside
Taking the client's nursing history
Teaching an individual client
Exchanging information at change of shift

Social zone (1.2–3.6 m)
Making rounds with a doctor
Sitting at the head of a conference table
Teaching a class for clients with diabetes
Conducting a family support group

Public zone (3.6 m and greater)
Speaking at a community forum
Testifying at a legislative hearing
Lecturing to a class of students

Zones of touch

Social zone (permission not needed)
Hands, arms, shoulders, back

Consent zone (permission needed)
Mouth, wrists, feet

Vulnerable zone (special care needed)
Face, neck, front of body

Intimate zone (great sensitivity needed)
Genitalia

Developing communication skills

The complex array of communication skills that nurses are required to develop and maintain is detailed later in this chapter and categorised according to therapeutic intention. Beginning practitioners of nursing will notice that they are inclined to use some skills more than others and that some skills come more naturally than others. Developing professional communication competence means paying close attention to these personal habits and predilections through critical reflective practice. The deliberate use of skills that do not come naturally requires conscious effort and consideration of therapeutic intention.

Self-awareness is critical to the development of effective communication skills because the way that they are used will be personal and unique to each nurse. Awareness of personal values and beliefs is especially important, as these may interfere with being open with and accepting of clients. For example, a belief that people who engage in behaviours that are harmful to their health, such as smoking and overeating, are weak-willed may hinder a nurse's effort to be helpful.

• CRITICAL REFLECTION POINT

1. **What are your personal beliefs about religion?**
2. **What types of people do you like? What types do you dislike?**
3. **What do you value in life?**
4. **How might any of these values and beliefs affect your communication with clients?**

The need to 'unlearn' previous communication patterns

When interacting with clients in a professional role, beginning nurses will often rely on their usual communication patterns, some of which are neither helpful to the client nor to the development of a therapeutic relationship. These include expressing approval or disapproval, stereotypical responses and false reassurance.

Approval and disapproval

In everyday conversations people often express approval or disapproval, yet in a professional role it is not helpful to clients when nurses impose their own attitudes, values, beliefs and moral standards. Other people have the right to be themselves and make their own decisions. Judgemental responses by the nurse often contain terms such as 'should', 'ought', 'good', 'bad', 'right' or 'wrong'. Agreeing or disagreeing sends the subtle message that nurses have the right to make value judgements about client decisions. Approving implies that the behaviour being praised is the only acceptable one. Often, the client shares a decision with the nurse, not in an effort to seek approval but to provide a means for discussing feelings. On the other hand, disapproving implies that the client must meet the nurse's expectations or standards; for example, commenting that 'It is silly for you to feel like that'. Instead, the nurse should help clients explore their own feelings, beliefs and decisions. The nursing response 'I'm surprised you say that you feel that way. Tell me more about it' gives the client a chance to express ideas or feelings without fear of being judged.

Stereotypical responses

A cliché is a stereotypical comment, such as 'You can't win them all' or 'Every cloud has a silver lining' that tends to belittle the other person's feelings and minimise the importance of their message. These automatic phrases communicate that the nurse is not taking concerns seriously or responding thoughtfully. Most often they are said with a good intention, to reassure a client; however, they are a form of false reassurance and are often not helpful.

False reassurance

Saying 'Don't worry, everything will be all right' may make the nurse feel better, but it does not have the same effect on the client. When a client is seriously ill or distressed, the nurse may be tempted to offer hope to the client with statements such as 'You'll be fine' or 'There's nothing to worry about'. When a client is reaching for understanding, false reassurance from the nurse may discourage open communication. Offering reassurance not supported by facts or not based in reality can do more harm than good. Although it might be intended kindly and have the secondary effect of helping the nurse avoid the other person's distress, it tends to block conversation and discourage further expression.

• CRITICAL REFLECTION POINT

You have been caring for Beth Mitchelton, aged 40, for 3 days, following her radical mastectomy. You have really 'hit it off' together and you find it easy to communicate with her. Like you, she is outgoing, enthusiastic and optimistic. In fact, you cannot quite believe how well she is coping with the loss of her breast. You think to yourself, 'I wonder how I would cope, being so young', as you find her fortitude amazing. Today is the day of her discharge from hospital; everything is in order and she is waiting for her husband. You enter her room to say goodbye and find her crying. You realise that saying something like 'You will be fine, don't worry' may not be helpful. What should you say?

Elements of professional communication

Professional appearance, demeanour and behaviour are important in establishing the nurse's trustworthiness and competence. They communicate that the nurse has assumed the professional helping role, is clinically skilled and is focused on the client. An individual nurse's inappropriate appearance or behaviour can harm nursing's professional image.

At work a healthcare professional is expected to be clean, neat, well groomed, conservatively dressed and free of strong scent and other odours. Professional behaviour should reflect warmth, friendliness, confidence and competence. Professionals speak in a clear, well-modulated voice, use good grammar, listen to others, help and support team-mates and communicate effectively. Being on time, organised, well prepared and equipped for the responsibilities of the nursing role also communicate one's professionalism.

Courtesy and use of names

Common courtesy is part of professional communication. To practise courtesy, nurses need to remain friendly, ask

permission to enter the client's space, address clients by name and always introduce themselves to clients by stating their name and explaining their role and purpose for interacting. This last point is particularly important when students are caring for clients in the clinical setting, as it is important that the student role of learner is understood by clients. The nurse's failure to give a name, indicate status (e.g. student, registered nurse or enrolled nurse) or acknowledge the client by name can convey an impersonal lack of commitment or caring. More importantly, clients have the right to know who is talking to them and in what professional capacity.

Addressing others by name conveys respect for human dignity and uniqueness. Using surnames is respectful in most cultures, but may seem too formal in others (Chapter 14). Therefore, in the initial interaction with clients the nurse should always ask them how they would prefer to be addressed and let others know their personal preference. Using first names is appropriate for infants, young children, confused or unconscious clients and close team members. Terms of endearment such as 'luv', 'dolls', 'Grandma' or 'darling' are inappropriate in a professional interaction. Avoid referring to clients by diagnosis, room number or other attribute, as it is demeaning and sends the message that the nurse does not care enough to know the person as an individual.

Privacy and confidentiality

Maintaining confidentiality is a sign of respect and a hallmark of professional behaviour. It is essential that the nurse safeguard the client's right to privacy by carefully protecting information of a sensitive nature. Sharing personal information or gossiping about others violates nursing ethical codes and practice standards. It sends the message that the nurse cannot be trusted and damages interpersonal relationships. Team members directly involved in the client's care should be given only relevant information about the client's status.

Trustworthiness

Trust is relying on someone without doubt or question. Being trustworthy means helping others without hesitation when help is needed. To foster trust, the nurse communicates warmth and demonstrates consistency, reliability, honesty and competence. Sometimes it is not easy for a client to ask for help. Trusting another person involves risk and vulnerability, but it also fosters open, therapeutic communication and enhances the expression of feelings, thoughts and needs. Without trust, a nurse–client relationship rarely progresses beyond superficial interaction and care. Avoid dishonesty at all costs. Knowingly withholding key information, lying or distorting the truth violates both legal and ethical standards of practice.

Respect

Respect is based on the belief that every human has inherent worth and dignity (Stein-Parbury 2014). Demonstrating respect is one of the central keys to effective interpersonal communication in nursing because respect means accepting the client's perspective and assuming their goodwill. Respect generates from a belief that the client is capable and resourceful. This involves being open and not imposing the nurse's value system on the client; that is, not judging the client because they hold views and beliefs that are different and possibly foreign to the nurse. Respect is especially relevant when communicating with clients who are of a different cultural background to the nurse.

For example, maintaining eye contact is a sign of trustworthiness in most Western cultures; that is, 'looking people in the eye' demonstrates honesty. In other cultures it is disrespectful to make eye contact with a person who is perceived as superior. Clients who avoid eye contact with nurses could be demonstrating respect, not dishonesty. Sensitivity to the culture of other people is needed in respectful communication (Chapter 14).

More importantly, nurses should not base their judgements about client behaviour on the basis of their own culture alone; this is disrespectful. Similarly, it is important to avoid cultural stereotypes that assume all people of a certain background will behave in the same way. Such thinking can lead to misunderstanding and a failure to communicate. An even greater danger of stereotyping is the risk that clients will be rejected or negatively judged because a nurse does not understand and respect their cultural value and belief systems.

Therapeutic communication techniques

The most basic nursing interventions used in communication are therapeutic communication techniques. **Therapeutic communication techniques** are specific responses that encourage the expression of feelings and ideas and convey the nurse's acceptance and respect. Learning these techniques helps the student develop awareness of the variety of nursing responses available for use in different situations. Although some of the techniques may seem artificial at first, skill and comfort will increase with practice. Tremendous satisfaction will result as therapeutic relationships and outcomes are achieved.

Heron (2001) offers a useful schema for understanding therapeutic intention through a classification system of two types of communication interventions: *authoritative* and *facilitative*. **Authoritative interventions** take responsibility on behalf of the client; **facilitative interventions** promote client autonomy and self-responsibility. When a nurse offers a client new knowledge, makes suggestions or directs the client, authoritative intentions are at play. When a nurse encourages a client to solve problems and express emotions, then facilitative interventions are at play.

The basis for Heron's intervention analysis is similar to the responsive and assertive dimensions of effective communication (presented earlier in this chapter). Authoritative interventions are assertive in nature and focus on new understandings, such as instructing a client newly diagnosed with diabetes on dietary management. Facilitative interventions are responsive and focus on existing understandings, such as how the client is experiencing a health event. Both types of interventions are potentially therapeutic, depending on context.

Facilitative communication techniques form the backbone of therapeutic communication because they help to build a relationship based on mutual understanding, and this type of mutuality is the basis of therapeutic relationships in nursing practice. In order to be of help, nurses must understand the meaning of a health event from the perspective of the client and their experience of that event.

At times, facilitative communication is therapeutically sufficient. For example, clients often find comfort in another person's human understanding of their situation; they might gain relief through finding humour in their situation. At other times, authoritative communication techniques are necessary to therapeutic endeavours, such as encouraging and persuading a recently disabled adult client to participate in everyday activities like dressing himself.

• CRITICAL REFLECTION POINT

Jack Stone is a 78-year-man who has been fit and healthy for most of his life. He was admitted to hospital 3 days ago with a suspected stroke. So far, all of the diagnostic tests have been inconclusive. You find that it is difficult for you to communicate with Jack as he complains a lot and gets angry at times. You enter his hospital room in order to conduct a neurological assessment. After asking him 'What day is it today?', he snaps at you and says, 'You people just keep asking me the same questions over and over again; what's wrong with you? I'm not stupid.'

1. **Should you use an authoritative or a facilitative approach when responding to Jack?**
2. **What is your intention in selecting the type of response that you think you should use?**

BOX 12-3 Classification of communication techniques according to therapeutic intention

Facilitative communication interventions

Active listening
Sharing observations
Expressing empathy
Offering hope
Sharing humour
Sharing feelings
Using touch
Using silence
Asking relevant questions
Paraphrasing
Clarifying

Authoritative communication interventions

Providing information
Focusing
Summarising
Self-disclosing
Confronting
Suggesting
Advising
Instructing
Persuading
Encouraging
Offering direct assistance

The choice between the two techniques depends on the vulnerability of the client. Determining the vulnerability of the client requires assessment of the resources available to meet the demands of a health event. The therapeutic communication techniques that follow are categorised according to therapeutic intention, as listed in Box 12-3.

Facilitative communication interventions

Facilitative techniques encourage clients to think for themselves and facilitate mutual understanding between them and the nurse. They are considered the backbone of therapeutic communication and are based on a philosophy of patient-centred care. When using facilitative techniques, the nurse follows the client's lead.

Active listening

Active listening means listening attentively with one's whole being – mind, body and spirit. It includes listening for conversational themes, acknowledging and responding,

giving appropriate feedback and paying attention to the other person's total communication, including the content, the intent and the feelings expressed (Stein-Parbury 2014). Active listening allows the nurse to better understand the entire message being communicated, and is an excellent way to build trust. In many nursing situations the other person simply needs someone to listen.

To listen attentively, the nurse faces the client at a distance of about 90 cm, removes any physical barriers if possible, maintains eye contact (if culturally appropriate), assumes a relaxed posture and sits quietly, leans forward slightly and nods in acknowledgment when the client talks about important points or looks for feedback. Fidgeting, breaking eye contact, daydreaming during conversation or only pretending to listen conveys the message that what the other person has to say is not important. These inhibit conversation and undermine trust.

Being available means offering oneself and expressing a willingness to listen, talk or be physically present with another person when the client needs it. By expressing availability, even though the client may not make their needs known, the nurse shows a caring attitude. When clients feel that the nurse is listening they sense a connection that enables the relationship to develop; they value nurses who take the time to listen to them (Kagan 2008, Marshall et al 2012). Therefore, listening is essential to the process element of therapeutic communication.

Availability and active listening are often described as nursing presence, an inter-subjective encounter between a nurse and a client in which the nurse encounters the client as a unique human being in a unique situation and chooses to 'spend' themself on the client's behalf (Zyblock 2010). **Presence** is the nursing quality of 'being there' for the client – not just physically present, but also listening attentively from a caring perspective: 'I'll stay with you a while. If you want to talk, I'll be glad to listen.' However, the ability to be fully present does not lie simply within the nurse; it requires a healthcare environment that is conducive to the formation of relationships between nurses and clients (Fingeld-Connett 2008, McMahon & Christopher 2011).

Challenges and potential pitfalls when listening

One of the key factors in being able to actively listen to clients is an ability to 'tune out' other thoughts in order to fully attend. Often when nurses are attempting to listen they are preoccupied with other matters; for example, they may be thinking about an onerous workload or worrying about a personal matter. More subtle is the tendency to make judgements about what a client is saying; for example, by thinking that the client is being silly or complaining too much. When emotions are being expressed, especially when clients are angry, it is often difficult to hear what they are expressing.

Changing the subject is an indication that the nurse is not listening; for example, saying, 'Let's not talk about your problems with the insurance company. It's time for your walk.' Changing the subject when another person is trying to communicate something important is rude and shows a lack of empathy. It tends to block further communication, and the client may then withhold important messages or fail to openly express feelings.

Using silence

It takes time and experience to become comfortable with silence. Most people have a natural tendency to fill empty spaces with words, but sometimes those spaces give time for the nurse and client to collect their thoughts and consider what has been communicated. Silence also allows the nurse to pay particular attention to non-verbal messages, such as worried expressions or loss of eye contact. Remaining silent demonstrates the nurse's patience and willingness to wait for a response when the other person is unable to reply quickly. Silence may be especially therapeutic during times of profound sadness or grief.

Sharing observations

Nurses make observations by commenting on how the other person looks, sounds or acts. Stating observations often helps the client communicate without the need for extensive questioning, focusing or clarification. For example, the nurse observes a young client holding his body rigidly erect and his voice being sharp as he says, 'Going to surgery is no big deal'. The nurse replies, 'You say having surgery doesn't bother you, but you look a little worried. It is natural to worry about surgery.' This approach may result in encouraging the client to further express current concerns.

Sharing feelings

Emotions are subjective feelings that result from one's thoughts and perceptions. Feelings are not right, wrong, good or bad, although they may be pleasant or unpleasant. If feelings are not expressed, stress and illness can worsen. Nurses can help clients express emotions by making observations, acknowledging feelings, encouraging communication, giving permission to express 'negative' feelings and modelling healthy emotional self-expression. At times, clients may direct anger or frustration prompted by their illness towards the nurse, who should not take such expressions personally. Acknowledging clients' feelings communicates that the nurse listened to and understood the emotional aspects of their illness.

When nurses care for clients they must be aware of their own emotions, because feelings are difficult to hide. Students may wonder whether it is helpful for the nurse to share feelings with clients. Sharing emotion makes nurses seem more human and can bring people closer. It is appropriate to share feelings of caring, or even cry with others, as long as the nurse is in control of how those feelings are expressed and does so in a way that does not burden the client. Feelings are shared with clients in an effort to assist them, not the nurse.

Expressing empathy

Empathy is the ability to understand and accept another person's reality and to accurately perceive feelings. Empathic communication conveys that the nurse not only has heard what the client has expressed, but also understands what the client means. In expressing empathy, the nurse communicates this understanding to the client. Such empathic understanding requires the nurse to be both sensitive and imaginative, especially if the nurse has not had similar experiences. Statements reflecting empathy are highly effective because they tell the person that the nurse heard the feeling content, as well as the factual content, of the communication. This results in clients feeling accepted and valued, thereby facilitating the therapeutic relationship.

Challenges and pitfalls in expressing empathy

There is a difference between empathy and sympathy. An example of a sympathetic expression is 'I feel so sorry about your amputation; it would be terrible to lose a leg.' **Sympathy** is concern, sorrow or pity felt for the client generated by the nurse's personal identification with the client's needs. Empathy is imagining what *it would be like* to be in the circumstances of the client; sympathy is assuming that the nurse knows *what it is like* (Stein-Parbury 2014). Sympathy is a subjective look at another person's world that prevents a clear perspective of the issues confronting that person. Although sympathy is a compassionate response to another's situation, it is not as therapeutic as empathy. A more empathic approach would be: 'Losing your leg has been a major change. How has it affected your life?' While it may seem that such a response might increase client distress, evidence shows that an empathic response such as this actually decreases their distress and enables them to cope (Lelorain et al 2012).

• CRITICAL REFLECTION POINT

Helen Simpson has had a resection of her bowel for cancer and now has a colostomy. You have been asked to begin assisting her with learning how to care for her colostomy when she is discharged. You read about how to instruct patients and feel confident that you know how to explain colostomy care. When you enter Helen's hospital room she is quiet and withdrawn, and tells you 'There's no need to bother with all of that. I'll be fine'. What should you say to Helen that would express empathy for her situation?

Offering hope

Hope is productive to healing, and offering hope communicates a 'sense of possibility' to clients (Fitzgerald Miller 2007). Appropriate encouragement and belief that the client can cope, along with concrete feedback about how the client is progressing, are important in fostering hope by boosting self-confidence and helping clients achieve their potential. Sharing a vision of the future and reminding others of their resources and strengths can also strengthen hope. Clients can be reassured that there are many kinds of hope and that meaning and personal growth can come from illness experiences (Fitzgerald Miller 2007).

Sharing humour

Humour is an important therapeutic resource in nursing interactions. It serves to build relationships by conveying respect for the personhood of the patient and creates a sense of cohesiveness between nurses and their clients. It helps decrease client anxiety, depression and embarrassment. Laughter can be good medicine when nurses use humour to help clients adjust to stress imposed by illness. Humour can increase the nurse's effectiveness in providing emotional support to clients and can humanise the illness experience. Laughter provides both a psychological and a physical release for both nurse and client. Humour can help others to interact more openly and comfortably and can make nurses' own humanity more apparent.

Using touch

Touch is one of the nurse's most potent forms of communication. Nurses are privileged to experience more of this intimate form of personal contact than almost any other professional. Many messages, such as affection, emotional support, encouragement, tenderness and personal attention, are conveyed through touch. Comfort touch, such as holding a hand, is especially important for vulnerable clients who are experiencing severe illness with its accompanying physical and emotional losses.

Since much of what nurses do involves touching, nurses must learn to be sensitive to others' reactions to touch and use it wisely. There are times when touch should be withheld; highly suspicious or angry people may respond negatively or even violently to the nurse's touch.

Asking relevant questions

Asking questions allows nurses to seek information that is vital to client care. Nurses should ask only one question at a time, and fully explore one topic before moving to another area. During client assessment, questions follow a logical sequence and usually proceed from the general to the more specific. Open-ended questions allow the client to take the conversational lead and introduce pertinent information about a topic: 'What happens when you and your husband argue?' Focused questions are used when more-specific information is needed in an area: 'What do you argue about most often?' The nurse should allow clients to fully respond to an open-ended question before asking more-focused questions. Closed-ended questions elicit a yes, no or single-word response: 'How many arguments did you have last week?' They are generally less useful during therapeutic exchanges, although they are often essential to client assessment.

Challenges and potential pitfalls in questioning

Asking too many questions can be dehumanising, because clients can feel as though they are being treated like an object. A useful exercise is to try conversing without asking the other person a single question. By giving general leads ('Tell me about it …'), making observations, paraphrasing, focusing, providing information and so on, nurses can discover much of importance that would have remained hidden if questions alone had been used during the communication process.

A nurse may be tempted to ask clients to explain why they believe, feel or have acted in a certain way. Asking for explanations, for example, 'Why are you so anxious?', is not helpful to clients; people often do not know why they feel the way they do, and a question such as this can put them on the defensive. Moreover, clients frequently interpret 'why' questions as accusations and this can cause resentment, insecurity and mistrust (Stein-Parbury 2014). They are best avoided and replaced with open-ended questions that explore the situation further.

Asking personal questions that are not relevant to the situation simply to satisfy the nurse's curiosity, for example 'Why don't you and John get married?', is not appropriate professional communication. Such questions are intrusive and unnecessary. If clients wish to share private information they will. If the nurse needs to know more about the client's interpersonal roles and relationships, a question such as 'How would you describe your relationship with John?' can be asked.

Paraphrasing

Paraphrasing is re-stating another's message briefly, using one's own words. Through paraphrasing, the nurse sends feedback that lets others know whether their messages were understood. If the meaning of a message is changed or distorted through paraphrasing, communication may become ineffective. For example, a client may say 'I've been overweight all my life and never had any problems. I can't understand why I need to be on a diet'. Paraphrasing this statement by saying 'You don't care if you're overweight or not' is incorrect. It would be more accurate to say 'You're not convinced you need a diet because you've stayed healthy'.

Paraphrasing is an effective way to clarify what a client is communicating. By putting their words into the nurse's own words, clients can not only correct any misunderstandings, for example, 'That's not exactly what I meant', but can also expand and elaborate on what they are meaning. A paraphrase is a useful way to encourage further interaction by demonstrating that the nurse is trying to understand the client's experience.

• CRITICAL REFLECTION POINT

The next time you are talking to one of your friends who is experiencing some difficulty in their life and telling you about it, try to simply rephrase what they are expressing. This is not an easy way to respond, so you will have to concentrate. Notice what effect paraphrasing has on the conversation. How is this conversation different to ones you normally have?

Challenges and pitfalls in paraphrasing

Paraphrasing is not the same as parroting – repeating what the other person has said word for word. Parroting is easily overused and is not as effective as paraphrasing. A simple 'Oh?' can give the nurse time to think if the other person says something that takes the nurse by surprise.

Nurses are sometimes reluctant to paraphrase what clients say out of fear of appearing incompetent; that is, they think that they should just know what the client means without having to say what they think. Another reason for a reluctance to use a paraphrase is the fear of 'reinforcing' distressing negative emotions, when that is what the client is conveying. The paraphrase is comforting to clients when they are distressed because it demonstrates that the nurse is listening and trying to understand (Stein-Parbury 2014).

Clarifying

To check whether understanding is accurate, the nurse can re-state an unclear or ambiguous message to clarify the meaning. Instead of paraphrasing the message, the nurse can also ask the other person to rephrase it, explain further or give an example of what the person means. Without clarification, the nurse may make invalid assumptions and

miss valuable information. Despite efforts at paraphrasing, the nurse may not understand the client's message and should let the client know if this is the case: 'I'm not sure I understand what you mean by "sicker than usual". What is different now?'

Authoritative communication interventions

Authoritative communication operates from the philosophy that the nurse needs to take charge and lead the client, instead of following the client, as is the case with facilitative techniques. While authoritative techniques can be used to promote client autonomy, for example, through health teaching, often they are not as patient-centred as facilitative techniques. More importantly, they are often overused in healthcare situations.

Providing information

Providing relevant information tells other people what they need or want to know so that they can make decisions, experience less anxiety and feel safe and secure. It is also an integral aspect of health teaching. It is usually not helpful to hide information from clients, particularly when they seek it. Clients have a right to know about their health status and what is happening in their environment.

Research has shown that the provision of information is highly individual in the sense that some clients require more information than others (Tobiano et al 2015). Identification of the amount and type of information needed by an individual client is essential in the use of this intervention.

• CRITICAL REFLECTION POINT

Some clients want to know every detail about their health status and care, while others want only minimal information. How might you assess how much information a client desires?

Instructing

This technique is similar to providing information, but is a more direct way of communicating. For example, a nurse might need to provide instructions to a postoperative client about how to splint the incision when attempting to cough.

Suggesting

Nurses often help clients by offering suggestions about what might be of benefit. For example, a nurse might suggest distraction as a useful way to cope with worry about pending diagnostic results. Suggestions should be posed tentatively and operate from an understanding of the client situation and knowledge of health. They are not based on the nurse's personal opinions or values.

Advising

Nurses are often in a position to offer sound advice about health matters. Like suggestions, advice is not based on personal opinions of the nurse, but rather on an understanding of the health event.

Challenges and pitfalls in advising

Giving personal opinions, for example, 'If I were you, I'd put your mother in a nursing home', must be avoided. When the nurse gives a personal opinion, it takes decision-making away from the client. It inhibits spontaneity, stalls problem-solving and creates doubt. Personal opinions differ from professional advice. At times, clients need suggestions and help to make choices. Suggestions are presented to clients as options because the final decision rests with the client. Remember, the problem and its solution belong to the other person and not the nurse. A much better response would be: 'Let's talk about what options are available for your mother's care.'

Persuading

When advising and suggesting do not seem to be helpful to the client, a nurse often has to become persuasive in pursuing a therapeutic aim. For example, emergency-room nurses may need to persuade family members of a client who has died suddenly not to drive themselves home from the hospital while still in a state of shock at the death.

Focusing

Focusing is used to centre on key elements or concepts of a message. If conversation is vague or rambling or clients begin to repeat themselves, focusing is a useful technique. The nurse does not use focusing if it interrupts clients while discussing an important issue. Rather, the nurse uses focusing to guide the direction of conversation to important areas: 'We've talked a lot about your medications, but let's look more closely at the trouble you're having in taking your tablets on time.'

Summarising

Summarising is a concise review of key aspects of an interaction. Summarising brings a sense of satisfaction and closure to an individual conversation and is especially helpful during the termination phase of a nurse–client relationship. By reviewing a conversation, participants focus on key issues and can add relevant information as needed. Beginning a new interaction by summarising a previous one helps the client recall topics discussed

and shows the client that the nurse has analysed communication. Summarising also clarifies expectations, as in this example of a nurse manager who had been working with a dissatisfied employee: 'You've told me a lot of things about why you don't like this job and how unhappy you've been. We've also come up with some possible ways to make things better, and you've agreed to try some and let me know if any of them help.'

Self-disclosing

To use **self-disclosure**, the nurse reveals personal experiences, thoughts, ideas, values or feelings in the context of the relationship with the intent of helping the other person. This is not therapy for the nurse; rather, it shows clients that their experiences can be understood and are not unique. Self-disclosures should be relevant and appropriate and made to benefit the client rather than the nurse. They are used sparingly so that the client is the focus of the interaction: 'That happened to me once, too. It was devastating, and I had to face some things about myself that I didn't like. I went for counselling, and it really helped … What are your thoughts about seeing a counsellor?'

Confronting

To confront someone in a therapeutic way, the nurse helps the client to become aware of inconsistencies in his or her feelings, attitudes, beliefs and behaviours. This technique improves client self-awareness and helps the client recognise growth and deal with important issues. Confrontation should be used only after trust has been established, and it should be done gently, with sensitivity: 'You say you've already decided what to do, yet you're still talking a lot about your options.'

Encouraging

Like offering hope, nurses are often in a position to encourage clients, especially when discouragement is evident. Encouragement is best offered in concrete terms, such as 'I can see that you are able to walk much better today. It only took you a few minutes to get to the toilet today. A few days ago it took nearly 20 minutes.'

Offering direct assistance

It may seem obvious that nurses assist clients. However, a direct offer of assistance can help when clients are overwhelmed with unpleasant feelings. 'Here, let me help you with putting on your shoes' is an example of direct assistance. In doing so, it is important that the nurse does not take over for clients and make them feel useless and more vulnerable.

Putting therapeutic communication techniques into action

The most critical aspect in determining which type of communication intervention to use is the intention of the nurse. For example, sharing observations such as 'you look a bit worried to me', is used with the intention of gaining more information about a particular aspect of the client's wellbeing, while an open-ended question such as 'how was your day yesterday?' is employed to gain general information. The former leads clients to discuss something in particular while the latter allows clients to bring up whatever is most relevant to them about the topic. Therefore, choice of technique is dependent on the purpose and intention of the communication. Becoming skilled at using the technique that is appropriate to each situation requires a great deal of self-awareness and reflective practice.

Being reflective is the key to developing effective communication skills in nursing practice. This reflection occurs prior to communicating, for example, to consider the intention of the interaction with a client, and after interacting with a client to determine the degree to which that intention was met. Reflection after communicating enables nurses to consider whether they have been of assistance in helping the client, thus enabling them to develop insight into a situation, and to challenge themselves and change their perspectives (Asselin et al 2013, Bulman et al 2012). More than any other skill in nursing, the ability to communicate effectively is one that requires lifelong learning. And that learning will not be productive without reflection and self-awareness. This is especially true for those situations that are emotionally challenging (Rees 2013).

• CRITICAL REFLECTION POINT

When Mark entered Mrs Simpson's hospital room he noticed that she looked uncomfortable and was holding an emesis bag. She stated that she thought she was 'going to vomit'. Mark replied by saying, 'Well, you have the bag in your hand'. She responded by telling him in no uncertain terms that she considered him a 'smart alec' and did not want him looking after her. At first, Mark went to his nursing manager and told her what had happened. She agreed to have his assignment to her changed. Upon reflection, Mark was not really satisfied with this outcome, and he considered how he might have come across to Mrs Simpson. He decided to go back to her room to try to sort out the situation. He began by saying, 'I think we got off on the wrong foot this morning. I can see how you became upset with me and I am sorry that I came across

the wrong way'. Mrs Simpson accepted the apology and agreed to have Mark care for her that day.

1. **What role did reflection play in Mark's response to this situation?**
2. **What did he learn from the situation?**

Emotional intelligence

In nursing, **emotional intelligence** is required for interpersonal competence (Powell et al 2015). This is because nursing care is delivered through interpersonal relationships which include making an emotional connection with clients (Stein-Parbury 2014). In providing nursing care, emotional responses are inherent, especially in relation to interacting with and building meaningful relationships with clients. Because of the nature of nursing work, these interactions and relationships can be filled with emotions (Dwyer & Hunter Revell 2015). It is for this reason that nurses need to be skilled in managing their emotions as well as understanding others' emotions. This ability is termed 'emotional intelligence', which has been shown not only to improve the quality of nursing care (Adams & Iseler 2014) but also is associated with decreased stress in nurses (Görgens-Ekermans & Brand 2012). In addition, nurses who have a high degree of emotional intelligence are more likely to use collaboration in resolving conflict, while nurses with a low degree are more likely to use an accommodating response when faced with conflict (Morrison 2008).

According to Goleman (1998), who popularised the concept, there are five dimensions of emotional intelligence, which are both interdependent and hierarchical. The first is *self-awareness*, the basis of emotional intelligence, which involves the accurate assessment and knowledge of self in relation to others. Self awareness enables the regulation of emotions. *Self-regulation* does not mean that nurses do not experience emotions, but that these emotions do not become so intense as to render the nurse unable to function. With awareness and emotional regulation nurses are able to move to the third dimension – *motivation* – and engage meaningfully with others. *Empathy*, the fourth dimension, allows the nurse to understand others. Finally, emotional intelligence involves managing situations that require *social skills*, especially when dealing with conflict.

Conclusion

Nurses need to be skilled in the art of interpersonal communication in order to provide care that is truly person-centred. The purpose of communication in nursing is to understand the meanings that are conveyed by clients, their families and other healthcare colleagues. It is through understanding such meanings that effective relationships are formed. Effective means that they are helpful to clients and families, and collaborative with colleagues. Communicating with and relating to clients, their families and healthcare colleagues can be some of the most challenging aspects of nursing practice. Nonetheless, forming meaningful relationships with others has the potential to be one of the most rewarding aspects of being a nurse.

Key concepts

- Communication is the means by which nurses meet their professional obligation to form therapeutic relationships with clients.
- Communication is a powerful therapeutic tool and an essential nursing skill used to influence others and achieve positive health outcomes.
- The dynamics of communication include both process and content.
- Effective communication involves being both responsive and assertive.
- Nurses consider many contexts and factors influencing communication when making decisions about what, when, where, how, why and with whom to communicate.
- Nurses must be able to communicate effectively with other members of the healthcare team in order to promote collaborative practice.
- Effective verbal communication requires appropriate intonation, clear and concise phrasing, proper pacing of statements and proper timing and relevance of a message.
- Effective non-verbal communication complements and strengthens the message conveyed by verbal communication so that the receiver is less likely to misinterpret the message.
- Nurses use intrapersonal, interpersonal and small-group interaction to achieve positive change and health goals.
- Helping relationships are strengthened when the nurse demonstrates caring by establishing trust, empathy, autonomy, confidentiality and professional competence.
- Effective therapeutic communication techniques are both facilitative, in which the nurse follows the client's lead, and authoritative, in which the nurse takes the lead.
- Ineffective communication techniques are inhibiting and tend to block the other person's willingness to openly express ideas, feelings or concerns.
- The nurse must blend social and informational interactions with therapeutic communication techniques so that others can explore feelings and manage health issues.
- Nurses need to engage in reflective practice in order to continuously develop their communication competence.

- Emotional intelligence is required for effective and skilled communication in the healthcare setting.

Online resources

Australian Institute for Patient and Family Centred Care is an organisation of patients, family members and healthcare professionals that promotes partnerships between patients, families and healthcare professionals. There are two videos of highlights of two healthplays 'Hear Me' and 'Do you know me?'. They depict the importance of involving family and knowing the patient, http://www.aipfcc.org.au/

Communication for Health in Emergency Contexts (CHEC); an interactive learning resource that focuses on communication with patients in an emergency department, www.chec.meu.medicine.unimelb.edu.au

TeamStepps is a teamwork system designed to improve quality and safety in health care. An overall description of the program is found at http://teamstepps.ahrq.gov/about-2cl_3.htm. A pilot of the program conducted in South Australia can be found at www.safetyandquality.gov.au/wp-content/uploads/2012/03/TeamSTEPPS-Implementation-of-a-teamwork-programme-into-an-Australian-Setting-Public-Report-on-Pilot-Study.pdf

References

Adams KL, Iseler JI 2014 The relationship of bedside nurses' emotional intelligence with quality of care. J Nurs Care Qual 29(2):174–81.

Asselin ME et al 2013 Exploring reflection as a process embedded in experienced nurses' practice: a qualitative study. J Adv Nurs 69(4):905–14.

Barrow M et al 2015 Collaborating in healthcare delivery: exploring conceptual differences at the 'bedside'. J Interprof Care 29(2):119–24.

Bauer M, Nay R 2011 Improving family–staff relationships in assisted living facilities: the views of family. J Adv Nurs 67(6):1232–41.

Benner P 1984 From novice to expert: excellence and power in clinical nursing practice. Addison-Wesley, Menlo Park, CA.

Bolster D, Manias E 2010 Person-centred interactions between nurses and patients during medication activities in an acute hospital setting: qualitative observation and interview study. Int J Nurs Stud 47:154–65.

Brock et al 2013 Interprofessional education in team communication: working together to improve patient safety. BMJ Qual Saf 22:414–23.

Bulman C et al 2012 The concept of reflection in nursing: Qualitative findings on student and teacher perspectives. Nurse Educ Today 32:e8–e13.

Bundgaard D et al 2012 What to know and how to get to know? A fieldwork study outlining the understanding of knowing the patient in facilities for short-term stay. J Adv Nurs 68(10):2280–8.

Chan EA et al 2012 Nurses' perception of time available in patient communication in Hong Kong. J Clin Nurs 21(7–8):1168–77.

Chang EML et al 2007 A survey of role stress, coping and health in Australian and New Zealand hospital nurses. Int J Nurs Stud 44:1354–62.

Charlton CR et al 2008 Nurse practitioners' communication styles and their impact on patient outcomes: an integrated literature review. J Am Acad Nurse Pract 20(7):382–8.

Constand et al 2014 Scoping review of patient-centered care approaches in healthcare. BMC Health Services Research 14(1):271–80.

DeFrino DT 2009 A theory of the relational work of nurses. Res Theory Nurs Pract 23(4):294–311.

Dwyer PA, Hunter Revell SM 2015 Preparing students for the emotional challenges of nursing: an integrative review. J Nurs Educ 54(1):7–12.

Fingeld-Connett D 2008 Qualitative convergence of three nursing concepts: art of nursing, presence and caring. J Adv Nurs 63(5):527–34.

Fitzgerald Miller J 2007 Hope: a construct central to nursing. Nurs Forum 42(1):12–19.

Fleischer et al 2009 Nurse–patient interaction and communication: A systematic literature review. J Public Health 17:339–53.

Florin J et al 2005 Patients' and nurses' perceptions of nursing problems in an acute care setting. J Adv Nurs 51(2):140–9.

Goleman D 1998 Working with emotional intelligence. Bloomsbury, London.

Görgens-Ekermans G, Brand T 2012 Emotional intelligence as a moderator in the stress–burnout relationship: a questionnaire study on nurses. J Clin Nurs 21:2275–85.

Hartlage HN 2012 Exploring boundaries in pediatric oncology nursing. J Pediatr Oncol Nurs 29(2):109–12.

Henderson A et al 2007 'Caring for' behaviours that indicate to patients that nurses 'care about' them. J Adv Nurs 60(2):146–53.

Heron J 2001 Helping the client, 5th edn. Sage, London.

Higgs J, Ajjawi R, Mc Allister L et al 2012 Communicating in the health science, 3rd edn. Oxford University Press, South Melbourne.

Hybels S, Weaver R 2008 Communicating effectively, 9th edn. McGraw-Hill, Boston.

Iglesias MEL, de Bengoa Vellejo RRB 2012 Conflict resolution styles in the nursing profession. Contemp Nurse 43(1):73–80.

Kagan P 2008 Feeling listened to: a lived experience of human becoming. Nurs Sci Q 21:59–67.

Kaitelidou D et al 2012 Conflict management and job satisfaction in paediatric hospitals in Greece. J Nurs Manag 20:571–8.

Kitson, A et al 2013 What are the core elements of patient-centred care? A narrative review and synthesis of the literature from health policy, medicine and nursing. J Adv Nurs 69(1):4–15.

Lelorain A et al 2012 A systematic review of the associations between empathy measures and patient outcomes in cancer care. Psycho-Oncology 21:1255–64.

LeMone P, Burke K, Levett-Jones T et al 2014 Medical surgical nursing: critical thinking for person-centred care, 2nd edn, Vol. 1. Pearson, Sydney.

Liaschenko J, Fisher A 1999 Theorizing the knowledge that nurses use in the conduct of their work. Sch Inq Nurs Pract 3(1):29–41.

MacDonald H 2007 Relational ethics and advocacy in nursing: literature review. J Adv Nurs 57(2):119–26.

Mahon MM, Nicotera AM 2011 Nursing and conflict communication: avoidance as preferred strategy. Nurs Admin Q 35(2):152–63.

Mantzorou M, Mastrogiannis D 2011 The value and significance of knowing the patient for professional practice according to the Carper's pattern of knowing. Health Science Journal 5(4): 251–61.

Marshall A et al 2012 Patients' views of patient-centred care: a phenomenological case study in one surgical unit. J Adv Nurs 68(12):2664–73.

Marshall S, Harrison J, Flanagan B 2009 The teaching of a structured tool improves the clarity and content of interprofessional clinical communication. Quality and Safety in Health Care 18(2):137–40.

McCabe C 2004 Nurse–patient communication: an exploration of patients' experiences. J Clin Nurs 13(1):41–9.

McCartan PJ, Hargie ODW 2004 Assertivesness and caring: are they compatible? J Clin Nurs 13:707–13.

McComb S, Simpson V 2013 The concept of shared mental models in health care collaboration. J Adv Nurs 70(7):1479–88.

McMahon MA, Christopher A 2011 Toward a mid-range theory of nursing presence. Nurs Forum 46(2):71–82.

Morrison J 2008 The relationship between emotional intelligence competencies and preferred conflict-handling styles. J Nurs Manag 16:974–83.

Newell S, Jordan Z 2015 The patient experience of patient-centered communication with nurses in the hospital setting: a qualitative systematic review protocol. JBI Database of Systematic Reviews and Implementation Reports 13(1):76–87.

Nordehn G et al 2006 A preliminary investigation of barriers to achieving patient-centered communication with patients who have stroke-related communication disorders. Topics Stroke Rehabil 13(1):68–77.

Northam S 2009 Conflict in the workplace: Part 2. Am J Nurs 109(7):65–7.

Nursing and Midwifery Board of Australia (NMBA) 2016 Registered Nurse standards for practice. Melbourne, NMBA. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards.aspx; accessed 14 June 2016.

Nursing and Midwifery Board of Australia (NMBA) 2008a Code of ethics for nurses in Australia. Canberra, ANMC. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Codes-Guidelines.aspx#competencystandards; accessed 20 July 2015.

Nursing and Midwifery Board of Australia (NMBA) 2008b Code of professional conduct for nurses in Australia. Canberra, ANMC. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines/Professional-standards.aspx; accessed 27 July 2016.

Nursing Council of New Zealand 2007 Competencies for registered nurses. Wellington, NCNZ. Online. Available: www.nursingcouncil.org.nz/Nurses; accessed 27 July 2016.

Nursing Council of New Zealand 2009 Code of conduct for registered nurses. Wellington, NCNZ. Online. Available: www.nursingcouncil.org.nz/Nurses; accessed 27 July 2016.

O'Hagan et al 2014 What counts as effective communication in nursing? Evidence from nurse educators' and clinicians' feedback on nurse interactions with simulated patients. J Adv Nurs 70(6):1344–56.

Pannick S et al 2014 Improving the quality and safety of care on the medical ward: A review and synthesis of the evidence base. Eur J Intern Med 25:874–87.

Powell KR et al 2015 Emotional intelligence: a critical evaluation of the literature with implications for mental health nursing leadership. Issues Ment Health Nurs 36:346–56.

Rees KL 2013 The role of reflective practices in enabling final year nursing students to respond to the distressing emotional challenges of nursing work Nurs Educ Pract 13:48–52.

Sidani S, Fox M 2014 Patient-centered care: clarification of its specific elements to facilitate interprofessional care. J Interprof Care 28(2):134–41.

Sobo EJ 2004 Pediatric nurse may misjudge parent communication preferences. J Nurs Care Qual 19(3):253–62.

South Australia Health 2012 ISBAR – Identify, situation, background, assessment and recommendation. Online. Available: www.sahealth.sa.gov.au/wps/wcm/connect/Public+Content/SA+Health+Internet/Clinical+resources/Clinical+topics/Clinical+handover/ISBAR+-+Identify+Situation+Background+Assessment+and+Recommendation; accessed 14 July 2016.

Street A 1992 Inside nursing: a critical ethnography of clinical nursing practice. State University of New York Press, Albany.

Stein-Parbury J 2014 Patient and person: developing interpersonal skills in nursing, 5th edn. Elsevier, Sydney.

Stein-Parbury J, Liaschenko J 2007 Understanding collaboration between nurses and physicians as knowledge at work. Am J Crit Care 16:470–7.

Stein-Parbury et al 2015 Expectations and experiences of older people and their carers in relation to emergency department arrival and care: A qualitative study in Australia. Nurs Health Sci.

Street M, Eustace P, Livingston P et al 2011 Communication at the bedside to enhance patient care: a survey of nurses' experience and perspective of handover. International Journal of Nursing Practice 17(2):133–40.

Tallon et al 2015 Rethinking family-centred care for the child and family in hospital. J Clin Nurs 24:1426–35.

Tejero LMS 2012 The mediating role of the nurse-patient dyad bonding in bringing about patient satisfaction. J Adv Nurs 68(5):994–1002.

Thomas KW, Kilmann H 1977 Developing a forced-choice measure of conflict-handling behavior: the 'mode' instrument. Educ Psychol Meas 37(2):309–25.

Tobiano G et al 2015 Patient participation in nursing care on medical wards: An integrative review. Int J Nurs Stud 52:1107–20.

van Dulmen S 2011 The value of tailored communication for person-centred outcomes. J Eval Clin Pract 17:381–3.

Wong et al 2015 Families' experiences of their interactions with staff in an Australian intensive (ICU): A qualitative study. Intensive Crit Care Nurs 31:51–63.

Zolnierek CD 2014 An integrative review of knowing the patient. J Nurs Scholarsh 46(1):3–10.

Zyblock DE 2010 Nursing presence in contemporary nursing practice. Nurs Forum 45(2):120–4.

CHAPTER

13

Documenting, retrieving and using information to inform practice

Elizabeth Cummings and Bryan Macdonald

Learning outcomes

Mastery of content will enable you to:

- discuss the importance of documentation and reporting to patients and nurses
- discuss the difference between paper-based records and electronic records
- describe the relationship between documentation and healthcare financial reimbursement
- identify the purposes of a healthcare record
- describe and apply guidelines for effective documentation and reporting
- discuss legal guidelines for recording client care
- describe different methods of record-keeping
- discuss the advantages of standardised documentation forms
- identify critical elements of a client's discharge plan
- describe the role of critical pathways in multidisciplinary documentation
- identify the important aspects of long-term care documentation
- discuss issues related to computerisation in documentation
- describe the purpose and content of a change-of-shift report (handover) and other forms of reporting
- describe handover reporting tools
- explain the process of verifying telephone orders.

KEY TERMS

Acuity charting, p. 249
Case management, p. 247
Change-of-shift report, p. 252
Charting by exception, p. 247
Clinical information systems, p. 236
Critical pathways, p. 247
DAR, p. 245
Diagnosis-related group (DRG), p. 236
Documentation, p. 238
Electronic health records, p. 238
Flow sheets, p. 249
Focus charting, p. 245
Incident reports, p. 256
myHealth Record, p. 238
Nursing informatics, p. 237
PCEHR (personally controlled electronic health record), p. 238
PIE, p. 245
Problem-oriented medical record (POMR), p. 244
Record, p. 238
Report, p. 252
Resident, p. 252
SOAPIE, p. 245
Source record, p. 246
Standardised care plans, p. 249
Transfer report, p. 255
Variances, p. 247

A core nursing competency is the ability to document and effectively communicate information about care, the client's response to illness, interventions and changes in their condition or circumstances (Wilkinson 2007). Nursing documentation must be accurate, concise, comprehensive, reflective, accessible and honest in conveying a timely account of nursing care. Nursing documentation is fundamental to providing client care, ensuring effective communication, and practising effectively and safely. Clients come into contact with many healthcare professionals and those points of contact must be linked by effective communication, with documentation being a permanent record of care across the many disciplines involved. High-quality, accurate information recorded by nurses is accessed and used by other members of the multidisciplinary care team in order to provide a comprehensive team approach to the client's plan of care. If documentation is not available, delays or omissions in treatments, referrals, discharge planning and recovery may occur, resulting in poorer client outcomes.

An optimal standard of nursing documentation describes all care administered throughout the course of the shift. Much of what nurses do for the client, however, may be lost through lack of appropriate acknowledgment in the record of care. Subsequently, if documentation is poor, the level and quality of continuing care can be reduced and the client may not receive the required care (Calleja et al 2011). This is particularly important under the current diagnosis-related group/case-mix system used in Australia whereby hospitals are reimbursed a set amount for each **diagnosis-related group (DRG)** treated (Box 13-1). Inaccuracy in documentation can have a direct effect upon the funding of the hospital and the staffing levels. Therefore the Australian Council on Healthcare Standards (ACHS 2010) specifies guidelines for the documentation of clinical data for classification purposes. Universal nursing terminology should form the basis of documentation and ensure that what is recorded and the care provided are consistent (Saranto & Kinnunen 2009). According to Paans et al (2010), there is a lack of consensus relating to the exact nature of an accurate record. However, in addition to poorer client outcomes, poor documentation can result in professional, ethical and legal consequences.

This chapter focuses on the documentation required within an acute care facility, but the principles of good documentation and use of data remain the same irrespective of the care situation. All organisations have documentation guidelines and the nurse is responsible for accessing and adhering to these guidelines. The provision of guidelines is consistent with the National Safety and Quality Health Service (NSQHS) Standard 1 (ACSQHC 2011).

eHealth

Globally, eHealth systems such as electronic medical records (EMR), electronic health records (EHR), and **clinical information systems** have been identified as major drivers for stimulating the changes necessary to enable coordination of care and sharing of information within health systems. eHealth innovations have huge potential to support an integrated health system and the realisation of a more efficient, safer, knowledge-based, patient-centred health system that provides universal, accessible and affordable care. Digital systems are significantly changing the way nursing documentation occurs in relation to the type of information recorded, the structure of the data and the input methods.

Increasingly, healthcare professionals are collecting and recording data using a wide range of devices. These vary from setting to setting, but the use of standard desktop computing is rarely sufficient for current healthcare needs. Tablet and other handheld devices are being introduced for recording observations and medication administration at the bedside; various electronic devices, including smart phones, are being used for client education (Ventola 2014). Pen-based, automated speech-recognition (ASR) or voice-recognition technology may eventually become extremely effective for nursing documentation now that palm-top technology is being used in the healthcare setting. Advances in information technology can provide the foundations for important improvements in healthcare delivery, such as cost efficiencies, targeting client education, screening and early treatment.

mHealth is the term used for health care supported by mobile devices, most frequently devices such as mobile phones, and tablet or laptop computers. These mobile devices are used to access health services and information. mHealth is a sub-discipline of eHealth, and can be implemented to collect clinical health data in the community, for access to healthcare information and for real-time monitoring of patients.

The Quantified Self is the term given to the recent trend of using technology to monitor regular aspects of daily life. This can include monitoring activity, diet, mood and vital signs, and usually combines wearable sensors and mobile computing. Many patients are becoming more aware of the benefits of self-managing their health and in time nurses will see more patients entering data into their electronic health records for healthcare practitioners to access.

Nursing documentation in the digital environment is integral to improving client care. As defined by the International Medical Informatics Association (IMIA), 'Nursing Informatics science and practice integrates nursing, its information and knowledge and their management with information and communication technologies to promote the health of people, families and communities world wide' (IMIA NI 2009). The ultimate goal of practising **nursing informatics** is to maximise people's health by managing information efficiently and effectively (Kennedy & Hussey 2015). So while the healthcare environment creates many challenges for accurately documenting and reporting the care delivered to clients, accurate documentation opens up many opportunities to improve care delivery.

BOX 13-1 Diagnosis-related groups

A diagnosis-related group (DRG) is a series of decision trees designed to cluster groups of clients together by diagnosis, surgical procedures, complications, comorbidities (pre-existing illness) and age.

The statistical weight of a DRG is multiplied by a hospital's specific rate of reimbursement.

The hospital is reimbursed a fixed amount for every client grouped into the DRG regardless of length of stay or cost of treatment.

An assigned DRG may change on the basis of documentation.

CLINICAL EXAMPLE

Mrs Staples is an 89-year-old woman who presents to the Emergency Department (ED) at 0730 hours with a fractured neck of femur after a fall at home. Mrs Staples lives alone with her dog and cat. Her daughter Debbie assists with shopping and taking her to appointments. Debbie tells the ED nurse that her mother has become quite forgetful, so may need frequent reminding that her neighbour will care for her animals, otherwise she will probably become agitated. The ED nurse advises the doctor of Mrs Staples's poor memory, but does not document Debbie's request, instead reporting it to the ward nurse when Mrs Staples is admitted at 1000 hours to the surgical ward.

At handover at 2300 hours, the night-shift ward nurse is told that Mrs Staples has been increasingly upset about her animals, but her daughter has not been contactable. At 0200 hours, Mrs Staples falls trying to get out of bed, and the nurse finds her crying, agitated to get home to her animals as she says no one is there to care for them. The nurse tries to reassure Mrs Staples and gives analgesia, but Mrs Staples remains upset and agitated. The nurse reviews the progress notes but cannot find any information about social arrangements for this patient. Mrs Staples has sustained a left-sided Colles' fracture as a result of her fall.

• CRITICAL REFLECTION POINT

Consider all the aspects of the *Clinical example* above.

1. **What are the main issues you can identify about documenting care?**
2. **What impact did or could this have on the people involved in the situation?**
3. **What are some alternative courses of action you would take in regard to documentation?**
4. **How could this situation have been different if Mrs Staples had a myHealth Record and she entered details there?**

Individual professional record-keeping

As independent practitioners, nurses are expected to maintain their own individual professional records. The development and updating of a professional portfolio is a good way of presenting skills, qualifications and continuing professional development, and is important for all nurses. An ePortfolio is a collection of digital artefacts that documents your learning, career, achievements and reflections over time. It is assembled and managed by the user and can be provided to support job applications, demonstrate educational progression, or simply as a repository for work-related information. This can be an important record for nurses as it can be used to document events that may have a legal impact at a later date.

Multidisciplinary communication within the healthcare team

Increasingly, nurses are working in a wide range of settings as members of multidisciplinary teams. Multidisciplinary collaboration demands effective communication between members of the healthcare team to achieve and maintain a high standard of care for clients. Reporting requires exchanges of both oral and written information between caregivers. At the end of a work shift, nurses give a verbal or taped report to nurses on the next shift. A doctor may call a ward to receive a verbal report on a client's condition and progress, or a nurse may call the doctor and report immediate care issues and request a review, along with, in the short term, care orders appropriate to the client's condition. The laboratory submits a report providing the results of diagnostic tests, or the physiotherapist undertakes a physical assessment and reports this to the team. All these communications require documenting and sharing.

It is always important to remember that a client's record or chart is a permanent legal document of information

relevant to the client's healthcare management. After each occasion of care, information about the client's health care is recorded. With each successive occasion the record is available to the doctor and other members of the healthcare team, and is a continuing account of the client's healthcare status and needs. Increasingly, these records are being documented and shared electronically.

• CRITICAL REFLECTION POINT

Consider the information you need as a clinician to be able to give safe, effective care to your patients. What would be the information you would look for every time you access patient documentation? Do you use this list as a checklist for things to include when you undertake documentation? This may include safety aspects (e.g. patient name and identifiers), care documentation (specific details versus broad comments), time of recorded entry, identified changes in patient status with cues/patient data supporting this determination, future management plans for the patient, patient preferences, etc.

Write a list of things to look for or include in your documentation every time. Consider this for patient progress notes, documenting health assessment and physical examination, clinical pathways, observations and other measurements recorded during patient care.

Continuity of care, discussed in detail in Chapter 8, is a concept that is at the basis of many quality-improvement movements across the healthcare industry. Continuity of care as a quality focus has arisen from concerns of care fragmentation for patients who often see many healthcare providers in various settings (Haggerty et al 2003). There are two core elements to the concept of continuity of care: *care of the individual patient* and *care delivered over time*. Haggerty et al (2003) describe three types of continuity of care: informational continuity, management continuity and relational continuity (Box 13-2). Effective documentation complemented by oral or written reporting is essential to maintain informational continuity and management continuity. Without an applied understanding of the nurse's role in maintaining continuity of care, the nurse may struggle to provide the patient with the appropriate level of care and safety.

The role of **electronic health records** in assisting with maintenance of continuity of care is evident through the simple and timely sharing of information. In Australia, the government has committed to the introduction of a personally controlled electronic health record, the **PCEHR**, or more recently renamed **myHealth Record**. This record places the client at the centre of their health care and allows them to access their own health information when and where it is needed. Clients have access to summary information about their medical history, medications, test results, immunisations and allergies, which can assist them and their healthcare providers in decision-making. Clients can give permission for health professionals anywhere in the country to access their relevant history. They can also record information about their health and wellbeing in their own section that can be shared with healthcare providers as required.

BOX 13-2 Continuity of care

Informational continuity – the use of information on past events and personal circumstances to make current care appropriate for each individual.

Management continuity – a consistent and coherent approach to the management of a health condition that is responsive to a patient's changing needs.

Relational continuity – an ongoing therapeutic relationship between a patient and one or more providers.

Haggerty JL et al 2003 Continuity of care: a multidisciplinary review. Br Med J 327:1219. Reproduced with permission of BMJ Publishing Group Ltd.

Documentation

Documentation is defined as 'any written or electronically generated information about a client that describes the care or service provided to that client' (Professional Development Committee of the Nursing Council of Hong Kong 2010). Effective documentation reflects the quality of care and provides evidence of each healthcare team member's accountability in the delivery of that care. Nursing documentation should be a record created by nurses to document care given or to communicate information relevant to the care of the particular client (NMBA 2016, see Box 13-3).

Purposes of records

Records serve multiple purposes in health care. In addition to demonstrating compliance with professional standards or competencies, records are used for: communication, assessment, financial reimbursement, education, research, auditing and legal documentation. These purposes are discussed in detail below.

Communication

The **record** is a means by which healthcare team members communicate their actions in relation to the client's care, including individual therapies, client education and use of referrals for discharge planning. The plan of care should be clear to anyone reading the chart. When a staff member is caring for a client and refers to a client's notes, the record should communicate the measures needed to maintain continuity and consistency of care.

BOX 13-3 Fundamental elements of records

- Client identification and demographic data
- Record of informed consent for treatment and procedures
- Admission nursing history
- Nursing diagnoses or problems
- Nursing or multidisciplinary care plan
- Clinical pathways and any variance from the norm
- Record of nursing care, treatment and evaluation
- Medical history
- Medical diagnosis
- Therapeutic orders
- Medical and healthcare professionals' progress notes
- Reports of physical examinations
- Reports of diagnostic studies
- Summary of operative procedures
- Discharge plan and summary

Assessment

A client history and baseline nursing assessment is completed when a client is admitted to a nursing care unit. This usually contains biographical data (e.g. age, marital status), method of admission, reason for admission, a brief medical–surgical history (e.g. previous surgeries or illnesses), allergies, current medication (prescribed, over-the-counter and illicit substances), the client's perceptions about illness or hospitalisation, and a review of health risk factors. A physical assessment of all body systems is either incorporated into the nursing history or included on a separate form.

The record provides data that nurses use to assess, identify, plan and evaluate appropriate interventions for nursing care. Information previously provided by the client should be verified by the nurse to confirm its accuracy. In an electronic system you may find that much of the data is prefilled, although the admitting nurse retains the responsibility for verifying the prefilled data.

Before caring for any client, the nurse should refer to the client's record for information regarding the reason for admission and general health status. The nurse is then able to conduct an individualised assessment of the client, which includes a comprehensive physical assessment, and psychosocial and environmental overview. It is important to note that in some settings the initial client assessment will be undertaken by the nurse; for example, in accident and emergency, in community care and in rural and remote area clinics.

Accurate assessment data generated by each member of the healthcare team provide an overview of the client's health status. For example, after inspection of a wound, the nurse may conclude that healing is delayed. Assuming due diligence and accurate recording of findings has occurred, the record will provide additional information, including the client's appetite, descriptions of the wound's previous appearance, an image of the wound, and laboratory results indicating the presence or absence of infection. Such information can help explain the reasons for and implications of changes in client condition, and should prompt direction and focus of care given by the healthcare team.

Financial reimbursement

As previously noted, the client care record is a document that shows the extent to which healthcare agencies should be reimbursed for services. DRGs form the basis for establishing reimbursement for client care. Detailed recording helps in establishing codable diagnoses that are used to determine a DRG. The nurse's contribution to documentation can assist the coding team to clarify the type of treatment a client receives. When client charges exceed the length of stay allowed for a particular DRG, appropriate documentation is essential to justify the additional time and cost.

Education

Students of nursing and other healthcare-related disciplines use these records as educational resources. A client's record contains a variety of information, including diagnoses, signs and symptoms (clinical features) of disease, successful and unsuccessful therapies, diagnostic findings and client behaviours. An effective way to learn the nature of an illness and the individual client's response to it is to read the client care record. While clients' records will not be identical, patterns of information can be identified in records of clients with similar health problems. This information can assist students in learning what patterns to look for in relation to various health problems and increase their ability to anticipate the type of care required by a client.

Research

Statistical data relating to the frequency of clinical disorders, and complications, the use of specific medical and nursing therapies, recovery from illness and deaths can be gathered from client records. Records are a valuable resource for describing characteristics of the client populations in a healthcare agency. A nurse may use clients' records during a research study to collect information on certain factors. For example, if a nurse

uses a new method of pain control for a group of clients, the records provide data on the clients' responses to the therapy. Recording entries that describe the type and dose of analgesic medications used and clients' subjective reports of pain relief could be used to evaluate pain-control measures. Nurses may also research records of previously discharged clients to identify nursing care problems. For example, a study to determine the incidence of infection in clients with specific types of intravenous catheters might be performed by means of a chart review. Chart reviews may also be used to research decisions made by health workers or as a measure of their written communication effectiveness. With the advent of electronic health records and standardised data entry it has become easier to gather and analyse large data sets in relation to all aspects of health care. It is important for the nurse to first acknowledge the legal and ethical considerations that apply before using or reproducing any material gathered from client care records in their setting, such as obtaining approval from recognised and appropriate ethics committees and from clients prior to access.

Auditing

The Australian Council on Healthcare Standards (ACHS) requires hospitals in Australia to establish quality-improvement programs for conducting objective, ongoing reviews of client care. The ACHS imposes standards for information to be included in the client's record, such as indications that a plan of care is developed with the client as a participant and that discharge planning and client education have occurred. The ACHS requires institutions to establish standards for quality of care, and regular review of information in client records provides the basis for evaluation of the quality and appropriateness of care provided in an institution. Nurses monitor or review records throughout the year to determine the degree to which quality-improvement standards are met. Deficiencies identified during monitoring are shared with all members of the nursing staff so that corrections in policy or practice can be made. Quality-improvement programs keep nurses informed of standards of nursing practice to maintain excellence in nursing care.

Medical records are also audited to review charges for the client's care. Auditors from the federal and state governments review records to determine the reimbursement that a client or a healthcare agency receives. Accurate documentation of supplies and equipment that have been used ensures that costs are recovered and that clients receive the care they require.

Electronic health records can assist in auditing processes as they enable the rapid accessing and collating of data in relation to standard data sets.

Legal documentation

Accurate documentation is one of the best defences against legal claims associated with nursing care. The record serves as a description of exactly what happened to a client and who was involved in providing care. This is particularly important because a lawsuit may not be filed for years after an incident and so documentation may be the crucial evidence protecting the nurse and the facility (Austin 2010). Nurses should also record a reflection of such incidents in their portfolio to ensure they have evidence if there is legal action at a later date. In contrast, documentation not completed to professional standards places nurses in jeopardy of a negligence claim from the clients in their care. Key areas of documentation that pose a risk of legal action for the nurses are (Forrester & Griffiths 2010):

- not charting the correct time events occurred
- failing to ensure that information is clear, concise and accurate
- charting actions in advance to save time, and
- documenting incorrect data.

Some of these issues are mitigated in the electronic health records; however, with increasing use of the EHRs, new unanticipated issues can arise. This is particularly concerning if a password is shared or an individual does not log out of a record, providing others with the means to accidentally enter data under another's name. Research into the effect of the introduction of EHRs in clinical settings has identified this can result in unintended consequences such as the introduction of technology-induced errors, workarounds, and workflow disruptions (Ash et al 2007). On the other hand, electronic records and health information systems bring with them a myriad of benefits. Kuziemsky et al (2012), for example, discuss a range of unintended benefits of health information systems (HIS) for patients, service delivery and administration (Kuziemsky et al 2012).

The law protects information about clients that is gathered by examination, observation, conversation or treatment. Nurses may not discuss a client's status with other clients or staff uninvolved in the client's care. Nurses are legally and ethically obligated to keep information about clients' illnesses and treatments confidential. Only those members of the healthcare team directly involved in care have legitimate access to the records. Clients often request copies of their medical records, and they have the right to read those records. Each institution has policies for controlling the manner in which records are shared. In most situations, clients are required to give written permission for release of medical information. Nurses are responsible for protecting records from all unauthorised readers. This includes handover notes, or informal,

identifiable notes that nurses make during the day and carry with them to assist in caring for patients.

When nurses and other healthcare professionals have a legitimate reason to use records for data gathering, research or continuing education, appropriate authorisation must be obtained according to agency policy. Nursing students and university teaching staff may be required to present identification indicating that access to the record is authorised. The nurse should know the location of the record at all times. The record is stored by the healthcare agency after treatment ends, and ownership of the record usually resides with the agency.

• CRITICAL REFLECTION POINT

How do you rate your ability to document patient care? What are the learning strategies that you use to improve this skill? Documentation truly is a skill that improves with practice. Some suggestions for improving your documentation can include:

- **practising in your university/college setting for the simulated case studies within the course**
- **having a colleague/fellow student read your documentation and ask you questions about the patient care you have documented**
- **practising documentation on scrap paper, and having a registered nurse check it before entering it into a patient's chart**
- **every time you provide care, while you are undertaking care or immediately after providing care, consider what information needs to be documented. If you are unable to document the information immediately, jot it down on scrap paper so you can recall it when you document (but always be vigilant about destroying/disposing of your scrap notes appropriately)**
- **reading through patient charts when you have access to them, noting the entries that give you a clear picture of the patient status/care given and comparing these with unclear entries. What is the difference between them? What lessons can you learn and apply from doing this? This is a form of auditing, and is a great way to learn what to do and what not to do.**

Guidelines for high-quality documentation and reporting

High-quality documentation and reporting are necessary to enhance efficient, individualised client care. Documentation must have meaning today, tomorrow and in the unforeseen future. One of the difficulties with documentation is that we never know when the document may be required, or under what circumstances (Austin 2010). Irrespective of the record type or data entry method, high-quality documentation and reporting follow five important guidelines: *fact*, *accuracy*, *completeness*, *currency* and *organisation*.

Fact

A record contains descriptive, objective information about what a nurse sees, hears, feels and smells. An objective description is the result of direct observation and measurement. The use of inferences without supporting factual data is not acceptable because they can be misunderstood. The use of words such as 'appears', 'seems' or 'apparently' is not acceptable because they suggest that the nurse did not know the facts. For example, the description 'The client seems anxious' does not accurately communicate facts and does not inform another caregiver of the details regarding the behaviours exhibited by the client that led to the use of the word 'anxious'. The phrase 'seems anxious' is a conclusion without supported facts. Documentation needs to clearly explain the nurse's observations of the client's behaviours. When recording subjective data, document the client's exact words within quotation marks. For example, 'Client states "I feel very nervous and out of control."' Any objective findings that are related to the client's anxiety, such as an increased blood pressure and pulse rate, can also be added.

Accuracy

The use of exact measurements ensures that a record is accurate. The nurse makes descriptions such as 'Intake, 360 mL of water' rather than 'Client drank an adequate amount of fluid'. Measurements are later used as a means to determine whether a client's condition has changed. Charting that an abdominal wound is '5 cm in length without redness, drainage or oedema' is more accurate than 'large wound is healing well'. Adhering to an institution's accepted abbreviations, symbols and system of measures (e.g. metric) ensures that all staff members will use the same language in their reports and records. Use abbreviations carefully to avoid misinterpretation. To avoid any chance of error, write words out in their entirety the first time before abbreviating them to avoid confusing terminology; otherwise, terminology can be confusing. When using electronic dropdown text menus ensure that you select the correct option as frequently there are a number of similar choices available.

Correct spelling is important and demonstrates a level of competency and attention to detail – misspelling can contribute to serious adverse treatments. Many terms can be easily confused or misinterpreted (e.g. dysphagia or dysphasia), so the nurse needs to understand the impact the documentation can have on client outcomes.

The ACHS EQuIP5 Guideline 1.1.8 (ACHS 2010) provides an overview of the details care providers must document in the client's clinical record, including that all entries must be legible, dated and signed with designation.

Records need to reflect accountability during the timeframe of the entry. This is best accomplished when nurses chart their own observations and actions. Each entry in a client's record is identified with the caregiver's initials or full name and status, such as 'Julie Smith, RN'. Each time initials are used, the full name and status must also appear on the same page. Nursing students enter their full name and educational institution, such as 'David Jones, SN, UTAS' (SN: student nurse), followed by the university affiliation. The signature holds that the nurse is accountable for information recorded. If information was inadvertently omitted from the record, it is acceptable for nurses to ask colleagues to chart information after they leave work. The entry needs to clearly show what was done and by whom: for example, 'At 1630 hours Sam Turner, RN, called and reported that at 1530 hours the client Joseph Podwera was administered the oral contrast solution required for his medical imaging procedure at 1700 hours.'

Should an incorrect entry be made in a client record, the nurse who made the entry must write a subsequent note in the record identifying the error and correcting it. Incorrect information should never be deleted or made illegible; rather, it must be identified as inaccurate and corrected with a subsequent note which is signed and dated.

Completeness

The information within a recorded entry or a report needs to be complete, containing concise, appropriate and thorough information about a client's care. Concise data are easy to understand. Clear, succinct recording and reporting give essential information, avoiding unnecessary words and irrelevant detail.

Criteria for thorough communication exist for certain health problems or nursing activities (Table 13-1). The nurse makes written entries in the client's medical record, describing nursing care that is administered and the client's response. An example of a nurse's thorough note follows:

> **2000 hours. Client verbalised sharp throbbing pain localised along medial side of right ankle, beginning at approximately 1900 hours after twisting his foot on the stairs. Pain increased with movement 7/10, slightly relieved with elevation 5/10. Pedal pulses equal bilaterally. Right ankle circumference 1 cm larger than left. Ice pack applied. Dr Walker notified at 1920 hours, nil further actions requested. Paracetamol 1 g given for pain at 1920 hours. Client states that pain has reduced to 3/10 at 1955 hours. L Turner, RN.**

Currency

Timely entries are essential in the client's concurrent care (ACHS 2010). In order to increase accuracy and decrease unnecessary duplication, many healthcare

TABLE 13-1 Examples of criteria for reporting and recording

Topic	Criteria to report or record
Assessment	
Subjective data	Description of episode in quotation marks Location, severity, onset, precipitating factors, frequency and duration, aggravating and relieving factors
Client behaviour (e.g. anxiety, confusion, hostility)	Onset, behaviours exhibited, precipitating factors
Objective data (e.g. rash, swelling, breath sounds)	Onset, location, description or quality of findings, aggravating or relieving factors
Nursing interventions and evaluation	
Treatments (e.g. enema, bath, dressing change)	Time administered, equipment used (if appropriate), client's response (objective and subjective changes) compared with previous treatment; for example, 'client denied pain during dressing change' or 'client reported severe abdominal cramping during enema'
Medication administration	Time administered, preliminary assessment (e.g. pain level, vital signs), client response or effect of medication; for example, 'client reports pain level 2 (scale 0–10) 30 minutes after paracetamol was given', or 'pruritus and hives developed over lower abdomen 1 hour after penicillin was given'
Client teaching	Information presented, method of instruction (e.g. discussion, demonstration, DVD, booklet), client response, including questions and evidence of understanding such as return demonstration or change in behaviour
Discharge planning	Client goals or expected outcomes, progress towards goals, need for referrals

agencies use bedside records, which facilitate immediate documentation of information as it is collected from a client. Activities or findings to communicate at the time of occurrence include:

- vital signs
- monitoring of interventions (chest tube observations)
- administration of medications and treatments
- preparation for diagnostic tests or surgery
- change in status
- admission, transfer, discharge or death of a client
- treatment for a sudden change in status.

This information is often included in flow sheets kept at the bedside. Nurses often also keep a worksheet when caring for several clients, making notes as the care occurs to ensure that entries recorded later in the record are accurate, as mentioned when discussing legal requirements affecting client information. Most healthcare agencies use the 24-hour system, avoiding misinterpretation of a.m. and p.m. times (Figure 13-1).

Organisation

The nurse communicates information in a logical order. For example, an organised note describes the client's pain, the nurse's assessment and interventions and the client's response. To write notes in an organised fashion, the nurse needs to think about the situation and sometimes make notes of what is to be included before beginning to write in the permanent clinical record.

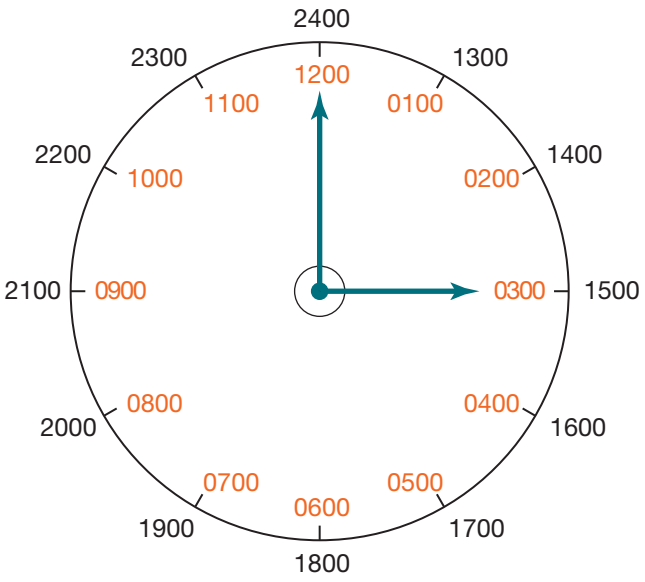

Figure 13-1 **24-hour time clock.**

Quality reporting in clinical information systems

While generally the same principles apply, whether using paper-based or electronic systems, there are some differences when using a clinical information system that nurses need to be aware of. These are described below.

Correcting documentation errors or making 'late entries'

Clinical information systems are designed to facilitate the easy entry of documentation. When a clinician documents a progress note, they are unable to edit this unless the note is in draft form. Draft documentation is not viewable to other users until the clinician determines it complete. Once it is complete and saved (i.e. not as a draft) it is viewable for any other clinician to review. Should the clinician then determine that it is incorrect or requires amendment, they must 'Cancel' the progress note entry. This automatically 'strikes out' the note and flags it as cancelled, while remaining viewable to other clinicians as cancelled.

Most clinical information systems do not generally support backdating of documentation (i.e. progress notes). As information is saved in the application, it is date- and time-stamped as to when it was created. Generally, the clinicians will denote that the situation occurred at a previous time when they provide the documentation, similar to the current practice in the paper-based medical record. Clinical information systems will always display the latest update made to any documentation to the user.

Preventing the deletion of information

Clinical information systems will always adhere to the medical documentation standards applicable at state and federal level. As a result, information is never deleted from the clinical information system. Where information is deemed not correct or appropriate (i.e. the information was recorded against the wrong client), the system will enable the user to remove the information; however, the system will only flag it as deleted. In most cases it will still be visible to the users so they are aware it has been deleted.

In some cases (i.e. in assessments where responses are removed or updated), the clinical information system will display the latest information to the user. However, it will still record for auditing purposes the historical changes to the information in the database tables.

In other cases, the information may be removed (i.e. cancelled as in progress notes); however, this is only enabled for the same clinician that wrote the information. Clinicians other than the original documenter are able

to delete another clinician's documentation in some circumstances where appropriate.

Identifying the changes and updates to the record

All changes in the clinical record within a clinical information system are recorded and saved against the individual logged in user. This is required to ensure that appropriate auditing can be undertaken (i.e. in the case of a coroner's inquest).

The clinical information system will always display the latest information to the clinician so that they can make clear, informed clinical decisions at the time. In most circumstances where information is updated, it will clearly show the clinician when and who made the updates to the record.

Note: Many clinical information systems are able to provide reports to the system administrators of changes to the record in audit reports.

Standards

The ACHS lists the following two criteria as mandatory in their EQuIP5 standards criteria and elements for healthcare standards (ACHS 2010):

> **1.1.5 Processes for clinical handover, transfer of care and discharge address the needs of the consumer/patient for ongoing care.**
>
> **1.1.8 The health record ensures comprehensive and accurate information is collaboratively gathered, recorded and used in care delivery.**

National standards or competencies, codes of ethics and professional conduct form practice guidelines and underpin responsibilities for nurses in Australia and New Zealand. All these documents outline broad roles and responsibilities for documentation and reporting (refer to your country's appropriate standards), and underpin registration and enrolment requirements for nurses. Some organisations also have further detail on how these roles and responsibilities will be enacted by nurses in their organisation.

In Australia, documentation needs to follow ACHS standards and guidelines in order to maintain institutional accreditation and lessen liability. Current standards require that all clients who are admitted to a healthcare institution have an assessment of physical, psychosocial, environmental, self-care, client education and discharge planning needs. In addition, the ACHS stresses the importance of evaluating client outcomes, including the client's response to treatments, teaching or preventive care. The nursing service department of each healthcare agency selects the method that is used to document client care. The method reflects the philosophy of the nursing department and incorporates the standards of care. Assessment data are recorded to offer to all healthcare team members a database from which to draw conclusions about the client's problems. Information describing the client's problems or diagnoses then directs caregivers to choose an appropriate plan of care with nursing therapies. Evaluation of care communicates the client's status, degree of progress and success in meeting expected outcomes of care.

Types of documentation

Narrative documentation

Narrative documentation is the traditional method for recording nursing care. It is simply the use of a story-like format to document information specific to client conditions and nursing care. Narrative charting, however, has many disadvantages, including the tendency to have repetitious information, be time-consuming and require the reader to sort through a lot of information to locate desired data (Blair & Smith 2012).

Problem-oriented medical records

The **problem-oriented medical record (POMR)** is a method of documentation that places emphasis on the client's problems. Data are organised by problem or diagnosis. Ideally, each member of the healthcare team contributes to a single list of identified client problems. This assists in coordinating a common plan of care. The POMR has the following major sections: database, problem list, nursing care plan and progress notes.

Database

The database section contains all available assessment information pertaining to the client: for example, history and physical examination, the nurse's admission history and ongoing assessment, the dietitian's assessment, laboratory reports and radiological test results. The database is the foundation for identifying client problems and planning care. The database is revised as new data become available, and accompanies clients through successive hospitalisations or clinic visits.

Problem list

After data are analysed, problems are identified and a single list is made. The problems include the client's physiological, psychological, social, cultural, spiritual, developmental and environmental needs. The problems are listed in chronological order and filed in the front of the client's record to serve as an organising guide for the client's care. New problems are added as they are identified. When a problem has been resolved, the date is

recorded and it is highlighted or a line is drawn through the problem and its number.

Nursing care plan

A nursing care plan is developed for each problem by the disciplines involved in the client's care. Nurses document the plan of care in a variety of formats. Generally, these plans of care include nursing diagnoses/client problems, expected outcomes and interventions.

Progress notes

Healthcare team members monitor and record the client's problems in the progress notes (Box 13-4). The information can be expressed in various formats of structured notes. One method is **SOAPIE**:

S Subjective data (verbalisations of the client)
O Objective data (that which the nurse can measure and observe)
A Assessment (problems identified based on the data)
P Plan (what the caregiver plans to do)
I Intervention
E Evaluation.

• CRITICAL REFLECTION POINT

Joseph Page is an 80-year-old admitted with a diagnosis of pneumonia. He complains of general malaise and a frequent productive cough, worse at night. Vital signs are: blood pressure 150/90 mmHg; pulse rate 92 beats per minute; respirations 22 breaths per minute; and temperature 38°C. During your initial assessment he coughs violently for 40–45 seconds without expectorating. His lungs have wheezes and crackles in both bases and are otherwise clear.

Differentiate between which of these data are objective and which are subjective.

In the **PIE** format, the assessment information is documented on special flow sheets. The narrative note includes:

P Problem
I Intervention
E Evaluation.

The PIE notes are numbered or labelled according to the client's problems. Resolved problems are dropped from daily documentation after the nurse's review. Continuing problems are documented daily.

Focus charting, or **DAR** notes, include:

D Data, both subjective and objective
A Action or nursing intervention
R Response of the client; that is, evaluation of effectiveness of the intervention.

One distinction of focus charting is its movement away from only charting problems, which has a negative connotation. Instead, the notes are structured according to client concerns: a sign or symptom, a condition, a nursing diagnosis, behaviour, a significant event or a change in a client's condition. Documentation is written in accordance with the nursing process; nurses are encouraged to

BOX 13-4 Progress notes – examples of different formats

SOAPIE

19/1/2008 Knowledge deficit related to uncertainty regarding surgery
1630 hours
S 'I'm worried about what it will be like after surgery.'
O Client asking frequent questions about surgery. Has had no previous experience with surgery. Wife present, acts as a support person.
A Knowledge deficit regarding surgery related to inexperience. Client also expressing anxiety.
P Explain routine preoperative preparation, including the purpose of deep-breathing and coughing (DBC) exercises.
I Provided explanation and teaching booklet on general postoperative care. Demonstrated and explained rationale for DBC exercises.
E Patient discusses rationale for DBC exercises and general care provided, and demonstrates the exercises correctly.
S Lazarus, RN

PIE

P Knowledge deficit regarding surgery related to inexperience.
I Explained to client normal preoperative preparations for surgery. Demonstrated DBC exercises. Provided booklet to client on postoperative nursing care.
E Client demonstrates DBC exercises correctly. Needs review of postoperative nursing care.
S Lazarus, RN

Focus charting

D BP in left arm 90/60, client's skin diaphoretic, client responds to name.
A Placed client in Trendelenburg's position, increased IV fluid rate to 100 mL/h per protocol, called Dr Arkin.
R Client remains responsive, BP in left arm 94/68, 3 min after increasing fluids.
S Wilson, RN
D Twisting in bed, grimacing with movement, states has sharp lower back pain (8/10).
A Administered morphine sulfate 10 mg IM.
R Verbalised relief within 15 minutes, lying quietly, pain level now 4/10.
T Newson, RN

broaden their thinking to include any client concerns, not just problem areas, and critical thinking is encouraged. Focus charting is easily understood by caregivers and adaptable to most healthcare settings.

Source records

In a **source record** the client's chart is organised so that each discipline (e.g. nursing, medicine, social work or physiotherapy) has a separate section in which to record data. One advantage of a source record is that caregivers can easily locate the proper section of the record in which to make entries. Table 13-2 lists the components of a source record. A disadvantage of the source record is that information is not organised by client problems, so that details about a specific problem may be distributed throughout the record. For example, the nurse describes the character of abdominal pain and use of relaxation therapy and analgesic medication in the nurses' notes. The doctor's notes describe the progress of the client's bowel obstruction and the plan for surgery in a separate section of the record. The results of X-ray examinations that show the location of the bowel obstruction are in the test results section of the record. The method by which source records are organised does not show how information from the disciplines is related or how care is coordinated to meet all of the client's needs.

The nurses' notes section is where nurses enter a narrative description of nursing care and the client's response (Box 13-5).

BOX 13-5 Sample narrative note

8/6 1100 hours

Client states, 'I'm having a hard time catching my breath.' Respirations, laboured at 28/min; P, 96; BP, 112/70. Client using intercostal muscles during inhalation. Breath sounds auscultated, crackles over both lower lobes. Chest excursion equal bilaterally. Elevated head of bed to Fowler's position. Obtained arterial blood gas analysis at 1045 order. Results are pH, 7.34; PCO2, 44 mmHg; PO2, 80 mmHg. Dr Stein called. Applied O2 at 4 L/min per mask as ordered. Remained at bedside to calm client.

P Haske, RN

In a clinical information system, the record is more integrated, but separate areas for writing and displaying information are also available (Figure 13-2).

• CRITICAL REFLECTION POINT

The nurse positions Mr Page in a semi-Fowler's position and encourages increased fluid intake for fever. One hour later the client is resting in bed. Vital signs are: blood pressure 130/86 mmHg, pulse 86 beats per minute, respiration 22 breaths per minute and temperature 37.8°C. The client states he has been able to sleep. His fluid intake has been 200 mL of water.

Use the given information to write a nursing progress note using each of the SOAPIE, PIE and DAR formats.

TABLE 13-2 Example of organisation of a traditional source record

Sections	Contents
Admission sheet	Specific demographic data about client: legal name, identification number, sex, age, birth date, marital status, occupation and employer, health insurance, nearest relative to notify in an emergency, religious preference, name of attending doctor, date and time of admission
Doctor's order sheet	Record of doctor's orders for treatment and medications, with date, time and doctor's signature
Nurse's admission assessment	Summary of nursing history and physical examination
Graphic sheet and flow sheet	Record of repeated observations and measurements such as vital signs, daily weights and intake and output
Medical history and examination	Results of initial examination performed by doctor, including findings, family history, confirmed diagnoses and medical plan of care
Nurses' notes	Narrative record of nursing process: assessment, nursing diagnosis, planning, implementation and evaluation of care
Medication records	Accurate documentation of all medications administered to client: date, time, dose, route and nurse's signature
Doctor's progress notes	Ongoing record of client's progress and response to medical therapy and review of disease process
Healthcare discipline's records	Entries made into record by all health-related disciplines: radiology, social work and laboratories
Discharge summary	Summary of client's condition, progress, prognosis, rehabilitation and teaching needs at time of dismissal from hospital or healthcare agency

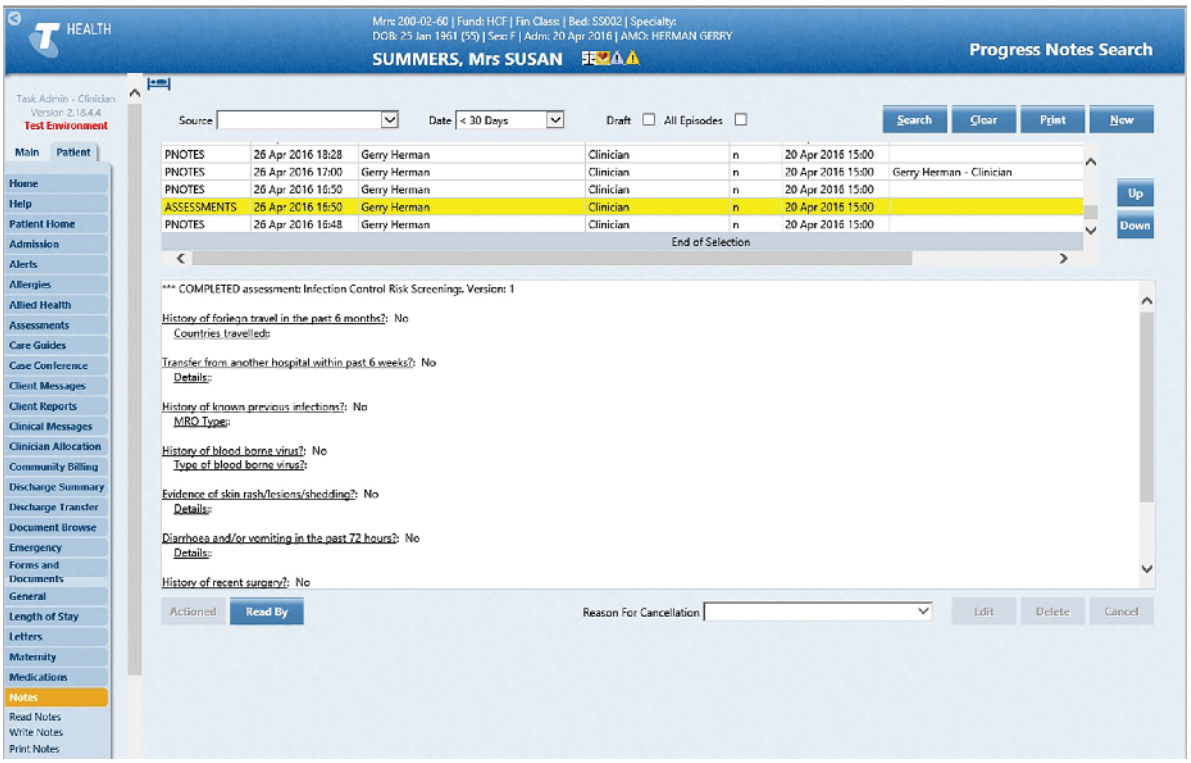

Figure 13-2 Viewing nursing notes in clinical information system.

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Charting by exception

Charting by exception is an approach used to streamline documentation. It reduces repetition and time spent in charting. It is a shorthand method for documenting normal findings and routine care based on clearly defined standards of practice and predetermined criteria for nursing assessments and interventions. Clearly defined standards of practice that specify nurses' responsibilities to clients provide the framework for routine care of all clients. With standards integrated into documentation forms, such as predefined normal assessment findings or predetermined interventions, a nurse need document only significant findings or exceptions to the predefined norms. In other words, the nurse writes a progress note only when the standardised statement on the form is not met. Assessments are standardised on forms so that all caregivers evaluate and document findings consistently.

Because the standard assessments are located in the chart, client data are already present on the permanent record and caregivers have easy access to current data. The assumption with charting by exception is that all standards are met unless otherwise documented. When nurses see entries in the chart, they know that something out of the ordinary has been observed or has occurred. For that reason, when changes in a client's condition have developed, it is easy to track them.

Case management and clinical pathways

The **case management** model of delivering care incorporates a multidisciplinary approach to documenting client care. The standardised plan of care is summarised into **critical pathways**, for a specific disease or condition. Clinical pathways – or critical pathways, care paths, integrated care pathways or care maps – are multidisciplinary care plans that offer many benefits by focusing on key interventions and expected outcomes within established timeframes. The nurse and other team members, such as dietitians, social workers and physiotherapists, use the same clinical pathway to monitor the client's progress during each shift.

The aim of clinical pathways is to improve the quality of care, client satisfaction and efficiency in the use of resources and to reduce risks (De Bleser et al 2006). In general, the clinical pathway identifies the expected outcomes for each day of care (Figure 13-3). Any divergence from the stated pathway of care, whether clinical or procedural, is regarded as a variance. Recognition of **variances** is

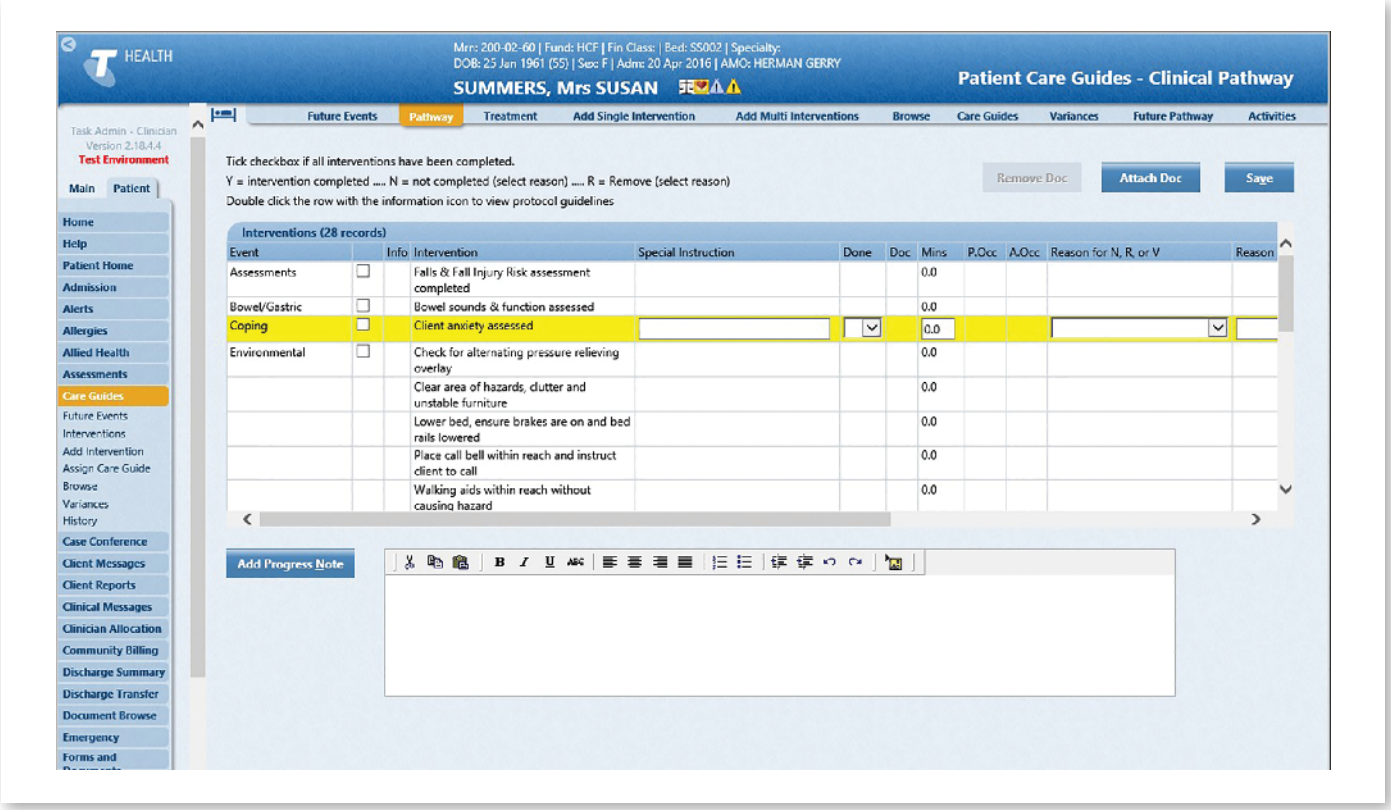

Figure 13-3 Clinical pathway in clinical information system.

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vital to client outcomes and should be documented in a timely fashion (Sheehan 2002). A negative variance occurs when the activities on the clinical pathway are not completed as predicted or the client does not meet the expected outcomes. An example of a negative variance is when a client develops pulmonary complications postoperatively, requiring oxygen therapy and monitoring pulse oximetry. A positive variance occurs when a client progresses more rapidly than expected; for example, use of an indwelling urinary catheter may be discontinued a day early. A variance analysis is necessary to review the data for trends and for developing and implementing an action plan to respond to the identified client problems (Box 13-6).

It must also be acknowledged that variance from the clinical pathway may be related to a client's comorbidities. These results are unexpected and not accounted for within the normal procedural outcomes, so there will be a reassessment of the use of the pathway as a clinical tool.

BOX 13-6 Variance documentation example

A 56-year-old client is on a surgical unit one day after cholecystectomy. He is beginning to have an elevated temperature, his breath sounds are decreased bilaterally in the bases of both lobes of the lungs and he is slightly confused. Ordinarily, one day after surgery the client should be afebrile with lungs clear. The following is an example of the variance documentation for this client.

23/9/08 1000 hours

Breath sounds diminished bilaterally at the bases. T, 38.2; P, 92; R 24/min; oxygen sat, 84. Daughter states he is 'confused' and did not recognise her when she arrived a few minutes ago. Oxygen started at 2 L per standing orders. Will monitor pulse oximetry and vital signs every 15 minutes.

Doctor notified of change in status.

Daughter at bedside.

Common record-keeping forms

Various forms are available which are specially designed for the type of information nurses generate during their client assessment. The categories within a form are usually derived from institutional standards of practice or guidelines established by accrediting bodies.

Nursing history

A client history form (often referred to as a nursing history) is completed when a client is admitted to a ward. The history form guides the nurse through an assessment of the client's social and health-related issues. These data then provide the framework for the nurse to develop a comprehensive, holistic approach to planning client care. All care delivered during an admission relies on an accurate initial assessment as the baseline for changes in client progress. Each institution designs a nursing history form differently, based on the standards of practice, philosophy of nursing care and the nursing care delivery system. The data gathered in any initial nursing assessment, however, become the foundation for planning clients' ongoing management up to and following their discharge.

Graphic sheets and flow sheets

Flow sheets are forms that allow nurses to assess the client and to document, quickly and effectively, using a coding system, vital signs and routine care, such as bathing, walking, meals and safety and restraint checks (Figure 13-4). If something on the flow sheet is unusual or changes significantly, a focus note is needed. For example, if a client's blood pressure becomes dangerously high, the nurse completes a focus assessment and records this, as well as action taken in the progress notes. Flow sheets provide a quick, easy reference for the healthcare team members in assessing a client's status. Critical care and acute care units commonly use flow sheets for all types of physiological data (Box 13-7).

Acuity charting systems or client dependency systems

Staffing patterns can be determined by examining the acuity levels of the clients on a particular nursing unit. The client-to-staff ratios depend on a composite gathering of data in relation to the 24-hour interventions that are necessary for implementing care. **Acuity charting** requires that staff assign a number scale to interventions, thereby obtaining a numerical level of acuity for each client. For example, an acuity system might rate bathing clients from 1 to 5 (1 is totally dependent, 5 is fully independent). A client returning from surgery requiring frequent monitoring and extensive care may be listed with an acuity level of 1. On the same continuum, another client awaiting discharge after a successful recovery from surgery has an acuity level of 5.

Standardised care plans

Many institutions have attempted to make documentation easier for nurses with **standardised care plans**. The plans, based on the institution's standards of nursing practice, are preprinted, established guidelines which are used to care for clients who have similar health problems. After a nursing assessment is completed, the nurse identifies the standard care plans that are appropriate for the client. The care plans are placed in the client's medical record. Modifications can be made in ink to the standardised plans to individualise the therapies. Most standardised care plans also allow the nurse to write in specific goals or desired outcomes of care, as well as the dates by which these outcomes should be achieved.

One advantage of standardised care plans is the establishment of clinically sound standards of care for similar groups of clients. These standards can be useful when quality-improvement audits are conducted. Another advantage is education; nurses learn to recognise the accepted requirements of care for clients. The standardised care plans can also improve continuity of care among professional nurses.

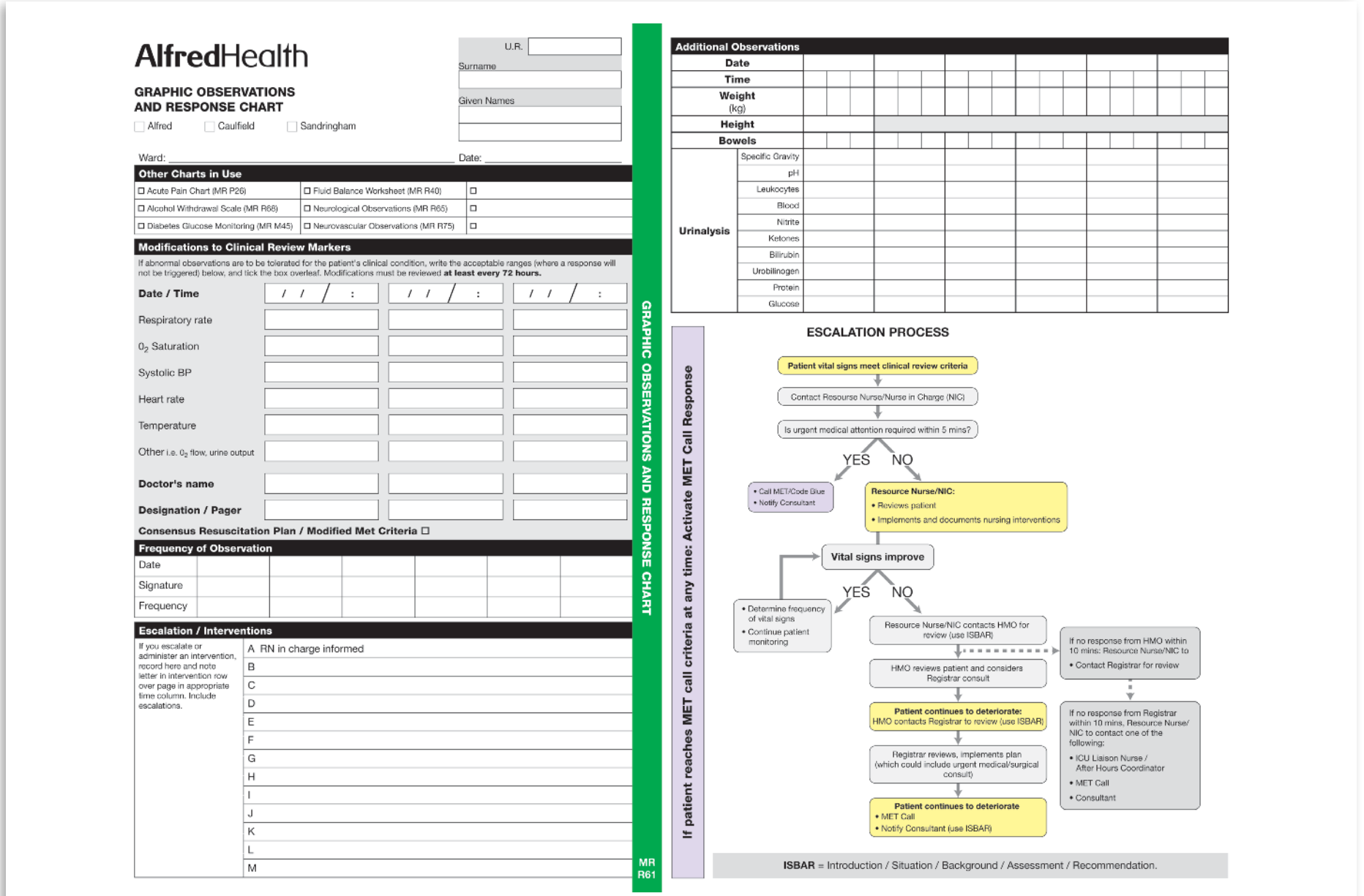
The use of standardised care plans is controversial. The major disadvantage is the risk that the standardised plans inhibit nurses' identification of unique, individualised therapies for clients. When standardised care plans are used in a healthcare facility, the nurse remains responsible for an individualised approach to care. Standardised care plans cannot replace the nurse's professional judgement and decision-making. In addition, care plans need to be updated on a regular basis to ensure that content is current and appropriate.

There is the trend in many hospitals to computerise care plans. With such a system, daily computer-generated care plans are printed and incorporate several nursing diagnoses or problems in a single care plan. Such a system facilitates the process of revision and individualisation of plans. Care facilities using this system will all use slightly different approaches.

Discharge summary forms

Significant emphasis is placed on preparing a client for an efficient, timely discharge from a healthcare institution. A prospective payment system based on DRGs encourages healthcare institutions to be more efficient and to discharge the client as soon as possible. However, it is important to ensure that a client's discharge results in desirable outcomes.

Ideally, discharge planning begins at admission. Nurses revise the plan as the client's condition changes. There needs to be evidence of the involvement of the client and family members in the discharge planning process so that the client and family have the necessary information and resources to return home. The planning for discharge



AlfredHealth

U.R.

Surname

Given Names

GRAPHIC OBSERVATIONS AND RESPONSE CHART

☐ Alfred ☐ Caulfield ☐ Sandringham

Ward: _____ Date: _____

Other Charts in Use

☐ Acute Pain Chart (MR P26)	☐ Fluid Balance Worksheet (MR R40)	☐
☐ Alcohol Withdrawal Scale (MR R68)	☐ Neurological Observations (MR R65)	☐
☐ Diabetes Glucose Monitoring (MR M45)	☐ Neurovascular Observations (MR R75)	☐

Modifications to Clinical Review Markers

If abnormal observations are to be tolerated for the patient's clinical condition, write the acceptable ranges (where a response will not be triggered) below, and tick the box overleaf. Modifications must be reviewed **at least every 72 hours.**

Date / Time	/ / :	/ / :	/ / :
Respiratory rate			
0_2 Saturation			
Systolic BP			
Heart rate			
Temperature			
Other i.e. 0_2 flow, urine output			
Doctor's name			
Designation / Pager			

Consensus Resuscitation Plan / Modified Met Criteria ☐

Frequency of Observation

Date						
Signature						
Frequency						

Escalation / Interventions

If you escalate or administer an intervention, record here and note letter in intervention row over page in appropriate time column. Include escalations.

A RN in charge informed
B
C
D
E
F
G
H
I
J
K
L
M

GRAPHIC OBSERVATIONS AND RESPONSE CHART

MR R61

Additional Observations

Date							
Time							
Weight (kg)							
Height							
Bowels							
Urinalysis Specific Gravity							
pH							
Leukocytes							
Blood							
Nitrite							
Ketones							
Bilirubin							
Urobilinogen							
Protein							
Glucose							

If patient reaches MET call criteria at any time: Activate MET Call Response

ESCALATION PROCESS

Patient vital signs meet clinical review criteria
Contact Resource Nurse/Nurse in Charge (NIC)
Is urgent medical attention required within 5 mins?
YES NO
• Call MET/Code Blue
• Notify Consultant
Resource Nurse/NIC:
• Reviews patient
• Implements and documents nursing interventions
Vital signs improve
YES NO
• Determine frequency of vital signs
• Continue patient monitoring
Resource Nurse/NIC contacts HMO for review (use ISBAR)
If no response from HMO within 10 mins: Resource Nurse/NIC to
• Contact Registrar for review
HMO reviews patient and considers Registrar consult
Patient continues to deteriorate: HMO contacts Registrar to review (use ISBAR)
If no response from Registrar within 10 mins, Resource Nurse/NIC to contact one of the following:
• ICU Liaison Nurse / After Hours Coordinator
• MET Call
• Consultant
Registrar reviews, implements plan (which could include urgent medical/surgical consult)
Patient continues to deteriorate
• MET Call
• Notify Consultant (use ISBAR)

ISBAR = Introduction / Situation / Background / Assessment / Recommendation.

Figure 13-4 Graphic observation chart.

Courtesy Alfred Health.

BOX 13-7 Benefits of using a flow sheet

Information is accessible to all members of the healthcare team
Time spent on writing a narrative note is decreased
Information is current
Errors resulting from transfer of information are decreased
Team members can quickly see trends over time

may also require the nurse to assess the client's need of ancillary assistance if the client does not have significant others or an established support system at home. Clients and their significant others also need to be made aware of potential post-discharge complications and any ongoing management they may require, such as follow-up appointments, medication management and emergency numbers.

When a client is discharged from institutional care, a discharge summary is prepared by the various members of the healthcare team and given to the client or family, general practitioner, home healthcare, rehabilitation or long-term care agency. Discharge summary forms (Figure 13-5) make the summary concise and instructive and should be a tool to assist in the ongoing management of the client following discharge.

• CRITICAL REFLECTION POINT

Several days later, following treatment with intravenous antibiotics, Mr Page is feeling much better and preparations are being made for discharge. He is to take Cephalexin 500 mg every 6 hours for the next 10 days, continue to drink extra fluids and get extra rest. Mr Page lives alone. Although he is generally cooperative, he does not like drinking water or taking pills. He is to make an appointment with his doctor for 1 week from today and should call the doctor if he develops symptoms of recurrence.

Write a discharge summary for the nursing care, including any patient education required, and discharge instructions for the patient which are concise and instructive.

Home healthcare documentation

Home health care continues to grow, with shorter hospitalisations and larger numbers of older adults requiring home healthcare services. Many state governments have specific guidelines for establishing eligibility for home healthcare reimbursement. According to these guidelines, nurse input into the documentation must reflect an accurate

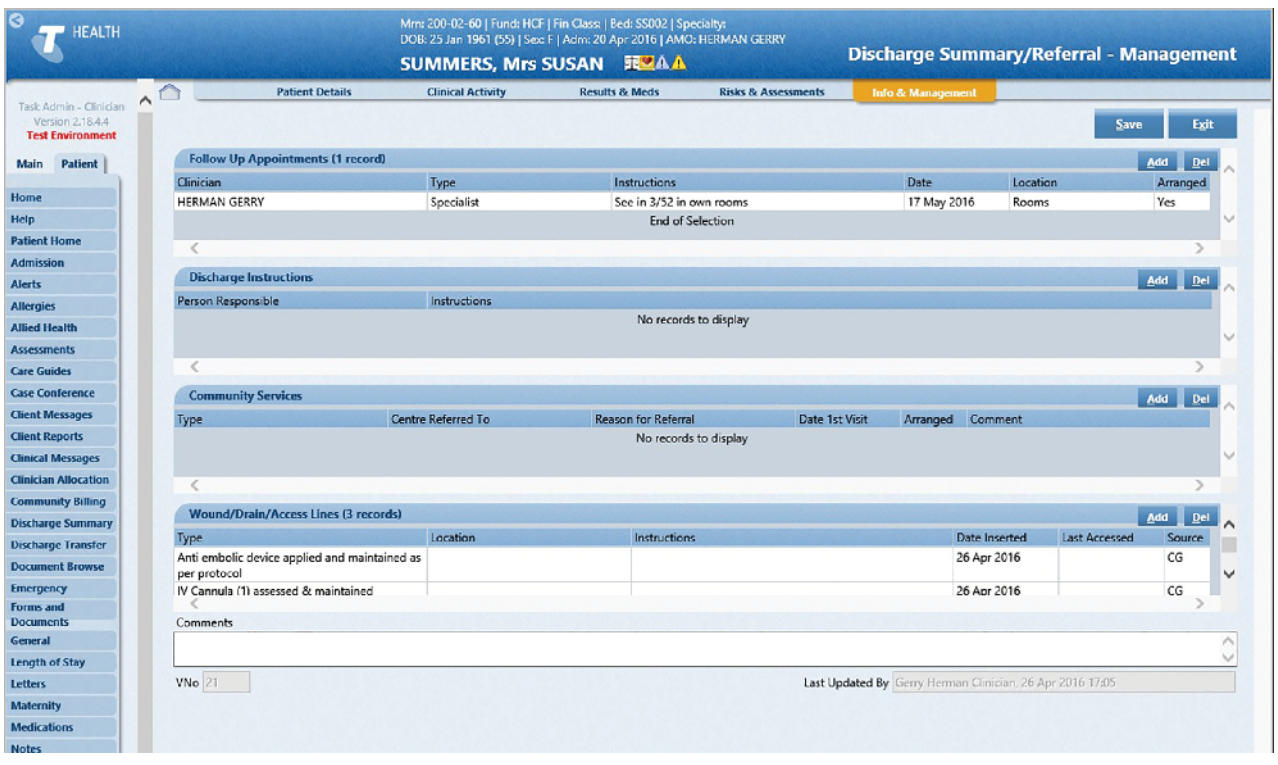


Figure 13-5 Discharge summary view clinical information system.

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assessment and the nurse's accountability to the client and the taxpayer.

Documentation in the home healthcare system has different implications from that in other areas of nursing. Nurses in this context must have astute assessment skills in order to gather the required information about changes in the client's healthcare status, as they often work independently and do not have others nearby to validate the client's condition or issues that may arise. In addition, documentation systems need to provide the entire healthcare team with the necessary information to be able to work together effectively (Box 13-8).

Some parts of the record are needed in the home with the client; other information is needed in an office setting. This means that duplication of documentation is necessary, or agency policies are needed regarding what forms nurses need to leave at their office versus what forms need to be taken into the homes. Computerised client records are a way of handling these different needs. With the use of tablet and laptop computers, it is becoming possible for the records to be available in multiple locations, which allows greater access to the multidisciplinary needs often present in home health care (Figure 13-6). This includes the ability to share documents and images, and conduct telehealth consultations with specialist team members from the client's home.

Long-term healthcare documentation

An increasing number of elderly people require care in long-term healthcare facilities. Since many individuals will live in this setting for the rest of their lives, they are referred to as **residents** rather than clients. The information provided within nursing documentation has a direct influence on the level of care a resident will receive.

Long-term client care in Australia has particular aspects that make documentation practices somewhat unique (Voyer et al 2014). In extended care, government agencies are instrumental in determining the standards and policies for documentation. In addition, the health department in each state or territory governs the frequency of written nursing records of the residents in long-term care facilities. Since residents are often stable, daily documentation may be completed using flow sheets. Assessments done several times a day in the acute-care setting may be required only at weekly or monthly intervals in the extended-care setting.

Extended-care agencies are also developing skilled-care units for residents requiring increased levels of care, in response to the demands for shorter hospital stays. Extended-care documentation supports a multi-disciplinary approach in the assessment and planning process. Communication among healthcare providers, such as nurses, social workers, occupational therapists and dietitians, is essential in the regulated documentation process.

BOX 13-8 Home healthcare forms for documentation

The usual forms used to document home care include:

- Client assessment
- Referral source information/intake form
- Discipline-specific care plans
- Doctor's plan of treatment
- Medication sheet
- Clinical progress notes
- Miscellaneous (conference notes, verbal order forms, telephone calls)
- Discharge summary
- Reports to third-party payers

Modified from Iyer PW, Camp NH 1999 Nursing documentation: a nursing process approach. Mosby, St Louis.

Reporting

Nurses communicate information about clients so that all team members can make appropriate decisions about their care. Four types of **report** made by nurses are the change-of-shift report, telephone report, transfer report and incident report.

Change-of-shift (handover) report

Towards the end of each shift, nurses report information about their assigned clients to the nurses working on the next shift. The purpose of the report is to provide continuity of care among nurses who are caring for a client. If one nurse finds a certain pain-relief measure effective for a client, it is important that the information be relayed to the next nurse caring for the client so that pain-control interventions can be continued.

The **change-of-shift report** (handover) may be given orally in person or via a recorded medium. Oral reports may be given in staff rooms, with staff members from both shifts participating or at the patient's bedside. An advantage of an oral report is that it allows staff members to ask questions or clarify explanations. When nurses make rounds, the client and family members also have the opportunity to participate in any decisions. The nurses can see the client together to perform needed assessments, evaluate progress and discuss the interventions best suited

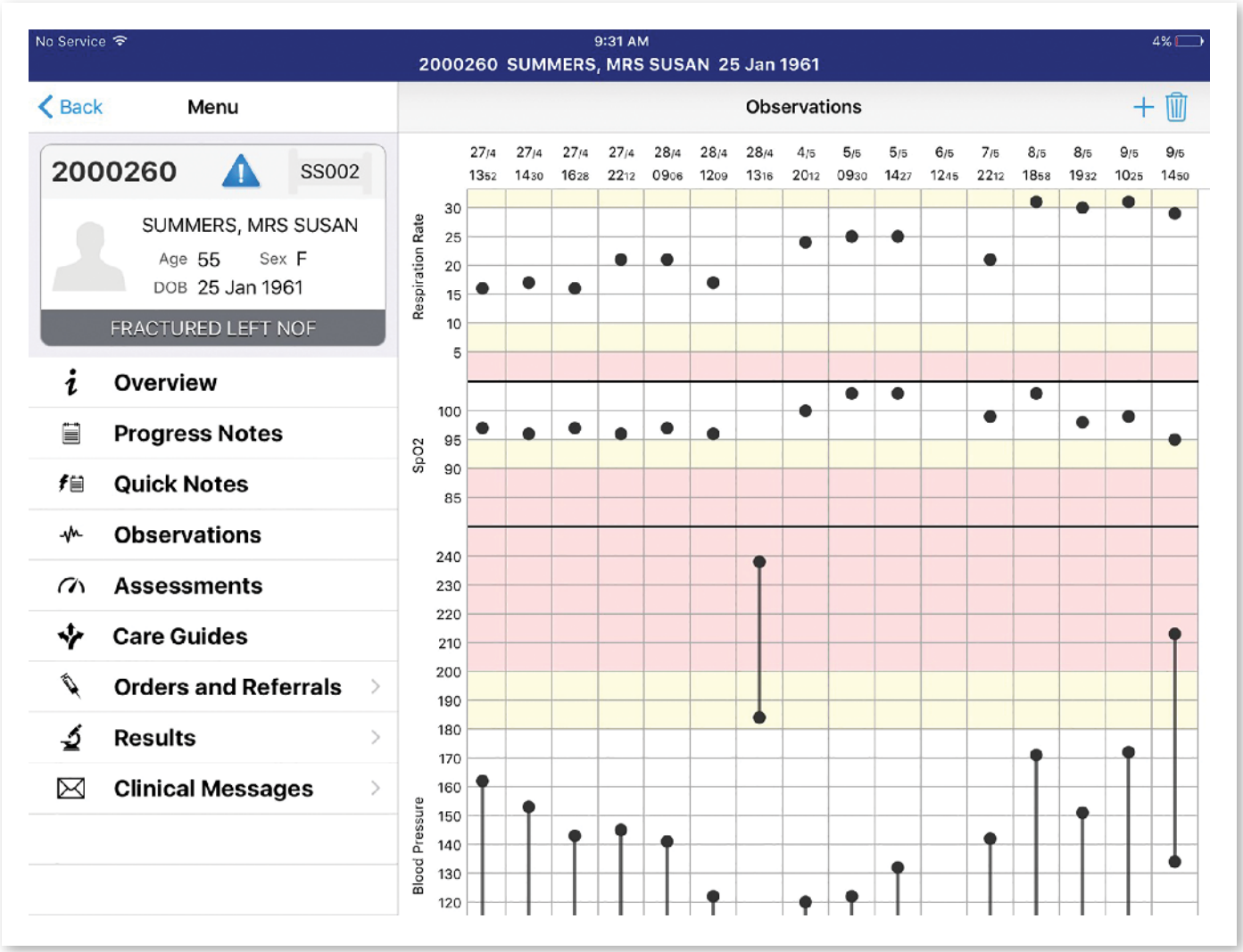


Figure 13-6 **Tablet-based observation recording.**

© Emerging Systems, a Telstra Health business.

to the client's needs. An audiotape report is given by the nurse who has completed care for the client and it is left in a secured area to ensure confidentiality for the nurse on the next shift to review. Taped reports can improve efficiency by allowing staff to report when time is available.

Because of a nurse's many responsibilities, it is important that a change-of-shift report be conducted quickly and efficiently (Table 13-3). A good report describes clients' health status and lets staff on the next shift know exactly what kind of care the clients require. Significant facts about clients are reviewed (e.g. the condition of wounds or episodes of chest pain) to provide a baseline for comparison during the next shift. Data about clients need to be objective and concise. An organised report follows a logical sequence. To prepare for the report, the nurse gathers information from worksheets and the client's care plan.

Reporting and handover has been a focus of quality improvement in Australia and New Zealand since 2007–08, with international importance placed on quality of handover as paramount to patient safety. See NSQHS Standard 6 for details on clinical handover (ACSQHC 2011). Handovers that are not structured or comprehensive can interrupt continuity of care, lead to poor practice and may cause harm (Calleja et al 2011). Structures and frameworks for reporting (Box 13-9) have been the focus of recent research as a means to improve quality. See Skill 12-1 in Chapter 12.

When giving a report, the nurse provides crucial information concerning clients and family members and discusses relevant issues in a professional manner. It is important that the nurse refers to the Nursing and Midwifery Board of Australia's *Registered nurse standards for practice* (NMBA 2016) or the Nursing Council of

TABLE 13-3 Comparison of do's and don'ts for change-of-shift reports

Do's	Don'ts
Do provide only essential background information about client (i.e. name, sex, age, doctor's diagnosis and medical history)	Don't review all routine care procedures or tasks (e.g. bathing, scheduled changes)
Do identify client's nursing diagnosis or healthcare problems and their related causes	Don't review all biographical information already available on file
Do describe objective measurements or observations about client's condition and response to health problem; emphasise recent changes	Don't use critical comments about client's behaviour, such as 'Mrs Wills is so demanding'
Do share significant information about family members as it relates to client's problems	Don't make assumptions about relationships between family members
Do continuously review ongoing discharge plan (e.g. need for resources, client's level of preparation to go home)	Don't engage in idle gossip
Do relay to staff significant changes in the way therapies are given (e.g. different position for pain relief, new medication)	Don't describe basic steps of a procedure
Do describe instructions given in teaching plan and client's response	Don't explain detailed content unless staff members ask for clarification
Do evaluate results of nursing or medical care measures (e.g. effect of back rub or analgesic administration)	Don't simply describe results as 'good' or 'poor'; be specific
Do be clear about priorities to which oncoming staff must attend	Don't force oncoming staff to guess what to do first

New Zealand (2007) *Competencies for registered nurses* to ensure compliance with the recognised professional standards pertaining to reports and the information contained within them. It is often necessary to describe the interactions among clients, nurse and family members in behavioural terms. The nurse needs to avoid using judgemental language such as 'uncooperative', 'difficult' or 'bad' when describing such behaviours.

• CRITICAL REFLECTION POINT

At the end of your shift 6 hours later, you have identified fluid volume deficit as a problem for Mr Page. Since his admission he has had fluid intake of about 600 mL and his urine output was 300 mL of dark, concentrated urine. His temperature is back up to 38.3°C, his mucous membranes are dry and he states that he feels very weak. Using a handover framework, list the information that should be included in the change-of-shift report.

Telephone report

Nurses inform doctors of changes in a client's condition and communicate information to nurses on other units about client transfers; laboratory staff or radiologists may report results of diagnostic tests. Those involved with a telephone report need to provide clear, accurate and concise information.

Information in a telephone report is documented when significant events or changes in a client's condition have occurred. To document a phone call, the nurse includes when the call was made, who made it (if other than the writer of the information), who was called, to whom information was given, what information was given and what information was received, and if any additional or change in orders were received. For example, 'At 1022 hours called Dr M's rooms to inform her that Ms Demos's STAT potassium level taken at 0800 hours was 3.2 mEq/L. Dr M to review patient on ward this afternoon. Carole Towns, RN'.

Telephone orders

Telephone orders involve a doctor stating a prescribed therapy over the phone to a registered nurse. Clarifying messages is important when a nurse accepts a doctor's orders over the telephone. The order needs to be verified by repeating it clearly and precisely. Many institutions require that the doctor repeat the telephone order to a second RN to reduce the possibility of a transcription error occurring. Then the nurse writes the order on the appropriate chart, such as the medication chart, and signs it. For example, '14–2–2012: 19.20 hours – Telephone order from Dr Reis for Mr Rogers UR 92762344 morphine 5 mg IM stat. Carol Towns, RN, and Mary Walters, RN'. The doctor later legally verifies the telephone order by signing it within a set time period (e.g. 24 hours).

Telephone orders are frequently given at night or during an emergency, and should be used only when

BOX 13-9 Reporting structures/tools

HAND ME AN ISOBAR

Step 1 – Preparing for handover	H Hey, it's handover time – reminding everyone about importance of handover A Allocate staff to care for patients during the handover (continuity of care) N Nominate participants, time and venue D Documentation should be updated before handover
Step 2 – Organise handover	M Make sure all participants have arrived E Elect a leader (usually shift coordinator/supervisor)
Step 3 – Environmental awareness	A Alerts, attention and safety N Notice about potential patient movements, staffing or other potential environmental issues
Step 4 – Minimum data set for individual patient handover	I Identification of patient S Situation and status O Observations B Background and history A Assessment and actions R Responsibility and risk management

SBAR

S Situation – chief complaint, current status
B Background – previous history (clinical background)
A Assessment – What are the problems? (results of assessment, vital signs and symptoms)
R Request/recommendation – What do I recommend/request be done? (suggested and anticipated changes, critical monitoring)

SHARED

S Situation – reason for admission/phone call; change in condition; diagnosis-specific information
H History – medical, surgical, family, etc; recent treatments, response and events
A Assessment – results of any testing, severity of condition
R Risk – allergies, infection control, literacy/cultural, drugs, skin integrity, mobility/falls
E Expectation – expected outcomes, plan for care with timeframes, discharge planning, who to call with specific concerns/treating team
D Documentation – progress notes, referral, anything relevant for patient

Adapted from Australian Commission on Safety and Quality in Health Care (ACSQHC) 2010. The OSSIE guide to clinical handover improvement. ACSQHC, Sydney. Online. Available: www.safetyandquality.gov.au/wp-content/uploads/2012/01/ossie.pdf; accessed 19 July 2016.

absolutely necessary. Certain guidelines can be used to prevent errors in receiving telephone orders (Box 13-10).

With the increasing adoption of electronic health records it is becoming possible for doctors to securely access patient records remotely. This should result in a decrease in telephone orders as the doctor can add orders into the EHR directly.

Transfer report

Clients may be transferred from one unit to another to receive different levels of care. For example, clients are transferred from an intensive care unit or the recovery room to general nursing units when the client no longer requires such intense monitoring. In order to promote continuity of care, transfer reports may be given by phone or in person. When giving a **transfer report**, nurses include the following information:

- client's name, age, primary doctor and medical diagnosis
- summary of progress up to the time of transfer
- current health status (physical and psychosocial)
- current plan of care
- any critical assessments or interventions to be completed shortly after transfer (helps receiving nurse to establish priorities of care)

BOX 13-10 Telephone order guidelines

- If the doctor sounds hurried over the phone, use clarification questions to avoid misunderstandings
- Clearly determine the client's name, room number and diagnosis
- Repeat any prescribed orders back to the doctor
- Write a telephone order to include date and time given; name of client, nurse and doctor; and the complete order
- Follow agency policies; some institutions require telephone (and verbal) orders to be reviewed and signed by two nurses
- Have the doctor co-sign the order within the timeframe required by the institution (usually 24 hours)

- any special considerations, such as isolation status or resuscitation status
- need for any special equipment.

After completion of the transfer report, the receiving nurse needs an opportunity to ask questions about the client's status. In some cases, written documentation must include a record of information reported.

• CRITICAL REFLECTION POINT

Reconsider the *Clinical example* at the beginning of this chapter.

Mrs Staples was the elderly woman admitted with a fractured neck of femur who later fell and sustained further injuries. We cannot know for sure, but perhaps if Mrs Staples had been reassured continually about who was looking after her pets, her outcome might have been different. What is relevant here is that unless information is written down, it is likely to be lost (Calleja et al 2011).

Research into handover and verbal reports has found that accuracy and retention of correct information is difficult when relying on verbal reports alone to carry information forward (Calleja et al 2011). One study that simulated clinical handover studied types of handover and data lost during handover (these were: purely verbal; note-taking style; and a typed sheet with verbal handover) over a period of five cycles of patient handovers (Pothier et al 2005). Findings included degradation of data in all three groups; however, the verbal-only style experienced the most data loss, until no original or correct data was handed over for any of the simulated patients. This substitution was not present in the other handover styles. The note-taking group showed steady data loss; at the end of five cycles, only 31% of data was accurate. Finally, the group with typed page accompanying verbal handover had very little data loss over the five cycles. This is of interest as nursing in particular is often seen as a discipline that has a 'verbal' culture (often information is passed on via verbal means with less detail given in documented notes).

Incident reports

An incident is any event that is not consistent with the routine operation of a healthcare unit or with the routine care of a client. Incidents may involve clients, staff or visitors. Examples of incidents include client falls, needle-stick injuries to staff, a visitor having symptoms of illness, medication administration errors, accidental omission of ordered therapies, and circumstances that led to injury or risk of injury. Analysis of **incident reports** helps with the identification of trends in systems and unit operations that provide justification for changes in policies and procedures, or in-service seminars. Incident reports are an important part of the quality-improvement programs of healthcare facilities.

When an incident occurs, the nurse involved or the witness(es) to an injury complete an incident report. A report is completed even if an injury does not occur or is not apparent. Most institutions have incident report forms, which are sent to the risk-management office for review and follow-up action. For example, the employees' health department might review all incidents involving employee needle-stick injuries, and the legal department might review incidents for which the potential for legal action against the hospital exists.

When a client or a visitor is involved in an incident, the nurse who observes the incident or who receives the report deals with the situation and then completes a detailed report. In many cases, a doctor is notified and decides on actions to be taken to determine whether any injury has been suffered. If a client is affected, the doctor documents the examination and findings in the client's medical record. The nurse documents only an objective description of what was actually observed and any follow-up care that occurred, and does not specify in the medical record that an incident report was prepared. Examples of an accurate and an inaccurate note are:

> **Accurate note: 2200 hours. Heard a thump in ward. Patient Margaret Baldwin found on floor, complained of aching pain in left hip, 8 (scale 0–10). Noted external rotation and shortening of left leg. Lifted into bed using Hoyer lift. Vital signs: blood pressure 142/88 mmHg; pulse 90 beats per minute; respiration 22 breaths per minute. Bed rails up, call bell within reach, patient reassured and instructed to remain in bed. Dr Smith notified at 2210 hours, portable X-ray ordered.**

> **Inaccurate note: Patient fell out of bed, complained of pain in left hip. Noted external rotation and shortening of left leg. Dr Smith notified.**

One of the more common types of incident is a medication error (Chapter 35). An incident report for a medication

error needs to include an accurate, concise description of the event, all important related information, such as the medical officer notified, and a record of any adverse reactions suffered by the client.

Nurses become involved in client-related incidents at some point in their career. The following list provides guidelines for correctly completing an incident report.

- The nurse who witnessed the incident or who found the client at the time of the incident files the report.
- Describe specifically what happened in concise, objective terms.
- Describe objectively the client's condition when the incident was discovered.
- Any measures taken by the nurse, other nurses or doctors at the time of the incident are reported, along with the outcomes of such interventions.
- Do not interpret or attempt to explain the cause of the incident or blame anyone.
- The report is submitted as soon as possible to the appropriate administrator.
- Keep a written account of the incident report for personal files.

Most jurisdictions have introduced electronic incident reporting systems allowing incident data collection and analysis at local (unit or organisation), state and national levels. This ensures that data can be used to gain a comprehensive understanding of the type, frequency and severity of clinical incidents. These analyses can provide important information on contributing and preventative factors and lead to targeted quality-improvement initiatives. It is important that the nurse also keeps a record of the event, usually in their professional portfolio, to assist with recalling the incident accurately if legal action ensues.

Key concepts

- The medical record is a legal document, and requires information describing the care that is delivered to a client.
- All information pertaining to a client's healthcare management that is gathered by examination, observation, conversation or treatment is confidential.
- Multidisciplinary communication is essential within the healthcare team.
- Accurate record-keeping requires an objective interpretation of data with precise measurements, correct spelling and proper use of abbreviations.
- A nurse's signature on an entry in a record designates accountability for the contents of that entry.
- Any change in a client's condition warrants immediate documentation, to keep a record accurate.
- Problem-oriented medical records are organised by the client's healthcare problems.
- The intent of SOAPIE, PIE or DAR charting is to organise entries in the progress notes by the nursing process.
- Critical pathways are instrumental in documenting methods that will produce a better quality of client outcomes.
- Long-term care documentation is multidisciplinary.
- Computerised information systems provide information about clients in an organised, accessible fashion.
- The major purpose of the change-of-shift report is to maintain continuity of care. Use of tools and frameworks can help improve the quality of handovers and reports.
- Rounds allow nurses to perform needed assessments, evaluate clients' progress and determine the best interventions for clients' needs.
- When information pertinent to care is communicated by telephone, the information needs to be verified.
- Incident reports objectively describe any event that is not consistent with the routine care of a client.

Online resources

Information related to professional standards for documentation can be found via your country's professional nursing and midwifery site:

Nursing and Midwifery Board of Australia, www.nursingmidwiferyboard.gov.au

New Zealand Nursing Council, www.nursingcouncil.org.nz

References

Ash JS, Sittig DF, Poon EG et al 2007 The extent and importance of unintended consequences related to computerized provider order entry. Journal of the American Medical Informatics Association 14:415–23.

Austin S 2010 Ladies and gentlemen of the jury, I present … the nursing documentation. Plastic Surgical Nursing 30(2):111–17.

Australian Commission on Safety and Quality in Health Care (ACSQHC) 2011 National Safety and Quality Health Service Standards. ACSQHC, Sydney.

Australian Council on Healthcare Standards (ACHS) 2010 The EQuIP guide: standards and guidelines for the ACHS evaluation and quality improvement program, 5th edn. ACHS, Sydney.

Blair W, Smith B 2012 Nursing documentation: frameworks and barriers. Contemporary Nurse 41(2):160–8.

Calleja P, Aitken LM, Cooke ML 2011 Information transfer for multi-trauma patients on discharge from the emergency department: mixed method narrative review. Journal of Advanced Nursing 67(1):4–18.

De Bleser L, Depreitere R, De Waele K et al 2006 Defining pathways. Journal of Nursing Management 14:553–63.

Forrester K, Griffiths D 2010 Essentials of law for health professionals, 3rd edn. Mosby Elsevier, Sydney.

Haggerty JL, Reid RJ, Freeman GK et al 2003 Continuity of care: a multidisciplinary review. BMJ 327:1219–21.

International Medical Informatics Association Nursing Interest Group (IMIA NI). Online. Available: https://imianews.wordpress.

com/2009/08/24/imia-ni-definition-of-nursing-informatics-updated; accessed 10 May 2015.

Kennedy MA, Hussey P 2015, 'Nursing informatics'. In KJ Hannah, P Hussey, MA Kennedy, MJ Ball (eds) Introduction to nursing informatics, 4th edn. Springer, MD, pp. 11–31.

Kuziemsky CE, Borycki E, Nohr C et al 2012 The nature of unintended benefits in health information systems. Studies in Health Technology and Informatics 180:896–900.

Nursing and Midwifery Board of Australia 2016 Registered nurse standards for practice. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards.aspx; accessed 14 June 2016.

Nursing Council of New Zealand (NCNZ) 2007 Competencies for registered nurses. Wellington. Online. Available: www.nursingcouncil.org.nz/Nurses; accessed 27 July 2016.

Paans W, Sermeus W, Nieweg RM et al 2010 Prevalence of accurate nursing documentation in patient records. Journal of Advanced Nursing 66:2481–9.

Pothier D, Monteiro P, Mooktiar M et al 2005 Pilot study to show the loss of important data in nursing handover. Br J Nurs 14:1090–3.

Professional Development Committee of the Nursing Council of Hong Kong 2010 Guide to good nursing practice nursing documentation. Online. Available: www.nchk.org.hk/filemanager/en/pdf/nursing_documentation_e.pdf; accessed 10 May 2015.

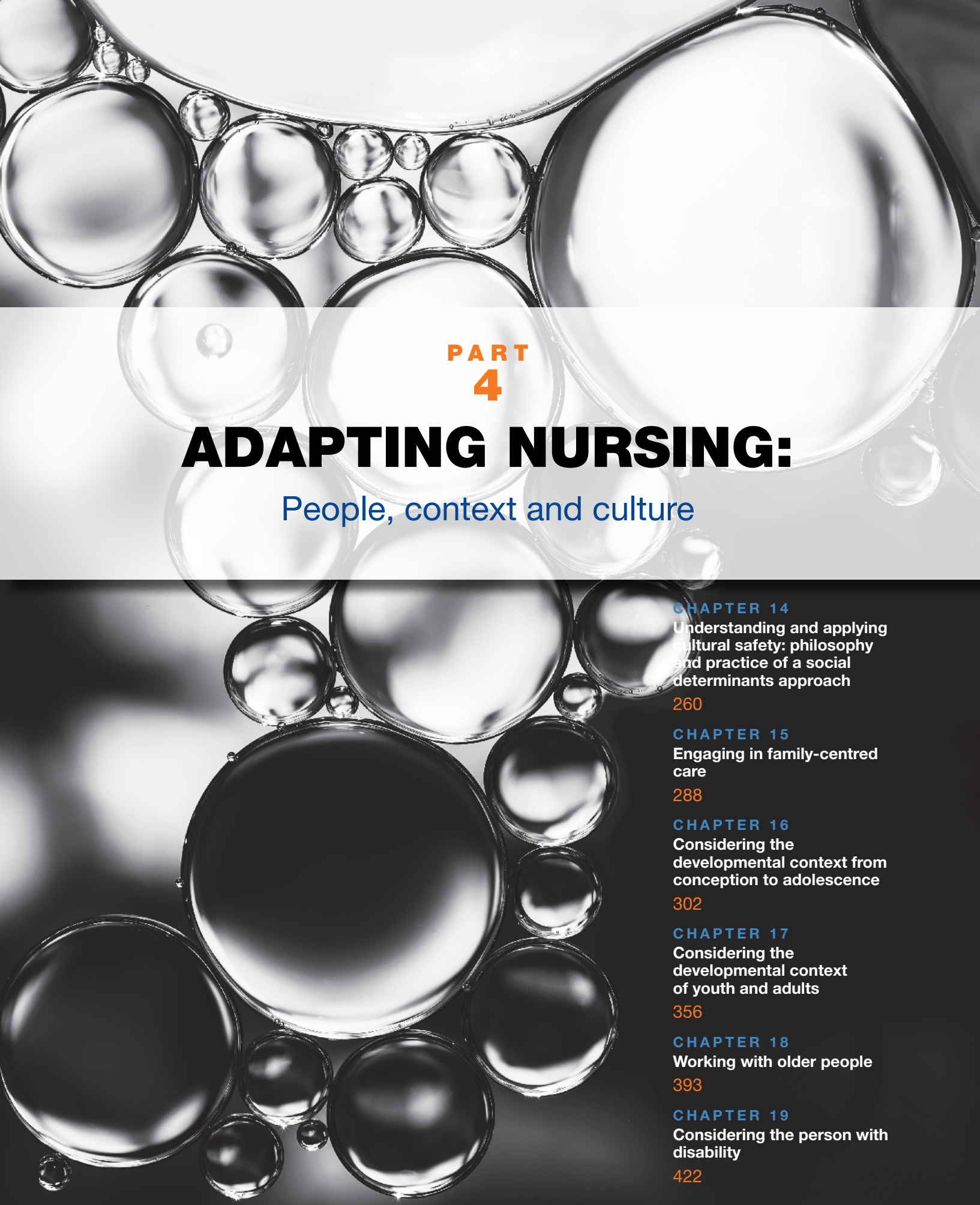
Saranto K, Kinnunen UM 2009 Evaluating nursing documentation – research designs and methods: systematic review. Journal of Advanced Nursing 65:464–76.

Sheehan J 2002 A liability checklist for clinical pathways. Nurs Manag 33(2):23–5.

Ventola CL 2014 Mobile devices and apps for health care professionals: uses and benefits. Pharmacy and Therapeutics 39(5):356–64.

Voyer P, McCusker J, Cole MG et al 2014 Nursing documentation in long-term care settings: New empirical evidence demands changes be made. Clinical Nursing Research 23(4):442–61.

Wilkinson JM 2007 Nursing process and critical thinking, 4th edn. Elsevier, New Jersey.



PART
4

ADAPTING NURSING:

People, context and culture

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CHAPTER

14

Understanding and applying cultural safety: philosophy and practice of a social determinants approach

Leonie Cox and Chris Taua

Learning outcomes

Mastery of content will enable you to:

- understand how the history of Australia and Aotearoa New Zealand impacts on the current health status of Indigenous persons in both countries
- understand what is meant by social constructionism and a critical approach and their relevance for nursing care
- describe the context of nursing in Australia and Aotearoa New Zealand and issues of culture in professional regulation
- develop awareness of, describe and discuss the theoretical principles underlying cultural safety and how it produces person-centred care
- explore your own culture (including your gender and gender identity/ies, age, ethnicity, class, attitudes, beliefs, behaviours, ability) and discuss the potential of these to affect your nursing practice
- consider the role of power and power imbalances in health care and how these relate to social stratification, systemic racism and biases, and structural violence
- practise culturally safe nursing care
- recognise the social determinants of health and discuss how cultural safety can help nurses to address health inequalities.

KEY TERMS

Agency, p. 274
Attitudes, p. 268
Beliefs, p. 268
Biomedical model, p. 276
Class, p. 273
Critical approach, p. 261
Cultural awareness, p. 267
Cultural competence, p. 277
Cultural safety, p. 266
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Discrimination, p. 274
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Stereotypes, p. 273
Structural violence, p. 276
Trust, p. 267
Values, p. 265
Whiteness, p. 271
Worldviews, p. 269

This chapter introduces a number of concepts and perspectives that you will need in your professional nursing practice to effectively address the interaction between culture/s and nursing care. The approach we advocate for is called cultural safety (Ramsden 2002),[1] and is defined as:

> **… the effective nursing of a person/family from another culture, and is determined by that person or family … The nurse delivering the service will have undertaken a process of reflection on [their] own cultural identity and will recognise the impact that [their] personal culture has on [their] professional practice. Unsafe cultural practice is any action which diminishes, demeans or disempowers the cultural identity and well-being of an individual (Nursing Council of New Zealand 2011:7).**

Underpinning this chapter and cultural safety is a philosophical commitment to social constructionism and a **critical approach** to understanding the influence of social processes on health and on nursing care. **Social constructionism**, a sociological theory, recognises that humans create society, its structures, institutions, knowledges and technologies and that all are shaped by the interests, priorities and '… values of the more powerful and influential members of society' (Willis & Elmer 2011:71). Social constructionism also recognises that people are shaped by society as it imposes limits on our actions and free will through rules, structures and dominant forms of knowledge. However, professional nurses are critical thinkers; we do not just passively accept things, but take a questioning approach to life, to knowledge and to our practice. We shape society by our actions as we negotiate life through communication and power relationships (Willis & Elmer 2011).

Such a position is in sharp contrast to that underlying a biomedically dominated healthcare system, which sees 'reality' as an unproblematic 'given' and, in caring for clients, disregards pertinent issues, such as social position, social experience, meaning and power. To help readers come to grips with these complex issues, this chapter discusses concepts that mainstream health cultures assume have a universal meaning, but which are in fact socially constructed. Examples include the concept of 'health' itself and those of 'race', 'ethnicity' and 'culture', which experience shows are constructed in numerous ways by clients and professionals in healthcare systems.

Because one-to-one relationships are the basis of all nursing care it is easy to see that care can be compromised when clients and nurses are working from different assumptions about identity; the nature of reality; health priorities; what it means to be healthy; what causes and what might cure illnesses; and what illness and wellness mean. It is these complex circumstances that provoke us to ask you to consider a number of perspectives in nursing that may be different to those you currently hold and to explore a number of influences that you may have not considered relevant to nursing.

We know that recent nursing graduates thinking about diversity and the delivery of nursing care seek a simple solution to help them cater for the holistic needs of clients; but there are no magic formulas. However, the model of cultural safety, and its practice and application, does develop a range of strategies that will enhance best practice. In this chapter we give you an overview of the societal context of nursing in Australia and Aotearoa New Zealand, considering the historical and contemporary state of the relationship between colonisers and the Indigenous people in both countries and the ongoing impacts on their health. We introduce you to the concept of the social determinants of health, which does not focus on individual behaviours, but looks at how health and the conditions necessary to attain and maintain wellness are intimately related to society and the dynamics between government, policies, institutions, media, public opinion and systems.

Accordingly, we explore the potential influence of various social and historical processes on nursing care and on health, not only for Indigenous peoples, but also more broadly. We have a closer look at cultural safety, exploring various socially constructed concepts such as culture, worldviews, lifeworld, whiteness, race, ethnicity and class. We consider power and health and the related issues of ethnocentrism and discrimination. These factors are all important in practising in a culturally safe way. We conclude with an overview of the regulation of the nursing profession in Australia and Aotearoa New Zealand and the practical application of cultural safety, taking into account the social determinants of health we will have discussed.

The context of health and nursing in Australia and Aotearoa New Zealand

The Australian mainland was a culturally diverse society long before Europeans set foot on the shores of Botany Bay, having already been occupied by its Traditional Owners for upwards of 40,000 years. Up to 700 different Indigenous[2] language groups occupied the continent (Australian Museum 2013) and lived in well-defined socioeconomic, political, land-owning units (Elkin 1964). In addition, the Torres Strait Islands constituted further diversity (Nakata 2004). These islands were gathered under Queensland ownership in 1872 when this state annexed all islands within a 60-mile radius of the mainland.

Aotearoa New Zealand had a somewhat different beginning. The first settlers to arrive in Aotearoa New Zealand between 250 and 1150 CE were Polynesian people (Belich 1996). By the 12th century there were numerous settlements, mainly along the coastline. These Polynesian settlers became known as Māori, and although dialectal differences developed, these peoples shared many common cultural traditions (Rice 1992). When Europeans decided to not only visit but to stay, both Australia and Aotearoa New Zealand were colonised by the British. However, significant differences marked this process in the two countries.

Indigenous peoples of Australia

Australia was colonised in the late 18th century with the British Crown claiming that the land was *terra nullius* (unoccupied) and therefore open to annexation without treaty (see Lippmann 1999, McGraw 1995, Reynolds 1987, 1989). This claim was justified on social Darwinist notions that the Traditional Owners were not humans, and ignored the fact that Macassan traders had been visiting the shores of the continent for several hundred years, while Europeans had first visited in the 1600s. As Nakata (2004:155) observes: 'As inhabitants of a seaway, Islanders in the Torres Strait had long been used to welcoming or defending themselves against visitors and were themselves travellers of considerable distances, both north to Papua New Guinea and south to Cape York Peninsula'. On mainland Australia the initial impact of a permanent European presence was far from peaceful. Land was taken by force and the period was characterised by massacres and punitive expeditions against Indigenous groups who fought to defend their land, its resources and their right to ceremonial practices and lore/law (Evans et al 1975). For the original owners, all of these sociocultural aspects are inseparable from Country.

The population was further decimated by infectious diseases that arrived with the colonisers. This period was followed by over 200 years of dispossession and dislocation, made possible by laws and policies applicable only to Indigenous Australians. These laws, and the policies and practices they enabled, were intrinsically racist and aimed to segregate, assimilate and control the Traditional Owners. This history is generally discussed with reference to the policy eras of dispersion, segregation, protection, integration and assimilation (see the work of Broome 2001, Cox 2007, Eckermann et al 2010, Kidd 1997, Reynolds 1987). Essentially, Indigenous Australians were treated by the state as inferior and every aspect of their lives, including language, family organisation, food and shelter, employment, education, recreation and religion, was strictly controlled by some government instrumentality.

Indigenous peoples and their supporters were never passive in the face of these genocidal processes, but actively resisted them in numerous ways such as dismantling bridges to prevent further incursions (Evans et al 1975) and the establishment in 1958 of the Federal Council for the Advancement of Aborigines and Torres Strait Islanders (FCAATSI) (National Museum of Australia 2014). A national referendum in 1967 ushered in policies for self-management and self-determination, although true self-determination is still not realised nearly 50 years later. The 1967 referendum determined that the First Australians would finally be recognised as citizens in the national census and that the Commonwealth Government could legislate for the benefit of Indigenous people. These events saw the gradual dismantling of some repressive state-based legislation, permitting the first Aboriginal-community-controlled medical and legal services to be established in the 1970s (Willis & Elmer 2011:184). The Aboriginal and Torres Strait Islander Commission (ATSIC) was established in 1990. Although subject to much critique and controversy, the formation of ATSIC was the closest Australia has come to having a truly representative Indigenous body. As Sanders (2004) argues, ATSIC improved political participation and enhanced regional representation and social reform among Australia's Indigenous peoples. However, ATSIC was abolished after 14 years of operation, having had its health responsibilities removed in 1995 (HREOC 2004).

Under the new policy eras of self-management and self-determination there has been major and extensive effort in relation to both Land Rights and Native Title. The Aboriginal Land Rights (Northern Territory) Act (1976), the Mabo decision in 1992 and the Wik decision in 1996 are just some of the major developments in this area, which space does not permit us to cover here (see Northern Land Council in *Online resources*). Smith and Morphy (2007) give an extensive overview of these developments in their edited volume on the social effects of Native Title. Although favourable Native Title judgements are valued acknowledgements of Traditional Owners, the authors conclude that Native Title does not constitute Land Rights and that the impact of Native Title judgements on improving the social position of Indigenous Australians is patchy at best.

In an attempt to address the seemingly intractable nature of Indigenous disadvantage, the Close the Gap (CTG) campaign was launched in 2007. This campaign

is a collaboration between government, Indigenous and non-Indigenous health organisations, the Human Rights and Equal Opportunity Commission (since 2008 known as the Australian Human Rights Commission (AHRC)) and community leaders. The aim of CTG is to close the health and life-expectancy gap between Indigenous and other Australians within a generation. A recent progress report on CTG shows that from 2005–07 to 2010–12 Indigenous life expectancy '… is estimated to have increased by 1.6 years for males and by 0.6 of a year for females. But a life expectancy gap of around ten years remains for Aboriginal and Torres Strait Islander people when compared with non-Indigenous people' (Close the Gap Steering Committee 2015:1). The Prime Minister's CTG Report stated: '… the disparity in outcomes remains … It is profoundly disappointing that most Closing the Gap targets are not on track to be met' (Commonwealth of Australia 2015:1).

Other recent notable events include the Royal Commission into Aboriginal Deaths in Custody (RCIADIC) following agitation by Black Deaths in Custody groups concerned about the over-representation of Indigenous people in jails and watch-houses and their preventable deaths while in custody (Johnston 1991). Marchetti (2006:453) comments that it was hoped the RCIADIC would 'transform race relations', but concludes that its 339 recommendations have had limited impact on the social and economic position of Indigenous Australians. Further, the report was noted to be deeply colonising in that it failed to 'understand or incorporate Indigenous worldviews and values' (Marchetti 2006:454). Deaths in custody continue and the incarceration rates of Aboriginal people remain disproportionately high (ABS 2014b). Nonetheless, RCIADIC Recommendation 247 states that all healthcare professionals need education on the impacts of forced child removal on Aboriginal people (Johnston 1991), an effort that continues to the present time and is evident in the context of this chapter.

It is noteworthy that this RCIADIC recommendation focused on what is perhaps the most enduring blight on Australian history: the genocidal policy and practice of forced child removal. Governments deemed Indigenous people incapable of raising their children with any white ancestry and removed them to be raised by white families, or in orphanages and dormitories on missions and reserves. The report of the Royal Commission also informed a national inquiry into the removal of Aboriginal and Torres Strait Islander children from their families (Human Rights and Equal Opportunities Commission 1997). The report of that inquiry, commonly called *Bringing Them Home*, articulated government child removal practices in detail and led to thousands of non-Indigenous Australians saying sorry to Indigenous Australians for the wounds of the past by signing 'Sorry Books' during a campaign launched in 1998 (National Sorry Day Committee Inc., n.d.). Eventually these processes led to a national apology to Indigenous Australians from then Prime Minister Kevin Rudd in February 2008 (Celermejer & Moses 2010:35).

The national apology was welcomed by Indigenous Australians and seemed to mark a new era in Australian history. However, as McAuley (2011:1) states:

> **Not only did the Apology make no provision for compensation for the wrongs suffered by those who were taken from their families, but the Rudd and Gillard governments have substantially maintained the controversial Northern Territory National Emergency Response (NTNER), or 'Intervention', introduced in the dying days of the Howard government.**

The Intervention followed the release of the Northern Territory Government's Board of Inquiry report into the protection of Aboriginal children from sexual abuse (Northern Territory Government 2007). Its implementation required the suspension of the Racial Discrimination Act 1975 and implied that Aboriginal people were child-abusers, incapable of looking after their money or taking their children to school or for health checks.

The NT Board of Inquiry report had been used by the Howard government to justify a political discourse about a 'crisis', defending the highly intrusive actions of the Intervention despite the fact that the report states that 'the problems [of sexual assault] do not just relate to Aboriginal communities. The number of perpetrators is small and there are some communities, it must be thought, where there are no problems at all' (Northern Territory Government 2007:6). Aspects of the NT Intervention have continued to evolve and have gained bipartisan support. Many processes are now legislated for by the 2012 Stronger Futures in the Northern Territory Act which focuses on alcohol abuse, income management and school attendance. The NT Intervention further marginalised and infuriated Indigenous people, and Indigenous-led movements such as 'Roll Back' (Box 14-1) are still trying to have the Intervention dismantled. These arrangements have been extended until 2022 under the Stronger Futures legislation (see *Online resources*).

In summary, it is crucial that nurses and all healthcare professionals grasp the fact that history has left its mark on Australian identity and attitudes towards the country's Traditional Owners, as well as on the life chances of today's Indigenous Australians whose ancestors (the old people) are revered in social memory (see Cox 2007, 2009, Saggers & Gray 1991). Structural inequality was created and firmly entrenched by historical circumstances, and is reinforced by contemporary policies and practices that

BOX 14-1 Roll back the Intervention

… Our voices are not being heard since 2007 … The Intervention has made it so hard for us to live on land and in our communities … Many communities were forced to sign 40-year leases and hand over control of their land to the government. Now they want to destroy our traditional ownership of the land by dismantling the historic NT Land Rights Act 1976.

The Intervention also forced the Basics Card on us, which quarantines half of the Centrelink payment. We are treated like children and told how to spend our money. We are humiliated on a daily basis when we go shopping. Reports show that the Basics Card is not working; it is not having healthy outcomes for Aboriginal people. But now the government wants to put us on a 'Healthy Welfare Card' where 100% of our money will be quarantined …

The Intervention has not produced jobs for our people – it has taken them away. They took away work from communities when they stopped the CDEP [Community Development Employment Projects] and left people with nothing to do and no way to make a living. This forced people off their homelands and into towns to look for work. But there is little work for Aboriginal people in the big towns and many end up on the street being harassed by police or in jails … We need real jobs with real wages in our communities.

… more Aboriginal children are being taken from families and put with foster parents, usually non-Aboriginal people. This child removal has to stop …

Our kids are turning to crime out of boredom or despair with many of their family members being locked up, often for minor offences such as not paying fines. More and more young people have no hope and are turning to harming themselves.

Rollback the Intervention 2015, Invasion Day Alice Springs 2015 blog. Available: https://rollbacktheintervention.wordpress.com/; accessed 2 Feb 2016.

continue to discriminate against Indigenous people (such as the 'Intervention' mentioned above) and hinder the right of Aboriginal and Torres Strait Islander peoples to self-determination (see Brown & Brown 2007). As we will see later in the chapter, such processes contribute to the social determinants of health which the model of cultural safety seeks to address.

Indigenous peoples of Aotearoa New Zealand

The colonisation process for Māori, the Indigenous people of Aotearoa New Zealand, presented many parallel impacts to those discussed for the Traditional Owners of Australia; however, there were some differences. One of these differences was the British acknowledgement of Māori as Indigenous *tangata whenua* (people of the land). However, despite this acknowledgement, the devastatingly negative biological and social effects of colonisation were not lessened. Dishonest purchasing of land, land wars and the introduction of diseases for which Māori had little or no immunity had significant impacts on the Māori population. Other consequences were impoverishment and the breakdown of Māori social structure, culture, language, life chances and health (Kearns et al 2009). In an attempt to recognise the legal rights of Māori and enable the British to colonise Aotearoa New Zealand in 1840, representatives of the British Crown and representatives of many of the multiple *iwi* (tribes) and *hapū* (sub-tribes) of Aotearoa New Zealand signed a treaty called the *Te Tiriti O Waitangi*/The Treaty of Waitangi (hereinafter referred to as Te Tiriti). Although Te Tiriti conferred the right on British settlers to settle in Aotearoa New Zealand, it also created a corresponding duty on the Crown to ensure Māori retained their existing property and citizenship rights (Human Rights Commission 2013).

Unfortunately, there were discrepancies between the Māori and British translations of Te Tiriti that were not initially recognised. Kingi (2007:5) states that 'while the objectives of Te Tiriti were in part designed as a platform for Māori health development, based on the continued population decline, it proved to be less than successful. In fact, the 1800s was a century characterised by significant and sustained Māori de-population'. This outcome was perhaps related to the fact that the intent and provisions of Te Tiriti were largely ignored until the 1970s, when a tribunal was eventually formed to ensure that the government and statutory bodies upheld their responsibilities as stated by Te Tiriti. The introduction of the Waitangi Tribunal Act in 1975 ensured a refocus on reparations to Māori, compelling the government to acknowledge the importance of the Crown's relationship with Māori (see *Online resources*).

Currently, Te Tiriti offers a mechanism for rectifying some of the consequences of colonisation, and provides a set of three principles for all persons living in Aotearoa New Zealand to follow. These principles are outlined in the *New Zealand Royal Commission on Social Policy Report* (RCSP 1988) as partnership, participation and protection (Ministry of Health 2004). Thus, *partnership* means working together with iwi, hapū, whānau and Māori communities to develop strategies for Māori health gain and appropriate health and disability services; *participation* at all levels means involving Māori at all levels of the sector in decision-making, planning, development and delivery of health and disability services; and *protection* and improvement of Māori health status means working to ensure Māori have at least the same level of health as non-Māori, and safeguarding Māori cultural concepts, values and practices.

Cultural diversity

While Aotearoa New Zealand had a colonial experience somewhat different from that of Australia, the process of colonisation still resulted in the loss of economic resources, the creation of structural inequality and widespread institutional **racism** – just as the equivalent processes in Australia did for the Traditional Owners. Although Australian and Aotearoa New Zealand societies are culturally diverse, it is important to acknowledge the status of Indigenous people in both societies as the original owners, and not diminish their status as just another ethnicity among many. In Australia, Indigenous peoples constitute 3% of the total population (ABS 2014a). Current census data shows that 24.6% of Australia's population was born overseas and 43.1% of people have at least one overseas-born parent (ABS 2012). The 2013 New Zealand Population Census found that Māori constitute 14.9% of the total population, while 11.8% of the population is of Asian descent and 74% identified with one or more European ethnicities (Statistics New Zealand 2014).

Despite the cultural diversity in both Australia and Aotearoa New Zealand, it should be remembered that cultural diversity does not mean that either country is marked by structural diversity. The dominant language and the underlying philosophies and practices within the mainstream legal, political, educational, agricultural and health institutions in both countries are monocultural in that they derive from one source (Britain) and are often referred to by the broad and generic term 'Western'. It is within this context that nursing education and practice occurs. In caring for people you will encounter beliefs and **values** that appear, or indeed are, inconsistent with the practices of 'Western' medicine, nursing philosophies and nurses' personal cultures. How nurses respond to clients' beliefs and behaviours is strongly related to their own beliefs and values, and will determine how effective they are in caring for and promoting clients' wellness and creating client- or person-centred care (see Figure 14-1).

To provide the best possible health care it is imperative that nurses understand concepts such as *culture*, *class*, *whiteness/race/racism* and *ethnicity* and have a strong



Figure 14-1 The diversity of which we are all a part makes health care challenging and rewarding.

(clockwise from top left): Dreamstime/Rsusanto, iStockphoto/andersen_oystein, Shutterstock/Tatiana Morozova, iStockphoto/Juanmonino, Shutterstock/Petro Feketa, Shutterstock/zhuda, Shutterstock/Tomasz Markowski, iStockphoto/Ian McDonnell.

awareness of themselves as cultural beings. Further, all health professionals need to consider how culture, class and social marginality impact on both health and health care. In the following sections we will show that social responses to clients' class, ethnicity, gender or abilities influence people's life chances and health. Such concerns are intimately related to the social determinants of health, that is, to factors beyond the control and behaviours of individuals. To come to grips with these complex issues we introduce you now to the model of cultural safety and discuss more fully the specific conceptualisation of culture that underlies the model and its focus on the social determinants of health.

Cultural safety

Cultural safety (*kawa whakaruruhau*) was developed within the Māori community in the 1990s by Māori nurse scholar Irahapeti Ramsden in Aotearoa New Zealand (1993, 2002). Ramsden and colleagues developed the model partly in response to a first-year Māori nursing student's astute comment: 'You people talk about legal safety, ethical safety, safety in clinical practice and a safe knowledge base, but what about cultural safety?' (Ramsden 2002:1). These Māori nursing students alerted Ramsden to the expectations they felt to conform to the dominant institutional culture and their experience of non-Māori 'experts' lecturing to them about traditional Māori culture. Their experiences suggested that there was only one correct, authentic way of being Māori, which, as urban Māori whose ancestors experienced the disruptions of colonisation, they could not embrace.

Cultural safety therefore aimed for cultural change by exposing and addressing such power imbalances to decrease the impact of cultural dominance and racism in health care, education and research (McCleland 2011). Ramsden also saw that nursing curricula were devoid of structural issues and were designed by and for those who did not share her cultural position or experience of colonisation. She challenged this cultural dominance, particularly the way it shaped policy and developed nurses as mere biomedical technicians rather than agents of social change (Ramsden 2002). Ramsden saw cultural safety as a way for nurses to consider how their socialisation and cultural position impacted on their work, emphasising the links between ill-health and dispossession, economic status and political agendas. This social determinants approach contrasts with individualist biomedical notions that illnesses merely occur 'within bodies'.

Underpinned by critical social theory, cultural safety also recognises that nursing care, education and research are not value neutral activities but reflect socio-political contexts and the values, assumptions and priorities of those involved (Ramsden 2002, Reimer-Kirkham et al 2009). Cultural safety focuses on *how people are treated in society*, not *how they are culturally different*. That is, the import of diversity is turned on its head in cultural safety, as it is social responses to diversity that create health impacts not the existence of the diversity itself (Cox & Simpson 2015). Consequently, cultural safety is about power – personal, professional and institutional power in health services, and the impact on those who use the service; the people who define the

CLINICAL EXAMPLE

An example of being culturally unsafe

Mrs G is an Aboriginal woman in her 40s who goes to the hospital in the rural town where she lives at about 11.45 am on a Monday morning, to see a doctor. She has pains in the stomach that have kept her awake all night and got worse after breakfast. She is accompanied by a female cousin, Mrs S, who is some years younger. Although only in her 40s, Mrs G is a respected elder in her community, a fact that reflects the statistically reduced life expectancy of Aboriginal people.

Mrs G is told by the young female nurse at the front desk to take a seat in the sparse basic waiting room. There are no magazines, television or tea-making facilities here, such as one might find in city hospitals. By 1.00 pm no one has come to see Mrs G and she's not been offered so much as a drink of water.

Feeling frustrated and worried about Mrs G, Mrs S finally finds the courage to confront the nurse and asks when the doctor will be there to see Mrs G.

The nurse responds by saying, 'Doctor is on his lunch break.' She then says to Mrs S, 'Are you a drinker too, love?' At this Mrs G gets up and says to her cousin, 'Let's go along', and they leave the hospital without being seen. Mrs G still has abdominal pain and both women are angry at being referred to as 'drinkers', especially as both are teetotallers and devout Christians.

Lessons to be learnt from this example are:

- the clients were culturally unsafe – they were demeaned, diminished and disempowered
- the nurse and the hospital neglected their duty of care
- the nurse has unexamined prejudices towards Aboriginal people and operates on stereotypes
- the use of the term 'love' from a young white woman was offensive to such respected leaders in the community
- access of these clients to health services was limited by the hospital's lunch-time policy
- it may take years for either woman or their large extended families to seek help from the hospital again.

Cox L 2007 Fear, trust and Aborigines: the historical experience of state institutions and current encounters in the health system, Health and History 9(2):70–92. Reproduced with permission.

worth of nurses' practice (Richardson 2004). Cultural safety is also about **trust**, being trustworthy and the way trust is constructed personally, culturally and institutionally; it requires the dominant culture to be accountable for the access and delivery of appropriate health care to all cultures (see *Clinical example*).

There is no doubt that there has been a growth in awareness of diversity issues in the nursing and midwifery professions. Although cultural safety was conceptualised by Māori nurses and colleagues and originated in a post-colonial context, it is *applicable to any encounter whatsoever*, because the interaction between a nurse and a client is always a bicultural relationship, whether differences between individuals are expressed by gender, sexuality, social class, occupational group, generation, ethnicity or other variables. The underpinning tenet of cultural safety is that each person should receive care that takes account of their unique identities and experiences. A plethora of **cultural awareness** orientation programs have recently been implemented, aiming to increase **cultural sensitivity** and understanding between people from different cultures, but these have been shown to have very little impact on changing behaviour and attitudes (NACCHO 2011). Such approaches often espouse providing culturally sensitive care *regardless of differences* and many still have not realised that a key point of difference in cultural safety is that it respects a person's cultural values and preserves their wellbeing *regardful of differences* (Ramsden 2002). Further, Ramsden (2002) illustrated that the impacts of cultural safety reached beyond cultural awareness and sensitivity (see Figure 14-2). This progression clearly highlights that the terms 'cultural awareness' and 'cultural sensitivity' are not interchangeable with 'cultural safety'; they are separate concepts (Ramsden 2002). All need to be achieved for nurses to be in a position to negotiate culturally safe care with clients.

Another key difference in approaches is that 'cultural safety does not ask nurses to discover the dimensions of any culture apart from their own. It does not believe that nurses should, or even could, gain an insider's understanding of any culture other than their own; instead the focus of care is on the client's experience as the determinant of effective nursing care' (Eckermann et al 2010:185). Self-awareness through personal self-reflection is therefore critical and requires nurses to bring to consciousness their own historical, cultural, social and personal context; their own beliefs, attitudes and values; and their own personal biases and cultural assumptions about others. Nurses then need to consider how all of these dimensions may affect the nursing care they provide to those assumed to be either different or the same as themselves. We will return to these important processes presently.

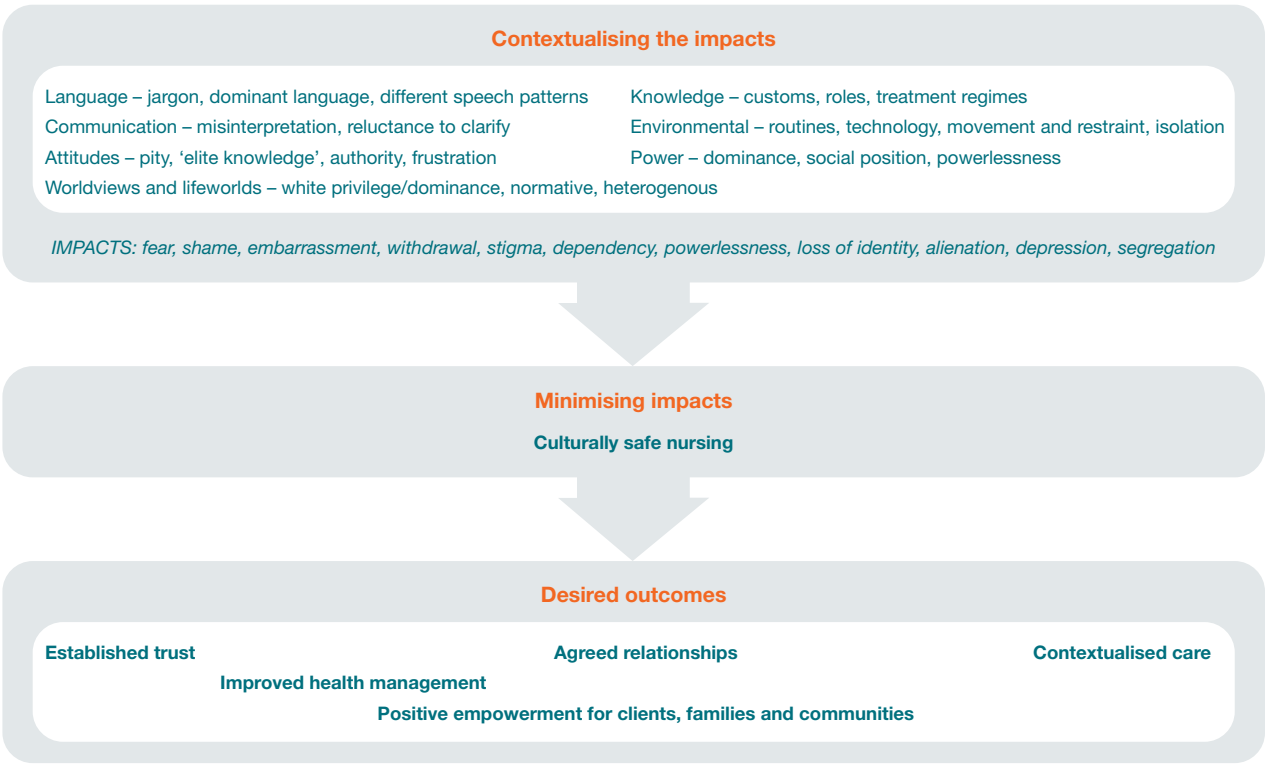


Figure 14-2 **Contexualising the impacts of culture.**

• CRITICAL REFLECTION POINT

To help you to start on your own journey of self-reflection:

1. **Write down at least three cultures that you identify with – these may be your religious or spiritual culture, one or more of your personal ethnicities, your professional culture, your generation, your gender, and so on.**
2. **Write down as many norms or rules you can think of that are part of the cultures you identified.**
3. **In your work as a nurse, consider some of the norms or rules that relate to the hygiene needs, mobility needs and nutrition needs of the people you serve. Are these the norms or rules of your job, or are they the norms or rules of the people you serve?**
4. **Think about some of the rewards and punishments that have helped you learn the norms or rules of one or other of your cultures.**
5. **Identify at least four of the beliefs and values of at least one of your own cultures and discuss them with other members of the culture you identify with. How important are they to you?**

A common misunderstanding in discussions on the impact of nurses' individual culture and values on nursing care, and the need for cultural safety, is the notion of 'treating everyone the same'. The authors have often heard nursing students exclaim 'But I treat everyone the same', or 'Why should they get different treatment to anyone else?' While nurses should treat everyone with the same level of positive regard and respect, these remarks reveal that the students have confused notions of equity and equality by suggesting that these terms mean 'sameness'. In fact, everyone is not the same: each person is unique and has unique needs. A deeper problem with such ways of thinking is that they also suggest everyone has the same advantages, opportunities and privileges, so they deny inequality.

Cultural safety and holism

Cultural safety is a **holistic** concept that is dedicated to **person-centred care**. Therefore, all aspects of that person must be considered in order to achieve such care (Ramsden 2002). Giving culturally safe care means that each person receives care and treatment according to their individual needs. Importantly, through Ramsden's work, the emphasis has changed from nurses' assessment of practice in terms of clients' needs – to clients' assessment of the type of service and care they would value. That is, the client, not the nurse, determines what culturally safe care is. Further, cultural safety is concerned with the transfer of power between healthcare providers and those receiving the service. As Ramsden (2002) points out, nurses need to become aware of the level of distrust that will mark their interactions with Indigenous and other clients from minority groups due to their previous experiences of oppression with healthcare systems, as previously discussed (see also Cox 2007, Forsyth 2007). As we have seen, the process of colonisation is typically associated with structural and cultural violence against Indigenous peoples. As the Nursing Council of New Zealand states: 'Any nurse who can understand their own culture, the theory of power relations and their impact in practice, can be culturally safe in any context' (cited in Ramsden 2002:199). Therefore, actions that reinforce respect, responsibility and the legitimacy of difference are likely to support cultural safety (Ramsden 2002).

The keys to holistic care are developing trust, negotiating knowledge, negotiating outcomes and understanding the socio-historical factors that influence health and nursing care. Strategies to achieve such outcomes include **self-reflection** and awareness; reflection on one's own culture, **attitudes**, beliefs and profession; understanding the influence of power imbalances; enhancing communication skills; and drawing on the skills of interpreters. Before considering these issues we will take a close look at the definition of culture used in cultural safety, because without grasping this concept, culturally safe practice will be elusive.

What is culture?

In coming to grips with the theory and practice of cultural safety it is essential to grasp the definition of culture underlying the model. There have been many definitions of culture over the past 150 years, a fascinating discussion of which can be found in Rapport and Overing (2007). Many people assume incorrectly that culture only relates to a person's ethnicity. Clearly, from our introductory comments on social constructionism, our understanding of culture is that it does not just exist as an unproblematic, observable entity – culture is constructed by humans in attempts to influence their social world, understand their experience and give it meaning. **Culture** is constructed socially in the interactions between people who live in networks of relationships characterised by power relationships. Cultures are contextual, dynamic, strategic and messy, not static systems practised to an equal degree by everyone who identifies as belonging to a particular culture. Many definitions emphasise notions of culture as learned, shared and complex. Rapport and Overing (2007:113) cite Wagner's critique of the 'idea of shared, stable systems of collective representations' within which 'instead lives a constant flux of continual re-creation'.

In contrast to functionalist views that see cultures as fixed and bounded wholes with members who equally share systematised **beliefs** that are the same, our everyday

lived experience is different. Our experience shows that while some aspects of culture may be shared, other aspects are highly contested and heterogeneous. We need only to think of the terms 'Aussie' or 'Kiwi'[3] as cultural identifiers to realise how diverse Australians or New Zealanders are in terms of attitudes, beliefs, values, practices, religions, languages and so on. Further, individuals can belong to many different cultures simultaneously and therefore have unique cultural needs that will not be met by seeking to learn normative ideals (worldviews) and practices of only one of the cultures that a client might embrace. The person may alter their behaviour, language, conversational topics and body language depending upon the group they are identifying with at any given time. An example might be a person who identifies as a European, Jewish, female, heterosexual nurse from a privileged economic background. Can you see how this person might behave differently depending on which cultural group/s she is interacting with at any particular time?

• CRITICAL REFLECTION POINT

1. **What cultural aspect of the person we have described above would you focus on? How would you provide care according to this person's needs? Figure 14-3 shows some of the many influences that shape cultures and an individual's cultural identity.**
2. **Define what culture means to you. Explore more clearly the society to which you belong and the subgroup(s) influencing your actions, beliefs and values. What internal and external environments helped to shape the subgroup(s) with which you identify? Analyse how you prefer to learn, use language and interact, what motivates you, how you make decisions, how you express yourself and how and with whom you prefer to interact.**

To help you reflect on this exercise and deepen your understanding of culture as it is used in cultural safety we turn now to a closer look at the concepts of the worldview and the lifeworld.

Worldviews and lifeworlds

Some definitions of culture restrict themselves to a consideration of **worldviews** and these emphasise idealised cultures (*normative culture*) rather than the lived experience of everyday life (*descriptive culture*). We argue that understanding human social experience in the **lifeworld** and interactions with the worldview is much more relevant for the interaction between culture and health care. All of us have a worldview. It is the framework we use to interpret and act in the world; the lens through which we view our experiences, think about the meaning and purpose of our lives and ponder how we got here, how the world came about, what happens

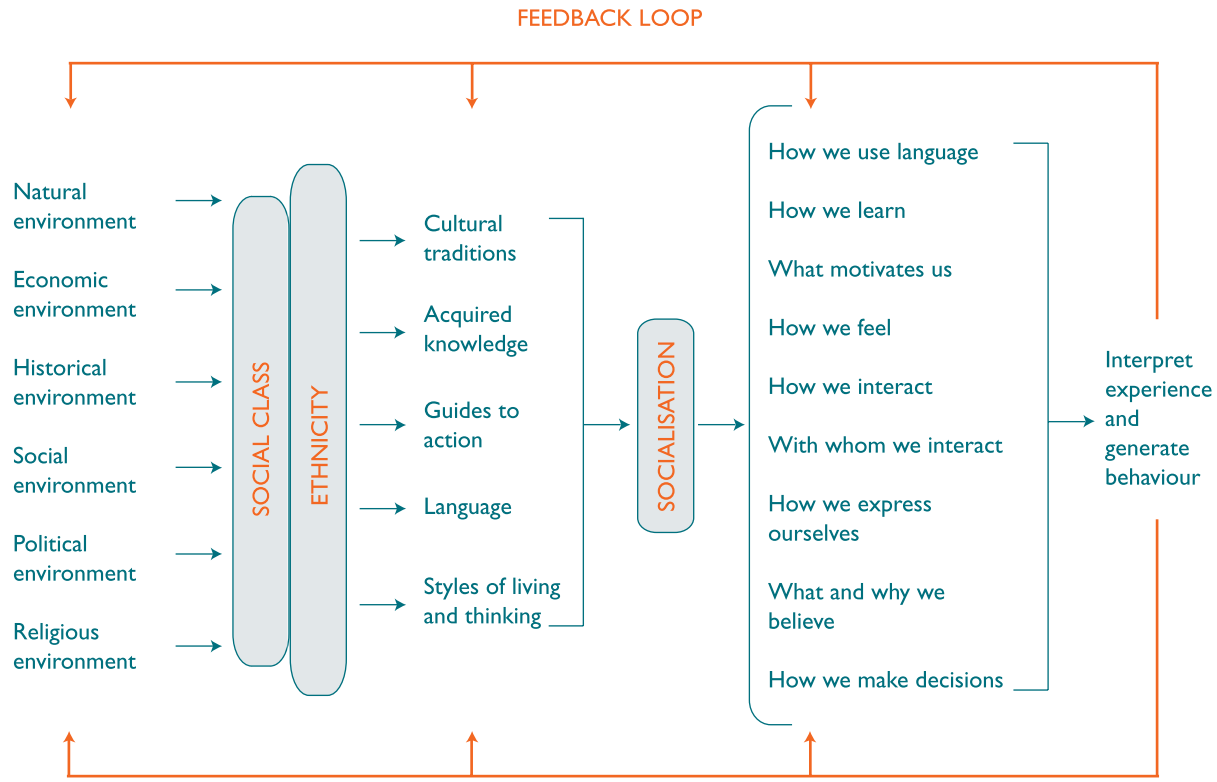


Figure 14-3 **The interrelationship of culture and environment.**

after our bodily passing, whether humans are alone in the universe and many other metaphysical and existential matters. Rapport and Overing (2007) note that the term worldview is the English translation of the German concept *Weltanschauung*, meaning our overall outlook, philosophy or conception of the world or, as Geertz would have it, 'a way of thinking about the world and its workings' (Geertz 1973, cited in Rapport & Overing 2007:432). Our worldview may have aspects that are shared with others, but it will also have aspects that are unique to us alone. Nonetheless, our worldviews affect the way we think and act, our beliefs about right and wrong, our perceptions of people and things around us, and our emotional reactions to our own experiences and to others.

• CRITICAL REFLECTION POINT

1. **Talk to some of your peers about their worldviews. Are they different from yours?**
2. **What about your family members?**
3. **Think about how you have come to have similar or different worldviews.**
4. **Write down a few ways in which the worldviews of clients might affect their health care.**
5. **Write down a few ways your worldview might affect your nursing care.**

The challenge in culturally safe nursing is to become aware of how the personal cultural biases (values, beliefs, attitudes, assumptions) that we hold can influence the care we deliver. Nurses interact with people throughout various stages of their life cycle and deal with a whole range of life events and problems. This is where Husserl's phenomenological concept of the lifeworld comes into play, as the lifeworld is the everyday world in which we live our lives – it refers to the world as it is experienced (Dahlberg & Drew 1997). When we consider issues of social position and power, it is clear that even though people may live in the same society and even share a cultural identity, their lifeworlds might be quite different to one another, being comprised of events, problems, privileges, opportunities and other circumstances that are not necessarily experienced by members of the same society or culture.

• CRITICAL REFLECTION POINT

1. **Talk to some of your friends about their lifeworlds. How do they experience their everyday life?**
2. **Is their experience different to yours? Are there differences in privileges and opportunities?**
3. **What about your family members?**
4. **Think about how you have come to have similar or different lifeworlds.**
5. **Write down a few ways that the lifeworld of clients might affect their health care.**
6. **Write down a few ways your lifeworld might affect your nursing care.**
7. **Think about how your lifeworld might come into play if you are the one who needs nursing care.**

It follows, then, that how we interpret and explain adverse events and problems is influenced by both our particular worldviews that inform our experiences, and the lifeworlds in which those experiences take place. Nursing, therefore, requires us to at least achieve some empathy towards the worldviews and lifeworlds of our clients *within their social context*, since it is only from doing so that we can gain understanding of clients' illness and healthcare needs (see *Research highlight*). To examine this proposition further we will take a closer look at health as a social construct in a later section.

In summary, in cultural safety, culture is conceptualised as changeable, learned, strategic and socio-political and the term '… is used in its broadest sense to apply to any person or group of people who may differ from the nurse/midwife because of socio-economic status, age, gender, sexual orientation, ethnic origin, migrant/refugee status, religious belief or disability' (Ramsden 2002:114). Culture is socio-political since issues arising from social, political, historical and environmental contexts are factors influencing what motivates people to interact, with whom they prefer to interact, and in what way. These factors are important social determinants of health. The interaction between culture and health shows that not all members of a society have equal access to power and resources: depending on their identity, social experience or social class, individuals are afforded different opportunities in life. They have access to varying levels of power, are permitted varying levels of input into decision-making processes, and their power to change their life circumstances for the better varies greatly. Indeed, some have suggested that being white is the best protector of health there is. We explore these issues further below.

Whiteness, race, ethnicity, class

As discussed earlier, the British way of life with its laws, understandings and beliefs around health and illness became the prevailing ethos in both Australia and Aotearoa New Zealand, and resultant power and control became situated in the domains of 'white' people. Consequently, the dominant philosophies and practices of health care in both societies stem from biomedicine and

RESEARCH HIGHLIGHT

Research abstract

Cancer mortality is higher for Indigenous Australians when compared with non-Indigenous Australians. Key issues are poor access to screening, treatment and support services. Research in Western Australia explored experiences of services and the barriers faced. Thirty interviews were undertaken with people from urban (n = 11), rural (n = 9) and remote (n = 7) areas.

Thematic analysis revealed that the participants' main needs were for practical and emotional support throughout the treatment process. Specific issues included:

- financial aspects – tests, medication, transport, parking, food, accommodation
- problems with travel, such as discomfort in entering areas where they had no formal invitation
- displacement from family and dealing with family responsibilities
- the hospital environment
- lack of information to prepare people for what to expect (new environment, treatment, follow-up, costs)
- lack of appropriate support persons – strong need for more Aboriginal interpreters or Aboriginal Liaison Officers, especially for ongoing support following discharge.

The researchers found that since most of the urban Aboriginal population lives on the fringes of Perth, they faced similar socioeconomic barriers as rural and remote participants, which were more extreme for remote participants. For some, not knowing their way around the large cities was likened to 'landing on the moon' (Shahid et al 2011:237).

The study identified an important systemic issue where rules relating to access to health services was one of several issues that prevented family members accompanying relatives travelling from remote areas.

The hospital environment

Participants found the hospital alienating:

- lifts could be terrifying
- loss of independence and dignity was disempowering
- inflexibility of the system to cope with extended families
- invasion of privacy, shame and discomfort during ward rounds.

'One participant said her 84-year-old grandfather "hated being heavily dependent on strangers" in hospital as he was a proud, independent man who disliked having to ask for things when he needed them; he hated being restricted to bed and detested the food' (Shahid et al 2011:238).

Positive support experiences

Some participants reported positive outcomes. However, many of those who reported positive experiences already had contacts or knowledge of the systems. Many often knew nothing about the system (for health services and financial support) and didn't know who to ask.

Researcher's recommendations

- Effective communication
- Feelings of trust
- Ensuring culturally safe treatment and service response.

To achieve the above:

1. Better management of costs – people avoid treatment if they feel they can't afford it or bring family for needed support.
2. Improve hospital environments to minimise feelings of alienation and fear – more support persons and interpreters, artwork, places to sit and yarn, access to preferred foods.
3. Reduce the need to travel – have regionally-based coordinators to link people to and between services.

In conclusion, it is often not remoteness in itself that is the actual problem. The problem is the lack of treatment infrastructure to meet clients' needs to ensure they do not feel demeaned and demoralised.

Reference

Shahid S et al 2011 'Nowhere to room … nobody told them': logistical and cultural impediments to Aboriginal peoples' participation in cancer treatment. Aust Health Rev 35(2):235–41. http://dx.doi.org/10.1071/AH09835.

the cultural dominance of the 'white' way of doing things. It is easy to see what an advantage these circumstances bring to the wellbeing of those already situated in white domains. As Puzan (2003) outlines, members of the white (or mainstream) culture are inheritors of unearned, unexamined and unacknowledged privileges. Further, **whiteness** is espoused as 'the norm' and everyone else is seen as outside of the norm. Those who are racially designated are therefore measured against the largely implicit standards of whiteness, regardless of whether they are able/unable, and willing/unwilling to meet 'white norms' and are often made to feel deficient or subordinate. Whiteness, then, does not simply refer to the colour of someone's skin but to a whole domain of power and privilege, which presents an alternative way to discuss systemic/institutional and personal racism that turns the gaze from continual scrutiny on 'the racialised other' to white purposes, practices and cultures.

Puzan (2003:193) describes whiteness as '… a socially constructed category of race, wherein non-white people are racially designated, while whites escape such designation and occupy positions which allow them to carry on as if what they say is neutral, rather than historically and ideologically situated'.

Just as cultural safety counters the invisibility of whites as cultural subjects, studies of whiteness counter the invisibility of whites as racial subjects, enforcing an acknowledgement from that domain of participation in diversity and therefore challenging the assumed right to define and police the diversity of others vis-a-vis white spheres of influence.

It is these dimensions of whiteness and of white power that cultural safety seeks to address. Practitioners undertake processes of critical cultural self-reflection and power sharing in order to facilitate the recognition of themselves as cultural beings who belong to a culture that has profound impacts on human health and wellbeing. Whiteness does not always control by force, but through the 'inequitable social distribution of punishments and rewards', through control of discourse and definitions, through control of what 'counts as knowledge' and of what action or treatments should be undertaken, through control of acceptable 'words and deeds' and through 'rules and laws', 'bureaucratic hierarchies', 'technologies of surveillance' and dominant ideologies (Puzan 2003:194–6).

It is likely that you can recall your own examples of unthinking expressions of white dominance. For example, the way 'Australians' comment on how many 'Asians' live here – ignoring the fact that many people of Asian descent have lived in Australia for the entire period since colonisation or for many generations. Of course, all these modes of dominance are experienced interpersonally and impact on individual consciousness. It is evident that the majority of nurses are white; that the rules, norms and conventions of nursing, and the knowledge passed down through nursing education, is white. It is also evident that white privilege, along with that of class, influences who can undertake nursing education and where that person may eventually be employed. Curriculum standards and pedagogies are informed by the knowledge of the dominant cultural group, that of the 'white' system, and anyone outside this group is in general required to learn the standardised white way (Solomon et al 2005).

Race

Historically, white privilege concerned the social construction of the notion that there were discrete and different evolutionary lines of humans that were called races. Although the term '**race**' first arose in Europe in the 15th century as a means to account for differences more generally, the theory of human races developed during the 19th and 20th century. Outlaw (1990:62) refers to '… the abundant knowledge that the deployment of race has almost always been to service political agendas' and in racial thinking, whites saw themselves as subordinate only to God and as the pinnacle of an evolutionary line of progressive human perfectibility from primitive to civilised.

From this lofty position, white people assumed the right to control racialised others and marshal them towards the perfection they saw themselves as having achieved. So, as Outlaw describes, race: '… continues to be a major fulcrum of struggles over the distribution and exercise of power' (1990:67). Although race is a social construction that has no biological or scientific basis (see Templeton 2002, 2003, Willis & Elmer 2011), the concept of race has destructively seeped into people's perceptions of others. Many problems arise from the situation where racial beliefs became the organising principle of the modern world, not the least of which is the various forms of racism that continue to influence the work of individuals and institutions such as healthcare services.

Ethnicity

Ethnicity is a related term that refers to the group or groups that people identify with or feel they belong to. Ethnicity can be based on religion, customs, or common ancestral or geographic origins. A person may identify with some or all of the shared characteristics of a group and may choose different ethnic affiliations at different times in their life. In some respects, however, the term ethnicity has come to have a commonsense meaning of 'minority' and is seen by some to be a less emotive term than 'racial minority'. It could be argued that those belonging to the dominant cultures in Australia and Aotearoa New Zealand do not generally see themselves as having ethnicity or as belonging to a 'race', more often reflecting on their cultural identity as simply 'Australian' or 'New Zealander'. However, using the above definition, everyone has 'ethnicity', and, notwithstanding experiences of removal and adoption, can trace the specific roots that form their ethnicity.

• CRITICAL REFLECTION POINT

Have you ever been in a situation where a way of understanding a health issue from the perspective of the dominant white culture is discussed, and the educator

turns to a student of different ethnicity and asks them to explain how this is understood in their ethnic group? What is happening when this occurs?

First of all, the educator has not only given privilege to the dominant way of understanding the issue, but has also assumed that the 'other' student is representative of all 'others'.

How would you respond if you were asked to speak for all people from the ethnic group you belong to? Could you do that?

Social class

Class is another marker of privilege and a social determinant of health. In countries such as Australia and Aotearoa New Zealand, people are categorised by educational, social and economic factors into different classes, which are accorded different social status. Just like the concepts of culture and race discussed above, 'class' is another social construction created by people in the attempt to order, understand and control their world. Such categorisation of people into classes is known as **social stratification** – the ordering of society into groups or classes which have differential access to power, privilege and status.

Membership of a social class often determines whether an individual will or will not complete intermediate or higher education or acquire sufficient meaningful work and income to satisfy their basic needs. Class is therefore another aspect of culture and an indicator of differential life chances that impact on health and wellbeing. *The Black Report* on health inequalities in Britain (Department of Health and Social Services 1980) clearly illustrated this by identifying a widening gap in health inequalities between rich and poor communities. Over the decades following *The Black Report*, other reports have reached similar conclusions, including *Fair Society, Healthy Lives* (*The Marmot Review*) (Marmot 2010). Little doubt remains that the relationship between health and social disadvantage is of major significance (Wilkinson & Pickett 2010), not only because of the economic cost to many, but also because of the social injustice caused by health inequalities.

Although it contradicts egalitarian Australian ideals, it is now well known that there are patterns of inequality in health and illness that can be better understood by focusing on the social dimensions of health; the impact of society's reactions to 'race', ethnicity and class stratification creates significant health impacts (Willis & Elmer 2011). To gain a better understanding of **social determinants of health** we now look at the impact of forms of discrimination and imbalanced relations of power.

Ethnocentrism, stereotyping, racism and discrimination

The preceding discussion about race/whiteness, ethnicity and class suggests that challenges may occur when one group assumes power over another and/or attempts to control them and enforce their beliefs, values and cultural practices. Such circumstances characterise the situation of Indigenous peoples and other minorities when the practices of mainstream cultures are related to beliefs such as ethnocentrism.

Ethnocentrism and othering

Ethnocentrism is the belief that our own cultural group (or those we identify with in a given context) is not only essentially different from, but is also superior to others (Eckermann et al 2010) and this results in what can be called 'othering'. **Othering** refers to a process where anyone perceived as different to the self (the other) is seen as inferior, suspicious, strange, exotic, unable to be understood, or considered not worth the effort of trying to understand. For example, residents may see strangers in a small town as 'other' (often referred to in Australia by the slang derogatory term 'blow-ins'). Australian or Aotearoa New Zealand-born citizens might see those born overseas as 'foreigners', or the privileged may see the poor as 'not one of us'. Otherness is a term that can be assigned to various cultural aspects such as class, sexual orientation, religious or spiritual beliefs, ethnic origin, migrant experience, gender, gender identity, age and disability.

Stereotyping

Although there is an educational emphasis on acknowledging individual differences between clients as consumers of health services and ourselves as nurses, it is equally important to emphasise that the healthcare workforce is itself extremely diverse. So, nurses may assign otherness to doctors (and vice versa), or to health professional colleagues, other nurses and clients, leading to further challenges to culturally safe workplaces. These 'othering' processes invoke **stereotypes** which arise from systematised models of culture we critiqued earlier, where everyone who shares a cultural identity is assumed to actually be the same (in terms of worldviews, lifeworlds and related behaviour). Ideas that cultures are static are problematic due to the variable ways in which individuals express and embrace their culture and to the different lifeworlds in which life's circumstances unfold.

Stereotypes can be both positive and negative. For example, a positive stereotype about nurses is that they

are always loving and caring, and a negative stereotype is that all female nurses are promiscuous. These over-generalisations always deprive the 'object' of individuality. As a result of applying stereotypes, we develop misguided mindsets and attitudes (whether these are positive or negative) towards people, which are dangerous in healthcare settings. A real-life example concerns a woman who is Aboriginal and has always lived in urban areas. She was horrified when it was suggested that her family might be interested in 'traditional birthing methods'. The stereotype assumed that all Aboriginal people are the same and that traditional Aboriginal birthing models, long struggled for by some Indigenous women in remote Central Australia, would also be welcomed by those living in urban South-East Queensland. Another example is a man who identified his ethnicity on an admission questionnaire as Māori and was then visited by the Māori health worker. He had not requested this visit and had never previously had any particular contact with Māori health services. He told the nurse that he would have preferred to have been asked first.

Racism and prejudice

Prejudices (literally prejudgements) are sometimes positive, but are more usually the negative attitudes people develop around stereotypes they have about others who they see as essentially different from themselves. *Personal racism* in the form of put-downs, 'jokes', violent acts and so on, is one form of prejudice and is one of three levels of racism: the others being *systemic/institutional* and *scientific* racism (discussed below). Personal prejudices are usually based on myths, rumours or over-generalisations from specific experiences. Just like other aspects of culture, prejudices and racism are learned during childhood socialisation, so that often the prejudices of parents or societies are passed on to successive generations. It is not uncommon for people to defend their prejudices and justify them by linking them to their values and beliefs. For example, following a process of reflection on a role-play where one of the authors (Cox) played the part of a beggar, a student admitted that they 'had no time for' (held deep prejudices against) people on the streets who tried to beg from them and that they perceived as homeless. The student went on to defend the prejudice by explaining that they were brought up to work hard and to take care of themselves – no one had given them any hand-outs, and besides they 'reckoned that people' become homeless because they are drug addicts or lazy or both.

This example of prejudice shows a lack of empathy or openness towards the myriad of other possible circumstances that might lead a person to beg on the street; instead there were several entrenched stereotypes about homeless people and beggars that informed their prejudice. Because prejudices are part of a person's worldview and reflect their values, people invest a good deal of their emotions in them and are quite resistant to change. However, adults develop **agency** and are able to challenge prejudices that their families, professions or society may have tried to socialise into them as part of their developmental pathway. Developing awareness of values and prejudices is crucial for nursing practice, as prejudices lead to discrimination.

Discrimination

Discrimination is the acting-out of prejudice: the act of speaking or acting against those who are perceived as different from 'us'. The progression from ethnocentrism to stereotyping, to prejudice, to discrimination, originates in our tendencies and encouragement to be proud of our culture, of who we belong to and who we are. Pride in one's cultural identity and group is not necessarily harmful. However, when prejudice and ethnocentrism become an outcome of cultural pride, the development of an insidious cycle of prejudice can ensue (Figure 14-4). Discrimination has important implications for communication between people from diverse cultures. It is easy to get caught in a cycle of prejudice, especially in a diverse society with a colonial history. If people are unfamiliar with the varied cultural backgrounds of others, it is easy to make faulty assumptions and to treat people according to entrenched social stereotypes based on people's religion, sexuality or geographical origin. This effect is perpetuated if those around us (family, friends and colleagues) and the media convey specific images of another group.

Racial discrimination is a problem of long standing for all Indigenous peoples across the globe, with positive images and stories of Indigenous individuals and their communities only rarely appearing in the media internationally. Although there is some evidence of change in Australia with the release of films such as *Bran Nue Dae* (2010), a dedicated Indigenous channel (NITV), and greater exposure of popular musicians, successful athletes, academics and so on, there is still the struggle against a negative focus that constantly invokes and embraces stereotypes. The racist targeting of the 2015 Australian of the Year (Adam Goodes) demonstrates the profound racism that underpins our society. One only has to think of policies and processes such as the Northern Territory Emergency Response discussed earlier to appreciate how deeply-entrenched stereotypes continue to justify the application of punitive practices to highly diverse people that are again universally rendered guilty and irresponsible (Brown & Brown 2007).

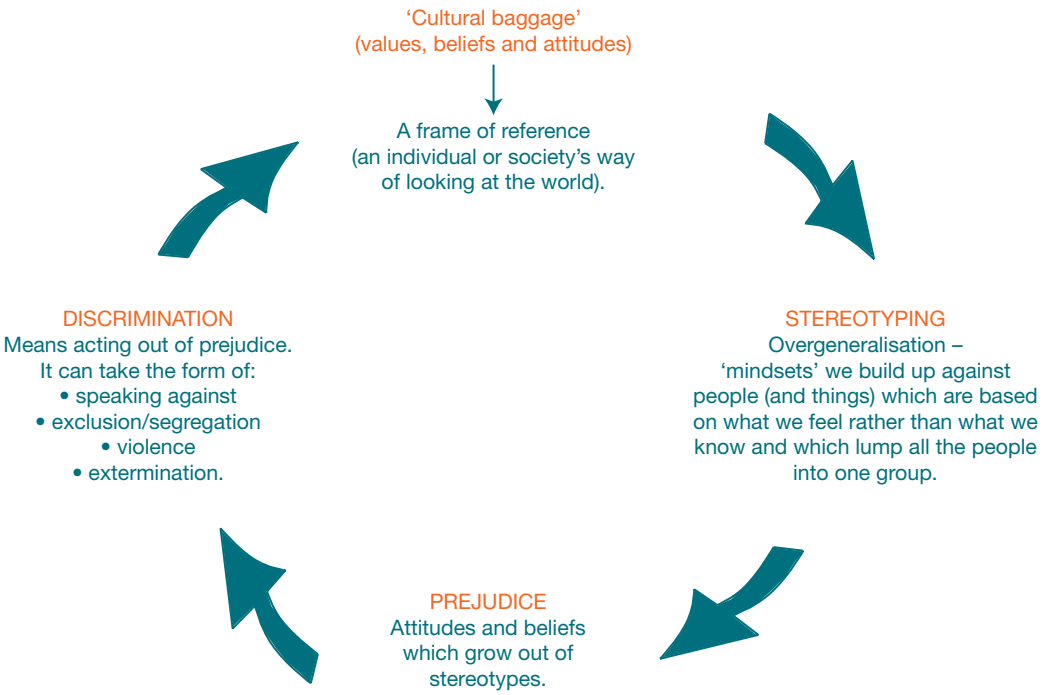


Figure 14-4 Cycle of prejudice.

Eckermann et al 2010 Binan Goonj: bridging cultures in Aboriginal health. Elsevier, Sydney, p. 157.

Power

Within the complex interaction of racism, ethnocentrism, stereotypes, prejudice and discrimination, power becomes extremely important. In anthropological theory, power is a particularly complex concept with an interesting genealogy. One way of understanding power comes from the work of the sociologist Max Weber (Bendix 1996), who identified three kinds of power evident within society: political, economic and social power (Box 14-2).

An essential feature of power is that those who dominate in imbalanced power relations work hard to maintain their position. We can see this dynamic in relation to whiteness, as discussed earlier, where those who have limited access to power and self-determination are subjected to systemic bias. The system itself, controlled by those who already hold dominant positions in power relationships, maintains the powerful because those not 'in the know' may not understand the rules, regulations, norms and values or do not possess the resources that provide access to the system.

If we take the example of the health system, one must first understand the system to be able to have influence within it; to understand it one must have some knowledge of it and have been successful in it; to be successful in it one must generally have come from a part of society that has traditionally been influential in developing and controlling the system. As Taylor and Guerin (2010) demonstrate, *systemic racism* or *institutional racism* are terms used to describe the disadvantage of minorities in their attempts to engage and access systems of institutions, and the ways in which the dominant system fails to extend the same advantage to them. Taylor and Guerin (2010) give the example of anti-smoking programs that were designed by dominant groups. The example reveals the operation of power, as the program is designed *by* the dominant group it operates *for* the dominant group, leading to the decrease of smoking rates among dominant groups, but not among various other populations in Australia.

BOX 14-2 Three types of power

- *Political power* is evident in formal government policy, informal control and influence in the political process and influence over public opinion.
- *Economic power* rests on income, wealth, access to credit, control of employment and control of wages and prices.
- *Social power* or social status is evident in access to political/economic power and how the community evaluates these.

Bendix R 1996 Max Weber: an intellectual portrait. Methuen, London.

This type of systemic bias effectively excludes some sections of society from accessing and participating in decision-making. These dynamics not only lead to entrenched patterns of domination and dependence, but also result in forms of **structural violence**, evident in the continuing differences in health between Indigenous peoples and other Australians, for example. Overall, the combined power effects of whiteness, class and ethnocentrism, and of racism, discrimination and poverty, show that for some, violence is inherent in the social system, which limits life chances. It is therefore important, in the pursuit of culturally safe nursing care, to understand the pressures that these dynamics exert on the health of individuals and their families/communities.

What is health?

Similar to other concepts discussed above, health is socially constructed and is not a universally agreed condition. Definitions of health often differ between cultures, but also within any one culture. The conditions thought to be necessary to maintain or regain health, and healthcare practices (be they lay or professional), reflect the lifeworld and particular values and beliefs of people regarding health and the causes of illness. Holistic definitions of health, such as that of the World Health Organization (WHO), are echoed in the documents of organisations such as the National Aboriginal Community Controlled Health Organisation (NACCHO) (see *Online resources*). In 1982, the precursor to NACCHO, the National Aboriginal and Islander Health Organisation (NAIHO), defined health as 'not just the physical wellbeing of the individual but the social, emotional and cultural wellbeing of the whole community' (cited in Eckermann et al 2010:64). This viewpoint is also supported in Aotearoa New Zealand, where the focus is on the interaction between people and the wider social, cultural, economic, political and physical environment (Durie 2003).

Another aspect of how each individual expresses their cultural being is their agency. As described previously, humans are not cultural carbon-copies of one another and are not automatons; each of us acts on and in the world with a degree of free will. It is these dynamics that account for the fact that cultures, including professional cultures such as nursing, can be described in both normative and descriptive terms; in terms of ideal professional values, beliefs and practices; and in terms of what the particular group actually values and believes; and how that culture behaves and practises in the real world. The implications of these circumstances for nursing practice are that the way we meet clients' needs is influenced by both our worldviews and our lifeworlds.

Despite the awareness that cultural beliefs and life experiences influence how people understand sickness and health, some explanations of health and illness are more powerful than others. In Aotearoa New Zealand and Australia, the **biomedical model** remains the dominant paradigm and has the most legitimacy, both socially and politically. Within the biomedical model, health is defined merely as the absence of disease. The causes (aetiology) of illnesses are based on a decontextualised and mechanistic view of individual humans, rendering their unique worldviews and lifeworlds irrelevant to the medical enterprise. This dominant paradigm is so entrenched and pervasive that it is difficult to provide any comparative analysis or critique (Willis & Elmer 2011).

Nurses' comprehension of the construction of health and illness is shaped by their socialisation within the profession and will, consequently, reflect the dominant biomedical ideology. Remember, culture represents a way of perceiving, behaving in and evaluating one's world. It is learned, grounded in life's circumstances and environment, and is dynamic, forever changing. Just as we are socialised through our family and wider social environment into particular ways of being, perceiving and acting in the world (culture), so are we socialised into our profession through education and the idealised values and behaviours we accept as appropriate to our profession. In relation to health and care, the professional culture of nursing provides the blueprint or guide for determining a definition of health and associated values, beliefs and practices. Crucially these might not always be of benefit to consumers. We turn now to consider the regulation of nursing and the application of cultural safety in professional practice.

• CRITICAL REFLECTION POINT

Think back now to our discussion on 'whiteness'. Can you see any aspects of the dominant culture in your way of thinking or in your nursing practice? How might these aspects affect a person who is not considered part of that dominant culture?

Professional nursing regulation and cultural safety

From the outset it is important to remember that nursing care is about a relationship between a nurse and a person/family/community being cared for. Culturally safe nursing care centres on the experience of that person/family/community. The various models and terms used in discussions of culture and nursing can be confusing for the beginning nurse. While

the Nursing and Midwifery Board of Australia (NMBA 2006:2) states: 'A graduate midwife has a commitment to cultural safety within all aspects of her practice and acts in ways that enhance the dignity and integrity of others', the NMBA Code of Ethics uses the term '**cultural competence**' (Australian Nursing and Midwifery Council 2008a). The term 'cultural competence' is often criticised due to the challenges involved in assuming that a practitioner can reach an endpoint and 'be' competent in someone else's culture (Taylor & Guerin 2010). Taylor and Guerin (2010:17) describe how notions of cultural competence have been expanded within Australian social sciences to include many elements of cultural safety, especially those concerning the implications of colonial history, notions of power (and disempowerment and empowerment), and the consideration of how one's own culture affects the provision of care. We advocate avoiding the notion of 'cultural competency' and encourage you to focus instead on the application and practice of cultural safety.

Applying cultural safety in professional practice

The Nursing Council of New Zealand (NCNZ) regulates nursing practice in Aotearoa New Zealand, specifying four domains of competence for registered and enrolled nurses: professional responsibility, management of nursing care, interpersonal relationships, and interprofessional health care and quality improvement (NCNZ 2012). Within each of these four domains are sets of indicators against which competency is determined, with requirements for culturally safe and competent practice encompassed within all the domains and their associated indicators. More specifically, Competency 1.5 (NCNZ 2007:13) states that the nurse 'Practises nursing in a manner that the client determines as being culturally safe', with the following indicators:

- Applies the principles of cultural safety in own nursing practice.
- Recognises the impact of the culture of nursing on client care and endeavours to protect the client's wellbeing within this culture.
- Practises in a way that respects each client's identity and right to hold personal beliefs, values and goals.
- Assists the client to gain appropriate support and representation from those who understand the client's culture, needs and preferences.
- Consults with members of cultural and other groups as requested and approved by the client.
- Reflects on his/her own practice and values that impact on nursing care in relation to the client's age, ethnicity, culture, beliefs, gender, sexual orientation and/or disability.
- Avoids imposing prejudice on others and provides advocacy when prejudice is apparent.

In Australia, the requirements for professional registration are not nearly so clear-cut. Many elements of the definitions discussed above are reflected in the *Code of ethics for nurses in Australia* and the *Code of professional conduct for nurses in Australia* (ANMC 2008a, 2008b). Nurses are expected to respect individual needs, values, culture and vulnerability. Recently revised *Registered nurse standards for practice* (NMBA 2016) recognise the context of practice in Australia as a 'rich mixture of cultural and linguistic diversity' with the registered nurse recognising 'the importance of history and culture to health and wellbeing' (NMBA 2016). Specifically, standards relating to critical thinking (Standard 1) and engaging in therapeutic relationships (Standard 2) contain criteria for demonstrating cultural safety and respect and a more general criteria recognising that 'people are the experts in the experience of their life' (NMBA 2016). The current range of expectations for beginning nursing practice in Australia and Aotearoa New Zealand closely mirror those outlined in the definition of culture used in cultural safety. It is also of note that the standards refer to the individual, rather than homogenising people by suggesting that they can receive appropriate care based on a group identity.

Reflecting on self; reflecting on practice

Cultural safety is not about attempting to learn about cultures. This tends to lead to 'recipe' thinking and assumptions about particular cultural ways of being. Further, as we have noted above, nurses working in Australia and Aotearoa New Zealand will encounter many forms of diversity in their work; learning about all of these would pose an insurmountable task. Ramsden (2002) and many other writers agree that the first step towards culturally safe care is exploration of the nurses' own attitudes and beliefs; the social, cultural and professional structures into which we have been socialised; and the influences these have on the relationships formed with people when in the dominant position in the power relationship. Further, the worldviews of nurses and how we communicate these is partly influenced by professional socialisation and partly by the personal worldviews and lifeworlds that we bring to the profession.

During professional education, nurses acquire a range of symbols (medical jargon, linguistic shortcuts and specialist knowledge) that may not be readily understood

by others. Taylor and Guerin (2010:125–7) suggest that nurses, like other professionals, often assume that both colleagues and clients share these professional symbols, knowledge, assumptions and beliefs, and that all can speak and understand the same (nursing/medical) language. This assumption can lead to serious misunderstandings and, along with the other factors we have discussed, is why self-reflection is the very first step in applying cultural safety in practice.

Ramsden (2002:47) acknowledges that, as a member of a minority group operating in mainstream society, 'Unless I understood myself very well as the bearer of culturally derived attitudes such as internalised racism and social class, I could very well become the oppressor of Māori and others who were less powerful than myself.' There are particular challenges for members of the dominant white culture in Australia and Aotearoa New Zealand when writing about or researching the areas of culture and health. The process of unpicking our own culturally constructed attitudes to ensure that nursing work does not add to the oppression of others is not easy. The endeavour has to be based on sincere dialogue, consultation, negotiation, monitoring and evaluation by those most likely to be affected by the results of this work.

It is therefore crucial for nurses to reflect on:

- personal cultural identity
- assumptions about health and illness and people
- personal definitions of health
- the client's definition of health
- the systems' definition of health
- whose definitions are legitimised (by law and by society)
- implications for nursing practice
- consequences for clients' health care.

When nurses reflect on the points above, they can be clearer about the attitudes, values, beliefs, practices and traditions acquired through their own personal background and experiences, and those of the culture of nursing (Figure 14-5). We may find that the ideal of treating everyone with respect and dignity might be harder to extend to some clients and their families than to others. Contact between people with differing cultural assumptions and circumstances is sometimes marked by suspicion, fear and self-doubt. This can work both ways, with nurses, clients and their families experiencing such feelings when confronted with one another. However, being open to client stories of their illness, negotiating with them and, if appropriate, with others from their family, friends or cultural group can help to minimise these consequences. Nurses sometimes have to learn to cope with feeling uncomfortable. Your own ideas and values will be challenged in the pursuit of excellence in holistic care.

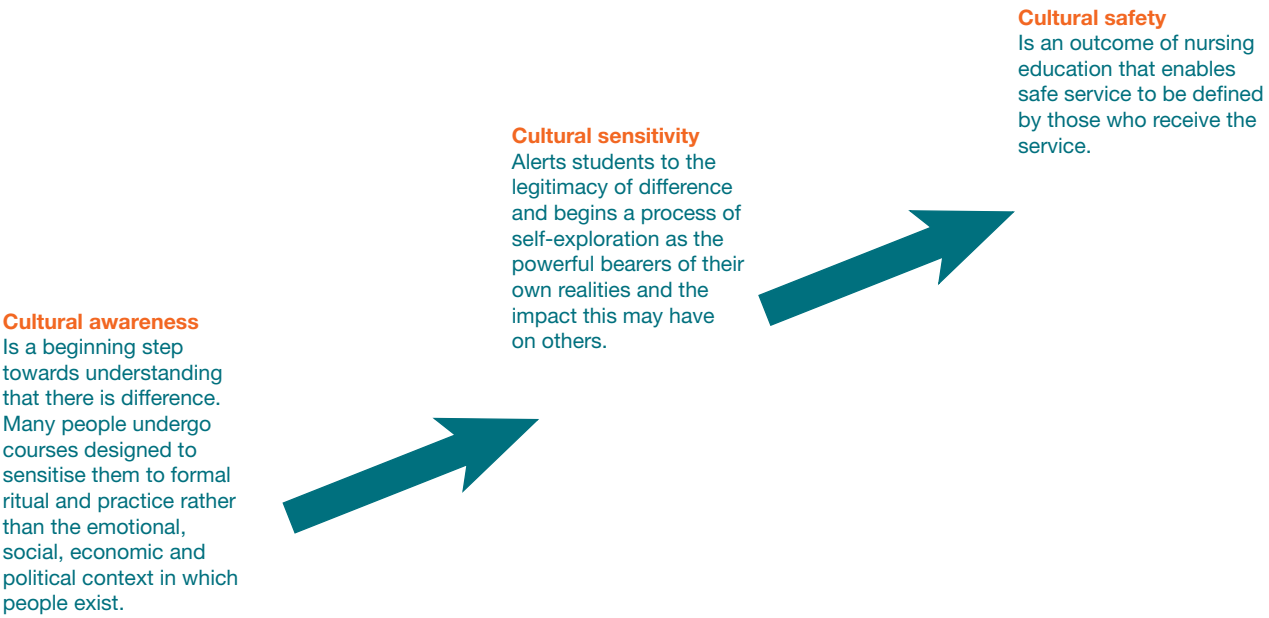


Figure 14-5 The process of achieving cultural safety in nursing and midwifery practice.

© Nursing Council of New Zealand 2011 Guidelines for cultural safety, the Treaty of Waitangi and Māori health in nursing education and practice, www.nursingcouncil.org.nz/Publications/Standards-and-guidelines-for-nurses.

Many people enter healthcare environments with feelings of anxiety, isolation, loss, confusion and powerlessness – not to mention the immediate effects of the presenting complaint or illness. These feelings can be especially acute for those outside 'white' spheres of control. Others can be disadvantaged by the language, culture, rules and regulations of the health system – it is a complex system. This reality affects all who are hospitalised to some extent, but imagine what it means to someone who comes from a group that has been historically targeted by the very people who are now responsible for their care, or for a person who does not share the language or sociocultural conventions taken for granted by the majority. Those who do not belong to the dominant culture, or who are unfamiliar with healthcare/hospital environments, may experience significant stress. This situation is related to differences in communication, attitudes and beliefs as well as differences in everyday routines that staff may take for granted, but which are invisible to consumers. Such stress will invariably affect consumers' capacity and willingness to engage with the priorities and treatments of healthcare systems and therefore impacts on their ability to recover from illness.

• CRITICAL REFLECTION POINT

Describe your experience of caring for a client who has experienced discomfort in the healthcare system because they did not 'belong' to mainstream culture.

1. **What was it that alerted you to the client's discomfort?**
2. **What stressors were experienced?**
3. **Identify at least one culturally safe strategy you implemented or, on reflection, that could have been implemented to support the client.**
4. **Have you ever had similar experiences? Write down what happened and how it felt.**

When considering health definitions and constructions, healthcare professionals have a special language based on their discipline(s) and even cultivate a particular form of shorthand (medical or nursing abbreviations), as already observed. These spoken and written forms of communication facilitate efficient understanding between healthcare professionals, yet are mostly foreign to outsiders. Similarly, the routines, technology, customs and rituals of a hospital are largely developed to make the institution work as efficiently as possible, yet they may seriously stress and disempower patients and clients. When these stressors are coupled with illness, isolation, unfamiliar attitudes and beliefs, there is potential for serious disadvantage. We can appreciate the impact of these dynamics when we consider, for example, that Indigenous people in Australia are hospitalised at 2.5 to 5.7 times the rate of other Australians (AIHW 2013). In Aotearoa New Zealand, avoidable mortality rates are over two-and-a-half times higher for Māori than for non-Māori, and avoidable hospitalisation rates are more than one-and-a-half times higher than those for non-Māori (Ministry of Health 2014). The NZ Ministry suggests that these rates could be either avoided or decreased with a focus on the right interventions to meet the needs of the population.

Aboriginal liaison officers and health workers (ALOs/AHWs), and Māori health workers, are integral members of the healthcare team and can contribute valuable insights into health issues experienced by Indigenous populations and the delivery of health care. But this workforce is often very small and stretched within mainstream institutions. Further, in rural and regional areas particularly, ALOs and AHWs often find themselves in situations where they are expected to be experts on every issue related to their own cultural group(s), while having to cope with the constant pressure of operating in demanding cross-cultural environments characterised by various languages, health priorities and behaviours, social positions and cultural constructions. Working in partnership and sharing 'power' with staff in these positions is critical, as is including family members or other significant people in decisions and care.

Nursing practice and social determinants

Social determinants of health include the systems and circumstances that are beyond the control of individuals. Social determinants are those conditions of everyday life in which people are born, grow, live, work and age. Many are socially constructed, and all are interwoven. Social determinants include those factors already identified as important to understanding culture, such as age, gender, gender identity, ethnicity, class (income, education, housing, employment), access to health services and a sense of control over one's life situation and environment (WHO 2011). If nurses are to develop skills appropriate to working with the diversity within and between us, our clients and colleagues, we need to keep in mind the way differences within and between groups can be evaluated. This is achieved through recognising the concepts of culture, race, class, ethnicity and the associated issues of power, discrimination and racism that were introduced above. It is critical to understand the social forces that impact on people's health, as interventions will flounder if health professionals are unable to understand the social determinants of health and understand each person within their own personal context.

For Indigenous peoples in Australia and Māori in Aotearoa New Zealand, there are additional socio-historical factors that continue to have impacts on health. These include alienation from country and resources; disruptions to and/or loss of language, ceremony and customs; and kinship and family fragmentation due to oppressive government policy. There are other factors that compound these social determinants. For example, it is now well established that racism has profound impacts on mental health, cardiovascular health and the endocrine system (NACCHO 2014). We also know that harassment contributes to very high levels of Indigenous incarceration, with profound impacts on the health and wellbeing of individuals, families and communities (Krieg 2006).

Systemic racism is not just witnessed in encounters between staff and patients, but in the decisions staff make about care and in the decisions police and others make about Indigenous people. In the 2014 Australian census, the proportion of prisoners identifying as Aboriginal and Torres Strait Islander ranged from 8% in Victoria to 86% in the Northern Territory (ABS 2014b). Similar geographic differences are evident in Aotearoa New Zealand. Health delivery and healthcare decisions will be influenced by these demographics. Further, the social construction of gender has profound effects on men and women and those outside of the dominance of heteronormativity such as those who identify as lesbian, gay, bisexual, transsexual, intersex or queer – the LGBTIQ community (Willis & Elmer 2011). It is easy to see that there may be compounding health effects, for example, on someone who might be a transsexual male, Indigenous and from a socially or economically disadvantaged background.

Those from migrant and refugee backgrounds also have specific social determinants affecting their health – in addition to all levels of racism that may characterise their Australian experience and any of the other social determinants outlined. These specific determinants may include the impacts of war, trauma, civil unrest and the ordeal of getting to Australia, the destruction or fragmentation of families, and profound grief and loss. The latter is not only due to the death or injury of loved ones, but also due to complex losses that moving to another country brings in terms of alienation from one's language, community, land, and the loss of everything known and held dear. From outside these experiences, one can only dimly imagine the suffering and distress which, for many, is then compounded by being held in detention centres, for example.

Experiencing inequalities leads to disempowerment and loss of personal control. It is critical that nurses view and care for each person within their personal context and in light of the social determinants of health that arise from their environment, life experiences and social context. We have discussed how understanding the influence of privilege and power imbalances, and the need for reflecting on self, and one's own culture and profession, matters in regard to our own attitudes and beliefs about 'the other'. Finally we turn to a number of skills concerned with communication, trust and negotiating knowledge and outcomes that nurses can develop for culturally safe care.

Communication skills

Chapter 12 of this text explores the importance of placing communication at the centre of safe and effective care. Here we briefly overview some issues of relevance to cultural diversity. Sharing a common language is obviously a basic component of effective communication, but in health care this is far from given (see *Clinical example*). As this scenario demonstrates, language is a significant cultural issue as it conveys meaning. Consequently, communication is culturally defined, so both verbal and non-verbal communication can be primary causes of discomfort or stress in health care.

The use of 'plain' English in verbal and written communication means avoiding overly complex, technical language and medical jargon when communicating with clients. While it is easy for nurses to recognise that someone from a migrant or refugee background might struggle with English, something that is not widely appreciated is that many Indigenous Australians have Indigenous languages as their first language and many others use Aboriginal English, which may be heavily accented and is recognised as distinct (Taylor & Guerin 2010:125–7). When nurses become aware that clients are not able to understand what is being said, the help of professional interpreters or ALOs is critical. The *Clinical example* illustrates the importance of such a service. A major problem in the scenario was that no one bothered to resolve the language issues inherent in dealing with the client before a plan was made. It is, however, important to remember that the interview with the interpreter needs to be planned and structured in such a way that there is time to explore and translate each issue. Nurses should avoid using a relative, spouse or child to interpret as they may not have the language skills necessary to interpret information accurately. In addition, the use of spouses or relatives may introduce greater power or emotional imbalances, stimulate gender role conflict and present confidentiality issues.

A further concern in this *Clinical example* was that the medical notion of 'normality' was in direct conflict with this woman's experience of grief. This factor reinforces

CLINICAL EXAMPLE

Language and culture

The importance of interpreters is increasingly about more than mere language translation – there can also be elements of cultural brokerage in their work, as shown in the following example.

A Polish woman in her 80s was admitted to a mental health facility. She had a depressed mood on admission but was not suffering from clinical depression. The woman was not fluent in English; she could only answer simple questions. She did say that she was sad, and she cried a lot. Sometimes she raised her hands in the air and wailed. Being in hospital was also distressing for her, so this was making her more tearful.

A young worker from the community sector (she worked in an NGO, a non-government organisation) decided that the woman should not live by herself and that it was too much to make visits every couple of days to check on her welfare and do her shopping. The mental health staff did not use an interpreter to properly assess the woman, but proceeded on collateral information from the community worker only. Nobody clarified with the woman when her husband had actually passed away, and it was assumed from the discussion with the community worker that the husband had died years before. In fact, the woman's husband had passed away just two weeks earlier.

Due to the NGO making an application to the public trustee, all of the woman's finances were taken into the care of the public trustee, who also interviewed her without an interpreter. There was a decision taken by those concerned that she would have to go into care.

The woman's daughter, who had returned to Poland about 20 years earlier, came back to Australia when she heard that her mother was going to go into a home for care and would have her finances managed by others. Subsequent work with the daughter, mental health services and an interpreter established that the woman was not mentally incapacitated in any way and could manage her finances with no problem. They filed an application to get her finances back into her own care.

It took many months (which were very distressing to the client and her family) to get the decision reversed. A natural grieving process for her husband had led to this chain of events, but due to nurses' cultural assumptions and the failure of health professionals to use interpreters at every step, the capacity for this woman to remain independent in her own home was entirely misjudged and mismanaged.

Personal communication, Kerry Kennedy 12 December 2011, reproduced with permission.

earlier comments about the need to explore the influence of culture on a client's health beliefs and health behaviours, as well as power and powerlessness, when professional beliefs conflict with those of clients. As the work of Cox (2009, 2010) demonstrates, it is absolutely essential that expertise from someone knowledgeable about the cultural identity of an individual is sought when there is concern about their 'mental health status', to determine what is considered 'normal' for this individual within a cultural context. However, an even more fundamental issue is that the Western medical model categorises people and their symptoms in terms of 'body' and 'mind' or 'physical' and 'psychological' parts. This view of the world and the assumptions underlying it are far from universal.

This, and the following *Clinical example* highlight issues of miscommunication, stereotypes and fear. However, they also highlight systemic factors within health care, particularly those related to unbalanced power relations. Indeed, nurses need to explore how they personally define, think and feel about 'other' people. **Power imbalances** can have further impacts on communication, leading clients to feel uncomfortable because they expect to be discriminated against in a system which they experience as alien and unfriendly. As Eckermann and others (2010:82) point out, if people always react to us with suspicion or other negative patterns then 'we start to wonder about ourselves, our worth, our traditions, our background. This wondering adds to the stress and tension of trying to cope with the society we live in.'

These issues become particularly important in situations where the cultural identities of a nurse and a client have historically occupied differential power positions, such as in the case of Indigenous minorities in Australia and Māori in Aotearoa New Zealand, and the dominant 'white' majority working within health and social care systems. As a result, members of a minority group may find it difficult to cope with feelings of insecurity and inferiority when relating to the dominant majority. The consequences are apparent in the next *Clinical example*, but are even more apparent in the profile of health disparity experienced by colonised minorities worldwide. It would, of course, be wrong to believe that only members of minorities might find themselves in such situations; indeed, many older people from varying cultural identities express similar experiences in accessing health systems. Any person who feels – or is made to feel – incompetent in a particular situation will begin to question their abilities and knowledge. It is argued, however, that for individuals who are part of the dominant group and who belong to the middle class in terms of access to education, information and decision-making, such episodes are transient and generally linked to specific crises. For many minority group members, however, such episodes are continuous and a lifelong experience.

Developing trust

Ramsden (2002) and Eckermann and others (2010) believe that establishing trust is basic to creating a

CLINICAL EXAMPLE

The power of attitude

A young mother of three children, two of whom were at school, reported to the Review Team that she had decided to take the baby to the medical centre and inquire about immunisation. She escorted the older children to school and carried the baby on to the centre, without an appointment. Dressed casually, she entered the centre and approached the nurse at the reception area. At first the nurse ignored the mother until she had completed her current task, then before the young woman spoke, the nurse turned to her with an expression of impatience and distraction.

The mother said that she felt so uncomfortable that she shrank away, excused herself and left. There was no exchange of words, yet the interaction had been so powerful that it completely blocked further access to health service. The young woman said that she felt shy and ambivalent, and did not feel able to assert herself in the medical centre and in the presence of the nurse who was exhibiting behaviour which the mother felt was an unspoken commentary on her baby, her casual appearance, her social class and her being Māori. Whether the nurse had intended to convey a negative message was not the issue; her professionalism should not have permitted her to behave in a way that could have been interpreted as obstructive to contact by the mother seeking her assistance.

Lessons to be learnt from this example:

- It is possible to create active barriers to service without recourse to spoken words.
- There are other discourses which are unarticulated and unanalysed but shape the behaviour of patient and professional.
- The influence of attitude can be a powerful inhibitor or initiator of professional interaction.
- It is the responsibility of the nurse as the power-holder to create an environment that enables people to feel safe in the presence of the nurse.
- Unfavourable attitudes are easily recognised by those who have been exposed to their negative effects.
- Those who have experienced the power of attitude imposition are always vigilant to the possibility of its presence.

Ramsden IM 2002 Cultural safety and nursing education in Aotearoa and Te Waipounamu, unpublished PhD thesis. Victoria University of Wellington, Wellington, pp. 62–3.

culturally safe environment, a position that we strongly support. Likewise, Taylor and Guerin (2010) propose that trust is a cornerstone of good care and can easily be achieved by finding a point of commonality or interest with the client, rather than being overly business-like and focused on clinical issues from the first meeting. Trust will develop when people do what they promise to do in a way that does not place other people at risk, culturally, spiritually and physically. There is no checklist for developing trust – it will grow as relationships grow. However, trust may be initiated at first contact simply by the level of respect and concern demonstrated by the nurse (Ramsden 2002). Inevitably, the nurse's ability to establish and maintain trust with a client is an essential prerequisite to negotiating and maintaining culturally safe care.

Further, the context of health and nursing in Australia and Aotearoa New Zealand presents specific challenges related to the level of distrust that may impact nurses' interactions with clients from minority groups, arising from histories of oppression (Cox 2007, Forsyth 2007, Ramsden 2002). The capacity of health professionals to acknowledge and validate their clients' experiences and perspectives is central to the development and maintenance of trust. To overcome these circumstances, nurses must learn to acknowledge and be aware of their own position of power over others.

Negotiating knowledge

As professionals, nurses need to 'know' a lot of information about their clients, to be sure of facts, and to feel confident that all possible evidence is taken into consideration during assessment. This is part of our professional socialisation. Having become aware of the need to consider the interaction between culture and health, educators have been inclined to teach knowledge 'about' various cultures in order to provide appropriate educational intervention (see, for example, the 'community' profiles on the Queensland Health website in *Online resources*). However, we have argued throughout this chapter that ideas of health and culture are constructed. Therefore, knowledge is also constructed to serve the particular purposes and interests of knowledge producers. As Nakata explains (2006:266), 'Understanding the theoretical and methodological issues [of knowledge production] is critical to producing new and more effective approaches to negotiating the intersections of different knowledge systems as they converge, circumscribe and condition the possibilities for both understanding the past and its legacies, and improving Indigenous futures.' The healthcare environment in which nurses work presents just such a context of intersecting knowledge systems – those of nurses, doctors, clients and their families and communities.

Ramsden (2002) highlights the need to negotiate appropriate knowledge with people about their cultural needs and perspectives to prevent compounding the powerlessness of outsiders to healthcare systems. Negoti-

ating knowledge means that the nurse and the client become learners in a bicultural (two cultures – the nurse and the client) relationship. Each has something to contribute to the other's understanding of the factors influencing the reasons for seeking the interaction. One way to equalise power imbalances is to actively negotiate outcomes as well as appropriate knowledge. Remember that negotiation is a two-way process – it requires dialogue.

Negotiating outcomes

All healthcare providers have a duty of care to provide safe care leading to positive outcomes. The reality is that care and positive outcomes are more likely to be defined on the basis of professional socialisation and culture (nurses and health systems) and the institutional and political demands made upon them. Clients may not share nurses' definitions of positive outcomes, and health system policy and practice can create culturally unsafe situations. It can be difficult for individual nurses to overcome these systemic factors that affect their capacity to provide culturally safe care. In remote and even in rural Australia, for example, it is the practice to transfer pregnant women from their home to a hospital birthing unit at 38 weeks in order to ensure a safer birthing environment (Eckermann et al 2010). The result is that many Indigenous women abscond from hospital after transfer because, for them, it is more important to give birth in their community and on their Country. Some Indigenous women may avoid antenatal care and other health authorities to avoid being removed, placing them and their baby at greater risk.

For many Indigenous mothers, staying within their family and community is not only important in terms of having the family nearby for support and cultural reasons, but also where the baby is born has impacts on that baby's identity and their future rights and responsibilities in and for Country, family and law/lore. The far-distant hospital presents its own social and emotional dangers caused by separation from family and community, and expectations to function in unfamiliar and sometimes hostile cultural environments. While the decision to birth on Country may not always be sound from a medical perspective, from the cultural perspective of the mother and her family and the baby's paternal family, it may be the only safe decision. However, what is considered safe is the controversial point here in regard to what is being privileged. Are practices such as those described above for medical safety, or the mother's and the family's cultural safety, or are they to protect the system and health professionals? This example not only highlights the problem of making policy on the basis of a cultural identity rather than according to individual needs, it also shows how such practices result in systemic discrimination rather than person-centred care. Of course, some pregnant women may need to be evacuated for medical reasons; however, many do not need this level of intervention and power exercised against them and their birthing choices. Others may choose to give birth in a hospital environment. A respectful conversation needs to take place between health professionals, the mother and family about what is medically safe and what care is valued by them, and this can be negotiated to maintain cultural safety.

Summing up

All clinical practice implies a theoretical, social, economic and political stance on the part of those involved in decision-making; that is, those who dominate in relationships of power. Even in the most straightforward terms, nurses are clearly in a position of power when interacting with their clients. A person's illness frequently renders them physically, mentally and emotionally diminished or incapable. Clients are often reliant on nurses for the most basic yet intimate and complex of needs, up to and including the maintenance of life itself. At a more complex level, interactions between nurses and clients involve a process that brings a whole range of personal, linguistic, historical, social and economic factors to bear. When perceptions and expectations within and about these factors are not shared by both a nurse and client, conflict will inevitably occur. Within such conflict, nurses are most likely to be more powerful. Nurses are supported by a professional culture, language, traditions and customs, which are a shorthand way of ensuring efficiency and effectiveness for those 'in the know', but which effectively and efficiently exclude those who 'do not know'. Nurses' language, tone of voice and body language, rightly or wrongly, convey attitudes and prejudices, indicate concern or lack of it, and can generate frustration and anger as well as trust and cooperation. These situations can occur in any nursing encounter, even when the nurse and the client share a cultural identity. However, when the nurse and client do not share a similar language, a common frame of understanding, compatible expectations and perceptions, or in short, do not share a similar cultural background, the potential for frustration is amplified.

Although the influence of culture on nursing practice is generally raised in relation to the rapidly changing and diversified demography of nations, following Ramsden (1993, 2002), we argue that all healthcare professionals are required to be culturally safe because whenever we are interacting with a client we are entering a bicultural relationship. Even if you and your client share a cultural

identity, your values, health beliefs and practices will not necessarily be the same. Remember that from the perspective of cultural safety, nurses' care can only be effective, appropriate, positive and empowering if the recipients of care – the clients, their families and communities – assess it as such (Richardson 2004).

In summary, a number of processes enhance the ability of nurses to provide culturally safe care which recognises the impacts of the social determinants of health on individuals and then works to minimise these impacts (Figure 14.2).

These processes include:

- reflecting on self; on one's own culture, profession, power imbalances, attitudes, beliefs about and reaction to others
- enhancing communication skills and drawing on the skills of interpreters
- understanding the influence of history on health and that health is political and social
- developing trust
- negotiating knowledge and outcomes
- understanding the influence of power imbalances on 'care'.

Notions of health and wellness are far more complex than simply the absence of disease; both are inextricably linked to the circumstances of people's lives, their sense of self, their social and economic situations, and their ability to access health systems and comprehend health information. Nurses can engage in social transformation and be agents of change by engaging in critical self-reflection as cultural beings, by recognising their power, by negotiating outcomes in partnership with clients and families, and by being knowledgeable about the socio-political dimensions of health and nursing care. The practice of cultural safety in nursing enhances compassion, limits victim-blaming and increases the chances of people accessing appropriate services and being treated well when they do. Critically, the practice of cultural safety brings about client-centred care by balancing the needs of systems and professions to focus on the needs of clients and families.

Key concepts

History and health

- Australia and Aotearoa New Zealand both have Indigenous populations; both societies arose from colonisation; and their current institutions are still heavily reliant on the values and beliefs of the British, despite the fact that both nations are composed of many cultures.
- Colonisation dispossessed and disempowered the Traditional Owners of Australia and Māori people of Aotearoa New Zealand, seriously affecting their life chances.
- Mainstream institutions in both countries generally struggle to work effectively with the diverse environment of their healthcare systems.

Culture

- The definition of culture is contested. We use a definition that accepts that cultures are dynamic and changing and include the dimensions of gender, age, ethnicity, ability/disability and class.
- Culture influences our values, beliefs, traditions and patterns of decision-making.
- History, socioeconomic, religious, political and natural environments influence cultures and individuals.
- Our attitudes, values and beliefs are created during socialisation/education/enculturation, and through various mediums, including language.

Culture and health

- The influence of culture on health is well known; indeed, health beliefs and actions are basic to perceptions of self and our understanding of the world.
- In nursing, various approaches have been developed to recognise the influence of culture on nursing practice and to enhance nursing care in culturally diverse environments.
- We recommend cultural safety.

Cultural safety

- Cultural safety has a basis in social justice, meaning that how people are treated in society (including health systems) is more important than how they might be culturally different.
- Cultural safety maintains that all nurse–client interactions are bicultural since even persons sharing a cultural identity are not necessarily the same.
- Cultural safety maintains that all nurse–client interactions are based on differential power relationships. All nurses must therefore understand their own culture, the culture of the medical systems they work in and the culture of nursing, and incorporate an understanding of power and its impact on their practice.
- Culturally safe practice does not rely on an understanding of the values and beliefs of various cultural groups. Its focus is on nurses' awareness of their own cultural biases, attitudes, beliefs and values and then moves beyond cultural awareness and sensitivity to build trust, share power and provide opportunity for clients, their families and communities to safely negotiate the nurse's service. As such, those who receive the service define culturally safe practice.

Endnotes

1. This is the first of various references that may seem out of date to students. Older references have been retained for seminal and historical works.
2. The authors are aware that using the term 'Indigenous' is far from ideal, as it tends to homogenise many different people. Where possible we use the term Traditional Owners and register the original inhabitants as 'status' or First Nations Peoples. We also use the term Indigenous for brevity; however, it should be noted that Indigenous people of mainland Australia and the Torres Strait Islands comprise many different groups, with language group names and other terms that they use to refer to themselves. Indigenous people also use terms that are roughly based on state boundaries: New South Wales: Koori, Goorie, Koorie, Coorie, Murri; Victoria: Koorie; South Australia: Nunga, Nyungar, Nyoongah; Western Australia: Nyungar, Nyoongar; Northern Territory: Yolngu (top end), Anangu (central); Queensland: Murri; Tasmania: Palawa, Koori. The term 'Aboriginal and Torres Strait Islander(s)' tends to be used most often, but remember that both the Torres Strait Island context and the mainland context are informed by locally specific cultural and historical backgrounds and are extremely diverse.
3. Common terms used to refer to someone from Australia and Aotearoa New Zealand respectively.

Online resources

Australian Critical Race and Whiteness Studies Association, www.acrawsa.org.au/

Australian Institute of Aboriginal and Torres Strait Islander Studies, http://aiatsis.gov.au/

Close the Gap Indigenous Health Campaign, www.humanrights.gov.au/our-work/aboriginal-and-torres-strait-islander-social-justice/projects/close-gap-indigenous-health

Culture Matters, http://culturematters.org.nz/

Department of Immigration and Border Protection, Australian Government, www.border.gov.au/

Human Rights and Equal Opportunity Commission: Bringing them home: report of the National Inquiry into the separation of Aboriginal and Torres Strait Islander children from their families 1997, www.humanrights.gov.au/sites/default/files/content/pdf/social_justice/submissions_un_hr_committee/6_stolen_generations.pdf

Indigenous Health InfoNet, www.healthinfonet.ecu.edu.au

Indigenous Law Resources, Royal Commission into Aboriginal Deaths in Custody, www.austlii.edu.au/au/other/IndigLRes/rciadic

Koori Mail, online newspaper, www.koorimail.com

Ministry of Health: Māori health, www.health.govt.nz/our-work/populations/maori-health

Ministry of Health: Māori health models, www.health.govt.nz/our-work/populations/maori-health/maori-health-models

National Aboriginal Community Controlled Health Organisation (NACCHO), www.naccho.org.au/

National Indigenous Times, online newspaper, www.nit.com.au

National Museum of Australia, exhibition on the true story of the Irish in Australia, www.nma.gov.au/exhibitions/irish_in_australia

Northern Land Council, www.nlc.org.au/

Prime Minister Paul Keating's Redfern speech 1992, http://antar.org.au/reports/paul-keatings-redfern-speech

Prime Minister Kevin Rudd, Apology to Australia's Indigenous Peoples 13 February 2008, www.smh.com.au/articles/2008/02/13/1202760379056.html; YouTube clip see www.bing.com/videos/search?q=youtube+kevin+rudd+apology&qpvt=youtube+keven+rudd+apology&FORM=VDRE#view=detail&mid=CC8872C18F17695F3CADCC8872C18F17695F3CAD

Queensland Health 'community' profiles, www.health.qld.gov.au/multicultural/health_workers/cultdiver_guide.asp

Roll Back the Intervention, http://rollbacktheintervention.wordpress.com

Stop the Intervention, http://stoptheintervention.org

Stronger Futures Legislation, www.creativespirits.info/aboriginalculture/politics/northern-territory-emergency-response-intervention#axzz44LOJxwRE

Te Ara The encyclopedia of New Zealand: Cultural safety, www.teara.govt.nz/en/video/28348/cultural-safety

Waitangi Tribunal, www.justice.govt.nz/tribunals/waitangi-tribunal

References

Australian Bureau of Statistics (ABS) 2014a Estimates and Projections, Aboriginal and Torres Strait Islander Australians 2001 to 2026, Cat. No. 3238.0. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/Products/C19A0C6E4794A3FACA257CC900143A3D?opendocument; accessed 6 May 2015.

Australian Bureau of Statistics (ABS) 2014b 4517.0 Prisoners in Australia 2014 Aboriginal and Torres Strait Islander Prisoners. ABS, Canberra. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/4517.0~2014~Main%20Features~Aboriginal%20&%20Torres%20Strait%20Islander%20prisoner%20characteristics~10007; accessed 2 Feb 2016.

Australian Bureau of Statistics (ABS) 2012 Media release. 2011 Census reveals one in four Australians is born overseas. 21 June 2012 | CO/59. Online. Available: www.abs.gov.au/websitedbs/censushome.nsf/home/CO-59?opendocument&navpos=620; accessed 7 May 2015.

Australian Institute of Health and Welfare (AIHW) 2013 Australian hospital statistics 2011–12. Australian Institute of Health and Welfare, Canberra.

Australian Museum 2013 Introduction to Indigenous Australians. Online. Available: http://australianmuseum.net.au/indigenous-australia-introduction; accessed 6 May 2015.

Australian Nursing and Midwifery Council (ANMC) 2008a Code of ethics for nurses in Australia. ANMC, Canberra. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Codes-Guidelines.aspx; accessed 7 Jun 2011.

Australian Nursing and Midwifery Council (ANMC) 2008b Code of professional conduct for nurses in Australia. ANMC, Canberra. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Codes-Guidelines.aspx; accessed 7 Jun 2011.

Belich J 1996 Making peoples: a history of the New Zealanders from Polynesian settlement to the end of the nineteenth century. Allen Lane and Penguin, Auckland.

Bendix R 1996 Max Weber: an intellectual portrait. Methuen, London.

Broome R 2001 Aboriginal Australians. Allen & Unwin, Sydney.

Brown A, Brown NJ 2007 The Northern Territory intervention: voices from the centre of the fringe. Med J Aust 187(11/12): 621–3.

Celermejer D, Moses AD 2010 Australian memory and the apology to the Stolen Generations of Indigenous people. In Assman A, Conrad S (eds), Memory in a global age: discourses, practices and trajectories. Palgrave Macmillan, Basingstoke.

Close the Gap Steering Committee 2015 Progress and Priorities Report. Online. Available www.humanrights.gov.au/sites/default/files/document/publication/CTG_progress_and_priorities_report_2015.pdf; accessed 7 May 2015.

Commonweath of Australia 2015 Closing the Gap Prime Minister's Report. Online. Available: www.dpmc.gov.au/sites/default/files/publications/Closing_the_Gap_2015_Report_0.pdf; accessed 2 Feb 2016.

Cox L 2010 Queensland Aborigines, multiple realities and the social sources of suffering: psychiatry and moral regions of being: Part 2. Oceania 80(3):241–2.

Cox L 2009 Queensland Aborigines, multiple realities and the social sources of suffering: psychiatry and moral regions of being: Part 1. Oceania 79(2):97–120.

Cox L 2007 Fear, trust and Aborigines: the historical experience of state institutions and current encounters in the health system. Health Hist J Aust N Z Soc Hist Med 9(2):70–92.

Cox L, Simpson A 2015 Cultural safety, diversity and the servicer user and carer movement in mental health research. Nursing Inquiry Article first published online: 2 Mar 2015 | DOI: 10.1111/nin.12096.

Dahlberg K, Drew N 1997 A lifeworld paradigm for nursing research. J Holist Nurs 15:303.

Department of Health and Social Services (DHSS) 1980 Inequalities in health (the Black Report). London, DHSS. Online. Available: http://www.sochealth.co.uk/national-health-service/public-health-and-wellbeing/poverty-and-inequality/the-black-report-1980/; accessed 1 June 2015.

Durie M 2003 Public Health Champion 2003 – Professor Mason Durie. Online. Available: http://www.pha.org.nz/phchampmdurie.html; accessed 1 June 2015.

Eckermann AK et al 2010 Binan Goonj: bridging cultures in Aboriginal health. Elsevier, Sydney.

Elkin AP 1964 The Australian Aborigines, 4th edn. Angus and Robertson, Sydney.

Evans R, Saunders K, Cronin K 1975 Exclusion, exploitation and extermination: race relations in colonial Queensland. Australian and New Zealand Book Company, Sydney.

Forsyth S 2007 Telling stories: nurses, politics and Aboriginal Australians, c. 1900–1980s. Contemp Nurse 24(1):33–44.

Human Rights Commission 2013 Review of New Zealand's Constitutional Arrangements. Online. Available: www.hrc.co.nz; accessed 7 June 2015.

Human Rights and Equal Opportunity Commission (HREOC) 2004 Statement on ATSIC: Dr William Jonas AM, Aboriginal and Torres Strait Islander Social Justice Commissioner. HREOC, Sydney. Online. Available: www.humanrights.gov.au/about/media/media_releases/2004/28_04.htm; accessed 12 Dec 2011.

Human Rights and Equal Opportunity Commission (HREOC) 1997 Bringing them home: report of the national inquiry into the separation of Aboriginal and Torres Strait Islander children from their families. HREOC, Sydney.

Johnston, E 1991 Royal Commission into Aboriginal Deaths in Custody national report: overview and recommendations. AGPS, Canberra.

Kearns R et al 2009 Placing racism in public health: a perspective from Aotearoa New Zealand. Geo Journal 74:123–9.

Kidd R 1997 The way we civilise. University of Queensland Press, St Lucia.

Kingi TR 2007 The Treaty of Waitangi: a framework for Māori health development. N Z J Occup Ther 54(1):4–10.

Krieg AS 2006 Aboriginal incarceration: health and social impacts. Med J Aust 184(10):534–6. Online. Available: www.mja.com.au/public/issues/184_10_150506/kri10234_fm.html; accessed 10 Jun 2011.

Lippmann L 1999 Generations of resistance, Mabo and justice. Longman, Melbourne.

Marchetti E 2006 The deep colonizing practices of the Royal Commission into Aboriginal Deaths in Custody. J Law Soc 33(3):451.

Marmot M 2010 Fair Society, healthy lives: The marmot review, executive summary. The Marmot review, London. Online. Available: www.instituteofhealthequity.org/projects/fair-society-healthy-lives-the-marmot-review; accessed 1 June 2015.

McAuley G 2011 The national apology three years later. Aust Stud 3. Online. Available: http://apo.org.au/research/national-apology-three-years-later; accessed 9 Nov 2011.

McCleland A 2011 Culturally safe nursing research: Exploring the use of an Indigenous research methodology from an Indigenous researcher's perspective. Journal of Transcultural Nursing 22(4): 362-7. Online. Available: http://tcn.sagepub.com/content/22/4/362; accessed 27 August 2013.

McGraw A 1995 Contested ground: Australian Aborigines under the British Crown. Allen & Unwin, Sydney.

Ministry of Health 2014 Avoidable mortality and hospitalisation (0–74). Online. Available: www.health.govt.nz/nz-health-statistics/health-statistics-and-data-sets/maori-health-data-and-stats/tatau-kahukura-maori-health-chart-book/nga-punaha-hauora-tutohu-health-system-indicators/avoidable-mortality-and-hospitalisation-0-74; accessed 12 June 2015.

Ministry of Health 2004 Ethnicity data protocols for the health and disability sector. Ministry of Health, Wellington.

Nakata M 2006 Australian Indigenous studies: a question of discipline. Aust J Anthropol 17(3):265–75.

Nakata M 2004 Commonsense, colonialism and government. In Davis R (ed), Woven histories, dancing lives: Torres Strait Islander identity, culture and history. Aboriginal Studies Press, Canberra.

National Aboriginal Community Controlled Health Organisation (NACCHO) 2014 NACCHO Aboriginal health and racism: What are the impacts of racism on Aboriginal health. Online. Available: http://nacchocommunique.com/2014/02/28/naccho-aboriginal-health-and-racism-what-are-the-impacts-of-racism-on-aboriginal-health/; accessed 17 Sep 2015.

National Aboriginal Community Controlled Health Organisation (NACCHO) 2011 Creating the NACCHO Cultural Safety Training Standards and Assessment Process: A Background paper. Online. Available: www.naccho.org.au/download/cultural_safety/CSTStandardsBackgroundPaper.pdf; accessed 1 July 2015.

National Museum of Australia: Collaborating for Indigenous Rights. Online. Available: http://indigenousrights.net.au/organisations/pagination/federal_council_for_the_advancement_of_aborigines_and_torres_strait_islanders_fcaatsi; accessed 7 May 2015.

National Sorry Day Committee Inc. n.d. Sorry Books. Online. Available: www.nsdc.org.au/index.php?option=com_content&view=article&id=261&Itemid=56; accessed 21 Nov 2011.

Northern Territory Government (NTG) 2007 Ampe akelyernemane meke mekarle 'Little children are sacred', report of the Board of Inquiry into the protection of Aboriginal children from sexual abuse. NTG, Darwin. Online. Available: www.inquirysaac.nt.gov.au; accessed 6 Dec 2011.

Nursing and Midwifery Board of Australia (NMBA) 2016 Registered nurse standards for practice. NMBA, Melbourne. Online. Available: http://www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards.aspx; accessed 14 June 2016.

Nursing and Midwifery Board of Australia (NMBA) 2006 National competency standards for the midwife. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards.aspx; accessed 17 Sep 2015.

Nursing Council of New Zealand (NCNZ) Reprint 2012 Competencies for registered nurses. NCNZ, Wellington. Online. Available: www.nursingcouncil.org.nz/Nurses; accessed 27 July 2016.

Nursing Council of New Zealand (NCNZ) 2011 Guidelines for cultural safety, the Treaty of Waitangi and Māori health in nursing education and practice. NCNZ, Wellington. Online. Available: www.nursingcouncil.org.nz; accessed 1 July 2015.

Outlaw L 1990 Towards a critical theory of 'race'. In Goldberg DT (ed), Anatomy of racism. University of Minnesota Press, Minneapolis, pp. 58–82.

Puzan E 2003 The unbearable whiteness of being [in nursing]. Nursing Inquiry 10(3):193–200.

Ramsden IM 2002 Cultural safety and nursing education in Aotearoa and Te Waipounamu. Unpublished PhD thesis. Victoria University of Wellington, Wellington.

Ramsden IM 1993 Kawa whakaruruhau: Cultural safety in nursing education in Aotearoa. Paper presented at the 2nd National Transcultural Nursing Conference, Cumberland College of Health Sciences, Sydney, 1993.

Rapport N, Overing J 2007 Social and cultural anthropology: the key concepts. Routledge, New York.

Reimer-Kirkham S, Varcoe C, Browne AJ et al 2009 Critical inquiry and knowledge translation: Exploring compatibilities and tensions. Nursing Philosophy 10(3):152–66.

Reynolds H 1989 Dispossession. Allen & Unwin, Sydney.

Reynolds H 1987 Frontier. Allen & Unwin, Sydney.

Rice GW 1992 The Oxford history of New Zealand, 2nd edn. Oxford University Press, Auckland.

Richardson S 2004 Aotearoa/New Zealand nursing: from eugenics to cultural safety. Nursing Inquiry 11(1):35–42.

Royal Commission on Social Policy (RCSP), (eds), 1988 The April report, vol II. RCSP, Wellington.

Saggers S, Gray D 1991 Aboriginal health and society. Allen & Unwin, Sydney.

Sanders, W 2004 ATSIC's achievements and strengths: implications for institutional reform. Australian National University, Centre for Aboriginal Economic Policy Research, Canberra. Online. Available: http://caepr.anu.edu.au/sites/default/files/Publications/topical/SandersATSICAchievement.pdf; accessed 12 Dec 2011.

Shahid S, Finn L, Bessarab B et al 2011 'Nowhere to room … nobody told them': logistical and cultural impediments to Aboriginal peoples' participation in cancer treatment. Aust Health Rev 35(2):235–41.

Smith BR, Morphy F (eds) 2007 The social effects of native title: recognition, translation, coexistence, CAEPR Monograph No. 27. ANU E Press, Canberra. Online. Available: http://press.anu.edu.au?p=64921; accessed 1 July 2015.

Solomon RP, Portelli JP, Daniel BJ, Campbell A 2005 The discourse of denial: how white teacher candidates construct race, racism and 'white privilege'. Race Ethnicity and Education 8(2):147–69.

Statistics New Zealand 2014 2013 Census QuickStats about culture and identity. Online. Available: www.stats.govt.nz. ISBN 978-0-478-40890-4.

Taylor K, Guerin P 2010 Health care and Indigenous Australians: cultural safety in practice. Palgrave Macmillan, South Yarra.

Templeton AR 2003 Human races in the context of recent human evolution: a molecular genetic perspective. In Goodman AH, Heath D, Lindee S (eds), Genetic nature/culture: anthropology and science beyond the two culture divide. University of California Press, Los Angeles.

Templeton AR 2002 The genetic and evolutionary significance of human races. In Fish JM (ed), Race and intelligence: separating science from myth. Lawrence Erlbaum Associates, Mahwah, NJ.

Wilkinson R, Pickett K 2010 The spirit level: why equality is better for everyone. Penguin, London.

Willis K, Elmer S 2011 Society, culture and health: an introduction to sociology for nurses, 2nd edn. Oxford University Press, Melbourne.

World Health Organization (WHO) 2011 Rio Political Declaration on Social Determinants of Health. WHO, Geneva. Online. Available: www.who.int/sdhconference/declaration/Rio_political_declaration.pdf?ua=1; accessed 7 June 2015.

CHAPTER

15

Engaging in family-centred care

Nicola Brown

Learning outcomes

Mastery of content will enable you to:

- discuss the diversity in family structure and characteristics in Australian and New Zealand society
- explore theories and models informing family nursing practice
- consider models of care that promote family engagement in care
- reflect on your own values and beliefs about families
- recognise the benefits and challenges in working with diverse families
- discuss strategies that you can use to manage your own responses to working with families.

KEY TERMS

Community strengths, p. 293
Cultural strengths, p. 293
Ecomap, p. 297
Family assessment, p. 297
Family-centred care, p. 294
Family nursing, p. 296
Family structure, p. 289
Family theories and models, p. 291
Genogram, p. 297
International Family Strengths Model, p. 293
Person-centred care, p. 294
Self-care, p. 300

Families are both universal and diverse. While we are all born into a family, the perceptions of 'family' vary greatly between people from different social and cultural backgrounds. Although Australian and New Zealand families have become smaller and more diverse in structure in recent decades, the family continues to fulfil important social roles and functions. In this chapter, you will explore the current situation of families in the Australian and New Zealand context in order to understand the importance of families in the delivery of health and health care.

What is a family?

Well, it depends on who you are asking, where you are, and even which time in history the question is being asked! Many people may initially respond to this question with a description of their own family. But as we think about families more deeply we soon start to see that there is more variation to family structure than that by which we define our own. There is significant diversity in terms of biological, legal and socially constructed relationships, marital status, relationships with extended family and social networks, and more. For some people, family may only include those people related to them by birth or marriage. For others, family may include long-term friends, household members and pets. While we may have a strong sense of family as individuals, organisations and legal statutes further propose different definitions to our own. These legally or organisationally constructed definitions can determine access to individual or family resources and data such as taxation, superannuation or social welfare benefits.

There is no single universal definition of a family, especially as families can vary so much in structure. One example of a definition is provided by the Australian Bureau of Statistics (ABS 2015):

> **Two or more persons, one of whom is aged 15 years or over, who are related by blood, marriage (registered or de facto), adoption, step or fostering; and who are usually resident in the same household.**

Note that the ABS definition includes residence in the same household as one of the criteria for defining family. But for many people, family includes people who may reside in another household. It is therefore important to bear in mind when reviewing census data that information on families is based on the household composition, rather than on who the individual person considers to be their family. In addition, more than one family may live together in the same household.

When considering the kind of structure a family might have, it is important to think about what it is that families do. Most families have some shared core functions including: maintaining wellbeing and sense of belonging for all individuals in the family group; raising children; establishing group values; sharing financial and material resources; and passing on knowledge of the culture and values of the group to the next generation (Families Commission 2013). Importantly for nurses, families often function as direct healthcare providers to other members. It is also worth considering that family members may have values and beliefs about lifestyle that could enhance or endanger the health of other members. Although shared functions may be common to many families, the extent to which these functions are seen as important varies according to the cultural background of the family and their shared values and beliefs. It is also important to consider that not all families will have the same expectations of what is considered successful family functioning.



Figure 15-1 Family celebrations and traditions strengthen the role of the family.

iStockphoto/Mark Bowden.

Trends in family structure and function

Now that we have clarified that families vary according to individual, organisational, social and legal contexts, it is useful to consider the patterns of family groups that are present in our society (see Box 15-1 and *Working with diversity*). The traditional **family structure** of the predominantly white Anglo-Saxon populations of Australia and New Zealand has been called the nuclear family – consisting of a heterosexual married couple with children. As the population has diversified, social values regarding relationships and marriage have changed and there is greater variation in family structure and household composition than ever before.

Migration

At an international level, migration has influenced the structure of families and has contributed to an increasingly diverse and multicultural society. This change has implications for both family structure and the social expectations of families. For example, in the most recent New Zealand census in 2013, the number of extended families had increased by almost 55% since 2001 (Statistics New Zealand 2014). These extended families were likely to include individuals from three or more generations. The range of family structures now includes couples living with or without children, single parents, separated parents who share care of their children across two households, blended families, same-sex couples with or without children, single people living alone or in groups, and extended families (Families Commission 2013, Qu & Weston 2013).

Diversity

As social values have become more inclusive in recent years, there has been increasing public and political momentum for marriage equality for same-sex couples. Legislation enabling same-sex marriage was passed in New Zealand in 2013. The Australian Government has proposed a plebiscite to inform a decision about marriage equality, but the debate continues without resolution.

Although homosexual couples are not permitted to marry by law in Australia, many couples form family households through cohabitation. Some homosexual families have children through adoption, fostering, assisted reproduction techniques or from previous relationships. An increasingly diverse and multicultural population also means that there is considerable variation in beliefs regarding parenting, expectations of child behaviour and childrearing practices (Wise and da Silva 2007).

BOX 15-1 Key concepts: diversity in family structures

Nuclear family

The nuclear family consists of father and mother (with one or more children).

Couple-only family

Couples without dependent children.

Extended family

The extended family includes relatives (aunts, uncles, grandparents and cousins) in addition to the nuclear family.

Single-parent family

The single-parent family is formed when one parent leaves the nuclear family because of death, divorce or desertion, or when a single person decides to have or adopt a child.

Blended family

The blended family is formed when parents bring unrelated children from prior or foster-parenting relationships into a new, joint-living situation.

Alternative patterns of relationships

These relationships include group households, 'skip-generation' families (grandparents caring for grandchildren), communal groups with children, 'non-families' (adults living alone), related individuals residing in the same household, but not in a couple or parent–child relationship, cohabitating partners, and same-sex couples.

Social change

The fastest-growing age group across the globe are those aged 65 years and older, and this ageing population is having a significant impact on family life (Chapter 18). The structure of New Zealand and Australian families has become more variable as the aged population increases and changes in relationship formations occur. These relationship changes are reflected in different types of living arrangements, reduced family size, less frequent marriages and more people living alone (particularly the elderly).

Many more middle-aged people are balancing the need to raise their own children while caring for ageing parents. Likewise, grandparents are more often involved in the care of grandchildren to enable both parents to return to the workforce. As both Australian and New Zealand Indigenous populations continue to have a shorter life span than the population average (ABS 2015, Statistics New Zealand 2013), Indigenous families may have less social support from their elders than other families. Further, migrant families are often separated from their extended family members and thus have diminished sources of social support.

Single households are the fastest growing household type. In Australia and New Zealand, the number of people living alone has increased to nearly 23% (Qu & Weston 2013, Statistics New Zealand 2014). This increase is a function of both an ageing population and a falling birth rate. Men and women are living longer, children are staying at home longer, couples are marrying later, and women are delaying childbirth or not having children at all.

The fertility rate has stabilised in recent years to approximately 1.93 babies per woman in Australia (ABS 2012), and 2.03 babies in New Zealand (Statistics New Zealand 2013). However, the median age of childbearing has increased to approximately 30 years of age and

WORKING WITH DIVERSITY

Focus on cultural care

New Zealand readers will be familiar with the word whānau, a Māori word often used to describe family, including immediate and extended family. However, the word whānau can have different meanings and interpretations. For example, whakapapa whānau refers to people related through shared ancestry, and therefore encompasses more than just immediate and extended family members. In recent times, whānau has also been used to describe a group of people joined together through a common bond or shared purpose (kaupapa whānau) (Cunningham et al 2005).

A recent New Zealand strategy to improve health care has been through whānau ora, a philosophy of care that recognises the importance of family in health and in contributing to enhancing the wellbeing of whānau through self-management of health, healthy lifestyles, te ao Māori, social participation and wealth creation. For example, some Māori healthcare providers have begun to employ whānau ora workers to support families with chronic physical or mental health illnesses (Boulton et al 2009, Kidd et al 2010). Whānau services have been established at some hospitals in New Zealand. These services provide social and practical support such as accommodation, and usually operate under Māori tikanga (protocol).

References

Boulton AF et al 2009 Realising whanau ora through community action: the role of Maori community health workers. Educ Health 22(2):188.

Cunningham C et al 2005 Analysis of the characteristics of whānau in Aotearoa. Research Centre for Māori Health and Development at Massey University, Wellington. Online. Available: www.educationcounts.govt.nz/__data/assets/pdf_file/0005/33494/characteristics-of-whanau-31-may-2005-final.pdf; accessed 17 July 2016.

Kidd J et al 2010 A whanau ora approach to health care for Maori. J Primary Health Care 2(2):163–4.

approximately one in five women will not have children (ABS 2012). In general, women from lower socioeconomic areas, and Indigenous women, are likely to have more children at a younger age than others (ABS 2012, Families Commission 2015). While the rate of adolescent pregnancy has declined, Australia and New Zealand continue to have relatively high rates of teen pregnancy compared with other developed countries (AIHW 2012).

Couple relationships have also changed as social and economic opportunities for women have expanded and social views of sexuality have broadened. Most women with dependent children have employment outside the home, and this has meant that more children require care outside the family (AIHW 2012, Families Commission 2013). As families with children have become increasingly dependent on two incomes, the role of fathers in Western developed nations has changed. More fathers now take leave when their child is born, and more are caring for their child(ren) while the mother is working (Featherstone 2009, Hosking et al 2010). Although fathers are increasingly involved in childcare, working and non-working women with children still carry a significantly higher burden of responsibility for household work than fathers (Craig & Mullan 2010).

As the rate of separation and divorce has increased over the last 40 years, the number of single-parent households has also increased. Approximately 11% of all families in Australia and 10% in New Zealand are single-parent families, with women more frequently positioned as head (Families Commission 2013, Qu & Weston 2013). Many single-parent families face economic challenges. In Australia, single parents are more likely to be reliant on government-funded pensions for income and are more likely to be unemployed. Even when single parents do work, they are more likely to have worse economic outcomes, primarily due to the lack of a second household income (AIHW 2012).

• CRITICAL REFLECTION POINT

1. **When you think of family, what do you imagine?**
2. **Do you have strong beliefs and values about families?**
3. **Could your beliefs and values affect your nursing practice?**
4. **If you think your beliefs and values could affect your practice, what strategies could help you in working with families?**

Family theory and models

Family theories have their origin in the social sciences, but have often been applied to family nursing practice and research. **Family theories and models** can give us a better understanding of different aspects, views or contexts of families in health and illness. There is no *single* theory, model or concept that has universal application for families and nursing. Rather, each offers a way of looking at families from a particular viewpoint (Kaakinen & Hanson 2015).

While drawing on a range of sources to explain family responses to health and illness provides a rich basis for research and practice, the myriad of different theories and models can make theoretical concepts of family very confusing. For clarity, the focus of this chapter will be limited to an introduction of the more common family theories or models that you might be asked to review as part of your studies, or which may be useful to your nursing practice. Among key theories and models listed in Table 15.1, family systems theory, family developmental theory, bioecological systems theory and family

TABLE 15-1 Key theories and models influencing family nursing

Theory	Focus
Family systems theory	Interactions among members of the family or between the family and their environment, which may result in either functional or dysfunctional outcomes
Developmental theory	The life cycle of families; stages of family development
Family cycle of health and illness	Cyclical model that describes common patterns of stress, reaction and adaptation to families when members become ill
Structural functional theory	Families as an institution; how they function to maintain family and social networks
Family stress theory	Analysis of how families experience and cope with stressful life events

Adapted from Kaakinen JR et al 2015 Family health care nursing. Theory, practice and research, 5th edn. F.A. Davis, Philadelphia.

partnership concepts and models are discussed below. As you review these, you will see many similarities in the concepts underpinning each theory or model.

Family systems theory

A systems theory approach means that we view the family as a whole system, or as individuals within a system who interact and are interdependent. An important premise of family systems theory is that the system (family) strives for balance and stability, either through adaptive or maladaptive methods. The systems theory approach allows healthcare professionals to visualise individual members of the family as participants of the broader family group; however, the emphasis when using family systems theory is still on achieving stability in the system, rather than on the needs of the individual. Systems theory has had a significant influence on the social sciences and in the development of family therapy.

Several key concepts underpin family systems theory (Kaakinen et al 2015). The first is that all parts of the system (family) are interconnected. So if one family member is unwell, this has implications for all family members. The second is that the family as a whole is composed of more than the sum of its parts. The third is that all families have some form of boundary between them and the environment. These boundaries may be open or closed to the environment (or community). Finally, systems can be subdivided into subsystems, Therefore, healthcare professionals may need to focus on subsystems within a family (such as mother-to-child or partner-to-partner relations).

Family developmental theory

Family developmental theory describes how the role and structure of families changes throughout the life span. Similar to life-span developmental theories, the theory proposes that families need to achieve certain 'milestones' before they can develop and move on to the next stage. The original family developmental theory was developed by Duvall (1977, 1985, cited by Kaakinen et al 2015). Subsequently, the model was expanded by Carter and McGoldrick (1999), in recognition of the social changes families were experiencing in moving from heterosexual marriage-based structures to greater diversity in the formation and legal recognition of couple relationships.

Key concepts underpinning family developmental theory are based on families experiencing change over time (see the family life cycle, Table 15.2). These changes are often related to changing social roles, are predictable to a large degree, and bring similar stresses, for example, the role changes that occur from being a couple to becoming parents. Families experience transitions from one stage to another and these transitions can result in stress while redefining relationships and understanding what the family is, or is becoming (Carter & McGoldrick 1999).

Bioecological systems theory

The bioecological systems theory (Brofenbrenner & Lerner 2004) combines aspects of both developmental and systems theory to explain individual or family growth. Essentially, this theory proposes that the characteristics of the individual or family system (physical, emotional, cognitive), and their unique environment systems (microsystem, mesosystem, exosystem and macrosystem) directly or indirectly interact over time (chronosystem), and that through these interactions the development of the individual or family is shaped (Figure 15.2).

The *microsystem* consists of the individual or family and their immediate environment, including family, school and neighbourhood. The *mesosystem* incorporates interactions between two or more microsystems in which the individual or family actively participates such as the interaction between the family and school, or the household and neighbourhood. *Exosystems* refer to external environments that may influence individuals and families indirectly such as parent work environments, family support networks or public policy. *Macrosystems* refer to the broader prevailing cultural and social mores or belief systems that influence the culture in which the individual or family lives, such as societal attitudes to family and parenting. Finally, the *chronosystem* refers to changes in environment and context that take place over time that affect the other four systems.

TABLE 15-2 The family life cycle

Family life-cycle stage	Emotional process of transition: key principles	Changes in family status required to proceed developmentally
Leaving home: single adults	Accepting responsibility for self and separation from parent(s)	Differentiation of self in relation to family of origin Development of intimate peer relationships Establishment of self in work and financial independence
Joining of families through marriage: the new couple	Commitment to new system	Formation of marital system Realignment of relationships with extended families and friends to include spouse
Family with young children	Accepting new generation of members into system	Adjusting marital system to make space for children Taking on parental roles Realignment of relationships with extended family to include parenting and grandparenting roles
Family with adolescents	Increasing flexibility of family boundaries to include children's independence	Shifting of parent–child relationships to permit adolescents to move into and out of system Refocus on midlife material and career issues Beginning shift towards joint care and concern for older generation
Launching children and moving on	Accepting multitude of exits from and entries into family system	Renegotiation of marital system as dyad Development of adult-to-adult relationships between grown children and their parents Realignment of relationships to include in-laws and grandchildren Dealing with disabilities and death of parents (grandparents)
Family in later life	Accepting shifting of generational roles	Maintaining own or couple functioning and interests in the face of physiological decline; exploration of new familial and social role options Support for more central role for middle generation Making room in system for wisdom and experience of older adults; supporting older generations without over-functioning for them Dealing with loss of spouse, siblings and other peers, and preparation for own death; life review and integration

Adapted from Carter EA, McGoldrick M 1999 The expanded family life cycle: individual, family and social perspectives. Allyn & Bacon, Boston.

The International Family Strengths Model

The **International Family Strengths Model** is an example of a family partnership model. Developed originally in the United States by Stinnett and DeFrain, the model was based on research that studied families to identify the characteristics, qualities and behaviours that made them successful. Over the past few decades, this work has been extended internationally to demonstrate key universal traits of strong families, and to consider the contribution that culture and community make to family strength.

- **Community strengths:** a supportive, safe and secure local environment that values family, demonstrates supportive community social behaviours, education, religious community relevant to the family, family support services.
- **Cultural strengths:** a rich cultural history that has developed over time, shared cultural meaning with the family, stability in the political structures, viable economic conditions and an understanding of the global society.

While recognising the diversity of families across cultures and countries, research has consistently demonstrated that there are international similarities in the way in which successful families work together (Table 15.3). Families do not acquire these characteristics overnight – essentially, family strengths develop over time, often in response to challenges or crises. In addition, all families have some strength, and strong families are not necessarily perfect. The purpose of the model is not necessarily to categorise families as 'strong' or not, but to focus on positive traits and build on these.

TABLE 15-3 International Family Strengths Model

Qualities of strong families	
Appreciation and affection	Individuals in strong families have deep emotional connections with each other and share their feelings of affection for each other.
Commitment	Family members have an enduring commitment to the family, which is held to be most important and above that of other commitments in their lives.
Positive communication	The appreciation and affection that family members have is reflected in their patterns of communication. Strong families are characterised by positive, open and honest communication.
Enjoyable time together	Strong families spend time together that is enjoyable and occurs frequently. Critically, the nature of the activity conducted is not as important as the sense of a positive connection that is achieved by spending time together.
Spiritual wellbeing	The sense of spiritual wellbeing reported by strong families encompasses more than the need to have a shared religious belief. Strong families share ethical values and beliefs about the world, their connection to their environment and a shared commitment to social values.
The ability to manage stress and crisis effectively	Strong families rally together in times of stress and crisis, attempt to ameliorate or reduce the impact on the family and may even see the crisis as an opportunity for the family and its participants to grow and develop.

Adapted from DeFrain J, Asay SM 2007 Strong families around the world: an introduction to the family strengths perspective. In DeFrain J, Asay SM (eds) 2007 Strong families around the world: strengths-based research and perspectives. The Haworth Press, Pennsylvania pp. 1–10.

Linking family theory and models to nursing

As you have read through this section you may have started to get some idea of how these concepts might be used as frameworks for nursing assessment and interventions with families; for research to explain family responses to illness; or for organising nursing practice. Family systems theory is often used to guide the organisation of care to include families, and in research that explores how the family interacts with other systems, such as a hospital. For example, family systems theory has been used as a framework for research into parental needs and expertise in caring for a child with autism (Cridland et al 2014). Developmental family theories are often used as frameworks for delivering health care to families at different life stages, such as transition to parenting and adjustment to illness across the life span. In a study of distress and perception of illness intrusion in parents of young people with juvenile rheumatic diseases, for example, family life cycle was used as a model to explain family adjustment to childhood chronic diseases as children reached different ages (Andrews et al 2009).

Family-centred care

Family are increasingly acknowledged as partners by all disciplines in their development of healthcare services and greater recognition of the role of family has led to the development of new models of care. *Person-centred care* and *family-centred care* are terms that have been used to encompass multidisciplinary models of care or service delivery that focus on the individual in the context of family, or the family unit as a whole. In the past, the patient- and family-centred care approach has predominantly related to child health care; however, more recently, the principles have been adapted and applied more widely. The more inclusive terminology of **person-centred care** is now more commonly used (Kitson et al 2013). As a result, there is some confusion around the terms and what they mean to people in different contexts. For purposes of clarity, the focus in this chapter will be on the principles of family-centred care.

There are a number of definitions of **family-centred care**. Many have been adapted to suit the context in which family-centred care operates. A broad definition that focuses on a system-wide approach to patient- and family-centred care is provided by the US-based Institute for Patient- and Family-Centered Care (2010):

> **an approach to the planning, delivery, and evaluation of health care that is grounded in mutually beneficial partnerships among health care providers, patients, and families … that shapes policies, programs, facility design, and staff day-to-day interactions.**

The interest in family-centred care first developed in relation to the care of children in hospitals. Changing social values in relation to children, and research into the effects of separation, led to increased involvement of families in the care of children in hospital. Over time, it has become widely accepted that the benefits of involving families in health care are relevant to people of all ages, not just children. Young people, adults and elderly people have greater autonomy in health care than children do, and therefore the term 'person-centred' is used to make the role of individuals more explicit while also ensuring that families are still included in the design and delivery of health care (IPFCC 2010).

Family-centred care recognises that the care of a patient's health occurs within the context of their family,



Figure 15-2 Observing family interactions between individuals within families assists in understanding family functioning.

iStockphoto/jarenwicklund.

and, therefore, the family is a key stakeholder in decisions about health care. In a healthcare service that is family-centred, the focus on families should extend through every facet of the work that the service undertakes – from the way in which healthcare professionals work in partnership with families, to the design of the building itself. While this may sound good in theory, it is potentially challenging to achieve in reality. As a result, the feasibility and outcomes of family-centred care remain controversial, and to date most research has been limited to developed Western countries (Foster et al 2010).

Additionally, there are situations where family circumstances may detract from the health and wellbeing of an individual. A common example is that of a child who has suffered parental abuse. In such circumstances, the focus on a person-centred approach to maintain the safety of the child, rather than family-centred care, may be more appropriate in the first instance.

RESEARCH HIGHLIGHT

Research focus

Working with clients and their families is a critical element of aged care nursing practice. This paper provides evidence of ways in which positive staff and family relationships can be achieved in aged care settings.

Research abstract

The purpose of this systematic review was to present the most recent and best evidence of factors related to staff–family relationships in institutional aged care. Studies were included in the review if their participants included residents or patients within acute, subacute, rehabilitation and residential settings who were aged over 65 years, their relatives, and staff members of the facility. Intervention studies were included if they used strategies and practices within the facility to promote constructive relationships and organisational characteristics. Outcome measures of interest for the review included perceptions of staff–family relationships, staff outcomes (e.g. stress, relationship and job satisfaction, retention), and family and resident satisfaction. Searches of relevant electronic databases using key search terms were performed. Studies that met the inclusion criteria were obtained and reviewed. Data were extracted using standardised tools. Quantitative data were not appropriate for meta-analysis; therefore, the studies were reported in narrative. Thematic analysis of the interpretive and critical papers was performed. Results were categorised and then aggregated to produce final results.

Research findings

A total of 50 studies were reviewed, including 35 from the earlier review and 15 from the updated review. The majority of studies that were included were qualitative. In-depth interviews were the most common method of data collection, and thematic or content analysis was most commonly used for analysis. The updated review supported findings from the first review. In addition, the updated review highlighted that factors important to effective relationships included monitoring of care, involving families in decision-making, upholding the uniqueness of the individual older person, promotion of trust, the multidisciplinary team and family dynamics.

Evidence-based practice

- There are a range of contextual, organisational and individual factors that influence staff–family relationships in aged care settings.
- Individual characteristics that are most important to the development of positive staff–family relationships are respect, trust, familiarity and empathy.
- Interventions that promote positive staff–family relationships are those that promote collaboration in care planning and decision-making; promote effective communication skills; have a clear process; and involve the multidisciplinary team.
- Organisational and management support for these interventions is essential for their success.

Reference

Haesler E et al 2010 Recent evidence on the development and maintenance of constructive staff–family relationships in the care of older people: a report on a systematic review update. Int J Evid Based Healthc 8:45–74.

There are four key principles that underpin a patient- and family-centred approach to care (IPFCC 2010):

1. *Respect and dignity*. Healthcare practitioners listen to and honour patient and family perspectives and choices. Patient and family knowledge, values, beliefs and cultural backgrounds are incorporated into the planning and delivery of care.
2. *Information sharing*. Healthcare practitioners communicate and share complete and unbiased information with patients and families in ways that are affirming and useful. Patients and families receive timely, complete and accurate information in order to effectively participate in care and decision-making.
3. *Participation*. Patients and families are encouraged and supported in participating in care and decision-making at the level they choose.
4. *Collaboration*. Patients and families are included on an institution-wide basis. Healthcare leaders collaborate with patients and families in policy and program development, implementation and evaluation; in healthcare facility design; and in professional education, as well as in the delivery of care.

The *Research highlight* above reports the results of a systematic review of positive relationships between aged-care residents, families and staff members. Systematic reviews offer a synthesis of high-quality evidence on a topic. It is notable that the findings from the study share similarities with the four key principles of family-centred care.

Family nursing

Family nursing is perhaps a little difficult to describe (Figure 15-3). Many nurses in acute care settings are comfortable with the notion of being a 'cardiac nurse', a 'paediatric nurse' or an 'emergency department nurse' because it is often easier to define what we do based on where our work is located. However, identifying family nursing as a branch or specialty within nursing is less easy. Regardless of what medical or other specialty we might define our work by, most people we care for are part of either their own or another family.



Figure 15-3 Nurse and family members.

iStockphoto/Christopher Futcher.

Family nursing therefore features across many areas of nursing practice and the approach to family nursing is more determined by the family we are working with, the nature of their health and the context in which nursing care takes place. Nurse academics studying the field of family nursing propose slightly different approaches depending on whom or what is the focus of care (Kaakinen et al 2015). In this chapter, approaches to family nursing have been categorised as *family as context*, *family as client* and *family as system*.

Family as context

When the focus of nursing care is on a particular individual within a family, the approach is to view, assess and care for the individual as the primary focus with recognition that the family context influences the health of that individual. In the family as context approach, nurses would plan and implement care for the individual, but would also consider the extent to which the family might support and influence the individual's health and wellbeing. For most nurses working in acute care settings, family as context is the most common approach to family nursing. The following *Clinical example* illustrates the family as context approach.

CLINICAL EXAMPLE

Stephen is a 30-year-old man who has insulin-dependent diabetes. Stephen is married to Jasmine, aged 29 years, and they are expecting their first child. You are the nurse working with Stephen to develop a plan for managing insulin administration and blood glucose monitoring. If your approach to nursing care viewed family as context, you would focus on Stephen as an individual. You would assess Stephen's knowledge of glucose monitoring, insulin storage and Stephen's skills in blood glucose monitoring and insulin administration. You might also consider Stephen's living circumstances, and discuss with him the need for his wife Jasmine to have information on emergency care in the event that Stephen becomes unwell.

Family as client

The family is viewed as the client when family functioning is the focus of care. In this situation, the nurse would plan and implement care for the family in one of their functions as a family, and assess the way the family operates as a whole (rather than the individuals). The following *Clinical example* provides an example of family as client.

CLINICAL EXAMPLE

Stephen and Jasmine are expecting their first child. Jasmine is from a Fijian Indian background while Stephen is English. Jasmine's parents (both retired) live some distance away. Stephen's parents are both deceased, and his siblings live overseas. Jasmine needs to return to work soon after the baby is born. The plan is that Jasmine's parents will live with Jasmine and Stephen during the week, so that they can care for the baby while his parents work. You are the early childhood nurse working with this family to provide guidance on child development and transition to parenting and to monitor the baby's growth and development. If your approach to nursing care viewed the family as client, you would focus on the way in which all members of the family approach the childrearing role, while assessing the baby's progress. You might meet with both parents and grandparents to provide education and support in child development and parenting.

Family as system

In considering the family as a system, the family is viewed as a system with parts that interact. The whole of the family system is greater than the sum of its individual parts. The focus of care is on interactions between the family members within the system. There are elements of family as context and family as client within this approach, as illustrated in the following *Clinical example*.

Dealing with complex family interactions can be challenging, and often interventions to assist the family require multidisciplinary input. It is important to recognise the boundaries of nursing practice, and to utilise the skills and knowledge of the multidisciplinary team to meet family needs.

CLINICAL EXAMPLE

After a healthy pregnancy, Jasmine gives birth to a well infant boy, Mathew. Jasmine and Stephen have been struggling financially, and Jasmine needs to return to work as soon as possible. However, following the birth Jasmine experiences great difficulty establishing breastfeeding, and is increasingly concerned that she won't be able to manage breastfeeding and work. This causes great stress to her relationships with Stephen and her mother, who both want her to give up trying to breastfeed and change to infant formula. You are the early childhood nurse working with this family. If your approach to nursing care viewed the family as system, you would assess the way in which the interactions between Jasmine, Stephen and Jasmine's mother were affecting the transition to parenting within the family. You might identify that some form of counselling or social support was needed to assist the family with their financial and social difficulties. This could require you to suggest a referral to other healthcare professionals, and you would continue to support the family with their transition to parenting and monitor Mathew's progress.

Family nursing care

Health professionals care for families in a variety of settings – in hospitals, in the community and in the home. The approach to gathering relevant information and data for assessment often depends on the particular healthcare problem; however, the purpose of assessment is the same, irrespective of where it is conducted. The aim is to ensure that family needs are met, that any gaps in the family intervention or action plan are identified, and that support and resources required by the family are provided.

You may have noticed similarities between approaches to the nursing care of individuals and the nursing care of families. Kaakinen and others (2015) propose a modified nursing process model for family nursing that also includes reflection. Nurses using the family nursing care model gather relevant information and data from the family, make priority judgements and decisions with the family, set priorities and establish goals in collaboration with the family, take action, and evaluate impacts and outcomes according to family values and priorities. For example:

- *Assessment of the family:* the nurse gathers information from a variety of sources to develop a family story.
- *Analysis of family story:* the nurse examines the assessment data to find information that explains the family management of the healthcare issue.
- *Develop family plan of care:* the nurse and the family collaborate to develop the best possible approach to managing the healthcare issue and the expected outcomes.
- *Family intervention:* the family and nurse implement the plan of care.
- *Family evaluation:* the family and the nurse determine whether the desired outcomes have been achieved, or what modification needs to occur.
- *Reflection:* the nurse uses self-reflection to explore their experience of working with the family.

Family assessment

Two tools that are commonly used by healthcare professionals in **family assessment** are the **genogram** and the **ecomap**. These tools are useful for mapping a visual representation of family structure and relationships within and beyond family boundaries. Both genograms and ecomaps should be developed in collaboration with the family. These are a really useful way of engaging families in an active discussion about their structure and can

appear a lot less threatening than pages of handwritten or computer notes.

The *genogram* is also a useful format for capturing the family tree over a period of three generations. Typically, the genogram is drawn in freehand during a family interview and is used to check that you, as the nurse, have understood the nature of relationships and family history within a household and have identified any family relationships outside the household that the family considers important. Figure 15-4 provides an example of a basic genogram that describes family relationships and generations both within and beyond a household setting. Note the conventions used to indicate gender, relationships and dates of significance. The dotted circular line, around Beth and her children, is used to identify those members of the family that are currently living in the household. The double circle around Beth indicates that she is the family member with the presenting healthcare issue.

An *ecomap* (Figure 15-5) is used to illustrate the contact between the family or household and systems outside of the family boundary that provide either support or stress to the family. Ecomaps place the family in the context of their current environment, whereas genograms tend to situate families within an historical context (Wright & Leahey 2009). Genograms do form part of an ecomap, as they represent the structure of the family at the centre of the diagram. In this example, the ecomap (Figure 15-5) is used to identify sources of support and areas of stress for Beth. The lines (dotted, scored or full) are used to indicate the quality of the family's relationship with others.

Facilitating family involvement in care

Considering the importance of families to the wellbeing of the people we care for, you might expect that there would be a wealth of evidence to guide nurses and other health-care professionals in their approach to involving families in care. However, there is still relatively little published evidence on exactly what is effective in family-centred care (Kitson et al 2013, Shields et al 2012). A recent literature review of studies on person-centred care across nursing, medicine and healthcare policy literature (Kitson et al 2013) proposed some approaches that may be useful to nurses working with patients and their families. In particular, the establishment of a genuine, positive and mutually respectful relationship between the healthcare professional, the patient and their family is a significant factor for family involvement in care. In addition, enabling participation and involvement in care that respects the autonomy of the individual and family, designing care that is tailored to their individual needs, and consideration

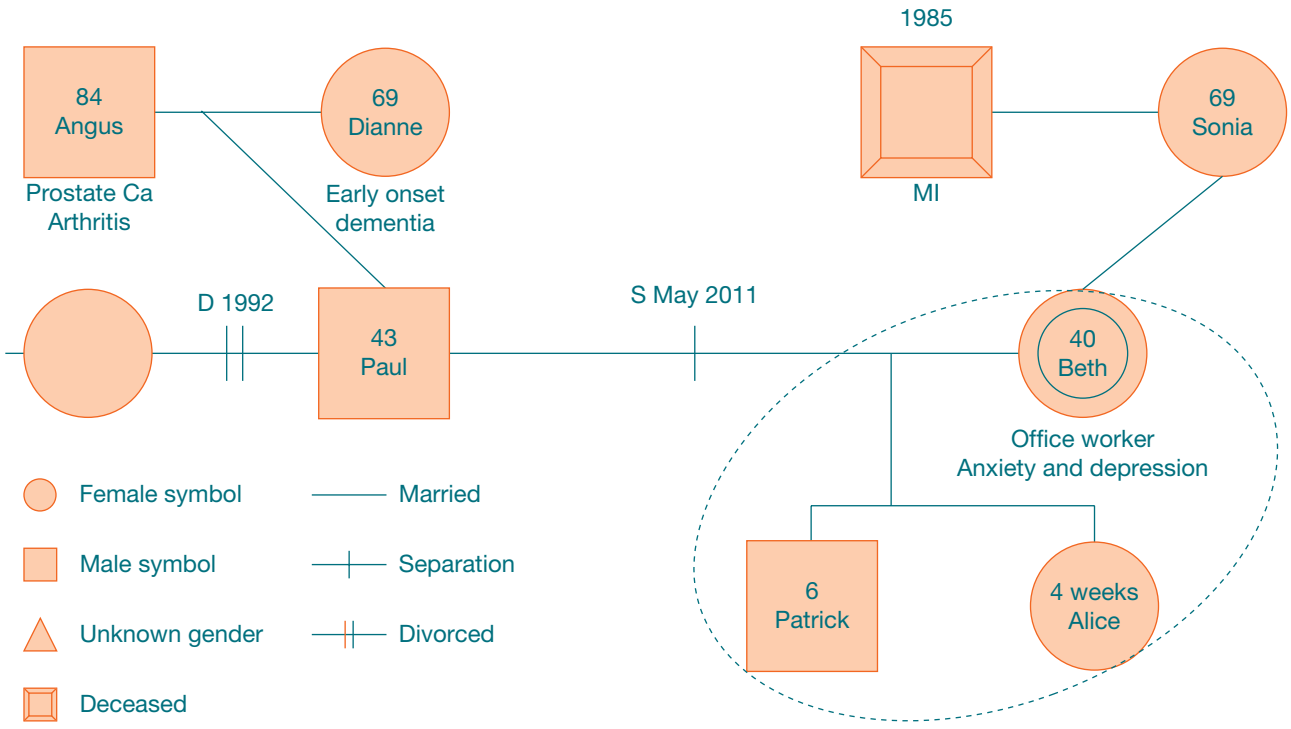


Figure 15-4 **Example of a genogram.**

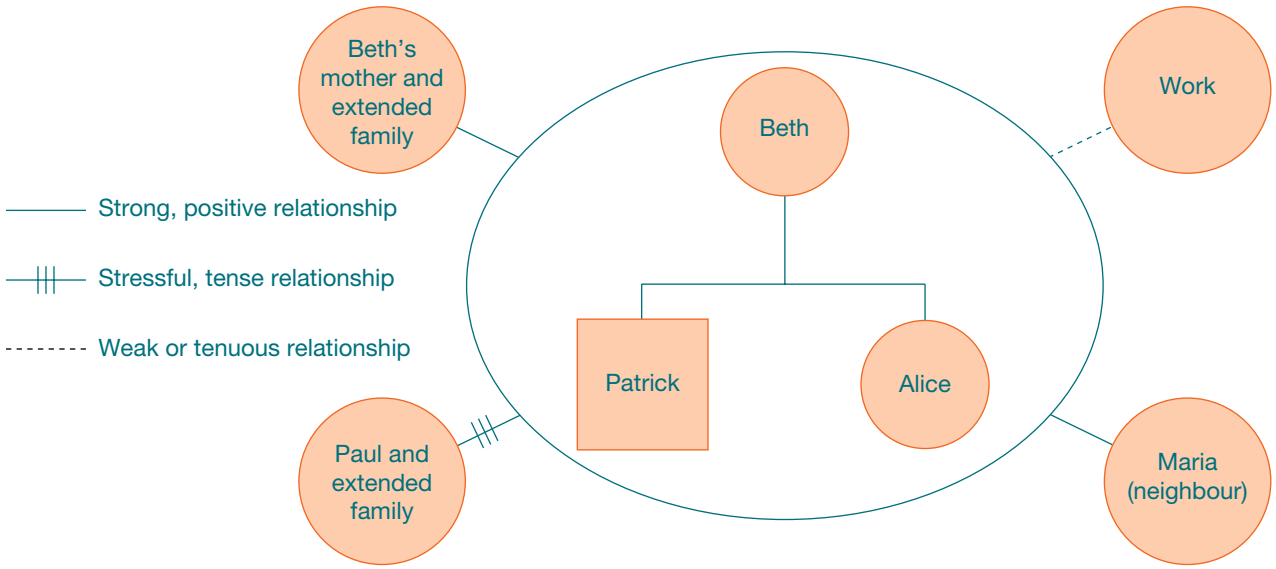


Figure 15-5 **Example of an ecomap.**

of the context in which care is delivered, seem to be the most common tenets of person- and family-centred care (Table 15.4).

While there are obviously universal themes in involving families in care, as Kitson and colleagues (2013) outline, the individual and unique differences in the settings where families are cared for will influence how we work with those families. The context of care is an important consideration in the delivery of care, so it is important that research is undertaken in a variety of settings to provide us with examples of a range of practices that support families.

TABLE 15-4 Core themes in patient-centred care

Themes	Sub-themes
Patient participation and involvement	Participating as a respected and autonomous individual
	Care plan based on individual needs
	Addressing individual physical and emotional needs
Relationship between the patient and the health professional	Genuine clinician–patient relationship
	Open communication of knowledge and expertise between clinician and patient
	Health professionals have appropriate skills and knowledge
	A cohesive and cooperative team of professionals
The context of care	System issues (environment, policy, access, organisational factors)

Adapted from Kitson A et al 2013 What are the core elements of patient-centred care? A narrative review and synthesis of the literature from health policy, medicine and nursing. J Adv Nurs 69(1):4–15.

Some insight into how to approach family-centred care within a particular context of care comes from an Australian study by Trajkovski and others (2012). In this small qualitative study, nurses caring for neonates and their families in a neonatal intensive care unit (NICU) were asked to explore their understanding of family-centred care, and explain their role in facilitating parent involvement in the care of their babies. Firstly, nurses believed it was important to 'get to know parents and their wishes' in order to deliver care that was individualised and specific to the needs of the family. The nurses also identified the importance of involving family in the day-to-day care of their baby through supportive involvement in the physical care. This included explaining aspects of care to all members of the family, not just the mother, and emphasising to parents that being present in the NICU was important for the nursing and general care of the baby. Neonatal nurse participants in the study were very aware that as the neonates were unwell, parental touch needed to be moderated by the nurse according to acuity, and that this was counter to the development of normal parent-to-infant relationships after birth. Nurses described needing to find a 'happy medium' between wanting parents to be involved, understanding that not all parents are equally able to participate at all times, expecting parents to be involved and still wanting to retain control. Finally, the nurses anticipated needing to prepare parents for taking on the care of their infants as their condition improved.

This is a small study based in only one unit, and caution must be taken in generalising these findings to other settings. However, some parallels can be observed between the neonatal nurses' descriptions of their

approach with family involvement in care and the themes identified by Kitson et al (2013) in Table 15.4 – especially the importance of a good relationship, mutual respect and an individualised approach to care. Considering the context of the study – a neonatal care unit – it can be appreciated that when patients are at their sickest families can and should be involved in their care.

• CRITICAL REFLECTION POINT

1. **Do you recollect a time where you or another family member was in hospital?**
2. **If you do, can you recall ways in which healthcare professionals involved you or your family in care? How did you feel about this?**
3. **In different contexts of practice, can you recall examples of ways in which you have seen nurses or other healthcare professionals involve families in the care of a patient or client? Do these differ depending on the time and place of care?**

Self-care when working with families

Working with families can be a rewarding aspect of the work that nurses do. In some situations, families can be a significant source of support to vulnerable family members, and this support can make the work of caring for others easier for all concerned, including healthcare professionals. However, a key part of working with families is to provide support to families, and in some circumstances this can be challenging. Sometimes the situations we face at work can raise issues or memories from our own experience that we find difficult to deal with. Sometimes there is a fine line between a caring, professional relationship and a relationship that is over- or under-involved.

• CRITICAL REFLECTION POINT

The following *Clinical examples* illustrate some of the types of situations that can develop when working with families. As you read the examples or think about situations you might have been involved in, ask yourself the following questions:

1. **Are you comfortable with the way in which the nurses in the examples are working with families?**
2. **What would you do in the same situation?**
3. **If you were confused or unsure of what to do, who could you discuss your concerns with?**
4. **What sort of things do you do to make sure that you are looking after yourself well, while caring for families?**

A good starting point for thinking about **self-care** when looking after families is the Australian and New Zealand guidelines on professional boundaries for nurses (Australian Nursing and Midwifery Council and Nursing Council of New Zealand 2010). These guidelines can assist nurses to identify when they are at risk of over-involvement or under-involvement in the care of families.

CLINICAL EXAMPLES

A. Karen is the mother of Conrad, aged 23 months. Karen is a 42-year-old single woman with a history of schizophrenia. Although Karen is well, she is unable to work and is dependent on a single-parent pension. Conrad is often unwell, with frequent upper respiratory tract infections, and Karen finds it difficult to care for him when he is unwell. Even if Conrad is mildly unwell, Karen brings him to the emergency department and requests that he be admitted to hospital. Each time, Karen refuses to stay in hospital with Conrad. Conrad becomes very distressed when his mother leaves, and cries for long periods of time. Other parents in the ward express their concern about the little boy, and the nurses feel frustrated that his mother won't stay and cannot care for him at home. The nurse unit manager raises their concerns about the emotional impact of admission on Conrad with his doctor.

B. Janine is a registered nurse working in an aged care setting in a small country town. She has a strong friendship bond with Eileen, an 86-year-old woman. Eileen's family is involved in her care and frequently visits her. They welcome the friendship that has formed between Janine and Eileen, and see Janine as a member of their extended family. Eileen's granddaughter is having a baby, and has asked Janine to be a godparent to her child.

C. Ward 2J is a large paediatric oncology unit, caring for children with oncological conditions from across the country. Simon is a 9-year-old boy receiving treatment for acute lymphoblastic leukaemia. His mother Yasmin is staying in hospital with him. Simon and Yasmin have little social support and no contact with Simon's biological father. Yasmin has struggled with depression for many years, is frequently tearful and emotional and needs lots of support from all the staff. Some of the nurses have befriended Yasmin, and have invited her on a night out to have a break from the ward.

Key concepts

- The family influences the lives of its members, and family members influence one another's health beliefs, practices and status.
- The concept of family is highly individual and requires a broad family-centred view in order to provide health care that is appropriate to the client and their family.

- The family's structure, functioning and relative position in society significantly influence the health of the family and the ability of members to respond to health problems.
- Values and beliefs about family structures and functioning vary. Nurses need to be aware of their own values and beliefs in order to become aware of their potential impact on the care provided.
- There is a range of theories that can be used to inform nursing practice in relation to children and families.
- The family unit can be viewed as (1) an important context for individual family members; (2) the client; or (3) a system (simultaneously viewing the family as both client and family in context).
- Measures of family health involve more than a simple summation of individual members' health.
- Social class, economic stability and racial and ethnic background influence the context of family approaches health.

Online resources

A number of websites provide up-to-date information on family data and research, including:

Australian Bureau of Statistics, www.abs.gov.au

Australian Centre for Health Promotion, www.healthinfonet.ecu.edu.au/key-resources/organisations?oid=652

Australian Institute of Aboriginal and Torres Strait Islanders Studies, www.aiatsis.gov.au

Australian Institute of Family Studies, https://aifs.gov.au/

Australian Institute of Health and Welfare, www.aihw.gov.au

Department of Social Services, www.dss.gov.au

Department of Health, Australia, www.health.gov.au

New Zealand Ministry of Health, http://www.health.govt.nz/

Social Policy Evaluation and Research Unit ('Superu'), New Zealand, www.superu.govt.nz

Statistics New Zealand, http://www.stats.govt.nz

References

Andrews NR et al 2009 The differential effect of child age on the illness intrusiveness–parent distress relationship in juvenile rheumatic disease. Rehabil Psychol 54(1):45–50.

Australian Bureau of Statistics (ABS) 2015 Family characteristics and transitions, Australia 2012–2013. Online. Available: www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4442.0Main+Features12012-13?OpenDocument; accessed 9 Mar 2015.

Australian Bureau of Statistics (ABS) 2012 Fertility rates. Cat no. 3301.0 Online. Available: www.abs.gov.au/ausstats/abs@.nsf/Previousproducts/3301.0Main%20Features42012?opendocument&tabname=Summary&prodno=3301.0&issue=2012&num=&view=; accessed 15 Jan 2016.

Australian Institute of Health and Welfare (AIHW) 2012 A picture of Australia's children 2012. AIHW, Canberra. Online. Available: www.aihw.gov.au/publication-detail/?id=10737423343; accessed 28 Apr 2015.

Australian Nursing and Midwifery Council and Nursing Council of New Zealand 2010 A nurse's guide to professional boundaries. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-and-Guidelines.aspx#professionalboundaries; accessed 23 Mar 2011.

Bronfenbrenner U, Lerner RM 2004 Making human beings human: Bioecological perspectives on human development. Sage, CA.

Carter EA, McGoldrick M 1999 The expanded family life cycle: individual, family and social perspectives. Allyn & Bacon, Boston.

Craig L et al 2010 Parenthood, policy and work–family time in Australia 1992–2006. Work, EmploySoc 24(1):27–45.

Craig L, Mullan K 2010 Parenthood, gender and work-family time in the United States, Australia, Italy, France and Denmark. J Marriage Fam 72(5):1344–61.

Cridland EK et al 2014 Family-focused autism spectrum disorder research: A review of the utility of family systems approaches, Autism 18(3):213–22.

DeFrain J, Asay SM 2007 Strong families around the world: an introduction to the family strengths-based perspective. Online. Available: http://mfr.haworthpress.com

Families Commission 2013 Families and whanau status report 2015. Towards measuring the wellbeing of families and whanau. Online. Available: www.superu.govt.nz/current-projects/families-wh-nau-status-report; accessed 15 Jan 2016.

Featherstone B 2009 Contemporary fathering: theory, policy and practice. Policy Press, Bristol.

Foster M et al 2010 Parents' and health professionals' perceptions of family-centred care for children in hospital, in developed and developing countries: a review of the literature. Int J Nurs Stud 47:1184–93.

Hosking A et al 2010 Duration of leave and resident fathers' involvement in infant care in Australia. J Marriage Fam 72(5):1301–16.

Institute for Patient- and Family-Centered Care (IPFCC) 2010 Frequently asked questions. IPFCC, Bethesda. Online. Available: www.ipfcc.org/faq.html; accessed 2 Jan 2011.

Kaakinen JR et al 2015 Family health care nursing. Theory, practice and research, 5th edn. FA Davis, Philadelphia.

Kitson A et al 2013 What are the core elements of patient-centred care? A narrative review and synthesis of the literature from health policy, medicine and nursing. J Adv Nurs 69(1):4–15.

Qu L, Weston R 2013 Australian households and families. Australian family trends no. 4. Australian Institute of Family Studies. Online. Available: www.aifs.gov.au/institute/pubs/factssheets/2013/familytrends/aft4/; accessed 8 Sep 2014.

Shields L et al 2012 Family-centred care for hospitalised children aged 0-12 years. Cochrane Database Syst Rev 10. Online. Available: www.onlinelibrary.wiley.com/doi/10.1002/14651858.CD004811.pub3/full; accessed 11 Mar 2015.

Statistics New Zealand 2014 2013 Census QuickStats about families and households. Statistics New Zealand, Wellington. Online. Available: www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/qstats-families-households.aspx; accessed 26 Mar 2015.

Trajkovski S et al 2012 Neonatal nurses' perspectives of family-centred care: a qualitative study. Journal of Clinical Nursing 21:2477–87.

Wise S, da Silva L 2007 Differential parenting of children from diverse cultural backgrounds attending child care. Australian Institute of Family Studies, Melbourne. Online. Available: www.aifs.gov.au/institute/pubs/rp39/rp39.pdf20; accessed Nov 2011.

Wright LM, Leahey M 2009 Nurses and families. A guide to family assessment and intervention. FA Davis, Philadelphia.

CHAPTER

16

Considering the developmental context from conception to adolescence

Jane Davey, Robyn Galway and Shaun Thompson

KEY TERMS

Adolescence, p. 343
Apgar score, p. 311
Critical periods, p. 304
Development, p. 303
Differentiation, p. 303
Embryo, p. 305
Erikson (psychosocial theory), p. 320
Fetus, p. 306
Fontanelles, p. 312
Freud psychosexual development theory, p. 319
Hyperbilirubinaemia, p. 316
Inborn errors of metabolism (IEMs), p. 316
Infancy, p. 317
Kohlberg (moral development theory), p. 334
Maturation, p. 303
Menarche, p. 345
Moulding, p. 312
Neonatal period, p. 312
Organogenesis, p. 308
Piaget (cognitive theory of development), p. 319
Physical growth, p. 303
Preadolescence, p. 343
Prematurity, p. 309
Preschool period, p. 331
Puberty, p. 343
School age, p. 334
Sexually transmitted infections (STI), p. 351
Toddlerhood, p. 327

Learning outcomes

Mastery of content will enable you to:

- identify basic principles of growth and development
- discuss factors influencing growth and development
- outline the main premise of developmental theorists: Freud, Kohlberg, Erikson and Piaget
- discuss physiological and psychosocial health during transition from fetus to neonate
- describe characteristics of physical growth from conception to adolescence
- describe cognitive and psychosocial development from birth to adolescence
- describe the interactions that occur between parent and child
- describe variables influencing how children learn about and perceive their health status
- explain the role of play in the development of the child
- identify factors that contribute to self-esteem in young people
- describe the influence of the school environment on the development of the child
- plan culturally appropriate health-promoting activities for children of all backgrounds
- discuss ways that nurses can help parents meet their children's developmental needs.

Understanding children and their growth and development is essential to promoting, maintaining and restoring health. There are recognised patterns or stages of developmental change that occur throughout infancy, childhood and adolescence, but it is important to keep in mind that there is a wide variation in individual capability development. The ranges of development identified in this chapter are for guidance; they are not prescriptive. Having a clear understanding of patterns of developmental change helps the nurse to plan, deliver and support age-appropriate and individualised care.

Nursing practice based on principles of growth and development is organised and directed at helping children and their families respond to changing internal and external conditions. This chapter discusses concepts of growth and development from the perspective of recognised developmental theorists, together with their application to promoting health from conception to adolescence.

Growth versus development

It is important to be aware of the difference between growth and development. **Physical growth** is the quantitative aspect of an individual's progression in physical measurements. Measurable growth indicators include height, weight, teeth, skeletal structures and sexual characteristics. For example, children generally double their birthweight by 5 months of age and their birth height by 36 months; however, the pace and behaviour of this progression is highly individual.

Development implies a progressive and continuous process of change leading to a state of organised and specialised capacity occurring over time. The processes of development are cumulative, as a function of increasing age and mastery of skills. Development is reflected in behaviours that enable the individual to be self-regulating. For example, an observable change for preschoolers is participating in telephone conversations with their parents. Before achieving this capability, the child must develop a small vocabulary, learn to put words together in phrases and sentences and develop a cognitive understanding of object permanence (that a person or object that is out of sight still exists). The ability to progress successfully through each developmental phase influences the holistic health of the individual. Success or failure within any phase may affect the ability to complete subsequent phases. A child who has not learnt to walk by 18 or 20 months, for example, demonstrates delayed gross motor ability, which slows exploration and manipulation of the environment. A child who is walking by 10 months is able to explore and find stimulation in the environment, thereby enhancing learning.

There are two further terms often associated with growth and development: maturation and differentiation. **Maturation** is the process of ageing and can be described as a more qualitative type of change. Maturation involves an individual's biological ability, physiological condition, and desire to learn more mature behaviour. To mature, an individual may have to relinquish previous behaviours and learning, integrate new patterns into existing behaviour, or both. Maturation influences the sequence and timing of changes associated with growth and development. For example, an infant relinquishes crawling for walking because walking permits more extensive investigation of the environment. However, an infant cannot walk until the biological ability and structures to perform the action (i.e. increased muscle cells and tone) have developed.

Differentiation is the process by which cells and structures become modified to facilitate development from simple into complex activities, and the development of more refined individual characteristics. For example, embryonic cells begin as vague and undifferentiated and develop into complex, highly diversified cells, tissues and organs.

Developmental theorists

Theories of human growth and development have been acquired through systematic observations of people going about their daily lives. From these observations, a series of logically connected hypotheses have been proposed that enable us to explain and predict potential physical and behavioural outcomes throughout the life span. Table 16.1 introduces four well-known developmental theorists and their major hypotheses. Reference will be made to theorists throughout this chapter and in Chapter 17.

• CRITICAL REFLECTION POINT

Table 16-1, overleaf, is just the beginning of learning about developmental theorists and their hypotheses concerning human growth and development. We challenge you to explore the work of others such as: behavioural and social learning theorists (e.g. Bandura, Skinner, Watson), ecological systems (e.g. Bronfenbrenner) and information processing (e.g. Chomsky).

Stages of growth and development

Human growth and development are continuous, intricate and complex processes that are often divided into stages organised by age groups, such as from conception to adolescence (Box 16-1). Although this chronological division is arbitrary, it is based on the timing and sequence

TABLE 16-1 Comparison of major developmental theories

Developmental stage (approximate age)	Freud (psychosocial development)	Erikson (psychosocial development)	Piaget (cognitive development)	Kohlberg (moral development)
Infancy (birth to 18 months)	Oral stage: focus on mouth/sucking	Trust versus mistrust: Ability to trust others to meet needs and thus begins to trust self versus withdrawal	Sensory motor period (stage 1–3) – gains understanding of: object permanence and cause and effect.	
Toddler/Early childhood (18 months to 3 years)	Anal stage: focus on self-control of bowels	Autonomy versus shame and doubt: begins to act independently, developing self-control versus defiance	Sensory motor period (stage 4–6) – coordinates more than one action, can recall, and tries new ideas to see what occurs	
Preschool (3–5 years)	Phallic stage: self-centred	Initiative versus guilt: imitates roles and follows rules, developing sense of purpose versus self denial/ restriction	Preoperational period: begins to use symbols, gives life to inanimate objects, can only see from own point of view (egocentric), developing language and pretend play skills	Preconventional (stage 1): obeys rules to elude punishment
Childhood (6–12 years)	Latent stage: suppression of sexual urges with focus on achievement	Identity versus inferiority: develops ability to make friends and achieve tasks versus withdrawal from school and friends	Concrete operations period: can understand more than one piece of information, develops logical thinking on factors that are present; unable to think about the future	Preconventional (stage 2): conforms to gain reward or acknowledgment
Early adolescence (12–14 years)	Genital stage: deals with sexual urges, seeks partner	Identity versus role confusion: developing understanding of self and personal beliefs versus confusion, indecisiveness and antisocial behaviour	Formal operations period: can think in an abstract method and hypothetically. Develops scientific reasoning. Concerns about own needs and self-gratification. Developing moral sense of right and wrong	Conventional: seeks good relations and approval of family and friends. Developing sense of responsibility
Middle adolescence (14–16)	Genital	Identity versus role confusion: learns to know self	Formal operations: can order ideas	Conventional: obedience of law, respect for authority
Late adolescence (17–21)	Genital	Develops career goal and ability to share all aspects of life with others	Formal operations: able to test own hypotheses and think ahead. Often period of utopian thinking	Post conventional: develops sense of responsibility, concerned with individual's rights, developing conscience orientation

Adapted from: Haith M, Benson J 2008 Encyclopaedia of infant and early development, Elsevier, Waltham MA; Leifer G, Fleck E 2013 Growth and development across the lifespan, 2nd edn. Elsevier, St Louis.

of developmental tasks that the child must accomplish to progress to another stage.

Critical periods

Stages of growth and development involve the concept of **critical periods**. A critical period is a specific span of time during which the environment has its greatest impact on the individual. During these critical periods, some form of sensory stimulation is necessary for developmental progression. Without stimulation, developmental task completion may be difficult or unattainable. For example, the toddler who has not been encouraged to learn to walk during a critical period may have difficulty learning to walk at another time. Therefore, developmental progression depends on the timing and degree of stimulation as well as on readiness to be stimulated by the environment. A stimulus provided too early may not be useful. For example, an 18-month-old child cannot learn to write, regardless of the intensity of the stimuli. There are also a number of other internal and external environmental

BOX 16-1 Developmental age periods

Prenatal period: conception to birth

Germinal: Conception to approximately 2 weeks

Embryonic: 2–8 weeks

Fetal: 8–40 weeks (birth)

A rapid growth rate and total dependency make this one of the most crucial periods in the developmental process. The relationship between maternal health and certain manifestations in the newborn emphasises the importance of adequate prenatal care to the health and wellbeing of the infant.

Infancy period: birth to 12 or 18 months

Neonatal: Birth to 28 days

Infancy: 1 to approximately 12 months

The infancy period is one of rapid motor, cognitive and social development. Through mutuality with the caregiver (parent), the infant establishes a basic trust in the world and the foundation for future interpersonal relationships. The critical first month of life, although part of the infancy period, is often differentiated from the remainder because of the major physical adjustments to extrauterine existence and the psychological adjustment of the parent.

Early childhood: 1 to 6 years

Toddler: 1–3 years

Preschool: 3–6 years

This period, which extends from the time the children attain upright locomotion until they enter school, is characterised by intense activity and discovery. It is a time of marked physical and personality development. Motor development advances steadily. Children at this age acquire language and wider social relationships, learn role standards, gain self-control and mastery, develop increasing awareness of dependence and independence and begin to develop a self-concept.

Middle childhood: 6 to 11 or 12 years

Frequently referred to as the 'school age', this period of development is one in which the child is directed away from the family group and is centred around the wider world of peer relationships. There is steady advancement in physical, mental and social development with emphasis on developing skill competencies. Social cooperation and early moral development take on more importance, with relevance for later life stages. This is a critical period in the development of a self-concept.

Later childhood: 11 to 19 years

Prepubescence: 10–13 years

Adolescence: 13 to approximately 18 years

The period of rapid maturation and change known as adolescence is considered to be a transitional period which begins at the onset of puberty and extends to the point of entry into the adult world – usually at the end of secondary school. Biological and personality maturation are accompanied by physical and emotional turmoil, and there is redefining of the self-concept. In the late adolescent period the child begins to internalise all previously learnt values and to focus on an individual rather than a group identity.

Adapted from Hockenberry MJ, Wilson D 2015 Wong's nursing care of infants and children, 10th edn. Mosby, St Louis.

factors that may interact to affect individual development, as shown in Table 16-2.

Developmentally appropriate care is facilitated through theoretical approaches that encourage organised care directed at the child's current level of functioning to motivate self-directed healthy choices, as indicated in Table 16.1. For example, nurses might encourage toddlers to feed themselves to advance their developing independence and promote their sense of autonomy. Or, understanding an adolescent's need to be independent should prompt the nurse to establish a shared contract about the care plan and its implementation.

Conception

Human development proceeds at a predictable and rapid rate from the moment of conception. During the prenatal period, the **embryo** grows from a single cell to a complex, physiological being. All major organ systems develop in-utero, with some functioning before birth (Figure 16-1). Fertilisation of the ovum takes place in the outer third of the fallopian tube and occurs within 24 hours of the ovum's release. Only one sperm penetrates the ovum. Once fertilisation takes place, the material from both cell nuclei unites. The organism then has its full genetic complement in one pair of sex chromosomes and 22 pairs of autosomal chromosomes. The ovum and the sperm each contribute one chromosome to each pair. It is through this mechanism that genetically determined characteristics (such as eye colour) and genetically programmed diseases (such as Down syndrome) are transmitted from parent to child.

The fertilised ovum, or *zygote*, passes through the fallopian tube to the uterus within 3 to 4 days. During this time the zygote continues to divide. Within 3 days, a solid ball of cells, called the *morula*, has formed. The morula continues to develop and forms a central cavity, or *blastocyst*. Even at this early stage of development, cells begin to differentiate in structure and function. Cells at one end of the blastocyst develop into the embryo, and

TABLE 16-2 Major factors influencing growth and development

Factors	Relevant influences
Forces of nature	
Heredity	Genetic endowment determines sex, race, hair and eye colour, physical growth, stature, and to some extent psychological uniqueness
Temperament	Temperament is the characteristic psychological mood with which the child is born and includes behavioural styles of easy, slow-to-warm and difficult. It influences interactions between the individual and environment
External forces	
Family	Family purpose is to protect and nurture its members Family functions include means for survival, security, assistance with emotional and social development, assistance with maintenance of relationships, instruction about society and world and assistance in learning roles and behaviours Family influences through its values, beliefs, customs and specific patterns of interaction and communication Ordinal position and sex influence individual's interaction and communication in family
Peer group	Peer group provides new and different learning environment Peer group provides different patterns and structures of interaction and communication, necessitating different style of behaviour Functions of peer group include allowing individual to learn about success and failure; to validate and challenge thoughts, feelings and concepts; to receive acceptance, support and rejection as unique person apart from family; and to achieve group purposes by meeting demands, pressures and expectations
Life experiences	Life experiences and learning processes allow an individual to develop by applying what has been learnt to what needs to be learnt Learning process involves series of steps: recognition of need to know task; mastery of skills to perform task; mastery of task; expertise in performing task, which expands capabilities; integration into whole functioning; and use of accumulated skills and experiences to develop repertoire of effective behaviour
Health environment	Level of health affects individual's responsiveness to environment and responsiveness of others to the individual
– Prenatal health	Preconception (e.g. genetic and chromosomal factors, maternal age, health) and post conception (e.g. nutrition, weight gain, use of tobacco and alcohol, medical problems, use of prenatal services) factors affect fetal growth and development
– Nutrition	Growth is regulated by dietary factors. Adequacy of nutrients influences whether and how physiological needs, as well as subsequent growth and development needs, are met
– Rest, sleep and exercise	Balance between rest or sleep and exercise is essential to rejuvenating body. Disturbances diminish growth, whereas equilibrium reinforces physiological and psychological health
– State of health	Illness or injury potentially hampers growth and development. Nature and duration of health problem influence its impact. Prolonged injury or illness may cause inability to cope and respond to demands and tasks of developmental stages
Living environment	Factors affecting growth and development include season, climate, home life and socioeconomic status

Adapted from Hockenberry MJ, Wilson D 2015 Wong's Nursing care of infants and children, 10th edn. Mosby, St Louis.

those at the opposite end form the *placenta*. Between days 6 and 10, enzymes are secreted that allow the blastocyst to burrow into the endometrium and become completely covered. This part of the process is known as *implantation*. Finger-like projections called chorionic villi develop to obtain oxygen and nutrition from the maternal blood supply and dispose of carbon dioxide and waste products.

Before implantation, the embryo is relatively protected from the external environment, but with implantation it becomes more vulnerable to the larger maternal environment via exchange of materials through the placenta. The placenta produces essential hormones that help maintain the pregnancy. Because the placenta is extremely porous, noxious materials such as viruses and drugs can also pass from mother to child. The effect of noxious agents on the unborn child depends on the developmental stage in which exposure takes place, with the embryonic stage being the most crucial. The embryonic stage lasts from day 15 until approximately 8 weeks after conception; this is a crucial stage in the development of organ systems and main external features (Figure 16-1). Following the embryonic stage, the developing child is known as a **fetus**.

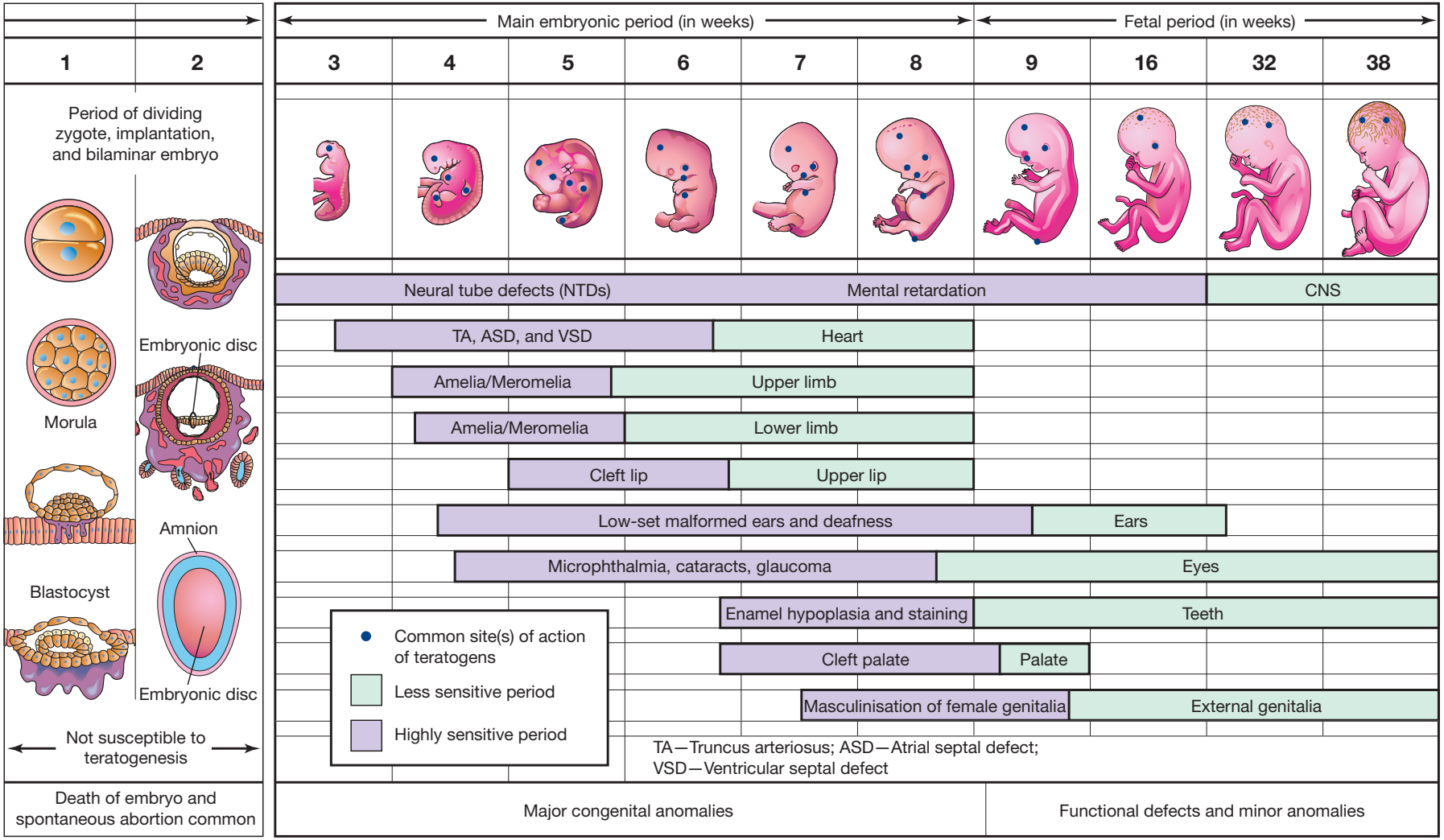


Figure 16-1 Critical periods in human development (mauve denotes highly sensitive periods when major birth defects may be produced).

Moore KL, Persaud TVN, Torchia, MG 2013 The developing human: clinically oriented embryology, 9th edn. Saunders Elsevier, Philadelphia, p. 489.

Women were calculating the date their baby would be born (based on the cycles of the moon), and successfully giving birth, for many thousands of years before modern medicine. Intrauterine life that reaches full term lasts 10 lunar or 9 calendar months, which equates to 40 weeks or 280 days. The length of pregnancy is calculated by determining the first day of the last menstrual period (LMP) to which 280 days is added. A second calculation method takes into account variation of individual menstrual cycles and is made by adding 280 days to the length of the menstrual cycle, then subtracting 28 days from the first day of the LMP (Grigg 2015). Gestation is often divided into three periods called *trimesters*.

First trimester

During the first trimester (the first three calendar months), implanted fetal cells continue to differentiate and develop into essential organ systems. These processes of cellular change (differentiation) and staged organ change (development) occur at different rates and times, with each organ being extremely vulnerable to environmental or other assault during this period. Interference with growth can cause the congenital absence of an organ system or extensive structural or functional alterations. Because several organ systems develop at the same time, disruption of one system may coincide with the disruption of others. Figure 16-1 shows the approximate times of critical differentiation for some of the major organ systems and their overlapping development.

Promoting first trimester health

There are many agents, referred to as *teratogens*, capable of producing adverse effects in the fetus during the first trimester. Some teratogens produce defects only if the fetus is exposed to the agent when the vulnerable organ is developing. One such teratogen is rubella or German measles virus, which can cause spontaneous abortion, stillbirth or defects of the eyes, ears and heart with exposure in the first trimester. It is important for the nurse or midwife to ensure the mother and family are aware of avoiding exposure to teratogenic agents.

Many drugs and medications are also teratogenic during rapid organ growth (**organogenesis**) in the first trimester. Past and present use of home remedies, herbs, and prescription or over-the-counter and illegal drugs must be carefully assessed. Barbiturates, anticoagulants, antimicrobials, alcohol, cancer chemotherapeutics and hydantoin anticonvulsants are only a few of the chemical agents associated with fetal abnormalities, and many other agents are still under investigation. The benefits of any medication needed to maintain the mother's health must be weighed against potential harm to the fetus. Abuse of drugs such as cocaine, LSD, heroin, ecstasy or amphetamines may result in significant fetal compromise (Thorogood & Crowther 2015). Smoking has been shown to reduce birthweight and increase the incidence of fetal and neonatal death (Thorogood & Crowther 2015). Infants exposed prenatally to alcohol can develop fetal alcohol syndrome (FAS), fetal alcohol effect (FAE) or an alcohol-related birth defect (ARBD) (Thorogood & Crowther 2015). Caffeine also crosses the placenta, and while a small intake has been found to have no ill effect in a well and healthy woman (Kuczkowski 2009), the pregnant mother should be encouraged to limit her intake and discuss the potential effects with her doctor, nurse or midwife.

Similarly, the diet of a woman both before and during pregnancy has a significant effect on the developing fetus in-utero. An adequate iron and folic acid intake is recommended for any woman contemplating pregnancy because of an association with iron deficiency anaemia and neural tube defects (see Box 16-2). It has been repeatedly demonstrated that mothers who maintain a healthy diet have fewer complications of pregnancy and childbirth and bear healthier babies than those with poor nutritional intake (Gibbons & Wratten 2015). Therefore, as there are consequences of maternal malnutrition for both maternal wellbeing and fetal development, attention to the assessment of women's nutritional status during pregnancy is important.

Second trimester

As the fetus grows in size, maternal physical changes during the second trimester (from the end of month 3 to the end of month 6) are concerned with the uterus becoming an abdominal organ. Measurement of the height of the uterus, above the symphysis pubis, is one indicator of fetal growth. The height of the uterus can also indicate approximate gestational age and alert health professionals to possible risk situations. The *fundus*, or top of the uterus, typically measures 1 cm for each week of gestation up to 36 weeks; a 16-week gestation should therefore measure 16 cm above the top of the symphysis pubis. Between 16 and 20 weeks, the mother begins to feel fetal movement. This feeling of life is referred to as *quickening*.

Fetal physical changes involve some organ systems continuing basic development, while the functional capabilities of others are refined. By the end of the sixth month, most organ systems are complete and can function. The fetus is usually considered *viable*, or capable of life outside the uterus if given intensive environmental support, at this time. At this point, the fetus weighs about

BOX 16-2 Ensuring adequate folic acid intake

Objectives

1. Women with no family history of neural tube defects will consume 0.5 mg of folic acid every day for 1 month prior to conception and for the first 3 months of pregnancy.
2. Women with a family history of neural tube defects will increase that dose to 5 mg.
3. Women taking anticonvulsants should take folic acid supplements only under the supervision and monitoring of a specialist doctor.

Teaching tips

- Ensure that females of childbearing age are aware of the benefits of folic acid to the developing fetus.
- Folic acid is a water-soluble vitamin and is readily excreted in the urine; therefore, encourage consumption of the appropriate amount of folic acid daily.
- Discuss the need for any woman contemplating pregnancy to have an adequate daily intake of folic acid because the moment of conception is not always known.
- Daily recommended folic acid intake may be consumed in food sources; however, adolescents are usually deficient. Deficiency is not related to socioeconomic status.
- Discuss foods that are rich in folic acid, such as green leafy vegetables, liver, kidney and asparagus. Limited amounts may be found in milk, poultry and eggs.
- Use sample menus to suggest ways of incorporating folic-acid-rich foods.

Evaluation

Review client's 3-day diet intake diary.

World Health Organization 2011 Periconceptional supplementation with folic acid to prevent neural tube defects; AIHW 2011 Neural tube defects in Australia. Canberra. Cat no. PER53.

0.7 kilograms (kg) and is approximately 30 centimetres (cm) long. Fingers and toes are differentiated, there is rudimentary kidney function and the sex of the fetus can be determined. The fetus is covered with *vernix caseosa*, a white cheese-like substance coating the skin. *Lanugo*, or fine hair, covers most of the body. These substances protect the thin, fragile skin of the fetus and decrease in amount as the pregnancy nears its completion; thus infants born before 38 weeks of gestation will typically have more obvious vernix and lanugo covering than full-term infants.

Any infant born before 37 weeks of gestation is identified as being premature. Causes for **prematurity** are poorly understood, and may be the result of maternal, fetal or placental problems. Maternal risk factors include physiological stresses such as renal and cardiovascular disease, diabetes mellitus, or uterine and cervical abnormalities. Mothers with mental health problems, poor socioeconomic circumstances, or who have received limited or no prenatal care, are also at risk of experiencing a preterm birth. Multiple pregnancies and fetal infections are also potential risk factors for prematurity. Placental factors include abruptio placentae and placenta praevia (Thorogood & Donaldson 2015a).

A preterm delivery is one that occurs between 20 and 37 weeks gestation. *Tocolysis*, using the calcium ion channel inhibitor nifedipine, may be implemented to temporarily inhibit preterm labour (Hunter & Gunn 2015). The highest risk of mortality and morbidity arises in deliveries prior to 34 weeks gestation (Thorogood & Donaldson 2015b). Advances in medical knowledge and treatments mean that it is now possible for 500 g babies of only 24–26 weeks of gestation to survive; however, there may be significant risk of long-term morbidity.

Promoting second trimester health

The promotion of healthy eating, activity and limiting exposure to teratogens continues into the second trimester, but there is a greater emphasis on how the fetus is growing. The fetal heartbeat becomes audible to stethoscope auscultation, and the mother becomes aware of fetal movement. Both events are highly significant to the parents because they provide tangible evidence of the pregnancy and reassure them that the fetus is alive.

During this period women often focus on planning for the birth, personal safety, health and appearance. Education about gestational events, employment, appropriate maternal rest, nutrition, dental care, physical activity and posture can be conducted during prenatal visits and in prenatal classes. This is also a good time to help the woman prepare for life at home with a new baby by discussing changes to family dynamics and infant care such as breastfeeding, settling and sleep. Because of dramatic changes occurring to the mother's body, including the renal system, asymptomatic urinary tract infections may occur. Urinary tract infections greatly increase the risk of preterm labour; therefore, voiding habits such as completely emptying the bladder with each void, ensure wiping from 'front-to-back' and post coital hygiene should also be discussed with the mother during this time.

Childbirth is always a significant and challenging event for women. It is important for women and their birth partners to understand how midwives and obstetricians will help their labour and birth, and to comprehend physical signs and symptoms that may indicate compli-

cations. Understanding the processes that are occurring both within themselves and for the developing fetus helps women to take appropriate action in response to any change they may detect in their health status.

Third trimester

Physical changes during the last 3 months of intrauterine life involve the fetus growing to approximately 50 cm in length. Subcutaneous fat is stored, and weight increases to between 3.2 and 3.4 kg. The skin thickens, lanugo begins to disappear and the fetal body becomes rounder and fuller. A tremendous spurt in brain growth begins during the third trimester and lasts well into the first few years of life. The central nervous system has established the total number and also the connections between neurons, and myelination of nerve fibres progresses at a rapid rate.

Relationships between prenatal events and cognitive development are difficult to establish. However, periods of diminished oxygen during fetal life are known to cause deficits in later cognitive functioning, and inadequate prenatal nutrition has been associated with lower brain weight. The large volume of research on developmental outcomes in low-birthweight (LBW) and very-low-birthweight (VLBW) infants indicates that these infants have an increased risk of learning disorders, school failures, temperament problems, neurological and motor impairment and developmental delays. Many additional factors affect an infant's temperament. Such factors include prenatal exposure to drugs, maternal analgesia during labour, and length of gestation. The Cochrane Library has a vast amount of information on developmental outcomes for LBW and VLBW infants (see *Online resources*).

By the end of the third trimester, the healthy fetus is physically able to make the transition from intrauterine to extrauterine life. The cardiac system is ready to change its circulation pattern to end bypassing of the lungs and the lungs are capable of maintaining the inflated state for gas exchange. The primitive temperature maintenance systems, reflexes and sensory organs are ready for use.

In the 10 years between 2001 and 2011 the number of registered Australian births increased by 22% (AIHW 2013). Caesarean section rates have also increased dramatically over recent years, yet there is little evidence to suggest that higher intervention rates in normal childbirth lead to lower perinatal morbidity and mortality. With anticipated exponential growth in caesarean section rates in subsequent pregnancies, there is growing concern about the implications of this trend for maternal and infant outcomes, and its impact on future services. In Australia, there is now a coordinated movement to increase the choices of childbearing women through the provision of midwifery-led models of care. Midwifery-led services have been in place in New Zealand for many years. For more information on the models of midwifery care in Australia you might like to consult the text *Midwifery: preparation for practice* (Pairman et al 2015).

Promoting third trimester health

Exposure to noxious agents and the absence of essential nutrients at this time can cause damage to the developing central nervous system and result in alteration of high-level cognitive functions. The nurse/midwife raises the mother's awareness of these specific threats through education and counselling, and continues to assist her to evaluate the quality of her nutritional intake.

Thoughts of delivering a healthy baby are foremost in the mother's mind as she focuses on preparing herself for the birth. Parents often seek information about the process of childbirth and breastfeeding from childbirth education groups, internet resources and blogs. Depending on the family's location and circumstances, different types of childbirth education are available. Some groups are for first-time parents or may focus on specific age groups, for example, the adolescent or the older (35 years or more) mother. Others may focus on refreshing baby care skills, preparing for an elective caesarean section or attempting a vaginal birth after a caesarean section (VBAC). Because some areas may have limited access to childbirth classes, parents should be encouraged to investigate local classes early or be recommended good quality online support.

The majority of Australian and New Zealand babies are born in hospitals and, in recent years, hospitals have attempted to become more family-centred, welcoming birth partners, helpers and family members and providing spaces with home-like furnishings. A very small percentage of mothers choose to deliver at home, often for reasons of greater choice over the birthing process. Another advantage of home birthing is that the entire family, or other people close to the family, can be part of the event. Most home births occur with low-risk pregnancies and are supported by a registered and experienced midwife. An open relationship with medical and hospital maternity services is necessary should hospitalisation and obstetric intervention become necessary.

Transition from intrauterine to extrauterine life

The transition from intrauterine to extrauterine life requires rapid changes in the newborn. Gestational age and development, exposure to depressant drugs before or

during labour, and the newborn's own behavioural style influence adjustment to the external environment. Initial assessment therefore encompasses a variety of physical and psychosocial elements to determine the newborn's ability to adjust to the external environment and to plan for any interventions that may be necessary, while also facilitating opportunities for the parents and child to develop a close physical and emotional attachment.

Physical changes

At birth, an immediate assessment of the newborn's condition is performed to determine the physiological functioning of the major organ systems. The most extreme physiological change occurs when the newborn leaves the in-utero circulation and develops independent respiratory functioning. Nursing/midwifery care is directed at maintaining an airway, stabilising and maintaining body temperature and protecting the newborn from infection.

The most widely used newborn assessment tool is the **Apgar score**. Heart rate, respiratory effort, muscle tone, reflex irritability and colour are rated to determine overall status. The Apgar assessment is generally conducted at 1 and 5 minutes after birth, and may be repeated until the newborn's condition stabilises. Table 16-3 outlines the scoring criteria related to physiological functioning. A total score of 0–3 signifies severe distress, a score of 4–6 represents moderate difficulty and a score of 7–10 indicates little difficulty in adjusting to extrauterine life. The nurse/midwife can use the Apgar score to determine areas requiring further assessment and careful observation. In addition, the nurse/midwife monitors the newborn's body temperature and other vital signs until these stabilise.

Airway patency and body temperature

Patency of the newborn airway is best ensured by removing nasopharyngeal and oropharyngeal secretions with suction or a bulb syringe. However, if the newborn has a lusty cry immediately after birth, they may have cleared these secretions themselves. Because hypothermia increases oxygen needs, the newborn's body temperature must be stabilised and maintained. The newborn may be placed directly on the mother's abdomen and covered in warm blankets; be dried and wrapped in warm blankets, being sure to keep the head well covered; or be placed unclothed in an infant warmer with a temperature probe in place for regular monitoring. For newborns unable to sustain adequate body temperature, isolettes and incubators, which supply radiant heat, are preferred.

Prevention of infection

As the newborn's immune system is immature, it is especially important that all standard infection control precautions are applied in childbirth and perinatal settings. Of these, good handwashing technique is the most important factor in protecting the newborn, mother and health professionals from infection. Cover gowns do not need to be worn while providing care for the healthy newborn once blood and amniotic fluid have been removed from the infant's skin.

Psychosocial changes

After immediate physical assessment and application of identification bracelets, the nurse/midwife promotes the parents' and newborn's need for close physical contact. Early parent–child interaction encourages parent–child attachment. Physical factors (e.g. fatigue, hunger, pain) and emotional factors (e.g. happiness and need for affection and touch) are assessed.

Most healthy newborns are awake and alert for the first half-hour after birth. This is an opportune time for parent–child interaction to commence. Close body contact, often including breastfeeding, is a satisfying way for most families to start their relationship. If immediate contact is not possible, the nurse/midwife incorporates this into the plan of care as early as possible. This may require bringing

TABLE 16-3 Apgar scoring

Sign	Score 0	Score 1	Score 2
Heart rate	Absent	Slow (below 100 bpm)	Over 100 bpm
Respiratory effort	Absent	Slow, irregular, hypoventilation	Good, crying lustily
Muscle tone	Flaccid	Some flexion of extremities	Active motion, well flexed
Reflex irritability	No response	Crying, some motion	Vigorous cry
Colour	Blue, pale	Pink body, blue hands and feet	Completely pink

Modified from Wheeler BJ 2015 Health promotion of the newborn and family. In Hockenberry MJ, Wilson D 2015 Wong's essentials of pediatric nursing, 10th edn. Mosby, St Louis.

the newborn to an ill parent, or bringing the parents to an ill or premature child.

Attachment is a complex and ongoing process of interaction that is important for an infant's sense of security. John Bowlby's (1969) original research on attachment is a cornerstone upon which others have continued to build. Attachment occurs when parents and newborn elicit reciprocal and complementary behaviours. Attachment behaviours include attentiveness and physical contact, requiring maintenance of newborn contact with the parent. Preterm, ill newborns and ill mothers have more difficulty with attachment if separation is prolonged. The attachment process is further complicated if parents are unable to care for the usual infant needs. You will find more information about attachment in the Cochrane Library (see *Online resources*). Facilitating attachment behaviours and interactions is a priority in postnatal care. Midwives and child health nurses need to plan carefully to optimise close contact, and pay particular attention where health issues of either infant or mother may impede this contact.

The newborn

The **neonatal period** is classified as the first 28 days of life. During this stage the newborn's physical functioning is mostly reflexive, with stabilisation of major organ systems being the body's main task. Behaviour greatly influences interaction between the newborn, the environment and caregivers. For example, the average 2-week-old smiles spontaneously and is able to note their mother's face. The impact of these reflexive behaviours is generally a surge of maternal feelings of love that prompt the mother to cuddle the baby. Nurses/midwives can apply their knowledge of this stage of growth and development to promote newborn and parental health. Understanding, for example, that the newborn's cry is generally a reflexive response to an unmet need (such as hunger) can help parents identify ways to meet those needs, such as feeding their baby on demand rather than adhering to a rigid schedule.

Physical changes

A comprehensive physical assessment is performed as soon as the newborn's physiological functioning is stable, generally within a few hours after birth. At this time the nurse/midwife measures height, weight, head circumference, temperature, pulse and respirations and observes general appearance, body functions, sensory capabilities, reflexes and responsiveness. The average newborn weighs around 3400 grams (g), is 50 cm in length and has a head circumference of 35 cm. Up to 10% of birthweight is lost in the first few days of life, mainly through fluid losses by respiration, urination, defecation and low fluid intake. Birthweight is usually regained by the second week of life, and a gradual pattern of increase in weight, height and head circumference is evident. During the first month, these increases average 115–230 g in weight per week, 0.6–2.5 cm in length and 2 cm in head circumference (Wheeler 2015).

The newborn's heart rate ranges from 120 to 160 beats per minute. The average blood pressure is 74/46 mmHg. The newborn's respiratory movements are mainly abdominal, and vary in rate and rhythm with an average rate of 30–50 breaths per minute. The axillary temperature ranges from 36°C to 37.5°C and generally stabilises within 24 hours of birth (Wheeler 2015).

Normal physical characteristics include the continued presence of lanugo on the skin of the back; cyanosis of the hands and feet for the first 24 hours; and a soft, protuberant abdomen. Skin colour varies according to racial and genetic heritage and gradually changes during infancy. **Moulding**, or overlapping of the soft skull bones, allows the fetal head to adjust to the various diameters of the maternal pelvis during vaginal birth. The skull bones readjust within a few days, producing a more rounded appearance of the head. The sutures and **fontanelles** are usually palpable at birth. The diamond shape of the anterior fontanelle and the triangular shape of the posterior fontanelle between the unfused bones of the skull are shown in Figure 16-2.

Neurological function is assessed by observing the newborn's level of activity, alertness, irritability, responsiveness to stimuli, and the presence and strength of reflexes. Normal reflexes include blinking in response to bright lights and jerking in response to sudden, loud noises. Table 16-4 describes other commonly evaluated reflexes. An absence of any of the reflexes may indicate prematurity, trauma, or central nervous system complications. Because the newborn depends largely on reflexes for response to environment, assessment of these characteristic responses is vital.

Normal behavioural characteristics of the newborn include periods of sucking, crying, sleeping and activity. Movements are generally sporadic, but they are symmetrical and involve all four extremities. The relatively flexed fetal position of intrauterine life continues as the newborn attempts to maintain an enclosed, secure feeling. Newborns normally watch the caregiver's face, reflexively smile, and respond to sensory stimuli – particularly the primary caregiver's face, voice and touch. Als's (1986) seminal work examining the complex relationships between growth and development and the behaviours of preterm infants has prompted a global shift in the practices

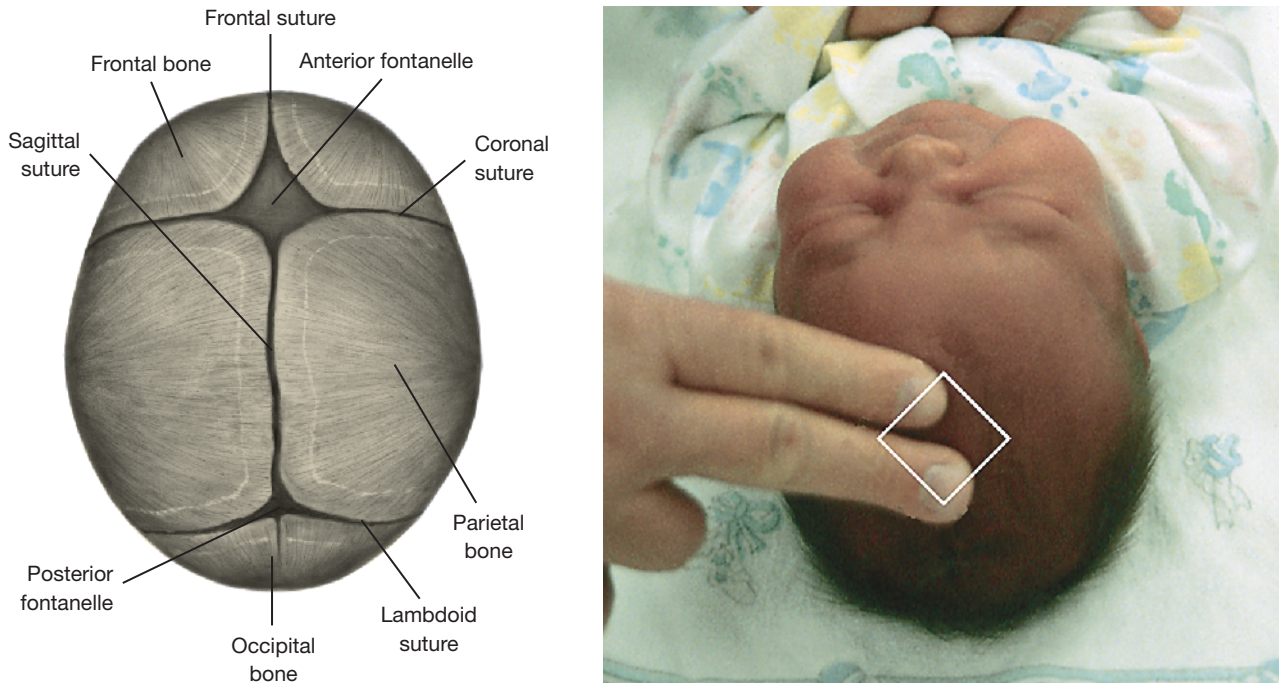


Figure 16-2 Fontanelles and suture lines.

Hockenberry MJ, Wilson D 2015 Wong's essentials of pediatric nursing, 10th edn. Mosby, St Louis, p. 261.

of neonatal intensive units that involve modifying the neonate's environment to promote optimum physical, cognitive and psychosocial development. This change in practice is referred to as 'developmental care' and you can find out more about it by looking up a recent meta-analysis in the Cochrane Library (see *Online resources*).

Sleep

The first hour of the unmedicated newborn's life is spent mainly in a quiet, alert state with wide-open eyes and vigorous sucking activity. Then neonates sleep almost continuously for the next 2–3 days to recover from the exhausting birth process. Thereafter, sleep periods vary from 20 minutes to 6 hours, with little day–night differentiation (Figure 16-3). Infant behaviour is characterised by five distinct states that are highly influenced by environmental stimuli. It is important for parents to understand these states (summarised in Table 16.5) and their implications for parental interaction.

The sleep environment and sleeping position of infants has been the subject of intense scrutiny over the past 20 years, motivated in part by the puzzle of Sudden Infant Death Syndrome (SIDS). Discussed later in this chapter, SIDS is defined as the unexpected and (after post-mortem examination) unexplained death of an infant. Sleep physiology develops throughout infancy and childhood. Sleep–arousal patterns occur within the child's social context but sleep patterns take considerable time to develop. Infants take time to distinguish between day and night and to develop consistent patterns of wakefulness and sleepiness, most taking the best part of 12 months (Stores 2001). The nursing assessment of infant sleep problems includes an investigation of the parents' expectations, as well as the settling and feeding practices that are used in individual households. It may first be necessary to support a change in adult expectations about infant sleeping habits and environments, rather than promote infant management strategies (See *Working with diversity* and Chapter 30).

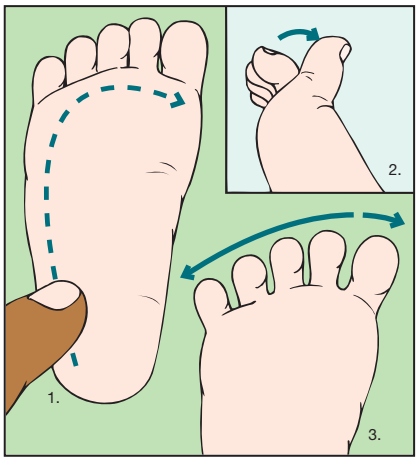
Cognitive changes

Early cognitive development begins with innate behaviour, reflexes and sensory functions. Newborns initiate reflex activities and learn behaviours and desires. For example, newborns learn to turn to the nipple and that crying results in a parental response.

Sensory functions contribute to cognitive development in the newborn. At birth, children can focus on objects about 20–25 cm from their faces and can perceive forms. A preference for the human face is apparent. Auditory and vestibular systems function from birth. These sensory capabilities allow newborns to elicit stimuli rather than simply receive them. It is therefore important that parents understand the infant's need for sensory stimulation,

TABLE 16-4 Assessment of common localised reflexes in the newborn

Reflexes	Expected behavioural responses
Eyes	
Blinking or corneal reflex	Infant blinks at sudden appearance of bright light or at approach of object towards cornea. Reflex persists throughout life
Doll's eye	As head is moved slowly to right or left, eyes lag behind and do not immediately adjust to new position of head. Reflex disappears as fixation develops. Persistent occurrence indicates neurological damage
Nose	
Sneeze	Nasal passages respond spontaneously to irritation or obstruction. Reflex persists throughout life
Glabellar	Tapping briskly on glabella (bridge of nose) causes eyes to close tightly
Mouth and throat	
Sucking	Infant begins strong sucking movements of circumoral area in response to stimulation. Reflex persists throughout infancy, even without stimulation, such as during sleep
Gag	Stimulation of posterior pharynx by food, suction or passage of tube causes infant to gag. Reflex persists throughout life
Rooting	Touching or stroking cheek along side of mouth causes infant to turn head towards that side and begin to suck. Reflex should disappear at about 3–4 months but may persist up to 12 months
Extrusion	When tongue is touched or depressed, infant responds by forcing it outwards. Reflex disappears by 4 months
Cough	Irritation of mucous membranes of larynx or tracheobronchial tree causes coughing. Reflex persists throughout life and is usually present first day after birth
Swallowing	Appropriate swallowing of liquid introduced into mouth. Can also be elicited by directing a puff of air at infant's face
Extremities	
Grasp	Touching palms of hands or soles of feet near base of digits causes flexion of hands and toes. Palmar grasp lessens after 3 months and is replaced by voluntary movement. Plantar grasp lessens by 8 months
Babinski	Stroking outer sole of foot upwards from heel and across ball of foot causes toes to hyperextend and hallux to dorsiflexion. Reflex disappears after age 1 year (see the illustration below)
Mass	
Moro	Sudden jarring or change in equilibrium causes sudden extension and abduction of extremities and fanning of fingers, with index finger and thumb forming C shape, followed by flexion and adduction of extremities. Legs may weakly flex. Infant may cry. Reflex disappears after 3–4 months and is usually strongest during first 2 months
Startle	Sudden, loud noise causes abduction of arms with flexion of elbows. Hands remain clenched. Reflex disappears by 4 months
Dance or step	If infant is held so that sole of foot touches hard surface, there is reciprocal flexion and extension of leg, simulating walking. Reflex disappears after 3–4 weeks and is replaced by deliberate movement
Crawl	When placed on abdomen, infant makes crawling movements with arms and legs. Reflex disappears at about 6 weeks
Placing	When infant is held upright under arms and dorsal side of foot is briskly placed against hard object, such as table, leg lifts as if foot is stepping on table. Age of disappearance varies



Modified from Wheeler BJ 2015 Health promotion of the newborn and family. In Hockenberry MJ, Wilson D 2015 Wong's essentials of pediatric nursing, 10th edn. Mosby, St Louis.



Figure 16-3 Newborn sleep periods have little day–night differentiation.

Shutterstock/Dhoxax.

such as talking to their babies and holding them to see their faces. This allows infants to seek or take in stimuli, thereby enhancing learning and promoting cognitive development.

It is debatable whether infant crying is the precursor of refined language. However, because crying elicits a response, and caregivers can distinguish cry patterns, crying has significance to newborns and parents. For newborns, crying is a means of providing cues to parents. Some babies cry because their nappies are wet or they are hungry or want to be held. Others cry just to make noise or because they need a change in position or activity. Working with parents to recognise patterns of behaviour in their infant can reduce some of the frustration parents feel when they cannot see an apparent cause, or find a solution, for crying.

Psychosocial changes

During the first month of life, parents and newborns normally develop a strong bond that grows into a deep attachment. Interactions during routine care enhance or detract from the attachment process. Feeding, hygiene and comfort measures consume much of an infant's waking time. These interactive experiences provide a foundation for the formation of deep attachments and newborns are active participants in this process.

TABLE 16-5 States of sleep and activity of infants

State	Behaviour	Duration	Implications for parenting
Regular sleep	Closed eyes Regular breathing Occasional body jerks	4–5 hours/day 10- to 20-minute sleep cycles	Infant not aroused by external stimuli Usual house noises can continue Check frequently Pat but don't wake
Irregular sleep	Closed eyes Irregular breathing Slight muscle twitching of body	12–15 hours/day 20- to 45-minute sleep cycles	External stimuli may arouse infant Periodic groaning or crying is usual; not an indication of discomfort
Drowsiness	Eyes may be open Irregular breathing Active body movement	Variable	Most stimuli arouse infant Pick infant up during this time rather than leave in cot
Alert inactivity	Responds to environment by active body movement and staring at close range objects	2–3 hours/day	Satisfy infant's needs such as hunger Place infant in area of activity Place toys/objects within infant's view
Waking and crying	May begin with whimpering and slight body movements Progresses to strong, angry cry and uncoordinated thrashing of extremities	1–4 hours/day	Remove intense internal/external stimuli Repeat activities that were effective during alert inactivity Rock and swaddle to decrease crying

Modified from Wheeler BJ 2015 Health promotion of the newborn and family. In Hockenberry MJ, Wilson D 2015 Wong's essentials of pediatric nursing, 10th edn. Mosby, St Louis.

WORKING WITH DIVERSITY

Focus on sleep

Although the biophysical aspects of sleep architecture and function are universal, sleep patterns, habits and rituals are culturally constructed. For example, the tendency to encourage infants and young children to sleep alone, away from other family members, is a relatively new Western social practice, bringing with it its own problems and challenges for early childhood development, secure attachment and wellbeing. In contrast, in some Asian groups, close sleep for infants is believed to be essential as a protective mechanism from a range of physical and spiritual harms. In societies where extended family homes and smaller houses are the norm, closer sleeping arrangements for infants and children are the norm. This means that what are considered normal or problematic sleep habits in infants and young children may vary from family to family.

Implications for practice

- Assess expectations, beliefs and values and sleep routines with families.
- Assess child's sleep patterns including total hours of nocturnal sleep, patterns of wakefulness, alertness during the day, numbers of naps taken.
- Assess bedtime rituals and habits.
- Assess sleep issues and plan interventions from the perspective of what is normal for the specific family.

References

McKenna JJ 2000 Cultural influences on infant and childhood sleep biology and the science that studies it. In Loughlin GM, Carroll JL, Marcus CL (eds) 2000 Sleep and breathing in children, a developmental approach. Decker Inc, New York.

Finn Davis K, Parker KP, Montgomery GL 2004 Sleep in infants and young children: part one: normal sleep. J Pediatr Health Care 18(2): 65–71.

If parents or children experience health complications after birth, attachment may be compromised. An infant's behavioural cues may be weak or absent, and caregiving may be less mutually satisfying. Tired or ill parents may have difficulty interpreting and responding to their infants. Children with congenital anomalies may be unwell or non-responsive to parental cues, and require special supportive care. For example, infants born with heart defects may tire easily during feedings. They may need to rest frequently after several bursts of sucking and fall asleep after taking only small amounts (30–45 millilitres). Infants may wake up after only a few hours, crying because they are hungry again. Not understanding that crying is a physiologically dictated sequence of events, parents may think that their infant is being fussy or that they themselves are inadequate. If both mother and infant experience decreasing pleasure from feeding, attachment may be halted or reduced.

Other health considerations for newborns

Hyperbilirubinaemia

Hyperbilirubinaemia is an excessive amount of accumulated bilirubin in the blood and is characterised by a yellow colouring of the skin, or jaundice. This accumulation occurs when the infant's body is unable to balance the destruction of red blood cells (RBCs) and the use or excretion of by-products. This balance can be upset by prematurity, breastfeeding, excess production of bilirubin, certain disease states such as Rhesus iso-immunisation or a disturbance of liver function such as biliary atresia. Because bilirubin is highly toxic to neurons, an infant with levels greater than 18 mg/100 mL is at risk of brain damage. Phototherapy (Biliblanket/overhead UV light) is used to help break down the bilirubin for easier excretion. Special care must be given to properly shield the infant's eyes to protect from exposure to the UV light. Because excretion of the extra bilirubin can cause watery stools, fluid balance must be monitored and maintained (Royal Prince Alfred Hospital 2009).

Inborn errors of metabolism

Inborn errors of metabolism (IEMs) refer to genetic disorders caused by the absence or deficiency of a substance, usually an enzyme, essential to cellular metabolism that results in abnormal protein, carbohydrate or fat metabolism. Although IEMs are rare, they account for a significant proportion of health problems in children. Blood tests can be used to determine IEMs, and in many places a routine blood sample is obtained on filter paper (newborn screening test) between 48 and 72 hours after birth. Nurses and midwives coordinate newborn screening and other laboratory tests as indicated by the newborn's state of health. Neonatal screening can detect phenylketonuria (PKU), hypothyroidism, galactosaemia, amino acid disorders and cystic fibrosis, allowing early commencement of appropriate treatment that can either fully prevent or delay neurological and other organ damage.

Circumcision

Newborn male circumcision is no longer practised on a routine basis in Australia or New Zealand, except for specific religious and cultural reasons. Current rates of male circumcision are about 10–20%, compared with 90% in the 1950s (RACP 2010). Circumcision remains a controversial issue, one that is argued in terms of human rights as well as for potential risks and benefits. The most commonly recognised medical indications for circumcision include: reduction of urinary tract infections – particularly

TABLE 16-6 Normal physiological parameters in infants and children

Age	Weight (kilograms)	Blood pressure, systolic (mmHg)	Heart rate (beats per minute)	Respiratory rate (breaths per minute)
Term	3.5	50	100–170	40–60
3 months	6	50	100–170	30–50
6 months	8	60	100–170	30–50
1 year	10	70–90	100–170	30–40
2 years	13	80–95	100–160	20–30
3 years	15	80–100	80–130	20
4 years	20	80–100	70–115	16–20
6 years	25	90–110	70–110	16–20
8 years	30	90–100	60–105	16–20
10 years	40	100–120	60–100	16–20
14 years	50	100–120	60–100	16
17+ years	70	100–120	60–100	16

Adapted from Thomson K, Tey D, Marks M (eds) 2009 Paediatric handbook, 8th edn. Blackwell, London; Samuels M, Wietska S (eds) 2011 Advanced paediatric life support. The practical approach, 5th edn. Wiley-Blackwell, West Sussex.

in the first year of life; reduction in the risk of cancer of the penis in later life; and there is some evidence of a decreased risk of contracting sexually transmitted diseases. On the other side of the debate, arguments against circumcision include complications associated with the procedure which may include: bleeding; infection; damage to the head of the penis; pain associated with the procedure; and reduction in sexual pleasure later in life. Care should be taken to ensure that parents making the decision to circumcise their son (or not) are directed to the most up-to-date and unbiased information available, and are given the opportunity to discuss this with appropriate health professionals (RACP 2010).

The infant

Infancy is the period from 1 month to 1 year of age (Box 16-1). This period is characterised by rapid physical growth and psychosocial development during which the infant increasingly interacts with their environment and moves from an innate reflexive behavioural pattern to one that is more purposeful. Parents/carers know the infant best, and are therefore most aware of any changes. Their involvement is critical when undertaking any comprehensive assessment.

Physical changes

An infant's steady and proportional growth is more important than absolute growth values. There are many norm-referenced percentile charts for age, gender, feeding type and growth, which you will find in a variety of texts, journals and health websites. However, it is important that culturally and geographically appropriate norms are referenced. Measurements of weight, length and head circumference recorded over time are the best way to monitor growth. Deviations across any of the recorded measurements may be an indicator of a potential health problem that may require further consultation or medical intervention.

Overall, infant size increases rapidly during the first year of life, with birthweight doubling in approximately 5 months and trebling by 12 months (Glasper & Richardson 2010). Height increases by an average of 2.5 cm during each of the first 6 months and 1.25 cm during the next 6 months. This 50% increase in birth height occurs mainly in the trunk (Berk 2014). The fontanelles become smaller, with the posterior fontanelle closing at approximately 2 months of age and the anterior closing between 12 and 18 months of age.

Changes in size and physiological function (Table 16-6) lead to an increased capacity for bodily movements. In infancy, initial movements are reflexive and spontaneous. As the central nervous system matures there is a consequential development of voluntary movement. Gross motor skills develop in a cephalocaudal and proximodistal pattern; that is, head control develops before trunk control, which in turn is established before leg control (Rathus 2014). Table 16-7 identifies major milestones in infant

TABLE 16-7 Gross and fine motor development 0–12 months

Age	Gross motor skills	Fine motor skills
1 month	Can lift head fleetingly when prone	Hands predominantly closed
	Can turn head to side when prone	Strong grasp reflex
	No head control when placed in sitting position	
	Marked head lag when moved from lying to sitting position	
2 months	Able to hold head erect and steady when upright	Hands mainly open
	Able to lift head 45 degrees when prone	Follows moving person with eyes
3 months	Can lift head and shoulders and chest when prone	Looks at own hands
	Bears weight on forearms when prone	Grasps a toy/rattle when placed in hand
		Reaches for objects; however, unable to grasp
4 months	Balances head when placed in a sitting position	Holds objects with two hands
	Rolls from back to front/side	Hands begin to come together in the midline
		Plays with hands
5 months	Able to sit when supported	Reaches out for toys and successfully grasps them
	No head lag when moved from lying to sitting position	Places all objects to mouth
	Puts feet to mouth when supine	
	Rolls from front to back	
6 months	When prone can lift chest with weight supported by arms	Transfers objects from hand to hand
	Able to sit in high chair	Uses palmar grasp
	Able to support own weight when lifted to standing position	Holds own feeding bottle
7 months	Able to sit alone; will lean forward taking weight on arms	Bangs toys on table/floor
	Will bounce on legs when held in standing position	Tries to retrieve small objects
8 months	Sits unsupported	Beginning pincer grip
	Bears weight on legs when supported	Stretches for toys beyond reach
	May pull to stand when holding on to sturdy object	Plays with toys for purposeful outcome, e.g. presses buttons for sounds
	Adjusts posture in order to reach/attain object	
9 months	Starts to crawl	Compares toys in hands by bringing together
	Sits for longer period unsupported (10 minutes)	Dominant hand use prevalent
		Holds more than two objects concurrently
10 months	Moves self from prone to sitting positions	Interactively plays simple games
	Balance easily regained when sitting	Able to purposefully release objects
	Lifts foot off the ground to take step while standing	
11 months	Walks while holding on to furniture (cruising)	Good pincer grip
	Stands alone	Explores toys more thoroughly
	Able to reach backwards while sitting	Better able to manipulate objects
		Places objects into container
12 months	Walks alone or with one hand held	Repeatedly throws objects
	Can sit down from standing position	Can turn book pages
		No longer puts all objects to mouth

Adapted from Berk LE 2014 Development through the lifespan, 4th edn. Pearson, Boston; Wilson D 2015 Health promotion of the toddler and family. In Hockenberry MJ, Wilson D 2015 Wong's essentials of pediatric nursing, 10th edn. Mosby, St Louis.

gross motor and fine motor development. Understanding these physical changes and how they progress over time is fundamental to caring for infants and their family. Delays in the achievement of expected milestones may indicate delays in development that could be assisted or improved by appropriate interventions, or may have lifelong implications for the family.

Cognitive changes

An infant learns by experiencing and manipulating the environment around them. Developing motor skills and increasing mobility expand that environment and expose the infant to a greater number of sensory stimuli, which in turn enhance cognitive development. Jean **Piaget**, a Swiss psychologist (Table 16-1), created the **cognitive** (or 'how one thinks') **theory of development**. This theory describes how sensory and motor interactions with the environment allow information to be processed and an action to be formed in response. These information processes are thought to be the basis for ongoing problem-solving abilities (Leifer & Fleck 2013). In infancy, this early cognitive development is demonstrated with the repetition of actions (Rathus 2014). For example, an infant will perceive sucking as pleasurable and then will go on to generalise this feeling with the sucking of fingers, clothes and coverings. There is more about Jean Piaget's theory of development in Chapter 17.

A neonate has a well-developed sense of smell, and by 1 month of age has sufficient cognitive capacity and visual acuity to see, fix and follow the path of a moving object. Over the ensuing months, sensory development concerned with visual acuity, hearing and eye–hand coordination continue along their respective developmental pathways. Rudimentary colour vision is usually present by 2 months of age. At this age, the infant will also enjoy complex designs to look at, with a preference for the human face. By 6 months of age the infant can see many colours, localise and discriminate sounds as well as grasp objects in their path, which makes the environment around them a much more interesting place to explore (Rathus 2014, Wilson 2015).

Given the important role sensory stimulation plays in cognitive development, appropriate opportunities must be provided when an infant is not in their usual environment. For example, an unwell or hospitalised infant may experience a change in their usual temperament, or lack the energy to interact with their environment. This has the potential to slow their cognitive development. In this situation, simple verbal interaction, an interesting colourful environment, eye contact, and having an expressive face at frequent intervals are essential components of nursing care.

• CRITICAL REFLECTION POINT

You may find it helpful for your future clinical practice to develop your own list of age-appropriate strategies that would enhance the cognitive development of a hospitalised infant. Take a moment now to develop your list.

Another significant cognitive change during infancy is the development of speech. Infants proceed from crying, cooing and laughing to imitating sounds, comprehending the meaning of simple commands, and repeating words with knowledge of their meaning. Table 16-8 outlines major milestones in language development during the first two years of life.

Psychosocial changes

Psychosocial developmental theory is concerned with the development of personality and identity via the social environment and through social interactions. The German psychologist Erik Erikson (Table 16-1) was influenced by **Freud's pyscho-sexual development theory**; however, he placed more emphasis on the social and cultural aspect of personality development. Erikson described development as evolutionary, stating that individuals needed to successfully pass through each of eight stages in order to achieve a healthy personality and enable successful social

TABLE 16-8 Milestones of language development in first two years

Age	Language ability
1 month	Responds to voice and sounds
3–4 months	Coos (oo-oo), turns towards voice and sound
6–9 months	Babbles, sing song speech, copies waving goodbye, takes turn when playing games, responds to own name
9–12 months	Two parts babbling (e.g. da da), copies sounds (eg broom broom for car), uses sound patterns, waves and claps hands on request
12–18 months	Expresses wants through gesture and facial expression, points to objects when named, begins to use single words (naming people and objects,verbs and negatives), uses one word for many meanings, attempts to imitate new words and familiar songs
18 months to 2 years	Uses two words together, vocabulary approximately 25 words growing quickly to 100–200 words, listens to a short story, understands simple commands

Adapted from Boyd D, Bee H 2010 The growing child. Allyn & Bacon, Boston; Berk LE 2014 Development through the lifespan, 4th edn. Pearson, Boston.

interactions (Erikson & Erikson 1997, Leifer & Fleck 2013, Heffner 2001).

Erikson describes infancy as the period of 'trust versus mistrust'. During this period the major emphasis is on positive parental or carer contact and nurturing of the infant, particularly in terms of visual contact and touch. If an infant has their needs for warmth, love and security met, they will develop optimism, trust, confidence and security within the world around them as they progress through childhood. Conversely, if an infant does not experience trust, they may develop insecurity, worthlessness and a general mistrust of the world in their childhood years. Development of trust occurs when parental or carer contact is constant and reliable.

During their first year, infants begin to differentiate themselves from others as separate beings capable of acting on their own. Initially, infants are unaware of the boundaries of self, but through repeated interactive and social experiences within the environment, they learn where the self ends and the external world begins. As infants determine their physical boundaries, they begin to respond to others (Figure 16-4). Infants begin to smile responsively rather than reflexively by 2–3 months of age. Similarly, they can recognise differences in people when their sensory and cognitive capabilities develop. By 8 months of age most infants can differentiate a stranger from a familiar person and respond differently to the two. Close attachment to primary caregivers, in most cases the parents, is usually established by this age, and infants seek out these people for support and comfort during times of stress. When an infant is hospitalised, they may have difficulty establishing physical boundaries because of repeated bodily intrusions that may be associated with painful sensations. Therefore, an important nursing consideration is to limit negative experiences where possible and ensure that pleasurable interventions such as play are included in daily care activities to support early psychosocial development.



Figure 16-4 **Smiling at and talking to an infant encourages the infant to respond, which increases interaction with parent or caregiver.**

Shutterstock.

Infant play

Play is considered to be the occupation of childhood and is a vital component in promoting both cognitive and psychosocial development, as well as structure and chemistry within the brain (Erikson 1963). Lester and Russell (2008) propose that play is influential in a child's ability to thrive in both social and physical environments and is necessary to enhance the physical and emotional functioning of the child and adult. Play during infancy enables the child to engage with all that exists within their surroundings (Youell 2008). Play provides opportunities for the infant to develop many motor skills. Much of infant play is exploratory, using senses to observe and examine their own body and objects of interest in their surroundings. Activities such as placing their toes in their mouth provide infants with pleasure and information about their own body, also helping to shape their early self-concept. Tickling, singing and talking to young infants, games such as 'peek-a-boo', or songs using fingers and toes, are ideal for early play. Gurgling and smiling during this early play promotes the development of play language before the introduction of language and toys (Youell 2008).

As the infant develops motor control, play becomes more manipulative. Adults can facilitate infant learning by planning activities that promote the development of milestones and providing toys that are safe for infants to explore with the mouth and manipulate with the hands, such as rattles, wooden blocks, plastic stacking rings and squeezable stuffed animals. Infants most often engage in solitary (one-sided) play but do enjoy watching others, particularly the antics of their siblings. Infants thrive on being played with and stimulated through interaction with others.

CLINICAL EXAMPLE

You are caring for Toby, a four-month-old male infant who has been hospitalised since birth with a long-term gastrointestinal disorder. With your understanding of family theory from Chapter 15, and now play, how would you promote Toby's growth and development? An example might be encouraging mum to actively engage with Toby through storytelling and singing. What other activities would enhance Toby's normal growth and development?

Other health considerations during infancy

Accidental injury

Accidental injury is a major cause of hospitalisation and death in childhood. Box 16-3 lists the main types of injuries that can occur and possible preventive strategies based on major developmental accomplishments. It is important to remember that infants are not immune from accidental injury while in hospital and health professionals must also be mindful of injury prevention in this setting.

BOX 16-3 Injury prevention during infancy

Age: Birth to 4 months

Major developmental accomplishments

- Involuntary reflexes, such as the crawling reflex, may propel infant forwards or backwards, and the startle reflex may cause the body to jerk
- May roll over
- Increasing eye–hand coordination and voluntary grasp reflex

Injury prevention

Aspiration

- Not as great a danger to this age group, but should begin practising safeguarding early (see under Age: 4–7 months)
- Never shake baby powder directly on infant; place powder in hand and then on infant's skin; store container closed and out of infant's reach
- Hold infant for feeding; do not prop bottle
- Know emergency procedures for choking*
- Use dummy with one-piece construction and loop handle

Suffocation/drowning

- Keep all plastic bags stored out of infant's reach; discard large plastic garment bags after tying in a knot
- Do not cover mattress with plastic
- Use a firm mattress and loose blankets; no pillows
- Make sure cot design follows state regulations and mattress fits snugly – cot slats 6 cm apart
- Position cot away from other furniture and away from radiators
- Do not tie dummy on a string around infant's neck
- Remove bibs at bedtime
- Never leave infant alone in bath
- Do not leave infant under 12 months alone on adult or youth mattress

Falls

- Always raise cot rails
- When in doubt as to where to place child, use the floor
- Restrain child in infant seat and never leave child unattended while the seat is resting on a raised surface

Poisoning

- Not as great a danger to this age group, but should begin practising safeguards early (see under Age: 4–7 months)

Burns

- Install smoke detectors in home
- Use caution when warming formula in microwave oven; always check temperature of liquid before feeding
- Check bath water

continued

- Do not pour hot liquids when infant is close by, such as sitting on lap
- Beware of cigarette ash that may fall on infant
- Do not leave infant in the sun for more than a few minutes; keep exposed areas covered
- Wash flame-retardant clothes according to label directions
- Use cool-mist vaporisers

Motor vehicles

- Do not leave child in parked car
- Check surface heat of car restraint before placing child in seat
- Ensure that children travel in approved restraints suitable for the child's age and size
- Do not travel with infants on a seat or on your lap
- Do not place child in a pram or stroller behind a parked car
- Do not place infant or child in front passenger seat with an air bag

Bodily damage

- Avoid sharp, jagged objects
- Keep nappy pins closed and away from infant

Age: 4–7 months

Major developmental accomplishments

- Rolls over
- Sits momentarily
- Grasps and manipulates small objects
- Re-secures a dropped object
- Has well-developed eye–hand coordination
- Can focus on and locate very small objects
- Mouthing is very prominent
- Can push up on hands and knees and crawl backwards

Injury prevention

Aspiration

- Keep buttons, beads, syringe caps and other small objects out of infant's reach
- Keep floor free of any small objects
- Do not feed infant hard lollies, nuts, food with pits or seeds or whole or circular pieces of meat
- Exercise caution when giving teething biscuits, because large chunks may be broken off and aspirated
- Do not feed infant while child is lying down
- Inspect toys for removable parts
- Keep baby powder, if used, out of reach
- Avoid storing large quantities of cleaning fluid, paints, pesticides and other toxic substances
- Discard used containers of poisonous substances
- Do not store toxic substances in food containers
- Discard used button-sized batteries; store new batteries in safe area
- Know telephone number of Poisons Information Centre

Suffocation

- Keep all latex balloons out of reach
- Remove all cot toys that are strung across cot or playpen when child begins to push up on hands or knees or is 5 months old

Falls

- Restrain in a high chair
- Keep cot rails raised to full height

Poisoning

- Make sure that paint for furniture or toys does not contain lead
- Place toxic substances on a high shelf or in locked cabinet
- Hang plants or place on high surface rather than on floor

Burns

- Keep taps out of reach
- Place hot objects (cigarettes, candles, incense) on high surface
- Limit exposure to sun; apply sunscreen

continued

Motor vehicles
- See under Age: Birth to 4 months

Bodily damage
- Give toys that are smooth and rounded, preferably made of wood or plastic
- Avoid long, pointed objects as toys
- Avoid toys that are excessively loud
- Keep sharp objects out of infant's reach

Age: 8–12 months

Major developmental accomplishments
- Crawls/creeps
- Stands, holding onto furniture
- Stands alone
- Cruises around furniture
- Walks
- Climbs
- Pulls on objects
- Throws objects
- Is able to pick up small objects; has pincer grasp
- Explores by putting objects in mouth
- Dislikes being restrained
- Explores away from parent

Injury prevention

Aspiration
- Keep lint and small objects off floor and furniture, and out of reach of children
- Take care in feeding solid food to ensure that very small pieces are given
- Do not use beanbag toys or allow child to play with dried beans
- See also under Age: 4–7 months

Suffocation/drowning
- Keep doors of ovens, dishwashers, refrigerators, and front-loading washing machines and dryers closed at all times
- If storing an unused appliance, such as a refrigerator, remove the door
- Supervise contact with inflated balloons; immediately discard popped balloons and keep uninflated balloons out of reach
- Fence swimming pools
- Always supervise when near any source of water, such as cleaning buckets, drainage areas, toilets
- Keep bathroom doors closed
- Eliminate unnecessary pools of water
- Keep one hand on child at all times when in bath

Falls
- Fence stairways at top and bottom if child has access to either end
- Dress infant in safe shoes and clothing (soles that do not 'catch' on floor, tied shoelaces, pant legs that do not touch floor)
- Avoid walkers, especially near stairs
- Ensure that furniture is sturdy enough for child to pull self to standing position and cruise

Poisoning
- Administer medications as a drug, not as lollies
- Do not administer medications unless they are prescribed by a practitioner
- Replace medications and poisons immediately after use; replace caps properly if a child-protector cap is used

Burns
- Place guards in front of or around any heating appliance, fireplace or furnace
- Keep electrical wires hidden or out of reach
- Place plastic guards over electrical outlets; place furniture in front of outlets
- Keep hanging tablecloths out of reach (child may pull down hot liquids or heavy or sharp objects)

Modified from Wilson, D 2015 Health promotion of the toddler and family. In Hockenberry MJ, Wilson 2015 Wong's essentials of pediatric nursing, 10th edn. Mosby, St Louis.

• CRITICAL REFLECTION POINT

Take the time to reflect on your experiences of visiting a hospital ward and make a list of the dangers an infant might face, and then think of some strategies to prevent harm. One example could be ensuring that the infant is placed in a suitable sleeping environment – a cot which complies with Australian safety standards (Product Safety Australia 2013). See *Online resources* at the end of this chapter for more information.

Death in infancy

Death in infancy may occur from a variety of conditions such as congenital abnormalities, perinatal/maternal complications, and for reasons that are unclear such as Sudden Infant Death Syndrome (SIDS) (AIHW 2012). SIDS accounted for 50 infant deaths in Australia in 2012 (ABS 2014). There are factors known to increase the risk of SIDS, such as the infant sleeping on the abdomen and side, the use of soft sleeping surfaces and/or loose bedding, overheating through overdressing or wrapping, smoking and sharing of beds (Hunt & Hauck 2006). Nurses caring for infants must be cognisant of these SIDS risk factors and have a responsibility to share this knowledge with parents or primary caregivers (*Working with diversity* on p. 316). The SIDS and Kids Organisation Australia has a very informative website of frequently asked questions (FAQs) by parents and caregivers that would be worthwhile for you to visit (see *Online resources*).

Immunisation

Fortunately, infant deaths from vaccine-preventable diseases are relatively rare in Australia and New Zealand (Royal College of Pathologists 2012). As infants and children require a number of immunisations in the first few years of life to protect against serious infections of childhood, sharing information about the most up-to-date schedule is important. In addition to the schedule of immunisations, it is also important for health professionals to be able to communicate concepts related to the importance of an immunised community. The most up-to-date and accurate information on immunisation schedules is provided on government websites (see *Online resources* for Australia and New Zealand). Most parental concerns relate to the potential side effects and possible risks of vaccination. As with all medications, some contraindications exist and, in general, no vaccines should be given during a severe febrile illness. This precaution avoids adding possible side effects to an already ill child.

Child abuse and neglect

Child maltreatment includes intentional physical abuse or neglect, emotional abuse or neglect, and sexual abuse. Infancy is a high-risk period for child abuse, with emotional abuse and neglect being the most common (AIHW 2014). Neglect refers to failure to provide for a child's basic needs. This includes the provision of adequate care, food, shelter, clothing, supervision, hygiene, education or medical attention. Neglectful behaviours could be physical, emotional, educational or environmental (Child Family Community Australia 2012). It is mandatory for all healthcare workers, police and education professionals to report suspected cases of child abuse to the relevant child protection agency (Mathews & Scott 2014). As a nurse working with infants and children, it is your responsibility to be aware of signs that could be the result of maltreatment (see Box 16-4) or could be mistaken for maltreatment (see Box 16-5). As a nurse working with children, you may be involved with cases of suspected or confirmed maltreatment.

• CRITICAL REFLECTION POINT

Take some time to reflect on your legal and ethical responsibilities in cases of suspected maltreatment. Also be aware of any personal feelings you may have when you consider such situations. Make a note of what your responsibilities as a nurse are in relation to mandatory child protection reporting.

Nutrition and feeding practices

Nurses and other health professionals caring for infants and children appreciate that no one diet is effective for all children or for any particular age group. Further, the quality and quantity of nutrition combines with family culture, food preferences and food allergies in influencing the infant's growth and development.

For any infant, nutritional wellbeing is protected and nurtured through breastfeeding. The National Health and Medical Research Council of Australia Infant Feeding Guidelines (2012) recommend 'exclusive' breastfeeding (the consumption of breast milk only) for the first 6 months of age. From 6 to 12 months of age, the continuance of breastfeeding with appropriate complementary foods is recommended. In 2010, it was found that while 96% of Australian mothers initiated breastfeeding, only 39% of infants were exclusively breastfed at 3 months of age. At 5 months of age, 21% of infants continued to be breastfed; however, only 15% were exclusively breastfed. This indicates the introduction of non-breast milk fluids or solids for the remainder (AIHW 2011). From 6 months of age, breast milk can provide at least half the daily

BOX 16-4 Clinical manifestations of potential child maltreatment

Physical neglect

Suggestive physical findings

- Failure to thrive
- Signs of malnutrition, such as thin extremities, abdominal distension, lack of subcutaneous fat
- Poor personal hygiene, especially of teeth
- Unclean and/or inappropriate dress
- Evidence of poor health care, such as untreated infections, frequent colds
- Frequent injuries from lack of supervision

Suggestive behaviours

- Dull and inactive
- Self-stimulatory behaviours, such as finger-sucking or rocking
- Begging or stealing food*
- Absenteeism from school*
- Drug or alcohol addiction*
- Vandalism or shoplifting

* in older child

Emotional abuse and neglect

Suggestive physical findings

- Failure to thrive
- Feeding disorders, such as rumination
- Enuresis
- Sleep disorders

Suggestive behaviours

- Self-stimulatory behaviours such as biting, rocking, sucking
- During infancy, lack of social smile and stranger anxiety
- Withdrawal
- Unusual fearfulness
- Antisocial behaviour, such as destructiveness, stealing, cruelty
- Extremes of behaviour, such as overcompliant and passive or aggressive and demanding
- Lags in emotional and intellectual development, especially language
- Suicide attempts

Physical abuse

Suggestive physical findings

- Bruises and welts on face, lips, mouth, back, buttocks, thighs or areas of torso
- Regular patterns descriptive of object used, such as belt buckle, hand, wire hanger, chain, wooden spoon; squeeze or pinch marks
- Burns, injuries, fractures, lacerations or bruises in various stages of healing on soles of feet, palms of hands, back or buttocks
- Patterns descriptive of object used, such as round cigar or cigarette burns, 'glove-like' sharply demarcated areas from immersion in scalding water, rope burns on wrists or ankles from being bound, burns in the shape of an iron, radiator or electric stove burner
- Absence of 'splash' marks and presence of symmetric burns
- Whiplash from shaking the child
- Unusual symptoms, such as abdominal swelling, pain and vomiting from punching
- Descriptive marks such as from human bites or pulling out of hair
- Unexplained repeated poisoning or unexplained sudden illness

Suggestive behaviours

- Wariness of physical contact with adults
- Apparent fear of parents or of going home
- Lying very still while surveying environment
- Inappropriate reaction to injury, such as failure to cry from pain
- Lack of reaction to frightening events
- Apprehensiveness when hearing other children cry
- Indiscriminate friendliness and displays of affection
- Superficial relationships
- Acting-out behaviour, attention-seeking behaviours
- Withdrawn behaviour

continued

Sexual abuse

Suggestive physical findings

- Bruises, bleeding, lacerations or irritation of external genitalia, anus, mouth or throat
- Torn, stained or bloody underclothing
- Pain on urination or pain, swelling and itching of genital area
- Penile discharge
- Sexually transmitted disease, non-specific vaginitis or venereal warts
- Difficulty in walking or sitting
- Unusual odour in the genital area
- Recurrent urinary tract infections
- Presence of sperm
- Pregnancy in young adolescent

Suggestive behaviours

- Sudden emergence of sexually related problems, including excessive or public masturbation, age-inappropriate sexual play, promiscuity or overtly seductive behaviour
- Withdrawn behaviour, excessive daydreaming
- Preoccupation with fantasies, especially in play
- Poor relationships with peers
- Sudden changes, such as anxiety, loss or gain of weight, clinging behaviour
- In incestuous relationships, excessive anger at mother for not protecting daughter
- Regressive behaviour, such as bed-wetting or thumb-sucking
- Sudden onset of phobias or fears, particularly fears of the dark, men, strangers or particular settings or situations (e.g. undue fear of leaving the house or staying at the day-care centre or the babysitter's house)
- Running away from home
- Substance abuse, particularly of alcohol or mood-elevating drugs
- Profound and rapid personality changes, especially extreme depression, hostility and aggression (often accompanied by social withdrawal)
- Rapidly declining school performance
- Suicide attempts or ideation

McCarthy K, Health problems in early childhood, in Hockenberry, MJ, Wilson, D 2015 Wong's essentials of pediatric nursing,10th edn. Mosby, St Louis.

BOX 16-5 Conditions that can be mistaken for sexual abuse

- Accidental straddle injuries
- Accidental impaling injuries
- Non-specific vulvovaginitis and proctitis
- Group A beta-streptococcal vaginitis and proctitis
- Nappy rash
- Foreign bodies
- Lower extremity girdle paralysis as in myelomeningocele
- Defects that cause chronic constipation, Hirschsprung's disease, anteriorly displaced anus
- Chronic gastrointestinal disease, Crohn's disease
- Labial adhesions
- Anal fissures

American Academy of Pediatrics 2013 Supplemental information Appendix. Conditions that may be mistaken for child sexual abuse. Pediatrics 132(2):S11–S18.

nutrient requirements or more, depending on the amount of breastfeeding each day and complementary foods ingested. Children who continue to breastfeed into their second year may obtain up to a third of their daily nutrient requirements from breast milk.

In Australia and New Zealand, as in many other countries, the study of lactation and assisting mothers to breastfeed is a specialised area of nursing/midwifery practice. Nurses and midwives are therefore well placed to influence and support infant feeding practices, including the promotion of breastfeeding. In order to work with a mother to establish and maintain the best infant feeding practices, it is helpful to assess the mother's goals and knowledge, her lifestyle commitments, values and beliefs, as well as the influences on her thinking about breast-feeding, including family, friends and a wide range of lay and professional resources. Nurses and midwives can assess and advise on breastfeeding technique in order to ensure good attachment and drainage of the breast during

nutritive sucking and on expressing and breast-milk storage techniques. You can find out more about breastfeeding for healthcare workers at the websites of the World Health Organization or, within Australia, that of the Australian Breastfeeding Association (see *Online resources*).

Many infants will consume a combination of breast milk and breast-milk substitutes (formulas) during their first year of life. A clean and safe water supply is essential for the preparation of powdered infant formula and manufacturers' instructions for reconstitution must be followed. All types of cow's milk (whole, 2% and skim) and imitation milks are not recommended in the first year because of the infant's decreased ability to digest the contained fat. Cow's milk also contains more sodium and protein, which, when ingested, increases the renal solute load making it too heavy for immature infant kidneys to handle. Because cow's milk is low in iron and high in calcium and phosphorus, absorption of iron may be decreased, thereby resulting in anaemia (National Health and Medical Research Council 2012).

The addition of complementary foods is not recommended before 6 months of age because the gastrointestinal tract is not sufficiently mature to handle heavy, complex nutrients. The introduction of cereals, fruits, vegetables and meats during the second 6 months of life provides iron and additional sources of vitamins. These become especially important when children are weaned from breast milk or formula and begin drinking whole cow's milk after their first birthday. Well-cooked table foods are also tolerated by 1 year. While the amount and frequency of feeding will vary among infants, it is important to recognise that healthy lifetime eating patterns are established from this time.

Dentition

Tooth eruption varies with each infant and child. In general, the first tooth erupts between 6 and 9 months. Occasionally, an infant is born with a tooth, while others remain toothless at 1 year. The order of tooth eruption is fairly predictable, with the lower central incisors being first to appear, closely followed by the upper central incisors.

Teething may result in considerable discomfort for some infants and little or none for others. The inflammation of the gum as a tooth emerges may result in a low-grade fever and irritability. Some infants have increased drooling, biting or finger sucking. The Australian Dental Association (2011) recommends gentle rubbing of the infant's gum with a clean finger, or providing a dummy, teething ring or wet cloth to relieve discomfort. Discomfort should not be prolonged, and if the infant is unwell or has a prolonged or high fever, medical attention should be sought. Dental hygiene and dental habits should be encouraged through the use of a soft toothbrush and water in infancy, preferably twice a day.

The toddler

Toddlerhood ranges from the time children begin to walk independently until they walk and run with ease, usually from 12 to 36 months of age. Toddlerhood is the first part of the early childhood period (Box 16-1) and is characterised by increasing independence bolstered by greater physical mobility, language development and cognitive ability. Toddlers are increasingly aware of their abilities to control some aspects of the world around them and are pleased with successful efforts in this new skill. This success leads them to repeated attempts to control their environments. Unsuccessful attempts at control may result in negative behaviour and temper tantrums and sometimes physical injury. Toddlerhood is an exciting and frustrating time for parents and carers as brain development generally exceeds the physical growth and capabilities of the child.

Physical changes

The rapid development of motor skills allows the toddler to participate in self-care activities such as feeding, dressing and toileting. In the beginning, the toddler walks in an upright position with a broad-stance gait, protuberant abdomen and with arms out to the sides for balance. Soon the toddler begins to navigate stairs, using a rail or the wall



Figure 16-5 Toddlers must be correctly restrained in vehicles.

iStockphoto/BrianAJackson.

to maintain balance while progressing upwards, placing both feet on the same step before continuing. Success provides the courage to attempt the upright mode for descending the stairs in the same manner. Locomotion skills soon include running, jumping, standing on one foot for several seconds and kicking a ball. Most toddlers can ride tricycles, climb ladders and run well by their third birthday (Glasper & Richardson 2010).

Fine motor capabilities move from scribbling spontaneously to drawing circles and crosses accurately. By 3 years the toddler draws simple stick-people and can usually stack a tower of small blocks. If the toddler has developed the necessary cognitive abilities, increased locomotion skills, the ability to undress, and development of sphincter control allow toilet training. Parents often consult nurses for an assessment of readiness for toilet training. Reminding parents to look for cues that the toddler is ready or may be interested in toileting is a first step. Thereafter, patience, consistency and a non-judgemental attitude, in addition to the toddler's readiness, are essential to successful toilet training.

The cardiopulmonary system becomes stable in the toddler years. The heart and respiratory rates slow, and blood pressure varies slightly from infancy as shown in Table 16-6. The anterior fontanelle closes between 12 and 18 months of age, ending the period of most-rapid growth of the skull and brain. Routine measurement of head circumference is recommended until 3 years of age.

The rate of increase in weight and length slows. By 2½ years the toddler weighs approximately four times their birthweight and is approximately half of their adult height (Kleigman et al 2011). Height during toddlerhood increases by about 7.5 cm a year, mainly as a result of increases in leg length (Wilson 2015).

Cognitive changes

Piaget's development staging during toddlerhood is one of 'preoperational thought'. Advances in intellectual development enable toddlers to comprehend themselves as a separate identity from others. Toddlers are able to obey simple instructions, can increasingly use language to communicate and express ideas, and begin to solve simple problems themselves. Thinking during this stage is *concrete*; that is, the toddler is unable to reason, use logic or see things from another's point of view.

Toddlers use symbols to represent objects, places and persons. This function is demonstrated when toddlers imitate the behaviour of another, such as pretending to shave like Daddy or pretending their finger is a gun. Using play and make-believe are ways toddlers can express their experiences and help them to understand events. Along with the maturity of cognition comes the development of speech. The rate of speech development varies from toddler to toddler, with girls generally developing speech at a faster pace than boys (Berk 2014). It is important to understand that a toddler will *comprehend* vocabulary to a much greater degree than they are able to express vocabulary (Wilson 2015).With this in mind, it is important to include the toddler when discussing their health care or treatment. The 18-month-old uses approximately 10 words. By 24 months of age, the toddler has a vocabulary of up to 300 words and is generally able to speak in short sentences. 'Who's that?' and 'What's that?' typify questions asked during this period. Verbal expressions such as 'Me do it' and 'That's mine' demonstrate the 2-year-old toddler's use of pronouns and desire for independence and control, which again are important considerations when planning care for toddlers and their families.

Psychosocial changes

According to theorist Erikson, toddlers pass through the developmental stage of 'autonomy versus shame and doubt' (Table 16-1). If the child has successfully developed a sense of trust during infancy they are now ready to develop a sense of their own abilities. Through physical development, toddlers develop the ability to master control of bladder and bowel and with developing muscles are able to do more for themselves, and strive for independence. Their strong wills are frequently exhibited in negative behaviours when caregivers attempt to direct their actions. Temper tantrums may result when toddlers are frustrated by parental restrictions (you may have heard people refer to the 'terrible twos'), as this is a stage of development when the child is trying to assert their autonomy (Berk 2014). Toddlers thrive on graded independence, and allowing them to do small things that will not harm themselves or others, such as dressing, will support their development. Firm consistent limits, patience and support allow toddlers to develop socially acceptable behaviour, independence and self-control without a loss of self-esteem (Berk 2014). This is often a challenging time for parents and caregivers. Unrealistic adult expectations or strict discipline may impact on the development of self-esteem and result in a toddler feeling unable to act capably and thus develop a sense of doubt in his/her abilities to master self in the world (see Chapter 20).

The child continues to engage in solitary play during toddlerhood, but also begins to participate in parallel play, which is playing beside rather than with another child. Toddlers who are just learning what belongs to them are often possessive of their toys. They learn the joy of sharing when they offer parents toys to hold and the parents

express pleasure. Socially, toddlers remain strongly attached to their parents, feel safe in their presence, and fear separation from them.

Other health considerations during toddlerhood

Safety

The newly developed locomotion and insatiable curiosity of toddlers make them a danger to their own wellbeing. Toddlers need close supervision at all times, particularly when in environments that have not been modified with child safety in mind. Poisonings occur frequently because toddlers nearing 2 years of age are interested in placing any object or substance in their mouth. Removing or locking up all possible poisons, including plants, cleaning materials and medications, is a safety strategy that nurses can discuss with parents. Toddlers also lack awareness of the danger of water, and combined with newly developed walking skills, means that drowning is a major cause of accidental death in this age group. Limit-setting is extremely important for toddler safety. Toddlers completely depend on their parents and carers for physical safety and maintaining a safe environment for exploratory behaviour. Table 16-9 identifies developmental abilities related to the risk of injury during this age period, and accompanying injury prevention strategies.

Perceptions of wellness

A toddler's perception of their own health is limited by their cognitive capabilities. Toddlers are able to recognise internal body sensations but have difficulty pinpointing their location. Therefore, toddlers who deviate radically from their usual patterns of eating, sleeping or playing require assessment to determine whether these alterations have resulted from illness. Toddlers also associate generalised responses with illness; for example, emotional distress may be represented as a 'sore tummy'.

Nutrition

The nutritional requirements of toddlers are increasingly met by consumption of healthy solid foods, and less from breast milk or breast-milk substitutes. The healthy toddler requires a balanced daily intake of bread and grains, vegetables, fruit, dairy products and protein. It is common for toddlers' tastes to change, and they may develop aversions to some foods and strong desires for others. The child's developing independence may also cause mealtimes to be stressful as the desire to feed self

TABLE 16-9 Injury prevention during early childhood

Developmental abilities related to risk of injury	Injury prevention
Motor vehicles	
Walks, runs and climbs	Use government-approved car restraint; if restraint is not available, use lap belt
Able to open doors and gates	Supervise child while playing outside
Can ride tricycle	Do not allow child to play on kerb or behind a parked car
Can throw ball and other objects	Do not permit child to play in pile of leaves, snow or large cardboard container in trafficked area
	Supervise tricycle riding
	Lock fences and doors if not directly supervising children
	Teach child to obey pedestrian safety rules
	Obey traffic regulations; walk only at pedestrian crossings and when traffic signal indicates it is safe to cross
	Stand a step back from kerb until it is time to cross
	Look right, left and right again and check for turning cars before crossing street
	Use footpaths; when there is no footpath, walk on right, facing traffic
	Wear light colours at night, and attach fluorescent material to clothing
Drowning	
Able to explore if left unsupervised	Supervise closely when near any source of water, including buckets
Has great curiosity	Keep bathroom doors and lid on toilet closed
Helpless in water, unaware of its danger; depth of water has no significance	Have fence around swimming pool and lock gate
	Teach swimming and water safety (not a substitute for protection)

continued

TABLE 16-9 ***continued***

Developmental abilities related to risk of injury	Injury prevention
Burns	
Able to reach heights by climbing, stretching, standing on toes and using objects as a ladder Pulls objects Explores any holes or opening Can open drawers and cupboards Unaware of potential sources of heat or fire Plays with mechanical objects	Turn pot handles towards back of stove Place electric appliances, such as kettle and frying pan, towards back of counter Place guard rails in front of radiators, fireplaces or other heating elements Store matches and cigarette lighters in locked or inaccessible area; discard carefully Place burning candles, incense, hot foods, ashes, embers and cigarettes out of reach Do not let tablecloth hang within child's reach Do not let electric cord from iron or other appliance hang within child's reach Cover electrical outlets with protective devices Keep electrical wires hidden or out of reach Do not allow child to play with electrical appliances, wires or lighters Stress danger of open flames; teach what 'hot' means Always check bathwater temperature; adjust hot-water heater temperature to 50°C or lower; do not allow children to play with taps Apply a sunscreen with SPF 15 or higher when child is exposed to sunlight
Poisoning	
Explores by putting objects in mouth Can open drawers, cupboards and most containers Climbs Cannot read warning labels Does not know safe dose or amount	Place all potentially toxic agents (including plants) in a locked cabinet or out of reach Replace medications and poisons immediately; replace child-resistant caps properly Refer to medications as drugs, not as lollies Do not store large surplus of toxic agents Promptly discard empty poison containers; never use to store a food item or other poison Teach child not to play in garbage containers Never remove labels from containers of toxic substances DO NOT induce vomiting unless advised Keep the emergency number of the nearest Poisons Information Centre next to the telephone
Falls	
Able to open doors and some windows Goes up and down stairs Depth perception unrefined	Keep screen in window, nail securely and use guard rail Place gates at top and bottom of stairs Keep doors locked or use child-resistant doorknob covers at entry to stairs, high porch or other elevated area, such as laundry chute Remove unsecured or scatter rugs Put non-skid mat in bath or shower Keep cot rails fully raised and mattress at lowest level Place carpeting under cot and in bathroom Keep large toys and bumper pads out of cot or playpen (child can use these as 'stairs' to climb out), then move to youth bed when child is able to crawl out of cot Avoid using walkers, especially near stairs Dress in safe clothing (soles that do not 'catch' on floor, tied shoelaces, pant legs that do not hang on floor) Keep child restrained in vehicles; never leave unattended in shopping trolley or stroller Supervise at playgrounds; select play areas with soft ground cover and safe equipment
Choking and suffocation	
Puts things in mouth May swallow hard or inedible pieces of food	Avoid large, round chunks of meat, such as whole sausages (slice lengthwise then into short pieces) Avoid fruit with pips, fish with bones, dried beans, hard lollies, chewing gum, nuts, popcorn, grapes, marshmallows Choose large, sturdy toys without sharp edges or small removable parts Discard old refrigerators, ovens and so on; if storing old appliances, remove doors Keep automatic garage door transmitter in inaccessible place Select safe toy boxes or chests without heavy, hinged lids Keep venetian blind strings out of child's reach Remove drawstrings from clothing

continued

TABLE 16-9 ***continued***

Developmental abilities related to risk of injury	Injury prevention
Bodily damage	
Still clumsy in many skills Easily distracted from tasks Unaware of potential danger from strangers or other people	Avoid giving sharp or pointed objects – such as knives, scissors or toothpicks – especially when walking or running Do not allow lollies or similar objects in mouth when walking or running Teach safety precautions (e.g. to carry fork or scissors with pointed end away from face) Store all dangerous tools, garden equipment and firearms in locked cabinet Be alert to danger of animals, including household pets Use safety glass and stickers on large glassed areas, such as sliding glass doors Teach personal safety Teach name, address and phone number and to ask for help from appropriate people (cashier, security guard, policeman) if lost; have identification on child (sewn in clothes, inside shoe) Avoid personalised clothing in public places Teach child to never go with a stranger Teach child to tell parents if anyone makes child feel uncomfortable in any way Always listen to child's concerns regarding others' behaviour Teach child to say 'no' when confronted with uncomfortable situations

Child Accident Prevention Foundation of Australia 2012; Leifer G, Fleck E 2013 Growth and development across the lifespan, 2nd edn. Elsevier, St Louis.

can result in spillage or not finishing the meal, which may be frustrating for both caregiver and child.

It may be advisable that those following specific food practices, such as strict vegan diets, consult with a dietitian to ensure an adequate, balanced protein intake for toddler growth and development, as parents may assume adult eating patterns can be applied. Toddlers who are unwell, are undergoing surgery, have diseases or inborn errors of metabolism involving digestion or absorption, also benefit from consultation with a paediatric dietitian, as increased caloric requirements or alterations to the balance and types of foods may be necessary.

• CRITICAL REFLECTION POINT

Take the time to think of some developmentally appropriate strategies to promote healthy and safe nutrition for a toddler. To achieve a sense of autonomy, for example, serving a meal of appropriate size will allow the toddler to experience accomplishment of the task of finishing the meal. Now it's your turn to think of other examples.

The preschooler

The **preschool period** refers to those years between the ages of 3 and 6 and represents the latter part of the early childhood period (Box 16-1). Children of preschool age refine the mastery of their bodies and have increasing emotional, psychosocial and cognitive capacity to meet formal educational challenges. Many people consider these the most intriguing years of parenting, because children can now effectively interact and communicate with adults. Physical development continues to slow, while cognitive and psychosocial development remains rapid.

Physical changes

Several aspects of physical development continue to stabilise in the preschool years. See Table 16-6 for average heart rates, respiratory rates and blood pressure ranges. Preschoolers gain, on average, 2–3 kg a year and grow 6–7.5 cm a year, having doubled their birth length at about 4 years (Glasper & Richardson 2010). There is an elongation of the legs, which results in the preschooler appearing more slender. Little difference exists between the sexes, although boys are slightly larger with more muscle and less fatty tissue.

Large and fine muscle coordination improves, enabling preschoolers to run well, walk up and down steps with ease and learn to hop. By 5 years of age, preschoolers can usually skip on alternate feet, use a skipping rope and begin learning to swim. Improving fine motor skills allows intricate manipulations. Preschoolers learn to copy crosses and squares. Triangles and diamonds are usually mastered between 5 and 6 years of age. Scribbling and drawing help to further develop fine muscle skills and eye–hand coordination (Leifer & Fleck 2011).

Preschoolers need opportunities to learn and practise new physical skills. Although children of preschool

age with acute illnesses benefit from rest and exclusion from usual daily activities, those experiencing chronic conditions or who have been hospitalised for long periods need ongoing exposure to developmental opportunities. Parents and nurses can work together to weave these opportunities into the daily experiences of children who are hospitalised or who are being cared for at home. The scope of activities should correspond to their abilities, needs and energy levels.

Cognitive changes

Preschoolers continue to master Piaget's preoperational stage of cognition (Table 16-1). The first phase of this period, from 2 to 4 years of age, is known as 'preconceptual thought' and is characterised by perceptual-bound thinking in which children judge people, objects and events by their outward appearance, or *what seems to be*. That is, during preconception, preschoolers have difficulty reasoning, thinking logically or comprehending that some things stay the same even if their appearance has changed. For example, if a volume of fluid is poured from a wide container into a narrow container, the preschooler will still assert that the narrow vessel contains more fluid because it is at a higher level within the container (Glasper & Richardson 2010).

Around 4 years of age, the intuitive phase of 'preoperational thought' develops, and children's ability to think in a more complex way is demonstrated by their ability to classify objects according to size or colour and by questions such as 'Why do they call it the thirty-first day of the month instead of the thirty-last?' Egocentricity persists, but is slowly replaced with social interaction, as illustrated by the 5-year-old who offers a sticking plaster to a child with a cut finger. Children become aware of cause-and-effect relationships, as illustrated by the statement 'The sun sets because people want to go to bed'. Early causal thinking is also evident in preschoolers' transductive thoughts (reasoning occurs from one particular thought to another). If two events are related in time or space, children link them in a causal fashion. The hospitalised child, for example, may reason: 'I cried last night, and that's why the nurse gave me the injection.' As children near age 5, they begin to use (or can be taught to use) rules to understand causation. They then begin to reason from the general to the particular. This forms the basis for more formal logical thought. The child can now reason: 'I get an injection twice a day, and that's why I got one last night' (Wilson 2015).

Preschoolers' knowledge of the world remains closely linked to concrete (perceived by the senses) experiences. Even their rich fantasy life is grounded in the perception of reality. The mixing of these two aspects can lead to childhood fears, and may be misinterpreted by adults as lying when children are actually presenting reality from their perspective. The greatest fear of this age group appears to be that of bodily harm. This can be seen in children's fear of the dark, animals, thunderstorms and medical personnel. This fear often interferes with their willingness to allow nursing interventions such as measurement of vital signs. Allowing preschoolers to help measure the blood pressure of a parent, or hold and manipulate the nurse's equipment, may assist cooperation.

The preschoolers' vocabulary continues to increase rapidly so that by 5 years of age they are able to use more than 2000 words, can define familiar objects, identify colours and express desires as well as frustrations. Speech is more social, with questions expanding to 'Why?' and 'How?' in the quest for information. Phonetically similar words such as *die* and *dye* or *wood* and *would* may cause confusion in preschool children. These aspects of speech development are important to keep in mind when preparing children for procedures and assessing comprehension of explanations. Nurses also need an awareness of normal speech development expectations, as failure to develop speaking skills can be a sign of failure to develop both cognitively and emotionally (Leifer & Fleck 2011).

Psychosocial changes

The preschoolers' world expands beyond the family into the neighbourhood, where children meet other children and adults. Their curiosity and developing initiative lead to the active exploration of the environment, the development of new skills and the making of new friends. Preschoolers have a surplus of energy that permits them to plan and attempt many activities that may be beyond their capabilities, such as pouring milk from a two-litre container into their cereal bowls. Guilt arises within children when they overstep the limits of their abilities and feel they have not behaved correctly. Children of preschool age need help to understand that 'wishing' for something to happen does not make it occur. Children who may have wished their sibling were dead during an expression of anger, for example, experience guilt if that sibling becomes ill. Erikson (1963) recommends parents to help their children strike a healthy balance between initiative and guilt by allowing them to do things on their own, while setting firm limits and providing guidance.

During times of illness or stress, preschoolers may revert to bedwetting or thumb-sucking and want their parents to feed, dress and hold them. Box 16-6 lists behaviours related to stress in preschoolers. These

BOX 16-6 Stress and related behaviours in preschoolers

3-year-old

Infantile behaviour – reverts to babyish ways; can't completely let go of babyhood

Stubbornness – although is developing an interest in social relationships and a concept of 'we', may lapse into uncooperative behaviour

Possessiveness – guards belongings and may be bossy about them

Jealousy – particularly when it comes to parents' love

Separation anxiety

Stranger anxiety

Confusion – cannot always discriminate between fantasy and reality

White lies – may result from wishful thinking, fantasy and desire to please or impress

Imaginary playmate – often blamed for misdeeds

Fears – may be precipitated by imagination, may also fear dogs or other animals

Speech – may stutter or stumble over words

Activity level – seems to be in perpetual motion; may exhaust himself or herself

Eating – may forget to eat or lose interest in food

Nap or bedtime – may fear bad dreams, the dark or missing out on some fun while asleep

Destructiveness – may damage or destroy objects

Questions – continually asks 'why', and is upset if trusted adults do not respond or do not know the answer

4-year-old

Insecurity – may develop nervous habits such as nail biting, facial tics, thumb sucking, genital manipulation, blinking or nose picking; may insist on bringing a familiar item from house to preschool

Exaggerations – may attempt to boost self-image with boasts

Companionship – enjoys interacting with friends, although there may be many quarrels

Silliness – tends to engage in silly play; likes words and is fascinated by rhyming syllables or foul language; is disciplined for lack of control

Property rights – protects belongings; may become bossy

Sex – interested in the human body; may engage in exhibitionism

Activity level – enjoys running, jumping and slamming doors; may be punished for disruptive behaviour

Fears – picks up fears from adults; may fear dark room, snakes and lizards or anything perceived as 'creepy'

Attention – likes to talk and is frustrated if ignored or put off; whines to get own way

5-year-old

Approval – parents' love and acceptance are vital; seeks praise

School – may have difficulty adjusting to kindergarten

Separation anxiety – particularly fears loss of mother

Infantile behaviour – may occasionally lapse into babyish behaviour as a result of realising that babyhood has ended

Worrying – may develop irrational fears, take information out of context or fret over a misinterpreted, overheard conversation

Masturbation – is concerned about being 'bad'

Belongings – protects possessions

Showing off – performs in order to gain praise

Procrastination – may dillydally now and then

Name-calling – insults others to boost self-image but is upset when she or he is the victim of mockery

Kuczen B 1982 Childhood stress: don't let your child be a victim. Delacorte Press, New York.

dependent behaviours are often confusing or embarrassing to parents, who may benefit from reassurance that they are normal preschooler coping behaviours. Offering the preschooler experiences that they can master and perceive as successful, helps them return to their prior level of independent functioning. As language skills develop, children should be encouraged to talk about their feelings. Play is also an excellent way for preschoolers to vent frustration or anger and is a socially acceptable way to deal with stress.

Preschool play

The play of preschool children becomes more social after the third birthday as it shifts from parallel to associative play. In many play activities, preschoolers display awareness of social context. Sex-role identification is strengthening, and children most often assume roles of persons of their own sex (Rathus 2014). Children often mimic or repeat social experiences. This tendency is especially significant for the nurse working with hospitalised children. Through play, children may express questions, fears, anger and misunderstanding about their illnesses and care. The nurse should be alert to such clues and ensure that children can play within their physical possibilities and energy limits. Play can provide a healthy outlet for frustration when children have been subjected to painful or restrictive experiences against their will.

Pretend play involving imaginary situations depends on children's ability to retain images of things they have seen or heard. This sociodramatic play involving other children occupies about a third of 5-year-old children's playtime. Pretending allows children to learn to understand others' points of view, develop skills in solving social problems and become more creative. Some children have imaginary playmates. These playmates serve many purposes – they are friends when the child is lonely, they can accomplish what the child is still attempting, and they can experience what the child wants to forget or remember. Imaginary playmates allow the child to distinguish between reality and fantasy and are healthy inventions (Berk 2014). Children who watch a great deal of television engage less often in imaginative play, possibly because they develop the habit of passively absorbing images rather than generating their own (Wilson 2015).

• CRITICAL REFLECTION POINT

Play is considered to be the occupation of childhood. Through play, cognition, language and social skills all develop. Hospitalisation is a major stressor for the preschooler and may limit opportunities for play. If you were designing a paediatric inpatient service, take a moment to think about the environment and resources that would be helpful to create a space that would promote/allow play. You may find the following resource helpful: The Association for Wellbeing for Children in Healthcare Policy relating to the provision of play for children in hospital, www.awch.org.au/pdfs/AWCH_Play_Provision_Policy.pdf

Moral development

Lawrence **Kohlberg** is a recognised moral theorist who provides a developmental perspective aligned to the work of Piaget (Table 16-1). **Moral developmental theories** attempt to explain how the child constructs their schema of right and wrong. During toddlerhood, moral development is at beginning stages and is closely associated with cognitive abilities. It is theorised that toddlers do not understand concepts of right and wrong but do understand that some behaviours bring pleasant results (positive reinforcement) and others elicit unpleasant results (negative reinforcement). The moral development of the preschool child expands to include a beginning understanding of behaviours considered socially right or wrong. However, the child continues to be motivated by the wish to avoid punishment or the desire to obtain a reward. The main difference between this stage of moral development and that of a toddler is that a preschooler is better able to identify behaviours that elicit rewards or punishment, and begins to label these behaviours as right or wrong (Berk 2014, Leifer & Fleck 2013).

• CRITICAL REFLECTION POINT

Take time to reflect on the cognitive and moral development of the preschooler and think about how their understandings of the world and events within that world may affect the nursing care you give. For example, an unpleasant procedure may be perceived as punishment for wrongdoing; if so, how would you approach such a situation?

Other preschooler health considerations

Safety

Falls become much less of a problem as fine and gross motor skills develop and the child becomes more coordinated with better balance. Guidelines for injury prevention in the toddler also apply to the preschooler (Table 16-9) with particular awareness in this age group to the risks of poisoning and pedestrian motor vehicle accidents.

Nutrition

Nutrition requirements for the preschooler are similar to toddlerhood. The average recommended daily intake is 7500 kilojoules. Parents may still worry about the amount of food their child is consuming. The quality of the food is more important than quantity in most situations. Preschoolers consume about half of the average adult portion. Fussy eating habits are characteristic of the 4-year-old, but the 5-year-old is more interested in trying new foods (see *Online resources*).

Sleep

The average number of hours of nocturnal sleep for children reduces over time. Preschoolers average 12 hours of sleep a night and take infrequent naps. Although children of this age group tend to sleep soundly, sleep disturbances are not uncommon. Disturbances may range from trouble getting to sleep, nightmares, or prolonging bedtime with extensive rituals. Preschoolers frequently have an overabundance of activity and stimulation during the day, so helping them to slow down before bedtime and instigating pre-bedtime routines, such as reading/story-telling usually results in less resistance.

School-age children and adolescents

School-age children and adolescents lead demanding and challenging lives. The developmental changes between 6 and 18 years of age are diverse, with physical,

psychosocial, cognitive and moral skills being expanded and refined. The environment also expands and develops, incorporating family, friends, school, community and spiritual influences. When assessing school-age children and adolescents, it is important to keep developmental theories and their associated age expectations in mind. According to Erikson, children in this age group strive to achieve a sense of identity and industry within a given social and moral context. Working through this period of development, the younger child establishes their own peer group while the adolescent often starts to engage in risk-taking behaviour. There are many other behavioural considerations for this age group, as identified in Table 16-10.

TABLE 16-10 Developmental behaviours of school-age children and adolescents

School-age children	Adolescents
Relationships with parents	
Children gradually learn that parents are less than perfect; they can be disillusioned with them and wish that friends' parents were their own. Sometimes they believe that they must be adopted. They rely on parents for unconditional love, security, guidance and nurturing.	Adolescents' desires for increasing independence and autonomy and continuing need for some dependence and limit-setting by parents place strain on their relationship. Effective communication and democratic parenting are the best tools for meeting this challenge.
Relationships with siblings	
School-agers seem to be at odds with one another at home; yet they are each other's best defenders away from home. Younger children often idolise older siblings, and this frequently leads to competition. Older children may envy attention that younger siblings require and be quite bossy and somewhat abusive.	Younger siblings rarely understand their adolescent siblings' need for privacy to think, dream and talk with peers. Adolescents often enjoy interacting with and guiding younger brothers and sisters when timing is convenient for them and they can remain in control.
Relationships with peers	
During primary school (6–9 years), children of both sexes play together, depending on who is available and interested. Around age 8, social groupings of same-sex peers form. These 'gangs' allow children to declare their independence from parental rules and establish their own secret codes or languages and rules of membership and behaviour. This period is often referred to as the secret society of childhood. Preadolescent (10–12 years) friendships are characterised by having best friend of same sex. These relationships may be transient, but they are intense and allow discussion of all areas of life. Some interest in heterosexual relationships develops but they are usually not reciprocated.	Peer group is a factor of critical influence to adolescents, who have increasing need for recognition and acceptance. Companionship offered by peer groups provides a secure environment for individuals to try out new ideas and share similar feelings and attitudes. Adolescents often form cliques with peers from the same socioeconomic group with similar interests. Cliques, which are highly exclusive, help their members, who have strong emotional bonds, develop their identities. The crowd, which is more impersonal than the clique, offers opportunities for heterosexual interaction and social activities. The crowd also maintains rigid membership requirements; clique membership is usually a prerequisite for crowd membership.
Self-concept	
Children's feelings of competence regarding mastery of tasks are key elements in forming self-esteem. Children need to receive positive feedback from teachers and parents regarding their efforts. It is important for children to develop skills in at least one area such as reading, music or swimming. Pets that require children's care and attention reward them with unconditional love and promote feelings of self-worth.	Formal and informal peer groups are the primary force in shaping self-concept of group members. Popularity and recognition within peer group enhance self-esteem and reinforce self-concept. Total immersion in peer group may make it appear that adolescents have no original thoughts and are incapable of making decisions. Adolescents who withdraw from peers into isolation struggle with developing identity.
Fears	
There is a decline in fears related to body safety, such as storms, dogs, darkness, noises, scrapes and scratches. Fears of the supernatural, such as ghosts and witches, persist and decline slowly. New fears related to school and family occur. They fear ridicule from teachers and friends and disapproval and rejection of parents. They also become frightened about death and items that they hear on news such as war and destruction of environment.	Fears in this age group centre around peer group acceptance, body changes, loss of self-control and emerging sexual urges. Adolescents constantly examine their bodies for changes and signs of imperfection. Any defect, real or imagined, is a cause of endless worry. Adolescents' developing awareness of economic and political problems may result in fear of going to war with its resulting death and destruction.

continued

TABLE 16-10 ***continued***

School-age children	Adolescents
Coping patterns	
To deal with stress, school-agers use problem-solving and defence mechanisms including regression, denial, aggression and suppression. Several categories of coping behaviours of hospitalised school-agers include inactivity (total silence, lack of activity and apathy), orientation or precoping (looking and listening, walking around and exploring, and asking questions), cooperation (compliance with care), resistance (attempt to get away from the situation by turning away or making physical or verbal attacks) and controlling (assuming responsibility for self-care and suggesting how things could be done).	Repertoire of coping behaviours has expanded with experiences adolescents have gained from life and from developing cognitive maturity. By age 15, most use full range of defence mechanisms, including rationalisation and intellectualisation. Adolescents' problem-solving abilities have matured, and they can reason through philosophical discussions and complex situations that require abstract thinking and proposition of hypotheses. Some adolescents use avoidance coping strategies in which the problem is denied or repressed and an attempt is made to reduce tension by engaging in chemical abuse or avoiding people.
Morals	
Children learn rules from parents, but their understanding of rules or reasons for them is limited until about 10 years. Before that, they are concerned with their own needs first and may cheat to win. After 10, justice is based on 'eye for an eye', and punishment should correct situation (e.g. if children break something, they should pay to have it fixed).	According to Kohlberg (1964), as youths approach adolescence they reach the conventional level, where internalisation of expectations of their family and society begins. Initially there is considerable conformity to rules to win praise or approval from others and to avoid social disapproval or rejection; later, they seek to avoid criticism from persons of authority in institutions.
Diversional activity	
School-agers play cooperatively in group activities such as skipping, hopscotch, soccer and basketball. Play becomes competitive, and children often have difficulty learning to lose. Teasing, insults, dares, superstitions and increased sensitivity are characteristics of this age.	Many teenagers develop special interests in certain sports and concentrate on developing maximal skills therein. Recreational activities are often determined by what is popular with peers and what can provide independence from parents (e.g. computers, cars).
Nutrition	
Children have definite likes and dislikes. Few nutritional deficiencies occur in this age group. Children have voracious appetites after school and need quality snacks such as fruit and sandwiches to avoid empty-kilojoule food such as chips and lollies.	Total nutritional needs become greater during adolescence. Girls' energy needs decrease, and their need for protein increases slightly. Iron needed by adolescents is almost twice that of adult men, and growth spurt increases calcium demand.

Rodgers CC 2015 Health promotion of the school age child and family. In Hockenberry MJ, Wilson D 2015 Wong's essentials of pediatric nursing, 10th edn. Mosby, St Louis.

• CRITICAL REFLECTION POINT

This would be a good time to reflect on how the information provided in Table 16-10 might guide you in conducting a thorough clinical nursing assessment and ongoing plan of care. After you have done the thinking, make sure you take the time to write your hard work down and place it in your professional portfolio.

Middle childhood

Middle childhood is generally described as the period between 6 and 12 years of age (Box 16-1). This period coincides with entry to school, as well as greater exposure to adult roles in work, recreation and social interaction. As the child and young person is exposed to these various educational and social interactions, their world expands and they undergo a transition from a life of relatively free play to a life of structured play, learning and work, where certain rules, expectations and social norms become incorporated into their sense of who they are. As a consequence, the child or young person begins to make decisions, accept responsibility and learn from life's experiences.

Physical changes

The rate of growth during the early school years is slower than at any time since birth, but continues steadily. The early school-age child appears slimmer than the preschooler, as a result of changes in fat distribution and thickness. Children in the middle years also experience differences in rate of growth, with approximate averages for height and weight being 5 cm and 2–3 kg respectively per year (Glasper & Richardson 2010).

School provides children with an opportunity to compare themselves with large numbers of other children of varying ages. Boys are slightly taller and heavier than

girls during these early school years. Approximately 2 years before puberty, children experience a rapid acceleration in skeletal growth. Girls, who reach puberty first, often begin to surpass boys in height and weight. These changes may begin as early as 7.5 years in girls and 10.5 years in boys; the average, however, is generally 10 and 12 years respectively (Glasper & Richardson 2010).

All body functions are refined and stabilised during the early school-age years, leading to changes in heart rate, blood pressure, respiratory rate and lung function, as shown in Table 16-6. Large-muscle coordination, strength, and gross and fine motor skills also improve and strengthen during this period. Activities of childhood, such as running, jumping, balancing, throwing and catching, writing and colouring, and computer games, all contribute to refinement of neuromuscular function and skills. Table 16-11 describes the specific gross motor and fine motor skills of the school-aged child and how they may be used in managing self-care in this group.

In the middle years, illness and hospitalisation threaten children's control of how they care for themselves. It is therefore important to allow them to participate in their own care and to maintain as much independence as possible. This participation is still possible for children whose care demands restriction. One example might be a child who is fluid restricted. In this situation the child may be able to choose the type of fluid they consume and when they consume it.

Other physical changes take place during the middle school-age years, such as steady skeletal growth in the trunk and extremities, together with small- and long-bone ossification, which is generally complete by 12 years of age. With this pattern of skeletal growth, body appearance and posture change. Earlier posture, which

TABLE 16-11 Motor development in the school-age child

6–7 years	8–10 years	10–12 years
Fine motor skills		
Uses knife to butter bread and learns to cut tender meat	Uses knife and fork simultaneously	Learns to peel apples and potatoes
Cuts, folds and pastes paper	Learns to thread needle and tie knot	Sews simple garments on machine
Prints with pencil	Uses hammer, saw and screwdriver	Builds simple objects like bird-house
Draws man with 12–16 details	Becomes proficient at writing cursive	Enjoys using decorative script
Copies triangle at 6 years and diamond by 7 years	Uses symbols in drawing (e.g. bird, star)	Begins to use creative and artistic talents
Colours within lines of picture	Builds simple models of cars and planes and does simple handicrafts	Builds complex models of cars and planes and does complex handicrafts
Needs assistance to clean teeth thoroughly	Learns to play marbles	Learns to play musical instrument
	Can learn to floss teeth effectively and be independent in tooth care	Becomes proficient in caring for teeth with braces and other appliances
Gross motor skills		
Remains in constant motion	Can catch, throw and hit ball	Can do standing broad jump of 1.5 m
Moves more cautiously at 7 years than at 6 years	Engages in alternate rhythmic hopping in 2–2 2–3 or 3–3 pattern	Can do standing high jump of 90 cm
Hops and jumps into small squares	Engages in complex styles of skipping rope accompanied by verbal jingles	Plays games involving simultaneous use of two or more complex motor skills such as rollerskating
Learns to rollerskate, skip, ride bicycle and swim		
Self-care		
Takes bath without supervision	Learns to clean bathroom after bath	Dusts, vacuums and straightens own room
Often returns to finger feeding	Enjoys fixing own snacks and school lunch	Learns to cook simply prepared foods
Learns to brush and comb hair in acceptable fashion without help	Learns to part hair and tie hair ribbons	Washes, dries and fixes own hair in plaits, curls and ponytails
Puts on most clothes but may need assistance with shirt-tails, sashes and final adjustments	Dresses self completely and can help younger siblings with clothes	Learns to sort, wash, dry and iron own clothing
	Can make own bed	Learns to care for fingernails and toenails

Rodgers CC 2015 Health promotion of the school age child and family. In Hockenberry MJ, Wilson D 2015 Wong's essentials of pediatric nursing, 10th edn. Mosby, St Louis.

was characterised by a stoop-shouldered, slightly lordotic stance and prominent abdomen, changes to a more erect posture. Facial bones grow and remodel, which is reflected in an alteration of eye shape that results in improved visual acuity and the attainment of normal adult vision. Screening for vision and hearing problems is easier, and results are more reliable because middle school-age children can more fully understand and cooperate with the test directions. Dental growth is rapid during the middle school-age years with the first permanent teeth erupting at approximately 6 years of age. Figure 16-6 illustrates the pattern and timing of dental shedding and eruption.

Cognitive changes

Cognitive changes in the middle school-age child offer the ability to think in a logical manner about the here and now, but not about abstraction. The thoughts of middle school-age children are no longer dominated by their perceptions, and their ability to understand the world greatly expands. Piaget identifies this period of maturing cognitive ability as 'concrete operational'. In this developmental stage, the middle school-age child and young person are able to use symbols to carry out operations in thought, rather than in action. They begin to use logical thought processes or mental activities to deal with concrete materials (objects, people and events they can touch and see).

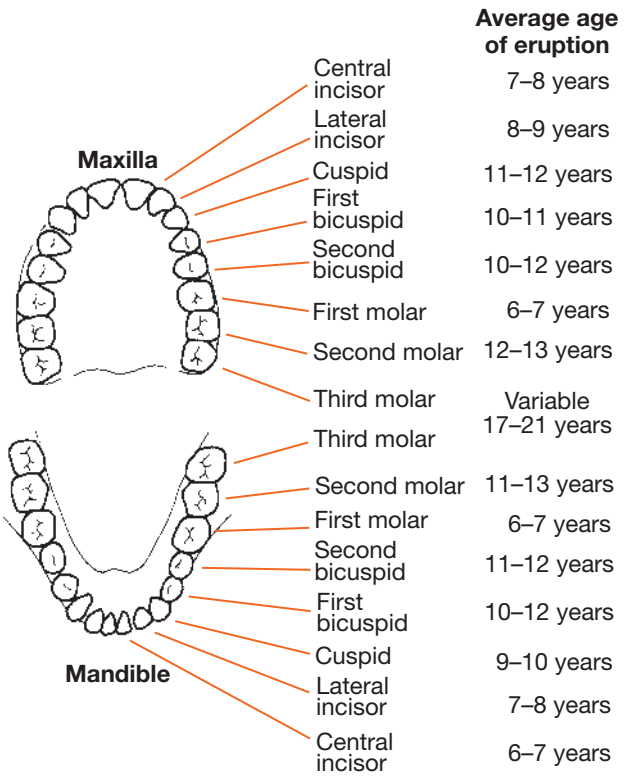


Figure 16-6 Sequence of eruption of secondary teeth.

Hockenberry MJ, Wilson D 2015, Wong's Nursing care of infants and children 10th edition, Mosby, St Louis.

Middle school-age children can use their newly developed cognitive skills to solve problems. Some children are better than others at problem-solving because of native intelligence, education and experience. Parents and health professionals can help middle school-age children improve their problem-solving abilities and assume responsibility for their general health by helping them to articulate problems and by actively planning care with them around their healthcare needs (Glasper & Richardson 2010). For example, when a child is newly diagnosed with type 1 diabetes, the nurse will play an integral part in assisting the child and their family to meet the new demands and challenges of this chronic illness.

• CRITICAL REFLECTION POINT

Can you think of strategies you might use in caring for the child and their family described above?

Language development is rapid during the middle school-age years, with the average 6-year-old child having a vocabulary of approximately 3000 words. This quickly expands with the introduction to formal reading, exposure to peers and contact with adults. With this exposure, children understand the use of language and realise that words have arbitrary, rather than absolute, meanings. Children within the middle years can use different words for the same object or concept, and understand that a single word may have many meanings. In the healthcare setting, middle school-age children are able to use their understanding of language to articulate their health problems and understand the consequences of that articulation. For example, a child complaining of pain might receive pain relief in the form of an injection; as a consequence of that experience, the child might not verbalise when they are next in pain due to the negativity experienced with that injection. Therefore, health professionals cannot always rely on the use of language for accurate clinical assessment when caring for middle school-age children.

Psychosocial changes

Erikson (Table 16-1) identified the developmental task for middle school-aged children as 'industry versus inferiority' (Leifer & Fleck 2013). During this time, children strive to acquire the competence and skills necessary for them to function as adults. School-age children in the middle years who are positively recognised for success feel a sense of worth. Those faced with failure

can feel a sense of mediocrity or unworthiness, which may result in withdrawal from school and peers. Refer back to Table 16-1 and consider the school-age child and young person's need for a moral code and social rules that are cognisant with their cognitive abilities.

As the child progresses into middle years, social and moral codes assume even greater importance to positive growth and development experiences as a young person. For example, 12-year-olds are able to consider what society would be like without rules because of their ability to reason logically and their experiences with group play. They view rules as necessary principles of life, not just dictates from authorities. In the early school years, children strictly interpret and adhere to rules. As they develop, they make more flexible judgements and evaluate rules for applicability to a given situation. Middle school-age children consider motivations and the actual behaviour when making judgements about the way their behaviours affect themselves and others. The ability to be flexible when applying rules and taking the perspective of others is essential in developing moral judgements. These abilities are present at times in earlier years, but are more consistently displayed in middle and later school years.

Group and personal achievements, and success in physical and cognitive activities, are important to the middle school-age child (Figure 16-7). Play involves peers and the pursuit of group goals. Although solitary activities are not eliminated, they are overshadowed by group pursuits. Learning to contribute, collaborate and work cooperatively towards a common goal becomes a measure of success. The middle school-age child prefers same-sex peers to opposite-sex peers and this close network of same-sex companions evidences strong gender identity. In general, girls and boys view the opposite sex negatively and peer influence becomes quite diverse. Conformity is evidenced in mannerisms, clothing styles and speech patterns, which are reinforced and influenced by contact with peers. During this time, clubs and peer groups become prominent. Group identity increases as the middle school-age child approaches adolescence.



Figure 16-7 **School-age children gain a sense of achievement when playing with peers.**

iStockphoto/Photo_Concepts.

The eminent psychologist Sigmund Freud was the first to provide a structured and complex theory of personality development. Freud's theory is grounded in the belief that two internal biological forces (aggressive and sexual forces) essentially drive psychological change in the child. Freud believed that the major motivation for behaviour is to achieve pleasure and avoid the pain created by these aggressive and sexual forces. Maturational changes occur as these forces come into conflict with the reality of the world. Table 16.1 provides a brief overview of Freud's five psychosexual developmental stages. Freud described middle childhood as a period of latency, where children have little interest in their sexuality. Yet in contemporary society, various forms of media emphasise the sexual curiosity of middle schoolers. While some children may experiment with sexuality through play, this is usually transitory. Emotional consequences can result from how parents deal with these behaviours or how the child believes the action would be interpreted from the parental point of view. Children's curiosity about adult magazines, or meanings of sexually explicit words, is another example of interest in sexuality during this period of development (The National Child Traumatic Stress Network 2009).

The middle school-age child goes through many adjustments. During this stage, the nurse's role is more likely to involve assisting parents and children to identify potential stressors and designing interventions to minimise the child's stress response to illness. Box 16-7 provides an overview of potential sources of stress encountered by middle school-age children.

• CRITICAL REFLECTION POINT

Take a moment to reflect on your own journey through school and the stressors you may have encountered. How did you manage them?

Other middle childhood health considerations

Major health problems

Injuries, poisonings and cancer (leukaemia and solid brain tumour) are the major health problems affecting Australian middle school-age children (ABS 2014). It is therefore crucial that those caring for children in

BOX 16-7 Potential sources of stress in middle childhood

Sources of stress for the 6-year-old

Expectations – parents, teachers and other adults begin to demand more

School – first year introduces the child to the more formal academic setting; it may be the child's first experience away from home all day

Activity level – may find it difficult to sit still for long periods of time; may have frequent accidents, such as spilling milk

Competition – the child wants to be 'first' or best

Shyness – may initially be shy in a new situation but usually recovers quickly

Aggression – may become hostile or aggressive; temper tantrums peak

Sensitivity – begins to read body language or facial expressions and becomes upset when disapproval is sensed

Teasing – engages in teasing, but becomes upset when on the receiving end

Decisions – has difficulty coping with increasing independence

Jealousy – sibling rivalry is common

Fears – usually centre around newly found independence and might include fear of getting lost or fear of making an embarrassing social blunder

Sources of stress for the 7-year-old

Moodiness – is often moody, unhappy or pensive

Approval – continues to need praise and approval from peer group and parents

Modesty – demands privacy when in the bathroom or dressing

Organisation – is comfortable with rules, regulations, routines and order; becomes upset when they are disrupted

Interruptions – hates to be disturbed when intensely involved in an activity

Idols – has a desire to be more like an admired idol

Friendship – becomes more selective about playmates

Sources of stress for the 8-year-old

Self-criticism – is very critical of personal ability and performance

Parental authority – is beginning to resent parental authority

Loneliness – likes frequent interaction with friends; may hate to miss school

Praise – continues to seek approval but can identify when praise is not genuine

Independence – many begin to stay alone for brief periods of time while parents run errands, with resulting feelings of uneasiness

Sources of stress for the 9-year-old

Rebelliousness – occasionally tests independence by rebelling

Opposite sex – engages in sex-segregated play, expresses an aversion to the opposite sex

Fair play – has a keen sense of what is fair and is vehement in demanding personal rights when a situation is perceived as unfair

Interruptions – continues to dislike interruptions but will usually resume an activity after an interruption

Propriety – has a sense of propriety and will often be upset if siblings or parents offend the child's notion of decorum or dignity

Sources of stress for the 10–12-year-old

Sexual maturation – girls, in particular, may become self-conscious regarding obvious signs of development

Social issues – a new level of awareness can generate concern regarding pressing societal problems

Size – both boys and girls may be upset by the fact that the girls are taller; the extremely small or extremely large child may be concerned about their size

Shyness – if the child already has a problem in this area, it will probably become more pronounced at this stage

Opposite sex – may become interested, yet shy, around members of the opposite sex

Confusion – too much freedom can cause the child to flounder

Health – it is not uncommon for a child to become a hypochondriac during this period of development

Money – child is anxious to earn and handle money, but often uses poor judgement

Competition – continues to be highly competitive and looks to peer group for prestige

Burnout – child may become vigorously involved in so many activities that he or she finally becomes exhausted

Self-concept – may engage in teasing, scapegoating or vicious attacks to temporarily boost their self-image; guilt often ensues; may be self-conscious about attempting a new skill

Parents – often becomes highly critical or intolerant of parents

Idols – continues hero worshipping

Fair play – continues to have a highly developed sense of fair play

Drugs and sex – may be tempted to experiment with drugs or sex because 'everyone' is doing it

Peer pressure – becomes a powerful motivating force

Self-criticism – child may be highly critical of personal performance

Kuczen B 1982 Childhood stress: don't let your child be a victim. Delacorte Press, New York.

the middle years understand the relationship between developmental abilities related to risk of injury and appropriate prevention strategies (see Table 16-12).

Long-term or chronic conditions also occur in the middle school-age years and are most commonly allergy-related conditions such as asthma, hay fever, sinusitis and eczema. Otitis media and eyesight problems are the next most common long-term conditions. This age group are also more likely to experience common health complaints such as colds, coughs, sore throats or influenza (ABS 2014).

Certain groups of middle school-age children are more prone to disease and disability, such as those with an intellectual disability, mental health disorder, learning disorder or sensory impairment. There is a well-known correlation between poverty and the prevalence of illness at any age. Children living in impoverished circumstances are often malnourished and have limited access to health care, health promotion or health prevention initiatives. A search of the relevant government's health website will identify some of the major health challenges experienced by disadvantaged families and specific cultural communities. Involvement with social reform, environmental change and person-centred methods of healthcare delivery is necessary to positively influence the future health of children and their families.

TABLE 16-12 Injury prevention during school-age years

Developmental abilities related to risk of injury	Injury prevention
Motor vehicles	
Is increasingly involved in activities away from home	Educate child regarding proper use of seatbelts when they are a passenger in a vehicle
Is excited by speed and motion	Maintain discipline while a passenger in a vehicle (e.g. keep arms inside, do not lean against doors or interfere with driver)
Is easily distracted by environment	Remind parents and children that no one should ride in the back of a ute or truck
Does not always perceive injury risk	Emphasise safe pedestrian behaviour
Can be reasoned with	Insist on wearing safety apparel (e.g. helmet) where applicable, such as when riding a bicycle or motorcycle
Drowning	
Is apt to overdo	Teach child to swim
May work hard to perfect a skill	Teach basic rules of water safety
Is cautious, but not fearful	Select safe and supervised places to swim
	Check sufficient water depth for diving
	Swim with a companion
	Use an approved flotation device in water or boat
	Adhere to legislation requiring fencing around pools
	Learn cardiopulmonary resuscitation (CPR)
Burns	
Has increasing independence	Make sure smoke detectors are in homes
Enjoys trying new things	Set hot-water temperatures to 50°C to avoid scald burns
	Instruct child in behaviour in areas involving contact with potential burn hazards (e.g. petrol, matches, bonfires or barbecues, lighter fluid, firecrackers, cigarette lighters, cooking utensils, chemistry sets); avoid climbing or flying kites around electricity wires
	Instruct child in proper behaviour in the event of fire (e.g. fire drills at home and school)
	Teach child safe cooking (use low heat, avoid frying, be careful of steam burns, scalds or exploding foods, especially from microwaving)
Substance abuse and poisoning	
May be easily influenced by peers	Educate child regarding hazards of taking non-prescription drugs and chemicals, including aspirin and alcohol
Has strong allegiance to friends	Teach child to say 'no' if offered illegal or dangerous drugs or alcohol
	Keep potentially dangerous products in properly labelled receptacles – preferably locked and out of reach

continued

TABLE 16-12 ***continued***

Bodily damage	
Has increased physical skills	Help provide facilities for supervised activities
Needs strenuous physical activity	Encourage playing in safe places
Is interested in acquiring new skills and perfecting attained skills	Keep firearms safely locked up except during adult supervision
	Teach proper care of, use of and respect for devices with potential danger (power tools)
Is daring and adventurous, especially with peers	Teach children not to tease or surprise dogs, invade their territory, take dogs' toys or interfere with dogs' feeding
Frequently plays in hazardous places	Stress eye, ear or mouth protection when using potentially hazardous objects or devices or when engaged in potentially hazardous sports (e.g. football)
Confidence often exceeds physical capacity	Teach safety regarding use of corrective devices (glasses); if child wears contact lenses, monitor duration of wear to prevent corneal damage
Desires group loyalty and has strong need for friends' approval	Stress careful selection, use and maintenance of sports and recreation equipment such as skateboards and inline skates
Attempts hazardous feats	Emphasise proper conditioning, safe practices and use of safety equipment for sports or recreational activities
Accompanies friends to potentially hazardous facilities	Caution against engaging in hazardous sports, such as those involving trampolines
Delights in physical activity	Use safety glass and stickers on large glassed areas, such as sliding glass doors
Is likely to overdo	Use window guards to prevent falls
Growth in height exceeds muscular growth and coordination	Teach name, address and phone number and to ask for help from appropriate people (cashier, security guard, policeman) if lost; have identification on child (sewn in clothes, inside shoe)
	Teach stranger safety: – avoid personalised clothing in public places – caution child to never go with a stranger – have child tell parents if anyone makes child feel uncomfortable in any way – always listen to child's concerns regarding others' behaviour – teach child to say 'no' when confronted with uncomfortable situations

Modified from Rodgers CC 2015, Health promotion of the school age child and family. In MJ Hockenberry & D Wilson (eds) 2015 Wong's Nursing care of infants and children, 10th edition, Mosby, St Louis.

Perceptions of wellness

During the middle school-age years, identity and self-concept become stronger and more individualised. Perceptions of wellness are based on readily observable facts, such as the presence or absence of illness and adequacy of eating or sleeping. Functional ability is the standard by which personal health and the health of others are judged. The middle school-age period is crucial for the acquisition of behaviours and practices for a healthy adult life. As cognition advances, possibilities for developmentally appropriate and effective health education increase. The promotion of good health practices is frequently organised and conducted within the school environment, with the support of school-based nurses working within a primary healthcare framework. Nurses support curriculum planning, teaching and learning about heath and self-care. They provide advice and information on health matters, conduct individual consultations and screening, immunisation and dental care, and are strong advocates for young people. Age-appropriate input on topics such as alcohol, drugs, tobacco, HIV, menstruation, sexual intercourse, sexually transmitted infections, reproduction, relationships and identity are all-important aspects of nursing work with middle school-age children.

Safety and nutrition

Since accidents are a leading cause of death and injury in the middle school-age period, safety is a priority health consideration. Children and young people should be encouraged to take responsibility for their own safety. Nurses working with middle school-aged children can contribute to meeting national policy goals by role-modelling healthy behaviours, promoting healthy lifestyle habits, including maintaining healthy weight and nutrition, and promoting safety measures to prevent accidents. Middle school-age children should participate in educational programs that enable them to plan, select and prepare healthy meals and snacks. Box 16-8 outlines several learning activities appropriate for this age group.

Although actual growth may slow during the middle school-age period, the body is preparing for a pubescent

BOX 16-8 School-based interventions to promote healthy nutrition

- Have young children collect pictures of healthy foods and make a poster for display in the school cafeteria.
- Make healthy foods (fruits, vegetables, whole grains, low-fat snacks) available in school vending machines and at school sporting events.
- Discourage the use of high-fat foods (lollies and chocolates) as part of school fund-raising projects.
- Avoid the use of food as rewards for behaviour; use verbal praise and token gifts to reinforce healthy eating and physical activity.
- Have teachers and school personnel model healthy eating habits.
- Ask children to select foods from a fast-food restaurant menu and to identify those foods high in fat, cholesterol and sodium.
- Ask each child to keep a diary of foods eaten in one day; using the food pyramid, evaluate these foods.
- Incorporate nutrition education into other classes (such as using a computer to analyse the nutritional content of foods).
- Have students keep a diary to identify cues for their eating behaviour (e.g. hunger, stress, other people, social situations).
- Teach students how to read and discuss the nutrition labels on foods.
- Ask students to examine television commercials, magazine advertisements and billboards to identify social influences on eating and physical activities.
- Use role-playing to help students learn to cope with social and peer pressures to eat specific foods.
- Have students identify environmental barriers to healthy eating.
- Have students prepare nutritious foods, plan menus and develop a recipe book of healthy foods.
- Involve parents in nutrition education through homework assignments or by inviting parents to attend student-led nutrition fairs.

St Ledger L, Young I, Blanchard C, Perry M 2010 Promoting health in schools. From evidence to action. Online. Available: www.dhhs.tas.gov.au/__data/assets/pdf_file/0007/117385/PHiSFromEvidenceToAction_WEB1.pdf; accessed 25 April 2015.

growth spurt, with a build-up of weight occurring at this time. Additional weight should not be a concern if the child has healthy eating habits in place. Children are invariably hungry after school and providing access to fresh fruit, raw vegetables, cheese and high-protein nutritious snacks is often the best way for a parent to ensure good nutritional intake. Children and young people can learn a great deal about a balanced diet by helping to prepare their own lunches and snacks.

Activity levels vary from day to day, and children's appetites and consumption of food varies accordingly. When children are overweight, they should be encouraged to increase their expenditure of kilojoules through exercise and vigorous play. Children who become overweight have lower self-esteem, have difficulty keeping up with other children in physical activities and may be rejected by their peer group (see *Online resources*).

• CRITICAL REFLECTION POINT

What do you know about current initiatives in the area of childhood obesity?

Preadolescence

Behavioural scientists often refer to the transitional period between middle childhood and adolescence as **preadolescence**. Others have referred to this period as late childhood, early adolescence and pubescence (Box 16-1). Physically, this developmental stage refers to the beginning of the second skeletal growth spurt, when physical changes such as the development of pubic hair and female breasts begin. These physical changes announce the approach of puberty and begin about two years earlier in girls than in boys. Children become much more social, and their behavioural patterns become much less predictable.

Development of close social networks of both same- and opposite-sex peers commences during the period of preadolescence. This expanded network may progress to new intimate relationships and is likely to influence the beliefs, perceptions and actions of this age group. These newly acquired social relations extend beyond immediate peers to other adults, providing the preadolescent with an opportunity to gain information regarding the attributes necessary for social and emotional maturity.

Adolescence

Adolescence is the period of development during which an individual makes the transition from childhood to adulthood, usually between 13 and 20 years (Box 16-1). The term adolescent usually refers to the psychological maturation of the individual, whereas **puberty** refers to the point at which reproduction becomes possible. The hormonal changes of puberty result in changes in the appearance of the young person, while mental development results in the ability to hypothesise and deal with abstractions. Adjustments and adaptations are needed to cope with these simultaneous changes and the attempt to establish a mature sense of identity. These adaptations

push the adolescent to develop coping mechanisms and styles of behaviour that will be used throughout life. Table 16-13 gives an overview of three sub-phases which are said to exist during the period of adolescence – early, middle and late adolescence.

A good understanding of development offers a unique perspective for helping teenagers and parents anticipate and cope with the stresses of adolescence. Nursing activities, particularly health education in a variety of settings inhabited by the young person, can promote healthy development.

• CRITICAL REFLECTION POINT

When caring for adolescent patients it is important to establish a partnership so that the adolescent has ownership of their care decisions and is able to maintain some independence. Thinking about Kohlberg's theory outlined in Table 16-1, adolescence is concerned with social responsibility and internalised standards; therefore, negotiation of care would provide an excellent opportunity for health education and promotion. With these thoughts in mind, what health promotion topics would you consider for the adolescent and how would you ensure information was adequately provided?

TABLE 16-13 Growth and development during adolescence

Early adolescence (11–14 years)	Middle adolescence (14–17 years)	Late adolescence (17–20 years)
Growth		
Rapidly accelerating growth reaches peak velocity Secondary sex characteristics appear	Growth decelerating in girls Stature reaches 95% of adult height Secondary sex characteristics well advanced	Physically mature Structure and reproductive growth almost complete
Cognition		
Explores newfound ability for limited abstract thought Clumsy groping for new values and energies Comparison of 'normality' with peers of same sex	Developing capacity for abstract thinking Enjoys intellectual powers, often in idealistic terms Concern with philosophical, political and social problems	Established abstract thought Can perceive and act on long-range operations Able to view problems comprehensively Intellectual and functional identity established
Identity		
Preoccupied with rapid body changes Trying-out of various roles Measurement of attractiveness by acceptance or rejection of peers Conformity to group norms	Modifies body image Very self-centred; increased narcissism Tendency towards inner experience and self-discovery Has a rich fantasy life Idealistic Able to perceive future implications of current behaviour and decisions; variable application	Body image and gender-role definition nearly secured Mature sexual identity Phase of consolidation of identity Stability of self-esteem Comfortable with physical growth Social roles defined and articulated
Relationships with parents		
Defining independence–dependence boundaries Strong desire to remain dependent on parents while trying to detach No major conflicts over parental control	Major conflicts over independence and control Low point in parent–child relationship Greatest push for emancipation; disengagement Final and irreversible emotional detachment from parents; mourning	Emotional and physical separation from parents completed Independence from family with less conflict Emancipation nearly secured
Relationships with peers		
Seeks peer affiliations to counter instability generated by rapid change Upsurge of close, idealised friendships with members of the same sex Struggle for mastery takes place within peer group	Strong need for identity to affirm self-image Behavioural standards set by peer group Acceptance by peers extremely important – fear of rejection Exploration of ability to attract the opposite sex	Peer group recedes in importance in favour of individual friendship Testing of male–female relationships against possibility of permanent alliance Relationships characterised by giving and sharing

continued

TABLE 16-13 ***continued***

Early adolescence (11–14 years)	Middle adolescence (14–17 years)	Late adolescence (17–20 years)
Sexuality		
Self-exploration and evaluation Limited dating, usually socialises with a group Limited intimacy	Multiple plural relationships Decisive turn towards heterosexuality (if homosexual, knows by this time) Exploration of 'self-appeal' Feeling of 'being in love' Tentative establishment of relationships	Forms stable relationships and attachment to another Growing capacity for mutuality and reciprocity Dating as a male–female pair Intimacy involves commitment rather than exploration and romanticism
Psychological health		
Wide mood swings Intense daydreaming Anger outwardly expressed with moodiness, temper outbursts and verbal insults and name-calling	Tendency towards inner experiences; more introspective Tendency to withdraw when upset or feelings are hurt Vacillation of emotions in time and range Feelings of inadequacy common; difficulty in asking for help	More constancy of emotion Anger more apt to be concealed

Modified from Ethington MD, Gallager MR & Wilson D, Health promotion of the adolescent and family. In MJ Hockenberry & D Wilson (eds) 2015, Wong's Nursing care of infants and children, 10th edition, Mosby, St Louis.

Physical changes

Physical changes occur rapidly in adolescence. Sexual maturation occurs with the development of primary and secondary sexual characteristics. *Primary characteristics* are physical and hormonal changes necessary for reproduction. *Secondary characteristics* externally differentiate males from females. The four main aspects of physical development are:

- increased growth rate of skeleton, muscle and viscera
- sex-specific changes, such as changes in shoulder and hip width
- alteration in distribution of muscle and fat
- development of the reproductive system and secondary sex characteristics.

Wide variation exists in the timing of physical changes associated with puberty between sexes, and within the same sex. In general, girls tend to begin their physical changes earlier than boys, with variations more pronounced in boys. The sequence of growth changes in puberty is the same in most individuals (see Table 16-14).

Physical changes during the period of adolescence occur when the hypothalamus begins to produce gonadotropin-releasing hormones. These signal the pituitary gland to secrete gonadotropic hormones. Gonadotropic hormones stimulate ovarian cells to produce oestrogen and testicular cells to produce testosterone. These hormones contribute to the development of secondary sex characteristics such as hair growth and voice changes, and play an essential role in reproduction. The changing concentrations of these hormones are also linked to acne and body odour.

As with increases in height and weight, the pattern of sexual change is more significant than their time of onset. However, being similar to peers is extremely important for adolescents. Any deviation in the timing of physical changes can be extremely difficult for the adolescent, and any large deviations require investigation. Emotional support is important for adolescents undergoing assessment of early or delayed puberty. Even adolescents whose physical changes are occurring within normal timeframes may seek confirmation and reassurance of their normalcy.

Height and weight increases usually occur during the prepubescent growth spurt. The growth spurt generally begins between 8 and 14 years of age for girls with height increases between 5–20 cm, and weight increases of 7–25 kg. The male growth spurt usually takes place between 10 and 16 years of age; height increases by 10–30 cm, and weight increases by 7–30 kg. The final 20–25% of adult height and final 50% of adult weight is gained during this time period (Ethington et al 2015). Girls attain 90–95% of their adult height by **menarche** (the onset of menstruation) and reach their full height by 16–17 years of age, whereas boys continue to grow taller until 18 to 20 years of age. Fat is redistributed into adult proportions as height and weight increase, and gradually the adolescent torso takes on an adult appearance.

TABLE 16-14 Average sequences of physiological changes in adolescence

Characteristics	Girls*	Boys*
Beginning of skeletal growth spurt	8–14½ (peak: 12)	10–16½ (peak: 14)
Beginning of breast development	8–13	
Enlargement of testes and scrotal sac		10–13½
Appearance of straight, pigmented pubic hair, which gradually becomes curly	8–14	10–15
Early voice changes (cracks)		11–14½
Enlargement of penis and prostate gland		11–14½
Menarche	10–18 (average: 12¼)	
Spermatogenesis (ejaculation of sperm)		11–17 (average: 13½)
Ovulation and completion of breast development	14–18 (average: 15½)	
Appearance of downy facial hair		12–17
Appearance of axillary (underarm) hair and increased output of oil and sweat-producing glands, which may lead to acne	10–16	12–17
Widening and deepening of female pelvis, with deposition of subcutaneous fat that gives rounded appearance to body	10–18	
Increase in shoulder width		11–21
Deepening of voice in males, with appearance of coarse and pigmented facial hair and appearance of chest hair		16–21

* Age ranges are in years.

Modified from Ethington MD, Gallager MR & Wilson D, Health promotion of the adolescent and family. In MJ Hockenberry & D Wilson (eds) 2015, Wong's Nursing care of infants and children, 10th edition, Mosby, St Louis.

Although there are many individual and gender differences, growth follows a similar pattern for both sexes. Growth in the length of extremities occurs earliest, making the hands and feet appear very large and the legs very long; the individual often appears awkward and clumsy. At the same time the lower jaw and nose become longer and the forehead higher and wider, as the baby face of childhood disappears. Next the thighs widen; then the shoulders broaden, and growth of the trunk proceeds. Widening of the female hips and broadening of the male shoulders continues throughout adolescence.

Recording individual growth during routine health assessments helps to assess physical development and evaluate any change in pattern. Sustained progression along a growth curve is more important than comparison against a norm. Adolescents are sensitive about physical changes that make them different from peers. For this reason they are generally interested in the normal pattern of growth and their personal growth curves. Sharing information and discussing normal patterns and variations reassures adolescents that their own patterns are normal.

Cognitive changes

The widening social environment of the adolescent continues to shape cognitive capacity, resulting in the highest level of intellectual development described by Piaget as 'formal operations' (Table 16-1). Without an appropriate educational environment, young people who possess sufficient neurological capacity to reach this stage may not attain it. Conversely, those who are guided towards education and rational thinking may reach this stage early. Swartz (2009) notes that adolescence is a time of behaviour change with this age group more likely to initiate 'multiple risk taking behaviours' possibly contributing to potentially preventable health problems associated with smoking, drug and alcohol use, unintended pregnancies, sexually transmitted disease and sedentary habits.

The adolescent develops the ability to solve problems through logical operations. The adolescent can think abstractly and deal effectively with hypothetical problems. When confronted with a problem, the adolescent can consider an infinite variety of causes and solutions. For the first time, the young person can move beyond the physical

or concrete properties of a situation and use reasoning powers to understand the abstract. Middle school-age children think about what is, whereas adolescents can imagine *what might be*. These newly developed abilities allow the adolescent to have more insight and skill in playing games (such as video, computer and board games) that require abstract thinking and deductive reasoning about many possible strategies. An adolescent can even solve problems requiring simultaneous manipulation of several abstract concepts.

Development of these higher-level abilities is clearly important for the pursuit of education and for establishing an identity. For example, newly acquired cognitive skills allow the adolescent to define appropriate, effective and comfortable sex-role behaviours and to consider their impact on peers, family and society. The ability to think logically about these behaviours and their outcomes encourages the adolescent to develop personal thoughts and means of expressing sexual identity. In addition, a higher level of cognitive functioning makes the adolescent receptive to more detailed and diverse information about people and their behaviours.

By mid-adolescence there is an introspective quality emerging with regard to cognition. At this time adolescents believe an 'imaginary audience' (Elkind 1998) provides them with an evaluative means and a sense of being unique. This concept may account for some typical adolescent behaviour, including self-consciousness and the desire for privacy. Elkind (1998) also describes another characteristic of cognitive function, the personal fable. This is a story created by the adolescent that is not true. This developmental milestone may account for undesirable risk-taking behaviours, since the adolescent believes they are immune from negative consequences.

This complex development of thought also leads adolescents to question society and its values. While adolescents have the ability to think equally as well as an adult, they do not have experiences on which to build their thoughts. It is common for adolescents to consider their parents narrow-minded or materialistic. Cognitive abilities and performance vary greatly and, in fact, an adolescent may perform at different levels in different situations based on their past experiences, formal education, motivation in the use of logic, and effective deductive reasoning.

Language development is mostly complete by adolescence, although vocabulary continues to expand. The main focus becomes communication skills that can be used effectively in various situations. Adolescents need to communicate thoughts, feelings and facts to peers, parents, teachers and other persons of authority. The skills used in these diverse communication situations are varied. Adolescents must select the person with whom to communicate, decide on the exact message and choose the way to transmit the message. For example, the way adolescents tell parents about failing a subject is not the same as the way that they tell friends on social media. The increasing influence of social media on the developing adolescent is significant and is a topic of considerable debate, particularly with reference to cyber bullying. Adolescents develop different skills and styles of communication and learn how and when to use them most effectively (Figure 16-8). These diverse communication skills are used and refined throughout life. Good communication skills are critical for adolescents to overcome peer pressure to participate in non-healthy or risky behaviours.



Figure 16-8 Interacting with peers helps to increase self-esteem during puberty.

iStockphoto/monkeybusinessimages.

Psychosocial changes

The search for personal identity is the major task of adolescent psychosocial development. Adolescents must establish close peer relationships or risk remaining socially isolated. Erikson sees identity (or role) confusion as a prime challenge of this stage (Table 16-1) and suggests that the cliquishness and intolerance of differences seen in adolescent behaviour are defences against this confusion (Simanowitz & Pearce 2003). Adolescents work at becoming emotionally independent from their parents, while retaining family ties. In addition, they need to develop their own ethical systems based on personal values. Choices about vocation, future education and lifestyle must be made. The various components of total identity evolve from these tasks and compose an adult personal identity that is unique to the individual. Behaviours indicating negative resolution of developmental tasks for this age are indecisiveness and the inability to make an occupational choice.

According to Erikson (1968), adolescence provides a time-out period when society allows the physically mature teenager to delay the assumption of adult responsibilities. This is a time for young people to try a variety of ideological and vocational roles before making a commitment. This psychosocial moratorium ends in the selection of values and a consolidation of identity.

Sexual identity

Achievement of sexual identity is enhanced by the physical changes of puberty (Figure 16-9). In Freud's view, these physiological changes reactivate the *libido*, the energy source that fuels the sex drive. This is evidenced by the adolescent's interest in developing intimate relationships with partners outside of the family, and the practice of masturbation. The physical evidence of maturity encourages the development of masculine and feminine behaviours. If these physical changes involve deviations from what is perceived normal, the young person has more difficulty developing a comfortable sexual identity. Adolescents depend on these physical clues because they seek assurance of maleness or femaleness, whereas others may seek non- or trans-gendered identities. Other influences are cultural attitudes and expectations of sex-role behaviour and available role models.

Group identity

Adolescents also seek a group identity because they desire esteem and acceptance; however, this need may conflict at times with the search for personal identity. Similarity in dress or speech is common in adolescent groups and popularity is a major concern. Trends in the desire for popularity have not changed significantly in recent years. Peer groups provide the adolescent with a sense of belonging and approval and the opportunity to learn acceptable behaviour. Popularity with both opposite-sex and same-sex peers is important.



Figure 16-9 Adolescents acquire sexual identity during social interaction.

© Petrenko Andriy.

Family identity

The movement towards stronger peer relationships is contrasted with the adolescent's movement away from parents. Although financial independence is not the norm for adolescents growing up in developed nations, many adolescents work part-time, using their income to bolster independence. When adolescents cannot have a part-time job because of studies, school-related activities or other factors, financial allowances for clothing and incidentals encourage adolescents to develop decision-making and budgeting skills.

Some families have more difficulty during the adolescent years than others. Adolescents need to make choices, act independently and experience the consequences of their actions. This is most safely tested within a firm, supportive family environment. This environment may involve curfews and participation in family chores. Emancipation from the immediate family is most successful when accomplished gradually. Families unable to provide this support complicate movement towards identity formation.

Vocational identity

The selection of an occupation or vocational direction in life provides a goal for adolescents and a path to possible further education. Because of society's changing needs, adolescents must be future-oriented when making these choices. However, adolescents do not know which jobs will be available or which jobs will be rewarding 10 or 20 years in the future. Selecting a career is a complicated task and the emotional support of family and friends helps adolescents to select courses of action that promote self-satisfaction, self-identity and continued opportunities for growth.

Moral identity

Not all adolescents attain the same level of moral development. There is, however, a general forward movement through the stages of moral development, with similar sequencing for all individuals, even when their time of achievement varies. Kohlberg (1964) explains moral development in terms of stages (Table 16-1), with the highest level derived from individual principles of conscience. Kohlberg's theory has a focus on justice, based on reciprocity and equal respect. Adolescents judge themselves by internalised ideals, which often lead

to conflict between personal and group values; however, group values become less significant in later adolescence.

The development of moral judgement depends heavily on cognitive ability, communication skills and peer interaction. Although moral development begins in early childhood, it is consolidated in adolescence because of the development of certain skills. Adolescents learn to understand that rules are cooperative agreements that can be modified to fit the situation, rather than absolutes. Adolescents learn to use their own judgement to avoid punishment rather than using the rules, as in earlier years.

Perceptions of wellness

Another component of personal identity is the perception of health and wellness. This component is of specific interest to healthcare providers. Healthy adolescents tend to evaluate their own health according to feelings of wellbeing, their ability to function normally and the absence of symptoms (Ethington et al 2015). The rapid changes during this period make health promotion programs especially crucial (see *Research highlight*). Adolescents try new roles, begin to stabilise their identity and acquire values and behaviours from which their adult lifestyle will evolve. Interventions to improve health might, therefore, concentrate on the adolescent period.

Other adolescent health considerations

There has been a significant amount of research by governments, health and welfare groups and others interested in reducing adolescent risk-taking behaviours and their consequences. Study results vary from place to place, and from time to time. You will be able to gather the most current statistics by accessing websites such as those of the Australian Bureau of Statistics, the Australian Institute of Health and Welfare, the Australian Department of Health and Ageing and the New Zealand Ministry of Health (see *Online resources*). The following section provides information about some of the most common areas of health risk for adolescents.

Accidents

Accidents remain the leading cause of death in Australian and New Zealand adolescents. Motor vehicle accidents, which are the most common cause of death, result in almost half of the fatalities from the mid-teen years. These accidents are often associated with alcohol or drug

RESEARCH HIGHLIGHT

Research focus

The physical, social and cognitive needs of adolescents requiring inpatient health services is an important health promoting strategy, and one overlooked in health-service infrastructure. Multiple negative risk-taking behaviours often adopted during the adolescent period frequently result in negative health outcomes. Adopting health strategies that focus on these clustered negative behaviours and their occurrence together is vital. Health education programming designed to address multiple risk behaviours concurrently in youth may be warranted.

Research abstract

The purpose of this study was to examine the co-occurrence of eight negative health behaviours among adolescents in order to inform educational interventions. The prevalence, co-occurrence and clustering of suicide attempt, lifetime history of sexual activity, tobacco use, mobile phone use while driving, risky weight loss, daily softdrink consumption, sedentary behaviour and extreme video game use were examined among 1354 high school students. The results showed that more than 80% of students engaged in one to three risk behaviours. Ever having sex was the most common co-occurring risk behaviour and four distinct clusters of risk behaviours emerged. The findings suggest that the adoption of multiple risk behaviours is extremely common among the adolescent population and therefore health education strategies should be designed to address multiple behaviours rather than focusing on the one, for example, smoking and sexual health.

Evidence-based practice

- Adequate and specialised education should be provided for nurses in psychosocial, physical developmental challenges and risk-taking behaviours of adolescents.
- There needs to be specific education and training for nurses in communication with the adolescent population in regard to sensitive subjects.
- Facilities need to be organised to promote age-appropriate physical, cognitive and social activity and behaviour for adolescents.
- Independence and autonomy need to be supported and guided by including adolescents in decision-making and scheduling of daily activities and treatments when they are inpatients.

Reference

Coleman C, Wileyto P, Lenhart C, Patterson F 2014 Multiple health risk behaviours in adolescents: An examination of youth risk behaviour survey data. American Journal of Health Education 45(5):271–7.

use. Adolescents are more likely than other age groups to never or rarely use a seatbelt, ride a motorcycle or a bicycle without a helmet, ride with someone who has been drinking alcohol, become involved in fights and seriously consider suicide (AIHW 2010, Ministry of Health 2014). The other frequent cause of accidental death in teenagers is drowning.

Suicide

Suicide rates remain a focus of attention in Australian and New Zealand adolescents, especially males. Even though rates have been declining, suicide remains the leading cause of death for all Australians aged 15–34 years (ABS 2010). A review by Harrison and others (2009) showed that the rate of suicide in Australian males had declined from 29.8 per 100,000 in 1997 to 17.0 per 100,000 in 2006. Equivalent rates for females were 7.8 and 4.8 per 100,000, respectively. Similarly, data from the New Zealand Ministry of Health (2014) also shows that in 2011, the rate of suicide among youth (aged 15–24 years) decreased by 32.8% since the peak in 1995. The male-to-female youth suicide ratio is 2.8:1, and the combined suicide rate for New Zealand youth is 19.3 deaths per 100,000. Suicide in Indigenous young people accounts for 4.2% of all deaths compared to 1.6% for all Australians (ABS 2010). Youth suicide rates from both countries continue to remain almost double those of all ages, and males continue to have higher rates than females (Harrison et al 2009, Ministry of Health 2014).

Young males are more successful at suicide attempts than females, in part because of the methods they use. Depression and social isolation commonly precede a suicide attempt, but suicide probably results from a combination of several factors. Although suicide is a complex issue, there are warning signs which often occur for at least a month before suicide is attempted:

- decrease in school performance
- withdrawal
- loss of initiative
- loneliness, sadness and crying
- appetite and sleep disturbances
- talking about suicide.

Other associated suicide risk factors are listed in Box 16-9. Where nurses are working with youth, it is important they know the factors associated with adolescent suicide risk and how these interact with precipitating events. Immediate referrals to mental health professionals need to be made when assessment suggests that adolescents are depressed or may be considering suicide. Guidance can help adolescents focus on the positive aspects of life and strengthen their coping abilities. The need for

BOX 16-9 Suicide risk factors

Past history

- Previous suicide attempt
- Family member or friend has made a suicide attempt
- History of child abuse or neglect
- Past psychiatric hospitalisation
- Death of a parent when child was young

Individual factors

- Hopelessness
- Marked, persistent depression
- Alcohol or drug abuse
- Impulsiveness
- Difficulty tolerating frustration
- Feelings of self-hatred or excessive guilt, feelings of humiliation
- Thinking disorder (wishes to join a deceased person, hears voices telling to kill self)
- Physical/body image problems (delayed puberty, chronic illness, disability, attention deficit hyperactivity disorder, learning disorders)
- Gender identity concerns; gay or lesbian in an unsupportive environment
- Sees self as totally helpless – a victim of fate
- A need to do things perfectly

Family factors

- Difficult home situation – long, bitter parent–child conflict
- Hostile parents
- Overt rejection by one or both parents
- Divorce or separation of parents
- Recent or impending move
- Family break-up or parental loss
- Exposure to unrealistically high parental expectations
- Parental indifference with very low expectations

Social/environmental factors

- Firearms in the home
- Incarceration
- Lack of effective social support system
- Isolation
- Exposure to suicide of another
- Few social, vocational, educational opportunities

McLean J, Maxwell M, Platt S et al 2008 Risk and protective factors for suicide and suicidal behaviour: a literature review. Scottish Government Social Research, Edinburgh. Online. Available: www.gov.scot/Publications/2008/11/28141444/0; accessed 15 April 2015; World Health Organization 2014 Preventing suicide: A global imperative. Geneva. Online. Available: www.who.int/mental_health/suicide-prevention/world_report_2014/en/; accessed 10 April 2015.

suicide intervention has been recognised, including the need for training health professionals to screen for suicide ideation, intent and risk (Yearwood & DeLeon Siantz 2010).

Substance abuse

Many adolescents attempt experimental or recreational substance use, but those who have unconventional values or difficult family situations may be at greater risk of chronic use and physical dependency. Adolescents may believe that mood-altering substances create a sense of wellbeing or improve their level of performance. Some adolescents believe that substance use makes them more mature. The Australian Institute of Health and Welfare and the New Zealand Ministry of Health both publish current data concerning drug use in young people. The most recent reports are based on data collected during 2007–08, which you can access from the websites listed in *Online resources*.

Eating disorders

Adolescent girls or young women form the largest group suffering from eating disorders, but males of the same age groups are also represented. The number of young people with eating disorders continues to increase. Such disorders are associated with the developmental challenges of identity and autonomy, and the social constructions of body image (Chapter 20), rather than with diet. Eating patterns and extreme weight changes may offer clues to the presence of an eating disorder. Areas to include in health assessment are past and present diet history, food records, eating habits, attitudes, health beliefs and socioeconomic and psychosocial factors (Forman et al 2015).

Although anorexia nervosa and bulimia are classified as separate eating disorders, there is significant overlap between the two and up to 50% of patients with anorexia develop bulimic tendencies (Devlin et al 2010). *Anorexia nervosa* is considered a clinical syndrome with both physical and psychosocial components. The majority of sufferers are adolescents and young women. Attending a highly competitive school and being from a professional, upper-middle-class family increases the risk of this disorder. People with anorexia nervosa have an intense fear of gaining weight and use their bodyweight and image to control their environment and identity. *Bulimia nervosa* is most identified with binge-eating and behaviours to prevent weight gain. Behaviours include self-induced vomiting, misuse of laxatives and other medications, and excessive exercise. Because adolescents rarely volunteer information about behaviours to prevent weight gain, it is important to take a thorough dietary history. Bulimia is considered a biopsychosocial illness. Both anorexic and bulimic people have a strong awareness of society's emphasis on being thin.

Sexual experimentation

Sexual experimentation is common among adolescents. Peer pressure, physiological and emotional changes, and societal expectations, contribute to early heterosexual and homosexual relations. The proportion of young people who are sexually active in their mid-teenage years continues to increase (AIHW 2011). By about 14 years of age, 27% of Australian adolescents report being sexually active and that number increases to 56% by 18 years of age. New Zealand figures show that around 24% of adolescents report having had sexual intercourse while around 18% report being sexually active (Adolescent Health Research Group 2012). Young people from Indigenous groups report becoming sexually active at an earlier age (AIHW 2011, Ministry of Health 2001). The two most challenging consequences of adolescent sexual activity are sexually transmitted infections and unwanted pregnancies.

Sexually transmitted infection

Knowledge of the symptoms and types of **sexually transmitted infections (STIs)** is generally poor among this age group and many adolescents remain unaware of the short- and long-term consequences of contracting even the most common STIs (AIHW 2011). The high incidence of STIs makes it imperative that sexually active adolescents be screened, even when they have no symptoms. The annual physical examination of a sexually active adolescent should include a thorough sexual history and a careful examination of the genitalia. Recommended tests for young women include Papanicolaou (Pap) smears. The healthcare provider can take the initiative by using the interview process to identify risk factors in the adolescent and initiate prevention and targeted screening. For the most current information about STIs, visit the family planning websites listed in *Online resources*.

Infection with the human immuno-deficiency virus (HIV), which may progress to acquired immune deficiency syndrome (AIDS), is transmitted through unprotected sexual intercourse, the use of shared needles, and infected blood products. Education about HIV and other diseases associated with sexual intercourse has been only partially successful in reducing risk-taking behaviours. Therefore, the risks associated with adolescent sexual activity and drug-use make adolescents one of the most vulnerable groups for acquiring HIV. Again, the family planning websites listed in *Online resources* will give you the most up-to-date information.

Pregnancy

The rate of adolescent pregnancy has fallen in Australia as a result of effective education, the ready availability of contraception and, in most states, legal abortion. The birth rate in adolescents reached an all-time low in 1988 and has remained below 20 babies per 1000 female teenagers aged 15–19 years ever since. The most recent statistics from the Australian Bureau of Statistics show that the rate of teenage pregnancy for 2012 was 16.1 per 1000 in the 15–19-year age group (ABS 2013).

Adolescent pregnancies occur in young women from all socioeconomic classes, all ethnic and religious backgrounds, and in all parts of the country. Two factors believed to account for adolescent childbearing trends are adult childbearing levels and trends, and poverty. The Australian Bureau of Statistics, Australian Institute of Health and Welfare and family planning websites will give you more information related to these issues.

General health concerns

Adolescence is an important period for the formation of healthy habits of daily living. Emphasis on exercise, sleep, nutrition and stress-reduction are increasing general health concerns.

Health education

Community and school-based health programs for adolescents focus on health promotion and illness prevention. Nurses are involved in community health through screening and health education programs. The services provided to adolescents must be easily accessible and confidential. Not surprisingly, adolescents are more likely to reveal intimate information about their risk-taking behaviours when they feel comfortable and respected within the interaction.

Nurses can play an important role in preventing injuries and accidental deaths. Encouraging adolescents to openly discuss alternative plans to driving when under the influence of drugs or alcohol prepares them to consider other options when such an occasion arises. Identifying adolescents at risk provides an opportunity to prevent accidents related to substance abuse and to provide counselling to those in rehabilitation. Effective adolescent health care focuses on health promotion while also engaging with the adolescent to address issues of role conflict, identity, parental involvement, confidentiality, and the varied coping strategies that are common to this group (Swartz 2009). Sex education and relationship counselling are also important areas where nurses can support adolescents. Nurses are in a good position to help adolescent mothers access support services and continue their education, by helping to organise flexible teaching and learning arrangements, uniforms and alterations in attendance schedules, as well as integration of an infant into the school environment.

Rural adolescents

Declining rural populations, the global financial crises, long distances between population centres, together with the subsequent reduction of opportunities and services, can have negative influences on adolescents living in rural or remote areas. Areas of concern for these adolescents include all of the above health risks, as well as risk of farm accidents, limited access to health care, limited privacy inherent in small towns, and possible lack of transportation to health care due to poverty or circumstance (e.g. lack of public transport). Nurses have always played an important role in rural areas, particularly where other types of medical support are lacking. Decreasing barriers to care, facilitating health promotion education and self-care, developing coping strategies and assessment of health beliefs are important areas where nurses can contribute.

Indigenous adolescents

Indigenous youth have a special set of challenges. Indigenous adolescents may feel alienated both from mainstream society and from traditional culture. They may experience a higher incidence of health problems and greater barriers to health care than their non-Indigenous peers. Health issues confronting Indigenous adolescents living in both urban and isolated areas include learning or emotional difficulties, violence, death from suicide, accidental injuries, poverty and high rates of adolescent pregnancy and STIs. The rate of alcohol and drug abuse is especially high within Australian Indigenous youth, with petrol sniffing of particular concern (Australian Indigenous HealthInfoNet 2010).

Culturally safe practice includes identifying personal ethnocentrism, stereotypes and prejudices and learning about social group dynamics in order to understand the issues and identify effective culturally sensitive coping strategies that enable Indigenous adolescents to overcome stresses inherent in their environment. In addition to the political, economic, social, cultural, environmental, behavioural and biological factors that influence health and wellbeing, health practitioners should also be aware that for many Indigenous peoples, health also has important spiritual and cultural dimensions (Commissioner for Children and Young People 2014). Health-promoting initiatives must incorporate these factors and be based on topics of concern for Indigenous adolescents themselves. Further, the appropriate presentation of health-promoting materials, in terms of methods and language, is not only important for Indigenous youth, but for all young people.

Key concepts

- Growth and development are patterned, complex and interdependent processes that continue throughout life.
- Nurses care for children at various developmental stages and during various transitions. Developmental theory provides a basis for nurses to assess and understand behavioral and other responses to health issues and treatments.
- Developmental theory is a way to account for how and why children grow as they do. Theories provide a framework and a way to clarify and organise existing observations to explain and predict behaviour.
- A developmental perspective helps the nurse understand commonalities and variations in developmental tasks and challenges for infants, young children and adolescents and the impacts these have on the client's health.
- The interdependence of physical, cognitive and psychosocial development means that each can affect infant, child or adolescent achievement at any particular stage.
- Growth and development are internally influenced by heredity and temperament, and are externally influenced by family, peers, life experiences and environmental elements.
- Because the embryo and fetus grow and develop throughout the intrauterine period, genetic factors and environmental factors (teratogens) may affect body systems in-utero.
- Physiological, cognitive and psychosocial developmental challenges continue from conception to adolescence. Nurses and other health professionals must be familiar with normal parameters to identify potential problems and promote optimal growth and development.
- Physical growth during the school years is slow and steady until the skeletal growth spurt just before puberty.
- The major psychosocial developmental task of the school-age child is the development of a sense of industry, which is gained through personal achievements and results in positive self-esteem.
- Cognitively, the young school-age child develops conservation, the mental operation that allows thought processes to become more logical.
- The prepubescent growth spurt usually occurs two years earlier in girls than in boys; during this time, development of secondary sexual changes begins.
- Adolescence begins with puberty, when primary sexual characteristics begin to develop and secondary sexual characteristics complete development.
- The adolescent is able to solve complex mental problems, use deductive reasoning and hypothesise about the future.
- The adolescent's rapid change in physical appearance heightens self-consciousness and concerns regarding body image.
- Accidents are a major cause of death in childhood and adolescence.

Online resources

Association for the Wellbeing of Children in Healthcare, www.awch.org.au/

Australian Bureau of Statistics, www.abs.gov.au

Australian Breastfeeding Association, www.breastfeeding.asn.au

Australian immunisation schedule, www.health.gov.au/internet/immunise/publishing.nsf/Content/Handbook10-home

Australian Institute of Health and Welfare, www.aihw.gov.au

Australian Department of Health, www.health.gov.au

Australian safety standards, Standards Australia, www.standards.org.au

Cochrane Collaboration and Library, www.cochrane.org

Commissioner for Children and Young people, www.ccyp.wa.gov.au

Developmental quiz, http://psychology.about.com/library/quiz/bl_dev_quiz.htm

Dietary guidelines, www.healthykids.nsw.gov.au/

Dietary guidelines, www.kidspot.com.au/schoolzone/Teaching-kids-how-to-cook-Food-pyramid+4649+419+article.htm

Family Planning New South Wales, www.fpnsw.org.au

Family Planning New Zealand, www.familyplanning.org.nz

National Health and Medical Research Council, www.nhmrc.gov.au

New Zealand Ministry of Health, www.health.govt.nz

New Zealand immunisation schedule, www.health.govt.nz/our-work/preventative-health-wellness/immunisation/new-zealand-immunisation-schedule

The National Child Traumatic Stress Network, www.NCTSN.org

Product Safety Australia, www.productsafety.gov.au/content/index.phtml/itemId/972363

SIDS Australia, www.sidsandkids.org

World Health Organization, www.who.int/en/

References

Adolescent Health Research Group 2012 Youth 2000 Project, Youth 12 – The Second National Health and Wellbeing Survey of New Zealand Secondary School Students. University of Auckland. Online. Available: www.fmhs.auckland.ac.nz/assets/fmhs/faculty/ahrg/docs/2012-overview.pdf; accessed 17 April 2015.

Als H 1986 A synactive model of neonatal behavioral organization: a framework for the assessment of neurobehavior in the premature infant and for support of infants and parents in the neonatal intensive care environment. Phys Occup Ther Pediatr 6(3–4):3–53.

American Academy of Pediatrics 2013 Supplemental information Appendix. Conditions that may be mistaken for child sexual abuse. Pediatrics 132(2):S11-S18.

Australian Bureau of Statistics (ABS) 2014 Causes of death, Australia 2012. Cat. no. 3303.0. Online. Available: www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3303.02012?OpenDocument; accessed 17 March 2015.

Australian Bureau of Statistics (ABS) 2013 Births, Australia 2013. Cat. no. 3301.0. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/mf/3301.0; accessed 17 March 2015.

Australian Bureau of Statistics (ABS) 2010 Suicides, Australia. Cat no. 3309.0. ABS, Canberra. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/Products/3309.0~2010~Chapter~Suicide+in+Australia; accessed 17 March 2015.

Australian Dental Association 2011 Oral hygiene, Australian Dental Association. Online. Available: www.babyteeth.com.au/oral-hygene/brushing-baby-teeth.html; accessed 24 March 2015.

Australian Indigenous HealthInfoNet 2010 Substance abuse. Online. Available: www.healthinfonet.ecu.edu.au/health-risks/substance-use?gclid=COrB28DzsK8CFWZMpgod3iWQGg; accessed 11 April 2015.

Australian Institute of Health and Welfare (AIHW) 2013 Australia's welfare 2013. Online. Available: www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129544075; accessed 15 Jan 2016.

Australian Institute of Health and Welfare (AIHW) 2012a A picture of children's health. Online. Available: www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737423340; accessed 1 April 2015.

Australian Institute of Health and Welfare (AIHW) 2012b Australia's mothers and babies. Online. Available: www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129545698; accessed 25 April 2015.

Australian Institute of Health and Welfare (AIHW) 2011a Young Australians: their health and wellbeing 2011. Cat. no. PHE 140. Online. Available: www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737419259; accessed 11 April 2015.

Australian Institute of Health and Welfare (AIHW) 2011b Neural tube defects in Australia. Cat no.PER53. Online. Available: www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737420860; accessed 25 April 2015.

Australian Institute of Health and Welfare (AIHW) 2010 Australian National Infant feeding survey: Indicator results. Online. Available: www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737420925; accessed 3 April 2015.

Australian Institute of Health and Welfare 2014 Child protection Australia 2012-13. Online. Available: www.aihw.gov.au/publication-detail/?id=60129547965; accessed 25 March 2015.

Berk LE 2014 Development through the lifespan, 4th edn. Pearson, Boston.

Bowlby J 1969 Attachment and loss. Hogarth, London.

Boyd D, Bee H 2010 The growing child. Allyn & Bacon, Boston.

Child Accident Prevention Foundation of Australia 2012 A parents guide to kid safe homes. Online. Available: www.kidsafe.com.au/2011%20Parents%20Guide%20to%20Kidsafe%20Homes%20FINAL%20photo%20primo.pdf; accessed 7 April 2015.

Child Family Community Australia 2012 What is child abuse and neglect? Australian Institute of Family Studies, Melbourne.

Coleman C, Wileyto P, Lenhart C, Patterson F 2014 Multiple health risk behaviors in adolescents: An examination of youth risk behaviour survey data. American Journal of Health Education 45(5):271–7.

Commissioner for Children and Young People 2014 The state of Western Australia's Children and Young People. 2 July. Western Australia. Online. Available: www.parliament.wa.gov.au/WebCMS/WebCMS.nsf/resources/file-tp---the-state-of-wa-children/$file/The%20State%20of%20Western%20Australia%20s%20Children%20and%20Young%20People%20-%20Edition%20Two%20-%2014%20July%202014.pdf; accessed 17 March 2015.

Devlin M, Jahraus J, Di Marco I 2010 Eating disorders. In J Levenson (ed) Textbook of psychosomatic medicine, 2nd edn. American Psychiatric Association, Washington, DC.

Department of Health and Ageing and National Health and Medical Research Council 2013 Australian immunisation handbook, 10th edn. Australian Government. Online. Available: www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/Handbook10-home; accessed 25 April 2015.

Elkind D 1998 All grown up and no place to go: Teenagers in crisis, rev edn. Perseus Books, Massachusetts.

Erikson E H 1963 Childhood and society. Norton, New York.

Erikson EH 1968 Identity: youth and crises. Norton, New York.

Erikson EH, Erikson JM 1997 The life cycle completed (extended version). Norton, New York.

Ethington MD, Gallagher MR, Wilson D 2015 Health promotion of the adolescent and family. In Hockenberry MJ, Wilson D (eds) Wong's nursing care of infants and children, 10th edn. Mosby, St Louis.

Finn Davis K, Parker KP, Montgomery GL 2004 Sleep in infants and young children: part one: normal sleep. Journal Pediatric Health Care 18(2):65–71.

Forman S, Yager J, Solomon D 2015 Eating disorders: Epidemiology, diagnosis and course of illness. Online. Available: www.uptodate.com/contents/eating-disorders-overview-of-epidemiology-diagnosis-and-course-of-illness?source=search_result&search=Eating+disorders%3A+Epidemiology%2C+pathogenesis%2C+and+clinical+features&selectedTitle=1%7E150; accessed 27 April 2015.

Gibbons MJ, Wratten J 2015 Nutrition and physical activity foundations for pregnancy, childbirth and lactation. In Pairman S et al (eds) Midwifery: preparation for practice, 3rd edn. Elsevier, Australia.

Glasper A, Richardson J (eds) 2010 A textbook of children's and young people's nursing, 2nd edn. Churchill Livingstone, London.

Grigg C 2015 Working with women in pregnancy. In Pairman S et al (eds) Midwifery: preparation for practice, 3rd edn. Elsevier, Australia.

Haith M, Benson J 2008 Encyclopedia of infant and early development. Elsevier, Waltham MA.

Harrison JE, Pointer S, Elnour AA 2009 A review of suicide statistics in Australia. Australian Institute of Health and Welfare, Canberra.

Heffner CL 2001 Erikson's stages of psychosocial development. Online. Available: http://allpsych.com/psychology101/social_development/; accessed 26 March 2015.

Hockenberry MJ, Wilson D 2015 Wong's nursing care of infants and children, 10th edn. Mosby, St Louis.

Hunt CE, Hauck FR 2006 Sudden infant death syndrome. Can Med Assoc J 174(13):1861–9.

Hunter M, Gunn J 2015 Pharmocology and prescribing. In S Pairman et al (eds) Midwifery: preparation for practice, 3rd edn. Elsevier, Australia.

Kleigman R, Stanton B, St Geme J et al 2011 Nelson's textbook of pediatrics. Elsevier, St Louis.

Kohlberg L 1964 Development of moral character and moral ideology. In Hoffman ML, Hoffman LNW (eds) Review of child development research, Vol 1. Russell Sage Foundation, New York.

Kuczen B 1982 Childhood stress: Don't let your child be a victim. Delacorte Press, New York.

Kuczkowski KM 2009 Caffeine in pregnancy. Arch Gynecol Obstet 280(5):695–8.

Leifer G, Fleck E 2013 Growth and development across the lifespan, 2nd edn. Elsevier, St Louis.

Lester S, Russell W 2008 Play for change. Play, policy and practice. A review of contemporary perspective. National Children's Bureau, London.

Mathews B, Scott D 2014 Mandatory reporting of child and abuse and neglect. Child and Family Community Australia resource sheet. Online. Available: www3.aifs.gov.au/cfca/about-child-family-community-australia; accessed 2 April 2015.

McCarthy K 2015 Health problems in early childhood. In Hockenberry MJ, Wilson D Wong's Essentials of pediatric nursing, 10th edn. Mosby, St Louis.

McKenna JJ 2000 Cultural influences on infant and childhood sleep biology and the science that studies it. In Loughlin GM, Carroll JL, Marcus CL (eds) 2000 Sleep and breathing in children, a developmental approach. Decker Inc, New York. Online. Available: https://cosleeping.nd.edu/assets/32942/cultural_influences_on_infant_and_childhood_sleep_biology_2000.pdf; accessed 18 March 2015.

McLean J, Maxwell M, Platt S 2008 Risk and protective factors for suicide and suicidal behaviour: a literature review. Scottish Government Social Research, Edinburgh. Online. Available: www.gov.scot/Publications/2008/11/28141444/0; accessed 15 April 2015.

Ministry of Health 2001 Sexual reproductive health strategy – phase one. Ministry of Health, Wellington. Online. Available: www.health.govt.nz/publication/sexual-and-reproductive-health-strategy-phase-one; accessed 21 April 2015.

Ministry of Health 2014 Suicide facts: deaths and intentional self-harm hospitalisations 2011. Wellington. Online. Available: www.health.govt.nz/publication/suicide-facts-deaths-and-intentional-self-harm-hospitalisations-2011; accessed 22 April 2015.

Moore KL, Persaud TVN, Torchia MG 2013 The developing human: clinically oriented embryology, 9th edn. Saunders Elsevier, Philadelphia.

National Health and Medical Research Council 2012 Infant feeding guidelines. Canberra. Online. Available: www.nhmrc.gov.au/_files_nhmrc/publications/attachments/n56_infant_feeding_guidelines.pd; accessed 7 April 2015.

Pairman S, Pincombe J, Thorogood C, Tracy S (eds) 2015 Midwifery: preparation for practice, 3rd edn. Elsevier, Australia.

Product Safety Australia 2013 Keeping baby safe – a guide to infant and nursery products. Australian Competition and Consumer Commission, Online. Available: www.productsafety.gov.au/content/item.phtml?itemId=972363&nodeId=fc862a4a309e16c8a5dcc4d107b15459&fn=Keeping%20baby%20safe.pdf; accessed 1 April 2015.

Rathus SA 2014 Childhood and adolescence. Voyages in development, 5th edn. Wadsworth Cengage Learning, California.

Rodgers CC 2015 Health promotion of the school age child and family. In Hockenberry MJ, Wilson D (eds) Wong's essentials of pediatric nursing, 10th edn. Mosby, St Louis.

Royal Australasian College of Physicians (RACP) 2010 Policy statement on circumcision. Sydney. Online. Available: www.racp.edu.au/page/policy-and-advocacy/paediatrics-and-child-health; accessed 20 April 2015.

Royal College of Pathologists 2012 Immunisation and vaccine preventable diseases. Online. Available: www.rcpa.edu.au/getattachment/72fd414e-8e44-40ec-bea2-19d2a52e2a2f/Immunisation-and-Vaccine-Preventable-Diseases.aspx; accessed 29 March 2015.

Royal Prince Alfred Hospital 2009 RPA newborn care guidelines, Jaundice. Online. Available: www.sswahs.nsw.gov.au/rpa/neonatal/html/docs/jaundice.pdf; accessed 25 April 2015.

Samuels M, Wietska S (eds) 2011 Advanced paediatric life support. The practical approach, 5th edn. Wiley-Blackwell, West Sussex.

Simanowitz V, Pearce P 2003 Personality development: core concepts in therapy. Open University Press, Berkshire.

Stores G 2001 A clinical guide to sleep disorders in children and adolescents. Cambridge University Press, Cambridge.

Swartz MK 2009 Adolescent health care (editorial). J Pediatric Health Care 23(1):1.

St Ledger L, Young I, Blanchard C, Perry M 2010 Promoting health in schools: from evidence to action. Online. Available: www.dhhs.tas.gov.au/__data/assets/pdf_file/0007/117385/PHiSFromEvidenceToAction_WEB1.pdf; accessed 25 April 2015.

The National Child Traumatic Stress Network 2009 Caring for kids: sexual development and behaviour in children, information for parents and caregivers. Online. Available: www.nctsn.org/sites/default/files/assets/pdfs/sexualdevelopmentandbehavior.pdf; accessed 17 March 2015.

Thomson K, Tey D, Marks M (eds) 2009 Paediatric handbook, 8th edn. Blackwell, London.

Thorogood S 2010 Challenges in women's health. In Pairman S et al (eds) Midwifery: preparation for practice 2nd edn. Churchill Livingstone, Sydney.

Thorogood C, Donaldson C 2015a Challenges in pregnancy. In Pairman S et al (eds) Midwifery: preparation for practice, 3rd edn. Elsevier, Australia.

Thorogood C, Donaldson C 2015b Disturbances in the rhythm of labour. In Pairman S et al (eds) Midwifery: preparation for practice, 3rd edn. Elsevier, Australia.

Wheeler BJ 2015 Health promotion of the newborn and family. In Hockenberry MJ, Wilson D (eds) Wong's essentials of pediatric nursing, 10th edn. Mosby, St Louis.

Wilson, D 2015 Health promotion of the toddler and family. In Hockenberry MJ, Wilson D (eds) Wong's essentials of pediatric nursing, 10th edn. Mosby, St Louis.

World Health Organization 2011 Periconceptional supplementation with folic acid to prevent neural tube defects. Online. Available: www.who.int/elena/titles/folate_periconceptional/en/; accessed 25 April 2015.

World Health Organization 2014 Preventing suicide: A global imperative. Geneva, Switzerland. Online. Available: www.who.int/mental_health/suicide-prevention/world_report_2014/en/; accessed 10 April 2015.

Yearwood EL, DeLeon Siantz ML 2010 Global issues in mental health across the life span: challenges and nursing opportunities. Nursing Clinics of North America 45(4):501–19.

Youell B 2008 The importance of play and playfulness. European Journal of Psychotherapy and Counselling 10(2)121–9.

CHAPTER

17

Considering the developmental context of youth and adults

Robyn Rosina

Learning outcomes

Mastery of content will enable you to:

- discuss developmental theories of young and middle-aged adults
- list and discuss major life events of young and middle-aged adults and the childbearing family
- describe developmental tasks of the young adult, the childbearing family and the middle-aged adult
- discuss the significance of family in the life of the adult
- describe normal physiological changes in young and middle adulthood and in pregnancy
- discuss cognitive and psychosocial changes that occur during the adult years
- describe health concerns of the young adult, the childbearing family and the middle-aged adult
- apply the nursing process to administer care to young and middle-aged adults.

KEY TERMS

Biophysical development, p. 360
Climacteric, p. 386
Cognitive development, p. 368
Developmental pathway, p. 357
Emotional health, p. 373
Epigenetics, p. 375
Generativity, p. 386
Maturity, p. 362
Menopause, p. 385
Middle age, p. 389
Moral development, p. 369
Personal lifestyle assessments, p. 373
Pregnancy, p. 381
Psychosocial development, p. 363
Psychosomatic illness, p. 389
Puerperium, p. 383
Routine health screening, p. 389
Vocational adjustment, p. 375
Young adulthood, p. 363

This chapter will discuss human life from age 25 to 64 years and will focus on life transition at the close of adolescence through young adulthood and the middle years of adult life. The focus will include theoretical and health-promoting perspectives.

A young person moving from adolescence to young adulthood and then on to the middle years is in a constant state of change. This change includes physical development (although settling into a normal rhythm for most at this point, apart from pregnancy, birth and lactation) and psychosocial development. The individual both experiences, and responds to, multiple interactions from the external world and as a consequence of life experiences, undertakes significant change and growth. In order to place youth and adulthood within a developmental context, this chapter presents a further explanation of human development theories introduced in Chapter 16, followed by a health risk and health promotion focus on young and middle adulthood of life.

The experience of good health optimises the unique response of the individual's interaction with the world. The presence of good health and the ability to contribute to responsive caregiving, further enhances physical growth and psychosocial progression. In contrast, the presence of poor health as a consequence of either acute (excluding short self-limiting illnesses) illness, injury, chronic illness, disability (congenital or acquired, including mental illness) or trauma can lead to suboptimal physical and psychosocial developmental outcomes. A positive or successful growth and developmental outcome in adult life is often regarded as a personal sense of happiness and wellbeing, or a feeling of life fulfilment, despite the experiences of adversity and challenge that are evident in every human life. Poor health or wellbeing, and insufficient access to health resources, challenges individuals and communities and can impede the rate of physical growth and the quality of psychosocial development at any given time in human life.

Each individual developmental outcome is mediated by a unique response to interactions between our internal and external worlds. The external environment is made up of people and resources that enable good health and safety and this environment constantly mediates the internal world, in multiple ways and in multiple settings. This interaction can be referred to as a person–environment context. As the person interacts with the environment, physical growth and psychosocial developmental progression can potentially be achieved. This process is often referred to as a **developmental pathway** and is the focus of development theories. In this chapter we will first examine and discuss the theoretical understandings of growth and development during young adulthood to the middle years of adult life. This will be followed by a discussion of some of the expected health experiences of individuals during the life course from young to middle adulthood.

Human development theory

We saw in Table 16-1 (p. 304) how the human development theories of four well-known theorists (Freud, Erikson, Piaget and Kohlberg) offer a framework for us to more easily understand, explain and predict the human developmental trajectory. This trajectory can be explained as a number of stages or milestones that are achieved throughout the course of human life, with development relying on successfully achieving the milestones of each stage. In this chapter we will return to these theorists, as well as introducing others related to human growth and development. These theoretical frameworks and developmental trajectories are particularly helpful when assessing normal and abnormal development alongside a health problem when individuals access healthcare services. Knowledge of the normal or usual trajectory offers a context for nurses and other health professionals to examine, assess, support and potentially optimise the physical and psychosocial developmental context for individuals receiving health care and to make recommendations for self-care. But first, let's review some of the basic terms introduced in Chapter 16.

Growth versus development

In the previous chapters we have described the difference between growth and development. *Growth* refers to the quantitative changes that can be measured and compared with norms, for example, taking the height and weight of a child and comparing the measurements with standardised growth charts. *Development* implies a progressive and continuous process of change leading to a state of organised and specialised functional capacity; for example, a child's progression from rolling over to crawling to walking. In the context of this chapter, another example of developmental progression is the adolescent achieving a sense of identity and role for life as they begin study and then work, or a young adult achieving intimacy with another, or an adult achieving a meaningful relationship with another.

Growth and development theories

Without necessarily being aware of doing so, we frequently use theories to guide behaviours in our daily lives. Theories are not just guesses – they are based on information from

our existing knowledge and previous experiences. For example, I have a theory that if I drive my car through a red light there can be three possible outcomes. First, I may have an accident, crashing into another car or pedestrian; second, I may be fined and lose demerit points on my licence; or third, I may be lucky and get away with it without having an accident or getting caught. This is a simple theory based on what normally happens in a specific circumstance and the logical possibilities. Such a theory can be used to guide the way we behave, taking into account the likelihood of each outcome so that a favourable one is more likely. In the example above, knowing the chances of each outcome of driving through a red light may guide us to make a sensible and informed decision. Of course, there are many other factors that will influence such decisions, such as if we are affected by alcohol, in a great hurry, talking on the mobile phone, bad weather and so on.

Theories are, therefore, a series of logically connected hypotheses based on evidence about particular situations which allow us to explain and predict potential outcomes. The example of the red light is not a very complex situation compared with a theory about the kind of conditions required for a child to develop into a physically, emotionally and socially healthy adult. Complex situations require more complicated theories with many propositions. When we try to understand what resources a person needs to develop into the best adult he or she can be and to maintain that state throughout adulthood, we have a very complex situation with multiple internal and external factors influencing the outcome.

In order to understand the continuation of growth and development into youth and middle adulthood, or the continuing formation of human personality, we require not just one but many theories. These theories explore aspects of personality development as well as the physical and cognitive abilities influencing a person's ability to make ethical decisions that affect the wellbeing of themselves and others. Understanding how people develop psychosocially, physically, cognitively and morally is tremendously important for nurses because we often meet people at vulnerable moments, when they are facing crisis points in their lives. The way we support people to manage these crises can have long-term ramifications and impact on their successful physical and psychosocial development. Sensitive and knowledgeable support from healthcare professionals can help people negotiate these crises more effectively.

Theories of human growth and development were established through systematic observations of people as they went about their daily lives. There are, however, several caveats that we should bear in mind when applying such theories to specific situations.

1. While theories are built upon layers of evidence, they may apply in many but not all circumstances.
2. It is very difficult to be certain of developmental predictions because it is often impossible to undertake systematic research to test them, partly because it is not possible to compare results with control groups.
3. It is important to keep in mind that it is not possible for any theorist to observe people from all cultures.

Therefore, theories are necessarily culturally based in most situations and as a result their propositions may not be universally applicable. Indeed, attempts to generalise across cultures inevitably gives rise to erroneous conclusions (see Chapter 14). Australia and New Zealand are both multicultural societies and as nurses we will care for people from many diverse backgrounds and cultures. While our personal experience may be limited in terms of understanding the extent of diversity, we know that people are more similar than they are different. Developmental theories can therefore offer a useful guide about what to expect at various stages of life, regardless of culture, but this is only possible if theories are not applied too rigidly.

It is also important to remember that growth and development is not a linear process, but possibly for ease of description, many developmental theories are presented in a linear way. The theories referred to in this chapter are meant to form the basis of a meaningful observation of an individual's multidimensional pattern of growth and development. All theories require validation through research and application to become fact. Developmental theories are, however, valuable guides for understanding important human processes that can allow nurses to begin to predict human behaviours and responses to specific stressful situations and recognise normal and abnormal health behaviours.

In this chapter we consider theories not only from the perspective of the individual theorist, but within the context of a broader world view (Ecological Systems Theory) and within the four major areas of human development: *biophysical*, *psychosocial*, *cognitive* and *moral*. Developmental theories help nurses to use critical-thinking skills to understand how and why people respond as they do to certain situations in health and illness. From the diverse set of theories included in this chapter, and the experiences of health and ill-health discussed, the complexity of human behaviour becomes easier to understand. However, when applying theories it is important to keep in mind that no one theory successfully describes human growth and development in all of its complexity, nor the uniqueness of human beings.

Theorists themselves demonstrate their own values and beliefs through the focus of their theoretical explanations, as well as in the subjects chosen for their work, and work within their own socio-cultural and historical context to understand the uniqueness of human experience.

Ecological systems theory

Urie Bronfenbrenner, a Russian psychologist, offers Ecological Systems Theory (EST) as a frame to understand the context for human development. Bronfenbrenner's clinical work began in the military during World War II and was concerned with the effects of social adversities such as war on the psychological development of individuals (Bukowski & Cillessen 1998). Bronfenbrenner strongly believed that human development is a result of the interactions between individuals and the environment they live within. His theory argues that human development is an outcome of interactions between the individual (internal world) and their environment (external world) (Figure 17-1).

The central tenet of EST is that the developmental outcome of individuals, particularly those facing adversity, can potentially be manipulated within the internal and external environments to enhance or impede developmental outcomes. For example, the developmental outcome for children living in low socioeconomic areas can be influenced by providing sufficient access to good health services. EST is widely referred to in the literature as a means of organising complex systems into a logical framework to understand human development and how it can be enhanced by improvements to the personal and environmental context. The environmental (external) context provides opportunities for nurses and others to bring about positive change or promote health to individuals as they access healthcare services.

Biophysical development theories

Biophysical development is concerned with the way our bodies change physically over time. In the following sections we look at theories about how children develop as they grow and how adults change as they age. As infants grow into adults, their physical changes can be measured. Such measurements can then be compared with those that normally occur, known as 'established norms'. The progress

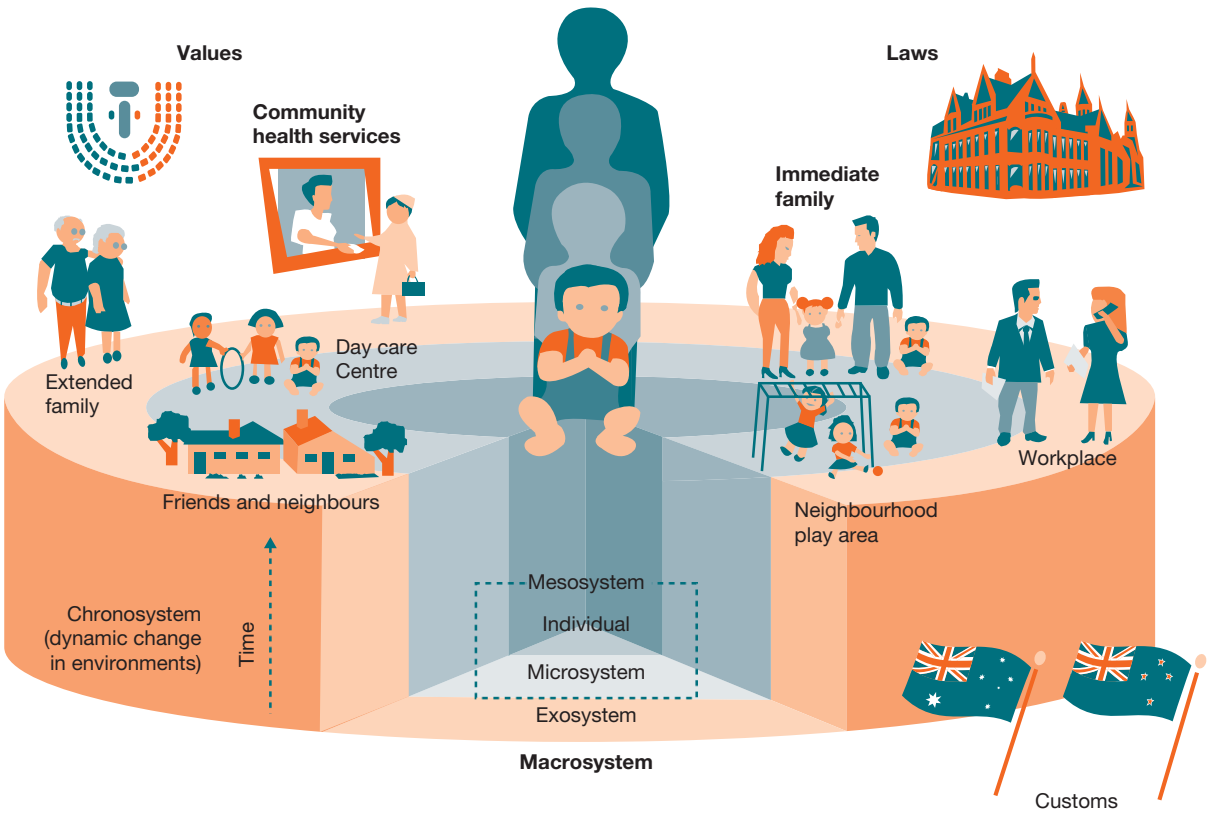


Figure 17-1 Ecological Systems Theory.

Adapted from Bronfenbrenner U 1995 The bio-ecological model from a life course perspective: reflections of a participant observer. In P Moen, GHJ Elder (eds), Examining lives in contexts: Perspectives on the ecology of human development. American Psychological Association, Washington.

of a child's maturation into adulthood can therefore be monitored against these normative standards.

Gesell's theory of biophysical development

Arnold Gesell (1880–1961) was a psychologist and doctor who initially studied development in children with an intellectual disability. He soon came to realise that to understand abnormal development, it is necessary to first understand the process of normal development. Gesell (1948) was one of the first theorists to describe **biophysical development** based on his observations of children and, as a consequence, he developed norms for the typical age at which children reach developmental milestones. Such milestones included motor development, personal hygiene tasks, expression of emotions, interpersonal relations and play. These norms are still used as primary sources of information for childhood development today.

Gesell's (1948) observations led him to believe that although each child's pattern of growth and development is unique, it remains genetically based. Environmental (including cultural) factors can support and modify the pattern, but do not generate it. Through his observations he learned that maturation has a fixed developmental sequence in all humans. For example, most children will learn how to crawl before they learn how to walk, but not every child develops those skills at exactly the same time. Gesell concluded that the environment does play a part in the development of a child, but it does not play any part in the *sequence* of development. Gesell believed that a child could not be pushed to develop faster than that child's unique timetable. However, it is worth noting that unhealthy development environments can impede the quality of development and the timing of developmental milestones for children, therefore potentially impacting on developmental progress. For example, children who spent their early years institutionalised are much slower in reaching the normal developmental milestones of sitting, standing, walking and play; however, the process can be restored with improved developmental environments such as being in good quality foster care (Kerkez 2011).

Gesell's norms have contributed much to our understanding of child development and provide a basis for both parents and professionals to know what to expect of children at various ages. However, it is important to keep in mind that he developed his norms based on observations of children in New Haven, United States. These children may not be typical of other cultures, such as Arabic, Australian Aboriginal or Māori children. There are many other theories of biophysical development, but each falls into one of three categories: the *genetic theories of ageing*, *non-genetic cellular theories* and the *physiological theories of ageing* (see Table 17-1).

TABLE 17-1 Biophysical theories of development

Theory category	Specific theories
Genetic theories – how DNA molecules transfer information that determines function and life span of cells	Programmed cell death
	Radiation influence on DNA molecule
	Error theory of ageing
Non-genetic cellular theories – how changes in the molecules and structural elements impair a cell's effectiveness	Wear-and-tear theory
	Cross-linking theory
	Free radical theory
Physiological theories of ageing – theories related to the performance of a single organ or impairment of the physiological control mechanisms	Kilojoule intake and effect on ageing
	Effect of stress on immune system
	Effect of stress alone on the body

Genetic and cellular theories of ageing

Genetic theories of ageing try to answer such questions as 'Why do people with long-lived parents and grandparents live longer than people whose parents die before the age of 50?' Such differences may be explained by genetic inheritance (such as a tendency towards the production of high cholesterol) or learned behaviours (such as lifestyle) or a combination of both. Genetic theories explain how deoxyribonucleic acid (DNA) molecules transfer information via the formation of proteins, which determines the function and life span of specific cells (Cavanaugh 1993, Eliopoulos 1999). This programmed cell death is a function of physiological processes that cause cells to trigger processes in other cells and self-destruct. How such processes are triggered is unknown. Considerable research is being conducted to explore the theory of ageing.

One DNA theory looks at how exposure to different types of radiation shortens the life span. Laboratory studies have shown that animals have a shortened life span when exposed to non-lethal doses of radiation. This process is thought to occur in humans, and is supported by the fact that ultraviolet light in sunlight causes wrinkling of the skin and is a known cause of melanoma (skin cancer).

The error theory of cellular ageing looks at how errors in the genetic code can occur during the process of transporting DNA information in the production of the protein and enzyme molecules required by the cell (Cavanaugh 1993, Eliopoulos 1999). When these errors

occur, the altered protein or enzyme synthesis leads to defective cellular structure and function.

Non-genetic cellular theories look at the cellular level (as opposed to that of DNA) and how changes that take place in the molecules and structural elements of cells impair their effectiveness (Cavanaugh 1993, Eliopoulos 1999).

The *wear-and-tear theory* works on the premise that our bodies just 'wear out'. This theory can explain some specific processes of ageing (such as osteoarthritis) that contribute to ageing, but it does not explain general ageing.

Cross-linking theory finds that certain proteins within human cells interact with molecules to form cross-links that alter the physical and chemical properties of the molecules involved. These molecules then no longer function in the same way they did before. Cross-links accumulate over time. These processes occur in arteries, muscles and skin tissues and account for age-related changes in the body.

The *free-radical theory* proposes that ageing is due to unstable molecules which are highly reactive chemicals causing cellular damage and thereby impairing the functioning of the organ. The rate of formation of these free-radicals is accelerated by radiation but inhibited by the presence of antioxidants, lathyrogens, prednisolone and penicillamine. This theory has spurred research in the inhibitory properties of antioxidants (especially vitamins A, C and E) and how these vitamins counteract the effects of free-radicals, thereby extending life. Research so far has shown insufficient evidence for the usefulness of antioxidants in the treatment of certain conditions such as dementia (Birks & Grimley 2009, Isaac et al 2008) and motor neurone disease (Orrell et al 2007).

Physiological theories of ageing

Physiological theories of ageing look at either breakdown in the performance of a single organ or the impairment of physiological control mechanisms (Cavanaugh 1993, Eliopoulos 1999). Under this category, various theories relate to single organs or the metabolic processes being tested. For example, how many kilojoules one consumes. Reducing kilojoules appears to lower the risk of premature death and slow down normative age-related changes (Edwards et al 2010). This is supported by facts we currently know about the problems caused by obesity, high cholesterol levels and vitamin deficiencies.

The effect of stress on the immune system, either alone or in combination, is the basis of two further theories of ageing. Some theorists suggest that alterations in the effectiveness of the immune system are responsible. The body may lose its ability to distinguish its own proteins from foreign ones, and will attack and destroy its own tissues. The second immunological theory proposes that as the body ages, it is less able to fight off infection. This is thought to be a factor in the development of chronic diseases such as cancer, diabetes and cardiovascular disease.



Figure 17-2 A retired couple enjoying fishing together.
Sorrentino S 1999 Assisting with patient care. Mosby, St Louis.

Biophysical theories all attempt to describe the processes of how and why our bodies mature and age. Gesell went as far as to propose that it is our biological body that determines our behavioural development, but remember, no one theory explains every aspect of ageing, but each can add to our understanding. Psychosocial theories look at the process of development from a very different perspective, and as such add even further to our understanding of ageing processes (Figure 17-2).

Psychosocial theories

As we have seen from the previous chapter, a number of psychologists have conducted systematic and careful observations of children and adults and have put together various psychosocial theories about the development of human behaviour. Many of these theorists have devoted their entire lifetime to the development of a consistent understanding of how we become successful human beings, or in contrast, to explain poor developmental outcomes and what changes might intervene to optimise human development.

Human behaviour is extremely complex and therefore difficult to capture within one theory. That is why different theorists have tended to focus on different aspects of human psychosocial behaviour such as the psychosexual, psychological, cognitive and moral aspects of development. Despite having a slightly different focus, the four psychosocial theorists compared in Table 16-1 (see p. 304) all believed that as we grow and develop, humans progress through a series of sequential stages. As each

stage is negotiated, the child's personality increases in **maturity** potentiating successful adult development.

Freud's psychoanalytical model of psychosexual development theory

The first person to provide a structured and complex theory of personality development was Sigmund Freud (1856–1939). Freud was a psychologist who practised in Europe. Freud developed his theory based on systematic observation of his patients. Despite much debate and criticism, Freud's theory is still very influential today. Terms such as 'denial' and 'repression' were introduced by Freud, whose work provided the basis for the development of the discipline of psychology.

Freud's theory is grounded in the belief that two internal biological forces (aggressive and sexual forces) essentially drive psychological change in the child. Freud believed that the major motivation for behaviour is to achieve pleasure and avoid pain, created by these aggressive and sexual forces. Maturational changes occur as these forces come into conflict with the reality of the world. He defined 'sexual' somewhat broadly as anything that produces bodily pleasure (Freud 1962). Sources of such pleasure develop at different ages. Infants, for example, find pleasure mainly in the oral area from sucking. Freud described five developmental stages, each of which he believed to be associated with the development of a sensual pleasurable zone.

Through these five stages, the components of personality develop. Freud believed that the functions of these components govern and explain adult behaviours. These components are the id, the ego and the superego. The *id* is the pleasure-seeking aspect of personality and is predominant in infancy. Infants are dominated by the desire to seek pleasure without the constraints of what is realistic or right. The *ego* represents the reality components, mediating conflicts with the world when the person is driven by the id. The ego develops during childhood and helps us to judge reality accurately, to regulate impulses and to make good decisions. The third component, *superego*, performs inhibiting, restraining and prohibiting actions. Often referred to as the conscience, the superego is initially derived from the standards of external social forces (such as parent, teacher, carer). The superego starts to develop in childhood and continues developing into adolescence. An adolescent, for example, may be motivated to seek pleasure (id) from spending vast amounts of time in leisure activities. His sense of reality (ego) may constrain him because he recognises that other activities such as learning and homework also need to be done. His developing conscience (superego) may also restrain him because he wishes to contribute to the good of society by volunteering, for example. In order to contextualise development into adulthood, we review Freud's five stages of psychosexual development in Box 17-1.

BOX 17-1 Freud's psychosexual developmental stages

Stage 1: Oral (birth to 12–18 months)

In this first stage, oral satisfaction through sucking is not only vital to life, but is also extremely pleasurable in its own right. The id – basic instinctual impulses to achieve pleasure – is the most primitive part of the personality and originates with the infant and forms the infant's drive to seek oral pleasure. Late in this stage, the infant begins to realise that the mother/parent is something separate from self. Disruption in the physical or emotional availability of the parent (e.g. mental disability, chronic illness, substance abuse) can therefore impact significantly on the infant's development.

Stage 2: Anal (12–18 months to 3 years)

The focus of pleasure changes to the anal zone. Children become increasingly aware of the pleasurable sensations of this body region with interest in the products of their effort. This is the stage when the child is first asked to withhold pleasure to meet parental/societal expectations through the toilet-training process. The ego starts to develop during this stage when the child begins to realise that reality (such as parental expectations) must moderate pleasure-seeking.

Stage 3: Phallic or oedipal (3–6 years)

During this stage, the sexual organ gains prominence. According to Freud, the boy becomes more interested in the penis and the girl becomes aware of the absence of the penis. These are times of exploration and imagination as the child fantasises about the parent as their first love interest. Freud believed that sexual wishes are temporarily driven underground through the action of the developing superego, or conscience, during this stage.

Stage 4: Latency (6–12 years)

This is the stage in which Freud believed that the aggressive and sexual urges are submerged in the unconscious at the end of the oedipal stage, and channelled into productive activities that are socially acceptable. Latency was thought to be a time of minimal sexual interest or activity. Within the educational and social worlds of the child, there is much to learn and accomplish and this is where the child places energy and effort.

Stage 5: Genital (puberty to adulthood)

This stage is Freud's final stage as he did not formally continue his theory into adulthood. This stage is described as a time of turbulence when sexual urges re-emerge. Freud believed that the task of moving from sexual attachment to the parent, to the separation and emotional independence of adulthood is difficult to achieve.

Freud did not formally continue his theory into adulthood. The final stage of Freud's psychosexual development theory describes the period from puberty to adulthood (Genital Stage). This stage is described by Freud as a time of turbulence, with the task of moving from sexual attachment to the parent, to the separation and emotional independence of adulthood being difficult to achieve.

The goal of development as seen by Freud was to achieve balance between the pleasures of the world and the domination of guilt and shame that comes from indulgence of these pleasures. The fully developed adult would have a strong sense of conscience that allowed the experience of pleasure within a clear appraisal of reality. Although Freud's theory has been soundly criticised for gender and cultural biases, he did give other theorists a firm basis on which to build their own observations of **psychosocial development**.

• CRITICAL REFLECTION POINT

How might Freud explain the impact of excessive violence and sexuality in today's films and computer games based on his theory of child development?

Erikson's development across the lifespan theory

As we saw in Chapter 16, Erik Erikson (1902–1994) refined Freud's theory and expanded it to include three stages of adult development, thus completing a psychosocial theory of development across the life span. Erikson was born in Germany of a Jewish mother. When the Nazis came to power, he left for the United States, where he spent most of his professional life. Erikson was largely influenced by the work of Freud, but placed more emphasis on the social–cultural aspect of personality development, rather than the psychosexual.

The primary tenet of Erikson's theory is that human development occurs across the life span in psychosocial developmental stages. This position is in contrast with earlier Freudian explanations that development occurred in psychosexual stages, with the basic personality completed at five years of age and development largely complete at the close of adolescence. In Erikson's theory, overcoming a crisis is described as a turning point of increased vulnerability. Each crisis also holds an opportunity for enhanced potential for developmental achievement and progression to the next stage (Erikson 1968). The experience of illness, trauma or insufficient access to resources for good health and a safe world increases the vulnerabilities for developmental achievement throughout childhood and adolescence. These vulnerabilities are associated with cumulative risks to psychosocial developmental achievement at each stage from birth to old age.

Erikson described eight stages of life, the first five coinciding with Freud's five stages (Box 17-1). Erikson believed that development is an evolutionary process based on the sequencing of biological, psychological, cultural and social events. Further, social and cultural expectations compel the individual to establish equilibrium related to a specific developmental task at each developmental stage (Erikson 1963, 1987). Each task is framed as opposing tendencies (the crisis), such as the adolescent's need to develop a sense of personal identity at a time when there are many confusing choices. A sense of identity is important for the adolescent to progress to adulthood and form satisfactory intimate relationships with others. Adolescents who are unable to develop a sense of identity tend to remain confused about who they are and how to relate to others. In such a way, each stage builds on the successful resolution of the previous developmental task and predisposes the person to be ready for the next task. Readiness for the task is necessary for success.

Erikson believed that it is not necessary for the conflict to be entirely resolved in the positive, but rather that the outcome be positive, on balance. The relative mastery of each development stage, building on the former stage, from infancy to adulthood, is required to master the tasks of adolescence, **young adulthood**, middle age and late adulthood. Given the importance of incremental and cumulative developmental outcomes for adulthood, we review Erikson's eight stages of life from infancy, continuing through the stages of childhood, young adulthood, middle age and late adulthood.

Erikson's eight stages of life

Trust versus mistrust (birth to 1 year)

Starting with oral satisfaction, the infant learns to trust the caregiver. The caregiver is representative of the greater world. Trust is achieved when the infant will let the caregiver out of sight without undue distress. The infant has learned to trust not only others but also self. When infants' needs are consistently met, they come to regard the world as a generally safe place. Neglect during infancy leads to the child becoming filled with mistrust – a negative feature. However, even the most cared-for infants experience occasional neglect when needs go unmet. The balanced outcome or relative mastery of this stage is the achievement of general trust with the ability to understand that all people are not equally trustworthy. In adult life, people need some scepticism to avoid being gullible or being cheated by dishonest people.

Autonomy versus shame and doubt (1–3 years)

Having developed a sense of trust in the adults in their lives, the growing child is now ready to develop a sense of their own abilities. The child now realises, in part through gaining bowel and bladder control, that there is a choice of holding on or letting go, and therefore begin to understand that they have a degree of control over their environment. In this way a sense of autonomy starts to develop. Understandably, toddlers may try to exert such control inappropriately over relationships, personal desires and manipulative objects such as toys. At this age children are sometimes willing to share toys, and cooperate some of the time, but not all of the time, and with some people but not others. Children also learn that parents and society have expectations about these choices. The manner in which autonomy is regulated, with empathetic guidance and support from caregivers, has an impact on the achievement of successful control without loss of self-esteem. Harsh discipline can lead the child to doubt their abilities and feel a sense of shame. Extremely permissive approaches leave the child unable to test the limits of their abilities with the safety of a watchful adult.

Initiative versus guilt (3–6 years)

As discussed in Chapter 16, the preschool period is a time of expanding physical and intellectual abilities. Having developed a realistic sense of their basic capabilities, the preschool-aged child can now build on these to make plans, set goals and reach achievements. In so doing, they begin to acquire a sense of initiative and learn new ways of using their recently acquired skills (Figure 17-3). This sense of initiative can be observed in the games children play.



Figure 17-3 Play is therapeutic at any age and provides a means for release of tension and stress in the environment.

Shutterstock/ZINQ Stock.

While playing, the child may come into conflict with another child, and this requires a response from an adult. This is the stage when the beginnings of a conscience (or superego) begin to emerge. If adults' responses are too punitive, the child may be left with a feeling of guilt and initiative may be thwarted. Teaching cooperative behaviours to children can enhance their ability to meet developmental tasks. Informing parents of the changes that the preschooler is facing can help the family support the child's growth and development (Box 17-2). It is also important for parents to understand that it is still necessary to place limits on children's initiative so that they can understand what is required of them to live safely within a society.

BOX 17-2 Threats to growth and development

Growth

Prenatal risk factors:
- Altered nutrition
- Substance use/abuse

Individual risk factors:
- Caregiver and/or individual maladaptive feeding behaviours
- Chronic illness
- Substance abuse

Environmental risk factors:
- Deprivation
- Poverty
- Violence

Caregiver risk factors:
- Abuse
- Mental illness
- Mental retardation
- Severe learning disability

Development

Prenatal risk factors:
- Substance abuse
- Lack of, late or poor prenatal care
- Poverty

Individual risk factors:
- Congenital or genetic disorders
- Brain damage (haemorrhage in postnatal period, shaken baby, abuse, accident)
- Chronic illness
- Failure to thrive
- Inadequate nutrition
- Behaviour disorders
- Substance abuse

Environmental risk factors:
- Poverty
- Violence

Caregiver risk factors:
- Abuse
- Mental illness
- Mental retardation
- Severe learning disability

Industry versus inferiority (6–11 years)

Erikson believed that the adult's attitudes towards work could be traced to successful achievement of this task (Erikson 1963). School-aged children are eager to apply themselves to learning socially productive skills. Children learn to work and play with their peers. Lack of achievement occurs in part because children lack adult capacities. This may create a sense of inadequacy and inferiority for children as they judge their performance against unrealistic standards. Children need to be helped to understand what is reasonable for them to achieve. Take the example of a disabled child struggling to learn to read. As a consequence of a biological difference and delayed achievement, this child may have difficulty avoiding a sense of inferiority. At this age, children need to be supported to understand where their talents lie and to achieve in those areas.

Identity versus role confusion (puberty 11–20 years)

Dramatic physiological changes mark this stage. There are also new social demands, opportunities and conflicts associated with sexual and aggressive drives that relate to the emergent identity and separation from family. This is the milieu in which identity development begins. Alternatives are tested with the goal of achieving some perspective or direction to answer questions such as 'Who am I?' and 'What kind of adult will I become?'

Acquiring a sense of identity is essential for making adult decisions such as choice of vocation or marriage partner. Each adolescent moves in their unique way into society as an interdependent member (Figure 17-4), and peers play a major role in the lives of adolescents (see *Research highlight*). Continuing the example of



Figure 17-4 Adolescents use being alone as a method of coping with stress. Healthcare professionals need to assess whether this method also indicates an attempt to cope with depression.

Dreamstime/Dmiskv.

RESEARCH HIGHLIGHT

Research focus

The health of young people is increasingly being researched and the results contribute methods of helping young people to successfully negotiate adolescence. One method that has become the focus of researchers is the development of helping skills in adolescent peers. These helping skills focus on supporting young people as they cope with their experiences of adolescence.

Research abstract

Peer support is used frequently in addressing the health of young people. The Helping Friends program builds on existing peer helping networks in schools to improve the availability, accessibility and appropriateness of social and personal support. It increases young people's knowledge of and access to referral options (in and out of school) and assists in the development of a safe and supportive school environment. Twenty-two schools in North Queensland, Australia, participated in the program with many participating on several occasions. An evaluation of the Helping Friends program using the Social Provision Scale was undertaken to determine whether there was an increase in perceived social support as hypothesised. Results revealed small yet significant increases along subscales of the Social Provision Scale. Pre- and post-measures of helping skills and knowledge of helping topics also revealed a significant increase following students' participation in training workshops. The results are discussed in terms of the efficacy of peer support programs for addressing the health needs of young people. The findings can be used to guide secondary schools in making decisions on the value of peer support programs and their application in school and out-of-school settings.

Evidence-based practice

- The Helping Friends program has been effective in increasing knowledge of helping behaviour.
- Peer influence is an important consideration in designing programs that target adolescent health.
- Identifying respected friends and enhancing existing skills can reinforce the level of social support within and across peer groups.

Reference

Dillon J, Swinbourne A 2007 Helping Friends: a peer support program for senior secondary schools. Aust e-J Adv Ment Health 6(1). Online. Available: http://amh.e-contentmanagement.com/archives/vol/6/issue/1/article/3309/helpingfriends; accessed 2 Jul 2012.

adolescence, a person who is ready to develop an intimate relationship will be reasonably comfortable with the sort of person he or she is, but is sufficiently malleable to be able to merge their identity with another and become a functioning couple.

Nurses can offer anticipatory guidance about changes and challenges for the adolescent. Nurses who understand the developing adolescent also recognise that adolescents need to be recruited as partners in their care. They are fully entitled to be consulted, along with their parents, about their progress and treatment.

• CRITICAL REFLECTION POINT

Imagine you are caring for a chronically ill adolescent. How might you ensure that the care provided is adolescent-focused? What key areas of development would be important to ensure that you deliver developmentally focused and person-centred care?

Intimacy versus isolation (young adult 20–40 years)

Having developed a sense of identity, young adults deepen their capacity to love others and care for them (Table 17-2). Successful intimate relations require the partners to develop a joint identity. Joint identity is difficult to achieve when the partners do not have a strong sense of who they are. If young people have not achieved a sense of personal identity, they may experience feelings of isolation from others and the inability to form attachments. Their willingness to share and mutually regulate their lives with another marks the completion of this task.

Young adulthood is the time to become fully participative in the community, enjoying adult freedom and the responsibility that goes with that freedom. Understanding the developmental needs of young adults will guide nurses in supporting clients' obligations towards their education, occupation, partners or offspring, particularly when unwell.

TABLE 17-2 Adult developmental theorists

Adult stages (approximate ages)	Erikson	Havighurst
Early early-adult (16–22 years)	Intimacy versus isolation: Ability to form intimate relationships	Early adulthood stage: Selecting a mate Learning to live with a marriage partner Starting a family Rearing children Getting started in an occupation
Late early-adult (22–34 years)		Early adulthood stage: Taking on civic responsibilities Finding a congenial social group
Middle adult (34–60 years)	Adulthood: Generativity versus stagnation, productivity and creativity	Middle age: Assisting teenage children to become responsible adults Achieving adult social and civic responsibility Reaching and maintaining satisfactory performance in one's occupation Developing adult leisure-time activities Relating to one's spouse as a person Accepting and adjusting to the physiological changes of middle age Adjusting to ageing of parents
Late adult/old age (60–85 years)	Integrity versus despair, disgust	Later maturity: Adjusting to decreasing physical strength and health Adjusting to retirement and reduced income Adjusting to death of a spouse Establishing an affiliation with one's age group Adopting and adapting social roles in a flexible way Establishing satisfactory physical living arrangements

• CRITICAL REFLECTION POINT

In current times, the high cost of living means many young people remain with their parents long into their 20s. How might this affect their development within Erikson's intimacy versus isolation stage?

Generativity versus stagnation (middle age 40–60 years)

Following the successful development of an intimate relationship, the middle-aged adult can focus on assisting the younger generation to develop useful and satisfying lives. This ability to sacrifice one's own needs to care for others is possible with or without the production of offspring. The emphasis on independent achievement, so prevalent in Western cultures, can create a situation in which adults become overly absorbed in their own success and neglect the needs of others. Adults at this stage are frequently at the peak of their careers (with the attendant demands), are often responsible for adolescent children, and may also be responsible for ageing parents. Such responsibilities may be a source of stress, but can also be a source of great satisfaction. Illness and/or disabilities that inhibit the discharge of these responsibilities may be a cause of considerable distress.

CLINICAL EXAMPLE

Greg is a 45-year-old male. He holds a senior executive position at a local corporation. Greg enters the emergency department with intense chest pain. Upon evaluation, it is determined that he has severe cardiovascular disease and requires emergency open-heart surgery.

His children, aged 13 and 17, and wife accompany him at the hospital. Greg is the sole wage earner for the family. Both children attend private schools and the whole family enjoys a comfortable and privileged lifestyle. After Greg settles into his private room at the hospital, he asks for computer access to complete some work before his surgery. What might you say to Greg and his family to convey your understanding of his developmental tasks while needing to balance stress?

Integrity versus despair (old age 60 years until death)

As the ageing process creates physical and social losses, the adult may also suffer loss of status and function, such as through retirement or illness. These external challenges are also met with internal struggles, such as the search for meaning in the life lived (Chapter 18). However, meeting these challenges also creates further potential for growth and wisdom. Many older people review their lives with a sense of satisfaction, even with knowledge of inevitable mistakes or poor choices made along the way. Others see themselves as failures, with marked contempt and the inevitable despair that comes from the realisation it is now too late to achieve hoped-for goals. Nurses are often in positions of influence within their communities and can contribute to the valuing of people at all ages and stages. Erikson (1963) stated, 'Healthy children will not fear life, if their parents have integrity enough not to fear death.' Erikson completed significant research during his academic career with varied cultural traditions and gender groups and believed his theory to be widely applicable.

Havighurst's developmental tasks theory

Basing his ideas on Erikson's work and his observation of mainly middle-class American families, Robert Havighurst (1900–1991) was an educator who identified a series of essential tasks that need to be achieved throughout the life span (see Table 17-2) (Ashburn 1978). We know from our own experiences, and from observing those of others, that we tend to achieve certain goals at a specific time of our lives. For example, we learn to walk and talk as babies, to read and write as children, to form sexual partnerships during adolescence and adulthood, and so on. When we accomplish these tasks we develop a sense of mastery and satisfaction and this sets us up to achieve subsequent developmental tasks. The psychosocial theories of both Havighurst and Erikson provide explanations and structure for our observations.

Havighurst believed that the pressures to achieve these tasks, as well as social pressures, develop from our increasing physical maturity and our personal goals and aspirations. Developmental tasks require the individual to reconcile increasing physical maturity with skills such as walking, talking or eating. Cultural pressure creates the conditions necessary to learn social behaviours and ethical norms. For example, although an adolescent girl may be physically able to accomplish the task of having a child, the preparation and timing for the onset of parenthood can also be considered from a perspective of cultural pressure from both the youth and the adult cultures. The desire to have a child might also grow out of the individual's personal aspiration to be a parent.

Similarly, Havighurst's theory proposes that there are critical periods when the individual is most receptive to the learning necessary to achieve success in performing

these tasks. In a similar way to Erikson, Havighurst believed that effective learning and achievement of tasks during one period leads to success with later tasks. Success may also lead to happiness and acceptance by society. Failure leads to unhappiness, disapproval by society, and difficulty with later tasks; for example, the struggle that an adolescent might experience in preparing for a work career after having failed to develop fundamental skills in reading.

As an educator, Havighurst believed that schools have considerable responsibility for helping a child attain the success necessary to lead to achievement of later adult development. His theory is a structure of both non-recurrent tasks specific to a stage of development (such as learning to walk), and recurrent tasks that re-emerge in new ways (such as learning to get along with age-mates). Critics of Havighurst's theory suggest that it is limited in its cultural application because it describes developmental milestones from the perspective of middle-class norms within the American culture. However, we already know that no one single theoretical framework is able to successfully describe the complexity and uniqueness of all human growth and development.

Cognitive development theories

Piaget's theory of cognitive development

Jean Piaget (1896–1980) was a Swiss biologist and philosopher whose interest was in the development of cognitive organisation – or how we think. Piaget created a theory of **cognitive development** which includes four periods, claiming that children move through these specific periods at different rates but in the same sequence or order (Crain 1992). His theory was built on years of observing children as they explored, manipulated and tried to make sense out of the world in which they lived, and ends with achieving the developmental stage of adulthood. In Piaget's cognitive development theory (Piaget 1954), external or internal forces did not shape thinking, although he acknowledged their presence in the process. Piaget's theory includes four general periods of development with a number of stages within each (Box 17-3) and is contrasted with those of Freud, Erikson and Kohlberg in Chapter 16 (Table 16-1, p. 304).

BOX 17-3 Piaget's cognitive development stages

Period I: Sensorimotor intelligence (birth to 2 years)

The infant develops the schema or action patterns for dealing with the environment. The schema basically consists of motor reactions to the environment as perceived through the infant's senses. These schemas may include hitting, looking, grasping or kicking. Schema gradually become self-initiated activities; for example, the infant learns that sucking achieves a pleasing result and generalises the action to suck fingers, blankets or clothing. Successful achievement of this stage leads to greater exploration, and exploration is essential for the child's subsequent development.

Period II: Preoperational thought (2–7 years)

The second period is a time when children learn to think with the use of symbols and images. This requires the child to reorganise their thinking, with play being the initial method of non-language use of symbols. Imitation and make-believe are ways to represent experience. As language develops, possibilities for thinking about the past or the future also develop. Children can now communicate about events with others.

Children are frequently egocentric in this period, in that they are unable to distinguish their perspective from that of another person. This egocentricity is illustrated by the way children of this age play, which is called 'parallel play'. Later in this stage, children learn to cooperate with each other to play a game such as 'mothers and fathers'. Such experiential learning complements the natural changes in thinking as children live with the responses of others to their actions.

Period III: Concrete operations (7–11 years)

Children achieve the ability to think systematically during the third cognitive period, but only when they can refer to concrete objects or activities; that is, experiences that can be seen, felt and tasted. They can now describe a process without actually performing it. At this time they are able to coordinate two concrete perspectives. In other words, they can appreciate the difference between their perspective and that of a friend. Children begin to cooperate and share new information about the act they perform. The potential develops for play and relationships to become more complex, as the child begins to comprehend the nature of rules and their usefulness in regulating activities.

Period IV: Formal operations (11 years to adulthood)

The individual's thinking moves to abstract and theoretical subjects in the formal operations period. Thinking can venture into such subjects as achieving world peace, finding justice and seeking meaning in life. Adolescents can organise their thoughts in their minds without needing concrete objects before them. They have the capacity to reason with respect to possibilities. New cognitive powers allow the adolescent to do more far-reaching problem-solving that includes their futures and those of others. This type of thinking continues to mature in the adult years as experience is accumulated.

In the fourth and final period of Piaget's cognitive development theory (known as Formal Operations) the individual's thinking continues to develop in complexity and moves towards more abstract and theoretical subjects than in the rule-driven and regulated 'Concrete Operations' period (Box 17-3). The adolescent continues to explore thinking across many dimensions, discovering interest in politics or the environment, for example. The expanded cognitive powers of adolescence permit better organisation of thought, greater ability to reason and respect differences of opinion, and skills in communicating and proposing solutions to perceived problems. This experience with theorising and abstract reasoning accumulates and continues into the adult years.

Piaget believed that the sequencing of the four stages of his theory (Box 17-3) occurred for all children, but that the rate of achievement could vary. He also theorised that this sequencing is true for all cultures. He acknowledged that biological maturation played a role in his developmental theory, but believed that rates of development depended on the amount of intellectual stimulation and challenge within the environment of the child.

• CRITICAL REFLECTION POINT

A 7-year-old boy has been diagnosed with immune-mediated (type 1) diabetes. A nurse initiates the educational process with him and his family. Which developmental tasks must the nurse determine are already accomplished by the child and his family in order to design an effective educational program and meet the needs of a family now faced with a chronic illness in one of its members? Based on this boy's cognitive development, how would the nurse work with him to achieve self-management of his diabetes?

Moral developmental theories

Moral developmental theories try to explain 'how individuals acquire moral values and how such values help guide the way those persons treat other people' (Thomas 1997). Although various psychosocial and cognitive theorists have discussed aspects of moral development within their respective theories, Piaget and Kohlberg are two who have proposed a specific theory of moral development.

Piaget's moral development theory

In his studies of 5–13-year-old boys from middle-class backgrounds, Piaget noted that the environment and stage of **cognitive development** are both factors that influence a child's moral development. Piaget noted that a natural shift in **moral development** occurs around the same time as the cognitive transition from preoperational to operational thought (Kurtines & Gewirtz 1984). In his theory of moral development, Piaget termed his two stages *heteronomous morality* and *autonomous morality*. In the stage of heteronomous morality (during the preschool period 3–5 years of age), children follow the rules set up by those in authority, such as parents, teachers, clergy or police. When a young person reaches the stage of autonomous morality (early adolescence 12–14 years of age), moral judgements are based on mutual respect for the rules and mutual regard for the person. The person at this stage starts to consider information related to the subjective intent in making moral judgements that involve others.

Piaget first saw the child as following, but not necessarily understanding rules. Children see rules as fixed and handed down by adults or by 'God', so they cannot change them. Young children base their moral decisions on the extent of the consequences of the action, not necessarily on the action itself. For example, a young child will not eat a biscuit before dinner not because the mother said not to, or because the child can see that it is not good practice nutritionally, but because the child is afraid of the punishment that would result from disobedience. Around 10 or 11 years of age, children's cognitive ability matures and the rules children follow are understood more within the context of community life and the interaction with those around them. Children understand that rules can be changed if everyone agrees to change the rules. Moral maturity is the internalisation of the principles, the desire to weigh all the relationships and circumstances before making a decision. Rules are the tools that humans use to grease the wheels of social interaction.

Kohlberg's moral development theory

Lawrence Kohlberg expanded on Piaget's moral development theory during his graduate work in psychology at the University of Chicago, initially interviewing boys at ages 10, 13 and 16 years. As outlined in Chapter 16, Kohlberg felt that Piaget did not go far enough in the development of his stages. His further development of Piaget's theory included presenting his research subjects with a series of moral dilemmas and analysing their responses. In this way, he identified six stages of moral development under three broad levels, extending into early adulthood (Kohlberg 1973, 1981). Kohlberg found that there was a link between moral development and Piaget's cognitive development: a child's moral development did not advance if the child's cognitive development did not also mature. Like Piaget, Kohlberg believed that we proceed in a sequential manner

through the stages of moral development, and do not skip any stages. He also believed that not all individuals progress to the higher stages of moral development, but may remain as adults in an earlier stage, particularly in Stage 4 as described below.

Level I: Preconventional level

At Level I the person reflects on moral reasoning based on personal gain. This kind of reasoning closely correlates with Piaget's first stage, in that the person's moral reason for acting relates to the consequences the person believes will occur. These consequences can come in the form of punishment or reward. It is at this level that children may view illness as a punishment; for example, for fighting with their siblings or not obeying their parents. The nurse must be aware of this thinking and reinforce to the child that they cannot become ill because of wrongdoing.

Stage 1: Punishment and obedience orientation

In this first stage, the child's response to a moral dilemma is unquestioning deference to authority (specifically their parents or caregivers) to avoid punishment. The child relies on authority to decide what is right, and in so doing avoids punishment. While children will test authority, they will ultimately follow their parents' instructions, such as refraining from hitting another child, to avoid being punished. If children are punished or if unpleasant things happen to them, they will tend to reason that they must have been guilty. Similarly, children at this age will believe that if other children are punished then they must have been naughty. The concept of justice has not begun to develop.

Stage 2: Instrumental relativist orientation

In the second stage, a child recognises there is more than one authority: a teacher may have a view different from that of the child's parent, or a mother may have different views from a father. The decision to do something morally right is based on satisfying one's own needs, and occasionally the needs of others. The child may play one authority off against another. Punishment is perceived not as proof of the child being wrong (as in Stage 1), but as something that one wants to avoid. Children at this stage will follow their parents' rule about being home in time for dinner because they do not want to be confined to their room for the rest of the evening if they do not get home on time.

Level II: Conventional level

At Level II, the person sees moral reasoning based on their own personal internalisation of societal and others' expectations. A person wants to fulfil the expectations of the family, group or nation and also develop a loyalty, actively maintain support and justify the order. Moral decision-making at this level moves from 'What's in it for me?' to 'How will it affect my relationships with others?' Nurses may observe this when family members make end-of-life decisions for their relatives; individual members may struggle with this moral dilemma. Grief support will involve an understanding of the level of moral decision-making of each family member.

Stage 3: Good boy–nice girl orientation

Stage 3 correlates with Piaget's second stage of moral development (see Table 16-1, p. 304). The individual wants to win approval and fulfil the expectations of the immediate group. 'Being good' means to have good motives, show concern for others, and keep mutual relationships through trust, loyalty, respect and gratitude. One earns approval by 'being nice'. A person in this stage may stay after school and do odd-jobs to win the teacher's approval.

Stage 4: Society-maintaining orientation

Individuals expand their focus from a relationship with others to societal concerns in Stage 4. Moral decisions take into account this societal perspective. 'Right' behaviour is doing one's duty, showing respect for authority and maintaining the social order. Adolescents may choose not to attend a party where they know alcohol will be served, not so much because they are afraid of getting caught, but rather because they know that it can lead to unsocial behaviour and create problems for others.

Level III: Postconventional level

The young person finds a balance between basic human rights and obligations, and societal rules and regulations at this level. Individuals move away from moral decisions based on authority or conformity to groups to define their own moral values and principles. Individuals at this stage start to look at what an ideal society would be like.

Stage 5: Social contract orientation

Having reached Stage 5, an individual may follow the societal law but recognises the possibility of changing the law to improve society. The individual also recognises that different social groups may have different values but believes that all rational people would agree on basic rights, such as liberty and life. Individuals at this stage make more of an independent effort to think out what society ought to value, rather than what is actually valued, as would occur in Stage 4. An individual at this stage recognises laws as social contracts that the citizens have agreed to uphold, but believes that there must be a mechanism to change unfair laws by democratic means (Crain 1992).

Stage 6: Universal ethical principle orientation

Stage 6 defines 'right' by the decision of conscience in accord with self-chosen ethical principles. These principles are abstract and appeal to logical comprehensiveness, universality and consistency (Kohlberg 1981). For example, the principles of justice require the individual to treat everyone in an impartial manner, respecting the basic dignity of all people, and guide the individual to base decisions on an equal respect for all (Figure 17-5). Stage 5 emphasises basic rights and the democratic process, whereas Stage 6 defines the principles by which agreements will be most just.

Later research by Kohlberg made him question his earlier conclusions regarding Stage 6, as he found that very few subjects consistently reasoned at this stage. He concluded that his research method of presenting people with moral dilemmas did not draw out the main differences between Stages 5 and 6. He later termed Stage 6 a 'theoretical stage' and tended to ignore this stage in preference for a combination of Stages 5 and 6 in his subsequent research.

• CRITICAL REFLECTION POINT

A 12-year-old girl is admitted to the emergency department after being involved in a motor vehicle accident. She has suffered a fractured pelvis, a fractured tibia and has internal bleeding. She will need immediate surgery. No other person was injured in the accident. Taking into account her psychosocial, cognitive and moral development stages, list as many strategies as you can that healthcare professionals and her parents might use to help her through her hospitalisation and rehabilitation.



Figure 17-5 **Adults must take responsibility for themselves.**

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Nurses need to be aware of their own level of moral reasoning when caring for others as this becomes essential to helping clients clarify their own decisions about their care. The personal beliefs and values of health professionals cannot, and should not, dominate the client's decision-making process. Nurses may also find that their own level of moral decision-making can influence decisions made by the healthcare team. Consider the following scenario: A nurse is caring for a homeless person and believes that all clients deserve the same level of care. The case manager, being responsible for resource allocation, complains about the client's length of stay and the amount of resources being expended on this one client. The nurse and the case manager are in conflict because of their different levels of moral decision-making within their practices.

Critics of Kohlberg's theory

Kohlberg has been recognised as a leader in moral developmental theory, but many identified theoretical differences seem to have arisen from his choice of research subjects. His theory has been criticised for mainly basing observations on males within Western philosophical traditions, and for mainly using cross-sectional (rather than longitudinal) methods to observe development. In cross-sectional studies, different children are observed at each age, so it is difficult to conclude that as a whole they followed a specific sequence. A child may not progress through the stages in order or may skip a stage, and this would not be detected under this method. Research attempting to support Kohlberg's theory by studying individuals raised under Eastern philosophies has found that those study participants never progressed beyond Stages 3 or 4 of Kohlberg's theoretical model. This does not necessarily mean they did not reach higher levels of moral development, but rather that Kohlberg's choice of research subjects did not allow a way to measure those raised within a different culture. Kohlberg's theory has also been criticised for age and gender bias, with Kohlberg himself admitting in later studies that Stage 5 might not be reached until adulthood (Kohlberg 1981).

Carol Gilligan (1982), an associate and co-author of Kohlberg, has proposed that Kohlberg's theory is biased in favour of men. A psychologist and researcher, Gilligan started questioning the differences she observed in the way men and women approached and answered questions about moral dilemmas. Gilligan believes that men and women develop in parallel ways in relationships and issues of dependency, with neither being superior to the other (Gilligan 1982). For example, separation and

individuation are critically tied to male development, as separation from the mother is essential for the boy in his development of masculinity. Girls do not need to separate from their mothers to achieve feminine identity; it is through this attachment to their mother that their identity is formed. Further, male moral development may focus on logic, justice and social organisation, whereas female moral development focuses on interpersonal relationships. Interestingly, studies using Gilligan's critique as the research design have been inconclusive and, as a result, Gilligan's position remains controversial (Cavanaugh 1993). However, according to Gilligan, all developmental theories are subject to this gender bias and it is only relatively recently that our society has conducted research to recognise the differences between men and women in the ways they think and how they have been raised to make moral and other decisions.

The developing adult

Young adults constitute about a quarter of the populations of Australia and New Zealand and, as they pass through alternating periods of stability and change, will make choices and build structures around themselves, while also re-evaluating these choices and considering new alternatives (Erikson 1968, 1982).

Young adulthood is the period between late teens and mid- to late 30s. Young adults experience natural processes of maturation and socialisation and actively adapt to new experiences. Young adulthood is usually a time when young people decide to separate from their families of origin, establish career goals and decide whether to marry and begin families, or remain single. Young adults also make decisions about their sexuality, forming heterosexual or homosexual relationships, and/or managing a continuing or emerging gender identity.

Middle age occurs between the mid- to late 30s and the mid-60s. The transition into middle adulthood occurs when young people become aware that changes in reproductive and physical abilities signify the beginning of another stage in life. This is a time of continuing transition when individuals may reassess their goals in life and add new goals. Some may change relationships and make new families in middle adulthood, while others remain single.

Ideally, those in middle adulthood have reached a mature balance in physiological, psychosocial and cognitive growth. Individuals tend to feel comfortable with the abilities, knowledge and responses that they have developed over the years and look at the world with a broad view, based on a blend of insight, emotion and imagination. Individuals take on problems that can be solved but also recognise and learn to live with insoluble problems. Balanced adults tend to be open to suggestions and to accept constructive criticism without a major loss of self-esteem. They weigh other people's input and recommendations when making decisions, but are not overly influenced or intimidated by others. Above all, mature people develop by learning from their own and others' experiences. Other characteristics of maturity are related to interpersonal communication and behaviour. Mature people tend to acknowledge accomplishments and shortcomings in themselves and others. Mature adults are able to confront tasks openly, use decision-making techniques to solve problems and be accountable and responsible for their actions.

Socio-cultural change in adult roles

In many cultures familial authority has historically been associated with males, who have traditionally assumed major power positions. Boys learn how to be men by absorbing messages about manliness from parents, siblings, peers, teachers, and television and cinema action movies. These messages encourage boys to be competitive, focus on external success, rely on their intellect, withstand physical pain and repress their vulnerable emotions. Traditional masculine roles include providing and protecting.

As women have increasingly taken on the roles of providing and protecting, men's roles have tended to move into disequilibrium. Faced with a societal structure that differs from the norm experienced by their fathers, some men are challenged with determining what it means to be a man and how to feel good about being male in today's society (Brooks 2010). As a provider, for example, a man is traditionally viewed as the main supporter of the family, but with more women pursuing successful careers, the relative importance of the male breadwinner has declined. In the last two decades and the ensuing global financial crises, real family income has been maintained only by the increased participation of women in the workforce. The traditional roles of men and women in young and middle adulthood have changed to a more equal power and family responsibility base. However, this phenomenon is more of a Western social cultural change, with many areas of society maintaining the traditional realm of male and female societal roles.

We have discussed adult maturity and the associated socio-cultural changes for young and middle-aged people. Now we will discuss the health and wellbeing of young adults as they move through life transitions into middle age.

Young adulthood

Physical changes

We have seen in Chapter 16 that adolescence is a common period for the emergence of mental health problems, accidents and injuries. Identification of risk-taking behaviours, mental health problems and the promotion of healthy living through appropriate access to health services ideally begin during the school years. Given the tendency of young adults to avoid health care, it is important that when young people do access healthcare services that they receive a thorough bio-psychosocial assessment. This will provide a good understanding of their health status (physical and mental health) as they enter adulthood, and is a valuable opportunity for health promotion activities, wellness strategies, answering questions about safe sexual practices and advice on any risk-taking behaviours.

Young adults are mostly active and busy participating in vocational and social activities. This group is less likely to be affected by severe physical illness; however, they do tend to ignore physical symptoms, and often postpone seeking health care. Except for pregnant or lactating women, most young adults have completed physical growth by the age of 20 years. For many couples, young adulthood is a time for childbearing and childrearing, and holds a range of biological, physical, psychosocial and economic challenges. While the physical, cognitive and psychosocial health concerns of the pregnant woman and the childbearing family may be extensive, most young adults experience good physical health.

The physical characteristics of young adults begin to change at the approach of middle age. Unless the young adult has a chronic illness, the findings of a health assessment will generally be within normal limits. Young men may be especially reluctant to seek medical advice and such a view may also be inadvertently reinforced by healthcare professionals (Hale et al 2010). Nurses should take great care to encourage self-care and the appropriate use of health services for both young men and young women.

Young adults in this developmental stage may benefit from a **personal lifestyle assessment**. This may assist with the identification of habits that increase the risk of cardiac, malignant, pulmonary, renal or other chronic diseases. A personal lifestyle assessment of the young adult includes assessment of general life satisfaction; hobbies and interests; habits such as diet, sleeping, exercise, sexual health, and use of caffeine, alcohol and illicit drugs; home conditions, including housing, economic condition, pets and type of health insurance; and their occupational environment, including type of work, exposure to hazardous substances, and physical or mental strain.

Psychosocial changes

The **emotional health** of young adults is related to the individual's ability to resolve personal, vocational and social tasks. Young adults are often caught between wanting to prolong the sense of freedom and minimal responsibilities of adolescence, and wanting to assume adult commitments. We acknowledge here that this is not the experience of all young adults. Many young adults live in impoverished circumstances, developing economies, or in places with strict political and cultural regimes that result in different life experiences. This may lead to differences in the timing and accomplishment of psychosocial development outcomes relative to their contextual life experiences.

During the young adult years, considerable attention is given to occupational and social pursuits. In this period, individuals attempt to improve their socioeconomic status, and upward mobility is sought through career choices. Recent trends towards corporate downsizing and increasing casualisation of the workforce, however, are leading to fewer full-time high-level positions. Consequently, many young adults are facing the added stress of greater competition in the workplace for fewer positions and an ever-changing skills base demanded by an increasingly technology driven market. For many young adults, two incomes are needed to provide for their families and preferred lifestyles. Career and personal counselling can help individuals identify learning and career choices and to set realistic goals.

However, certain patterns or trends are predictable. Between the ages of 23 and 28 years the young person refines their self-perception and ability for intimacy. From 29 to 34 years the young person directs enormous energy towards achievement and mastery of the surrounding world. The years from 35 to 43 are a time of vigorous re-examination of life goals and relationships. Alterations are made in personal, social and occupational lives. Often the stresses of this re-examination result in what some call a 'midlife crisis'. For some, this heralds a change in marital partner, lifestyle or occupation.

Ethnic and gender factors have sociological and psychological influences in an adult's life. These factors sometimes pose a challenge for appropriate and effective nursing care. Each person holds culture-bound definitions of health and illness. We are just beginning to understand the experience of illness, ageing and trauma for some individuals and its impact on the future of health care.

Nurses and other healthcare professionals bring distinct practices and ideas for the prevention and treatment of illness, often shaped by their own cultural experience. Knowing too little about a client's self-perception or

beliefs regarding health and illness, or relevant history such as violence or trauma, may create conflict between the nurse and the client. Of critical importance here is that healthcare professionals are prepared to actively listen to clients to gain an understanding of the way the client understands health and illness, and something of their life experience. The skills required to listen effectively are described in Chapter 12.

Changes in the traditional role expectations of both men and women in young and middle adulthood have also led to greater challenges and creativity in nursing care. Women and men often continue to work during the childrearing years, and many struggle with balancing careers, partners, parenting, education, employment and possibly other carer responsibilities. This is a potential source of stress for young adults that continues into middle adulthood for many. Nurses can support access to culturally and socially appropriate information, and appropriate referral, to provide opportunities for the achievement of potential, despite health problems. Health is not merely the absence of disease but involves a self-perception of wellness in all human dimensions. Acknowledgement of the psychosocial needs of young adults and their possible needs in other dimensions is a significant aspect of nursing practice.

The young adult must make decisions concerning career, a partner, possible marriage or parenthood and lifestyle. Although each person makes these decisions based on individual factors, the nurse should understand the general principles involved in these aspects of psychosocial development. This is undertaken while assessing the young adult's psychosocial status and tailoring support in times of illness. A range of psychosocial assessment tools are utilised, often associated with the type of illness and/or age or development stage of the client. Two examples are the HEADSPACE psychosocial assessment tool for young people aged 12–25 years (National Youth Mental Health Foundation 2013) and the Palliative Care Psychosocial Assessment Tool (Department of Health and Human Services Tasmania 2007).

Cognitive changes

Rational thinking habits increase steadily through the young and middle adult years. By the mid-20s the prefrontal cortex of the brain is fully developed. The prefrontal cortex governs the person's ability to reason in a mature way and to control reckless impulses. In addition, formal and informal education, general life experiences and occupational opportunities dramatically increase the individual's conceptual, problem-solving and motor skills during this period of life. Adults enter learning situations with a background of unique life experiences. For some, this may include migration from other lands, different languages and cultures. For others, background experience may include illness (physical and mental), emotional or physical trauma or disability. Adults are individuals with their unique life story.

Identifying preferred occupations is a major task for young adults. When people are aware of their own skills, talents and personality characteristics, educational preparation and occupational choices are easier and more satisfying. Many young adults, however, lack either the resources or the support systems to facilitate further education or the development of skills necessary for many positions in the workplace. As a result, some young adults may have limited occupational choices.

For the young adult receiving health care, individual compliance with regimens such as medications, treatments or lifestyle changes (such as quitting smoking) involve complex decision-making processes. When determining the amount and type of information the individual needs to make informed decisions about the prescribed course of therapy, the nurse should consider the external evidence available (from research) and those factors that may affect the individual's contextual compliance with the regimen, including educational level, social and economic factors, cultural diversity, motivation and desire to learn. Young and middle-aged adults are continually evolving and adjusting to changes in their home, workplace and personal lives, so their decision-making processes need to remain flexible. The more secure adults are in their roles, the more flexible and open they are to change. Adults who feel insecure tend to be more rigid and less confident in making decisions.

Health and wellbeing of young adults

Lifestyle

The health and wellbeing of individuals and wider society is also dependent on lifestyle behaviours and responses to the external environment. Certain lifestyle behaviours such as smoking, the abuse or misuse of alcohol, illicit, prescribed and over-the-counter substances, insufficient exercise, poor diet, and poor dental and personal hygiene can all increase or contribute to a future risk of illness. Family history and, as is being revealed by research, our genetic codes, can increase our risk for cardiovascular, renal, endocrine or neoplastic disease.

The nurse's role in promoting health is to identify factors that may increase the young adult's risk of health problems and to provide education and support to reduce

unhealthy lifestyle behaviours. Those lifestyle habits that activate the stress response also increase the risk of illness. Prolonged stress increases wear and tear on the body's capacity to adapt, leading to the development of stress-related diseases such as emotional disorders and infections.

Smoking is a well-documented risk factor for pulmonary, cardiac and vascular diseases in both smokers and those who are exposed to environmental smoke. Inhaled pollutants from smoking increase the risk of lung cancer, emphysema and chronic bronchitis. The nicotine in tobacco is a vasoconstrictor that acts on the coronary arteries, increasing the risk of angina, myocardial infarction and coronary artery disease. Nicotine also causes peripheral vasoconstriction and may lead to vascular problems. Alcohol consumption and especially 'binge' drinking is an increasing problem among young people, with young males particularly at risk (Chartier et al 2011). Other health and risk-taking behaviours are discussed later in the chapter.

Epigenetics

Epigenetics is a new frontier of knowledge bringing new understandings to our personal lifetime risk of disease (Francis 2012). Current knowledge has allowed us to establish links between the biological or genetic, and extrinsic or environmental causes of disease. Epigenetic research explores the ways in which environmental (including lifestyle behaviours) or ecological (environmental context as discussed earlier in this chapter) factors alter the way in which genes express themselves. Specifically, **epigenetics** explores the mechanism by which genes are turned on, or turned off, expressed or not expressed, as a result of environmental influences (Francis 2012). This field offers an exciting new direction for governments, health services and health professionals to determine and promote health and preventative interventions to specific groups of individuals with high-risk genetic markers for disease.

• CRITICAL REFLECTION POINT

Mason is a 24-year-old man who smokes two packets of cigarettes per day. He began smoking when he was 14 years old. During a work-based health assessment, Mason complains, 'I just can't seem to kick the habit no matter how hard I try.'

1. **What does the nurse need to know about smoking cessation programs in order to negotiate with this client?**
2. **What questions would the nurse ask Mason in order to assess his motivation and opportunities to quit smoking?**
3. **What physical assessment would the nurse conduct, and for what reasons?**
4. **What follow-up plan might the nurse negotiate in order to provide support for Mason's efforts if he attempts a quit-smoking program?**

Careers and work

Young men and women aspire to careers that will enable them to realise their occupational dreams and financially support themselves. Young adults may formulate short- and long-term goals in traditional or non-traditional careers and successful **vocational adjustment** is important in the lives of most. Successful employment not only ensures economic security, but also leads to friendships, social activities, and support and respect from co-workers. Career-related stressors include changes in one's work demands, location or job security, or in those of a partner. The combined employment demands of the adult members of a household may place stress on their domestic needs. These stressors may be managed by dividing labour among family or extended family (e.g. grandparents), or by outsourcing some domestic activities such as house-cleaning, childminding and gardening, depending on the family income.

There is a current trend for young adults, with or without partners, to return or remain with their parents in the family home for longer periods of time. Parents are increasingly supporting young adults financially and emotionally during their early periods of study and work. Many young adults cannot maintain the costs of living as well as undertake post-school education, and therefore rely on subsidised accommodation at home for support. Some young adults are supported by parents or family to work or study in other countries to improve work opportunities and family prosperity back at home. Other more privileged young people may experience the opportunity to work and travel for fun. This situation has created a very multi-cultural context in higher education and in the workplace for many young people, expanding their life experiences and friendships.

Sexuality

The development of secondary sexual characteristics occurs during the adolescent years (see Chapter 16) and is accompanied by an increased interest in intimacy. The young adult has usually developed the emotional and cognitive maturity to complement their physical ability and is able to develop mature sexual relationships and have children. Young adults who have failed to achieve the developmental task of personal integration may, however, develop relationships that are superficial and unfulfilling, or even damaging (Haber et al 1997).

The psychodynamic aspect of sexual activity is as important to young adults as the type or frequency of sexual intercourse. Psychological beliefs and expectations give feelings of pleasure and satisfaction to adults. In order to maintain total wellness, adults should be encouraged to explore various aspects of their sexuality and be made aware that sexual needs and concerns will continue to evolve. As the age of initiation of sexual intercourse continues to decrease, young adults become more at risk of sexually transmitted infections (STIs). Consequently, they need early preventative and screening information regarding modes of transmission, prevention, symptom recognition and treatment of STIs.

Lifestyle and relationships

While there is a trend towards more young adults living with parents or extended family members, many are remaining single and living independently. Expanding career opportunities for women is one reason for the increase in the independent singles population. Women now enter the job market with greater career potential and therefore greater opportunities for financial independence. Further, more single people are choosing to live together outside of partnering (e.g. friends benefit financially from purchasing a house together), as well as becoming single parents, either biologically or through adoption. Those who establish long-term relationships or eventually choose to become partners experience several changes as they take on new responsibilities. For young adults who remain single and without children, parents and siblings may remain the nucleus of their family, although the young adult maintains independence from parental controls. Close friends and associates of the single and childless young adult may also be viewed as the individual's 'family' (see Chapter 15).

Relationships: partners and marriage

The social pressure to get married is not as great as it once was. In Australia (Australian Bureau of Statistics 2007a) and New Zealand (Baker 2001), the median age for women to marry was 25 years in 1988 and 29 years in 2007. The corresponding ages for men were 27 and 29. Many young adults will form long-term same gender or opposite gender relationships and many will choose not to marry at all. Married couples may choose to separate or divorce if they find their marital situation unsatisfactory and many more couples are leaving parenting decisions well into their 30s, and a few beyond into their 40s. The divorce rates for New Zealand and Australia are similar, at around 2.5–2.6 divorces per 1000 people (ABS 2007b). In the 1970s and 1980s the divorce rate rose quite sharply in both countries because of changes to family legislation.

Every couple's relationship is unique. Compatible beliefs and values are seen as important to building a happy relationship, as are motivations for commitment. When establishing a shared relationship, a couple agrees to work on the following tasks:

- establish a mutually respectful intimate relationship
- decide on and work towards mutual goals
- establish guidelines for power and decision-making issues particularly childraising and finances
- set standards for extra-family interactions
- find companionship with other people for a social life
- choose morals, values and ideologies acceptable to both.

These major tasks of adulthood require considerable psychosocial and cognitive maturity and self-esteem. When accomplished, however, they provide the foundation for a stable relationship. Growth in partnership or marriage extends over many years and a range of challenges present themselves. The couple learns patterns of sexual expression and ways to live intimately with each other. In order to live harmoniously the couple needs to learn styles of conflict resolution, decision-making and role patterns. In addition, each partner may experience a sense of loss of individuality and self in the transition from *me* to *we*. Success in solving the challenging problems that occur in any intimate and committed relationship offers partners significant insight into each other and significant personal development opportunities.

Family orientation

The family orientation stage is directed towards childbearing and childrearing activities and caring for older family members. Parenting roles must be defined, united and practised. The nurturing and socialisation needs of children can put pressure on the couple's intimate relationship. In addition, expectations for 'perfect parenting' may be unreasonable and conflict with reality. Other challenges emerge as family growth brings greater financial demand to meet housing, social and lifestyle expectations. Young adults often experience stress during this time and some families begin to be affected by violence, substance abuse and gambling during this period of life.

Some young women will experience depression and anxiety during pregnancy and following childbirth (the perinatal period). Undertaking a risk assessment as women access health services for antenatal and postnatal care offers an important opportunity to detect depression and/or anxiety in the perinatal period. The Edinburgh Post Natal Depression Scale (Cox et al 1987) is commonly used to assess for depression in pre- and postnatal women.

• CRITICAL REFLECTION POINT

Alisha is aged 32 and is 34 weeks pregnant. She attends the outpatient prenatal clinic at the local public hospital. During her interview with the midwife, Alisha describes feeling very tired and teary. She finds working full-time and caring for her two other children demanding. Her husband works in the mines and is away from home for long periods. The situation is distressing her and she feels down a lot.

Consider the presenting problem and priorities and goals for planning care with Alisha to respond to these issues.

Decisions about parenthood

The availability of contraception makes it possible for today's couples to decide when and if to start a family (see Figure 17-6). One factor influencing this decision is the reason for wanting a child. Social and, in some countries, political factors may also influence a couple to limit the number of children they have. In many developed countries, economic considerations frequently drive the decision-making process. For those living in low resource or developing nations, having children is a way of ensuring that someone will be available to care for the aged parent and family into the future. General health status and age are also considerations in decisions about parenthood as couples in many developed countries are getting married later and postponing pregnancies.



Figure 17-6 **Parent–child nurturing is important in adult transitions incorporating parenthood.**

iStockphoto/McInnch.

Unplanned pregnancy

Young adults sometimes have educational and career goals that take precedence over family development. Interference with these goals can affect future relationships and later parent–child relationships. An unplanned or even a planned pregnancy can act as a stressor and present emotional and physical health risks. Determination of situational factors that may affect the progress and outcome of an unplanned pregnancy is important. Exploration of problems such as finance, career, living accommodation, family support systems, potential parenting disorders, depression and coping mechanisms is important in assessing the health of a woman with an unplanned pregnancy.

Emotional health

Most young adults have sufficient physical and emotional resources and support systems to meet the many challenges, tasks and responsibilities of young adulthood. During the psychosocial assessment of young adults, assessing the 10 hallmarks of emotional health (Box 17-4) is one way to determine successful maturation in this developmental stage.

Health and health risk in young adulthood

Young adults are generally active and have minimal health problems. However, their lifestyles may put them at risk

BOX 17-4 10 hallmarks of emotional health

1. A sense of meaning and direction in life
2. Successful negotiation through transitions
3. Absence of feelings of being cheated or disappointed by life
4. Attainment of several long-term goals
5. Satisfaction with personal growth and development
6. When married, feelings of mutual love for partner; when single, satisfaction with social interactions
7. Satisfaction with friendships
8. Generally cheerful attitude
9. No sensitivity to criticism
10. No unrealistic fears

Modified from Stanhope M, Lancaster J 1996 Community health nursing: process and practice for promoting health, 4th edn. Mosby, St Louis.

of illness or disability during their middle or older adult years. Young adults may also be genetically susceptible to certain chronic diseases such as diabetes mellitus and familial hypercholesterolaemia (McCance & Huether 2012). Crohn's disease, a chronic inflammatory disease of the small intestine, most commonly occurs between 15 and 35 years of age.

Health risk and illness

Health risk factors for the young adult originate from their community, lifestyle and family history. For example, a young man whose father and paternal grandfather had myocardial infarctions (heart attacks) in their 50s has a higher risk for myocardial infarction. The presence of chronic illnesses in a family also increases the family member's risk of developing a disease. Risk may be a genetic factor and carried down through the family ancestry, or environmental; for example, the increased risk of lung cancer with the presence of secondary cigarette smoke in the home or heart disease as a result of poor family dietary habits over many years. It is also common for young adults to have misconceptions about the transmission and treatment of sexually transmitted infections (STIs) and they often need encouragement to discuss partner health status and risk.

Acute hospital care for young adults is frequently related to accidents, substance abuse, and exposure to environmental and occupational hazards, stress-related illnesses, respiratory infections, gastroenteritis, influenza, urinary tract infections and minor surgery. An acute minor illness can cause a disruption in the life activities of the young adult and increase stress in an already hectic lifestyle. Dependency and limitations posed by treatment regimens can also increase frustration for the young adult. To give young adults a sense of maintaining control of their healthcare choices, it is important to ensure they are well informed about their health status and that you, as the nurse, partner with them in healthcare decisions.

Chronic conditions are not common in young adulthood, but they can occur. Chronic illnesses such as hypertension, coronary artery disease and diabetes may have their onset in young adulthood without being diagnosed until later in life. Causes of chronic illness and disability in the young adult can include accidents, multiple sclerosis, rheumatoid arthritis, HIV/AIDS and cancer. Those born with genetic or congenital conditions of childhood, such as cystic fibrosis or congenital heart disease, now live well into their adult years and challenge health services to deliver appropriate care during adulthood. Chronic illness and disability can affect the accomplishment of important developmental tasks in young adulthood. The threat to the young adult's indpendence that is caused by chronic illness or disability can result in the need to change personal, family and career goals. Nursing interventions for the young adult faced with chronic illness or disability should acknowledge potential developmental problems related to sense of identity, the establishment of independence, reorganisation of intimate relationships and family structure and launching of a chosen career (Brown & Edwards 2007).

Health screening and assessment

Routine health screening has beneficial outcomes for the detection, management and prevention of a range of health disorders. Routine screening and assessment reduces the risk of preventable disease (see Chapter 24). In Australia, there are currently eight National Health Priority Areas: arthritis and musculoskeletal conditions, asthma, cancer control, cardiovascular health, diabetes mellitus, injury prevention and control, mental health and obesity (AIHW 2011). These priority areas have been associated with 91% of all deaths in this country. In New Zealand, the national health targets for 2011–12 are shorter stays in emergency departments, improved access to elective surgery, shorter waits for cancer treatment, increased immunisation, better help for smokers to quit, and better diabetes and cardiovascular services (Ministry of Health 2011a).

Breast screening (mammography) is included in current initiatives since breast cancer continues to be one of the most common causes of cancer deaths among women in Australia and New Zealand (Breast Cancer Australia 2011, Ministry of Health 2011b). Health screening not only involves professional activities, but relies on individuals conducting self-assessments, for example, regular examination of skin, breasts or genitalia. Nurses have a role in supporting young adults to understand the importance of integrating regular self-assessment into their daily lives and in promoting activities such as sun safety. It is vital that nurses have the skills to engage in effective educational processes to support young adults to adopt self-assessment and self-care practices for maintaining health and reducing risk (see Chapters 16 and 21).

Personal hygiene

As in all age groups, the personal hygiene habits of young adults are important and can impact on health. Regular bathing and healthy eating are important for maintaining healthy skin, hair and nails. Sharing eating utensils with a person who has a contagious disease increases the risk of illness. Poor dental hygiene increases the risk of periodontal disease and, as is now known, heart disease. Gingivitis (inflammation of the gums) and periodontitis (loss of tooth support) can be avoided through good oral hygiene (see Chapter 29).

Exercise

Exercise patterns can affect health status and this is a particularly important area of concern in countries where a sedentary lifestyle is common. For many young adults a lack of exercise is often related to work that requires sitting for long periods or long commutes to work. Insufficient physical activity and lack of exercise are associated with obesity, diabetes and cardiovascular diseases. Exercise that produces a sustained increase in the pulse rate for about 30 minutes every day improves cardiopulmonary function by lowering blood pressure and heart rate. In addition, exercise decreases fatigability, insomnia, tension and irritability. Related health assessment includes musculoskeletal assessment, joint mobility and muscle tone.

Psychosocial health

The psychosocial health concerns of the young adult are often related to work, study, relationship or family stress. As noted in Chapter 20, stress is not always bad. Stress can be valuable in motivating a person to change their situation. However, if the stress is prolonged and the young adult is unable to adapt to the stressor, health problems can develop. Mental health is an increasingly important issue for Australians and New Zealanders. In Australia, young adults are more likely to die from suicide than any other age group and the rate is higher for young men than women (ABS 2010b). Comparatively, the peak age for suicide among Aboriginal and Torres Strait Islander people (male and female) for 2012 was 25–29 years (ABS 2013a). This group suicide at a rate that is higher than non-Indigenous people. In 2014, suicide among Aboriginal and Torres Strait Islander peoples accounted for 5.2% of all Indigenous deaths compared to 1.8% for all deaths among non-Indigenous people (ABS 2016).

The second peak (the first is after age 85 years) in age for suicide in Australia is between the ages of 40 and 44 years for men and women (ABS 2013b). Similarly, in New Zealand, suicide continues to occur at significantly higher rates in Māori (16.1 per 100,000) than non-Māori (9.9 per 100,000) (Ministry of Health 2009).

Most young adults are able to handle day-to-day crises and variable levels of work stress. Situational job stress may occur when a new boss enters the workplace, a deadline is approaching or the worker is given new or greater responsibilities. A trend in today's business world and a risk factor for job stress is corporate downsizing, leading to increased responsibilities for individual employees and fewer vacant positions within corporate structures. Work stress also occurs when a person becomes dissatisfied with a job or their work responsibilities. Because individuals perceive jobs differently, the types of job stressor vary from person to person. Assessment of the young adult should include a description of the usual work performed and the present work functions, if different. Work assessment also includes conditions and hours, duration of employment, changes in sleep or eating habits, and evidence of increased irritability or nervousness.

Family stress can occur at any time during the peaks and troughs of normal family life (see Chapter 15). Situational stressors particularly occur during significant life events such as births, deaths, illnesses, marriages, divorce and job loss. Because of the multiplicity of changing relationships and structures in the emerging young adult family, stress is frequently high. The paid and unpaid work responsibilities of both partners may lead to temporary or permanent dysfunction in the young adult's family. For example, the highest divorce rate occurs during the first 3–5 years of marriage for young adults under the age of 30 years.

Families develop certain roles or jobs for their members. These roles enable the family to function as a unit and to contribute effectively to their broader society. An important role is that of the family 'leader'. In many families, one parent is the leader, or in others, both parents act as co-leaders. In single-parent families the parent or occasionally a member of the extended family is the family leader. When the role of leader is threatened (as a result of illness, for example), a situational crisis may occur. Indeed, any illness in the family has flow-on effects for all members, creating family strain. Assessment of environmental and familial factors, including the support systems and coping mechanisms commonly used by family members, is an important aspect of the health assessment. When any client presents with stress-related symptoms, it is useful to first explore significant family events.

Alcohol and substance use

Substance abuse directly or indirectly contributes to mortality and morbidity in young adults. Young adults under the influence of alcohol and/or other drugs may be severely injured in motor vehicle accidents, assaults or from self-harm. They are more likely to engage in other high-risk behaviours that may result in death or permanent disability to themselves or others. Increases in binge drinking and illicit drug use have led to alarming increases in emergency department presentations in recent years. One-third of Australian young people have been found to drink sufficient quantities of alcohol to put them at risk of short-term alcohol-related harm (AIHW 2007).

Dependence on stimulant or depressant drugs can result in long-term addiction, physical and mental health problems or death. Further, illegal possession and use of

illicit drugs is a criminal offence. Overdose of a stimulant drug ('upper') can stress the cardiovascular and nervous systems to the extent that death occurs. The use of depressants ('downers') can also lead to an accidental or intentional overdose and death.

Substance misuse is not always detectable. Non-judgemental questions about the use of legal drugs (prescribed drugs, tobacco and alcohol), use of soft drugs (marijuana) and use of illicit drugs (cocaine, heroin or 'ice') should be a routine part of any physical health assessment. Important information may be obtained by making specific inquiries about past medical problems, changes in food intake or sleep patterns, or emotional instability. Previous criminal convictions, such as for driving while intoxicated, domestic abuse or disorderly conduct may be relevant for alerting the healthcare professional to probe for the possibility of substance misuse or addiction.

Cannabis

For some, cannabis use commenced in adolescence continues through the young adult years. Also known as marijuana, this drug is developed from the flowers or extracted resin of the cannabis plant and is often smoked using unfiltered implements. The brain, specifically the hippocampus, amygdala, striatum and the cerebellum, have receptors that are impacted by cannabis. As a consequence, the user experiences a distorted sense of perception and a false sense of tranquillity sleepiness or restlessness, and can lead to feelings of depression.

Although correlations around the frequency and duration of use are unclear, cannabis use can result in impaired memory, increased anxiety, impaired psychomotor control, increased appetite, increased heart rate and alteration of sleep. Longer term use can (but is not limited to) increase the risk of mental illness, personality changes, hormonal problems, immune system suppression and injure blood vessels, as well as the structures of lungs and brain. Another more positive side effect of cannabis is pain reduction. Medical cannabis is increasingly being used to treat nausea associated with chemotherapy and other drug therapies and to reduce chronic pain and seizures.

Methamphetamines

The current worldwide trend of youth and young adults to consume methamphetamines is of significant concern for current and long-term health status. Methamphetamine is a synthetic (man-made) drug, often manufactured in non-regulated laboratories in residential suburbs or remote locations. The drug is made from the ingredients of a number of common cold and flu medications to increase its strength. These ingredients may be combined with other substances such as battery acid, lamp fuels, cleaning products and anti-freeze. Already high-risk, it is often the unknown contents of self-manufactured methamphetamines that significantly increase the risk of consuming this drug.

Crystal meth or 'ice', as it is often called, gives the person a false sense of themselves, often resulting in behaviours associated with personal violence and accidents. The 'down' or 'crash' as the drug wears off causes physical and emotional pain, leading to further drug seeking. Long-term health effects include increased heart rate and high blood pressure, damage to blood vessels in the brain and heart, leading to stroke or cardiac rhythm irregularities and possibly death. There is also risk for brain, liver, kidney and lung damage. Withdrawal from this drug and rehabilitation is long term and difficult.

Gambling

The 15–24-year age range is a high-risk period for engaging in gambling. Interestingly, higher rates of problem gambling have been linked to those with symptoms of self-reported Attention Deficit Hyperactivity Disorder (ADHD) persisting into young adulthood (Breyer et al 2009). Poor ability to cope with stress, anxiety, anger and other emotions have also been identified among young adult gamblers who go on to experience adult gambling addictions (Messerlian et al 2005). A recent study has reported that problem gambling among young adults is associated with higher rates of illicit substance use, alcohol and cigarette use, aggressive behaviours and unemployment, and lower rates of education (Hayatbakhsh et al 2012).

Young adults risk multiple health and social problems when they become involved in gambling, particularly when begun in adolescence. Problem gambling is a relatively under-researched area of health, but appears to be linked to a number of long-term health and social impacts.

Violence and injury

Violence is the greatest cause of mortality and morbidity in the young adult population. Death and injury can occur from physical assault, motor vehicle or other accidents and intentional self-harm or suicide. In Australia, 25% of male deaths and 17% of female deaths between the ages of 15 and 24 years are due to suicide (Harrison et al 2010). In Australia (AIHW 2006) and New Zealand (Ministry of Health 2014), young adults are much more likely to die from suicide or accidents (including road accidents or homicide) than disease. However, the number of deaths of children and young adults from motor vehicle

accidents has reduced considerably in the last two decades (AIHW 2010).

Media attention has focused on the increase in violent crime among youth, but adults still commit the majority of crimes. Factors that may predispose adults to violence, with subsequent injury or death, include poverty, family breakdown, domestic violence, child abuse and neglect, and repeated exposure to violence. Community and domestic violence are major causes of homelessness among women (AIHW 2005). Psychosocial assessment, including questioning about behaviour patterns, history of physical abuse, substance abuse, education, work history and social support systems, is an important part of the health assessment to detect personal and environmental risk factors.

Environmental or occupational factors

A common environmental or occupational risk factor is exposure to airborne particles that may cause lung diseases and cancer. Such lung diseases include silicosis from inhalation of talcum and silicon dust, and emphysema from inhalation of smoke. Cancers resulting from occupational exposures may involve the lung, liver, brain, blood or skin. Questions regarding occupational exposure to hazardous materials should be a routine part of the health assessment (Table 17-3).

TABLE 17-3 Occupational hazards associated with diseases

Occupational hazard	Work-related condition
Asbestos	Asbestosis, mesothelioma (pleural and peritoneal), lung cancer
Sunlight	Skin cancer
Wood dust	Nasopharyngeal cancer
Metal dust	Lung disease
Anaesthetic gases	Reproductive effects, cancer
Cement dust	Dermatitis, bronchitis
Solvents	Liver disease, dermatitis
Metal powders	Cataracts
Repetitive wrist motion on computers	Tendonitis, carpal tunnel syndrome, tenosynovitis
Petroleum distillates	Cancer of lung, larynx
Vinyl chloride (plastics)	Liver cancer (haemangiosarcoma)
Vibration (as in jackhammer use)	Raynaud's phenomenon
Dyestuffs	Bladder cancer, dermatitis
Pesticides	Pesticide poisoning
Cleansers, latex gloves	Allergies

Modified from Stanhope M, Lancaster J 2008 Community and public health nursing, 7th edn. Mosby, St Louis.

Sexually transmitted infections

Sexually transmitted diseases (STDs) or infections (STIs) continue to be a significant health problem for sexually active adolescents and adults. STDs include syphilis, chlamydia, gonorrhoea, genital herpes and HIV or acquired immune deficiency syndrome (AIDS). Some STIs have immediate and obvious symptoms such as discharge and discomfort. In others, symptoms are less obvious (particularly in women) and failure to treat may lead to significant consequences such as chronic infection from genital herpes; infertility from gonorrhoea; or disability and death from AIDS. Nurses should be alerted to the possibility of STIs when clients complain of urological or gynaecological problems (see Chapters 21 and 23). Health promotion for the prevention of STIs, safe sex and sexual safety is usually begun in early adolescence and is part of many school-based health and personal development learning activities.

Infertility

Infertility is the involuntary inability to conceive. In most sectors, infertility is defined as the inability to conceive after a year or more of regular sexual intercourse. While the fertility rate has increased in Australia and New Zealand (ABS 2007c, Statistics New Zealand 2011), an estimated 15–20% of otherwise healthy adults are infertile and many infertile clients are young adults. However, about 50% of the couples evaluated and treated in infertility clinics eventually become pregnant. In about 10–20% of couples, the cause of infertility is unknown and they remain infertile. In the remaining 30%, the cause of infertility is diagnosed but the couples remain infertile because of endometriosis, blocked fallopian tubes or decreased sperm motility. For some infertile couples, a nurse or health professional may be the first person they talk to about their inability to conceive. Assessment of the infertile couple should include a comprehensive health history of both the male and the female to determine factors that may have affected fertility, as well as relevant physical findings.

Pregnancy and parenting

A significant developmental task for many young adults is the decision to parent children (Figure 17-7). Physiological, cognitive, emotional and psychosocial transitions are part of a woman's **pregnancy** and childbearing experience



Figure 17-7 Ongoing prenatal care reduces complications of pregnancy.

iStockphoto/Gene Chutka.

(see Figure 17-8). The significant family of a woman, particularly a partner but also other family members such as parents, will also experience psychosocial transitions associated with the pregnancy and childbirth. Conception, fetal development and aspects of health during pregnancy and childbirth are discussed in Chapter 16.

Conception, pregnancy, birth and the puerperium are major phases of the childbearing cycle. Women experience significant complex changes in physiological condition, emotion and body image during pregnancy and early motherhood. Women who are anticipating pregnancy will benefit from good health practices before conception; these include maintaining a balanced diet, including an increased intake of folates (National Health and Medical Research Council 2003), a health check-up, avoidance of alcohol and cessation of smoking.

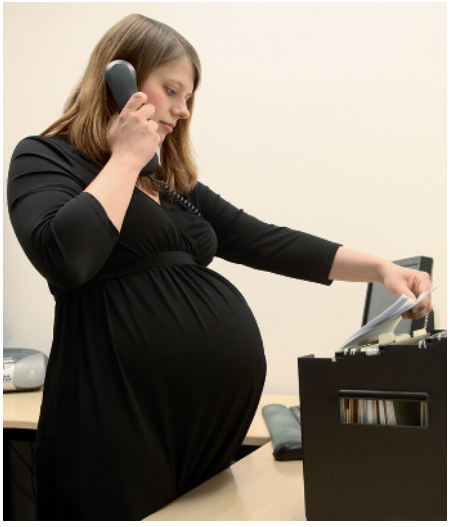

Figure 17-8 The ability to handle day-to-day challenges at work minimises stress.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Physiological changes and needs

The major physiological changes and needs of the pregnant woman vary with each trimester (Table 17-4) and are also discussed in Chapter 16.

Prenatal care

Prenatal care, also known as antenatal care, is the routine examination of the pregnant woman by a midwife, obstetrician or general practitioner. Prenatal care includes physical assessment, for example, of the pregnant woman's weight, blood pressure, urine testing for glucose, acetone and protein, and measurement of the pregnant uterus (fundal height). Information is shared regarding sexually transmitted diseases, other vaginal infections and urinary infections that could adversely affect the health of the woman or fetus. The pregnant woman may be counselled about exercise, diet and childcare. Regular antenatal care monitors for conditions associated with pregnancy such as preeclampsia, eclampsia, gestational diabetes, excessive weight gain and the high-risk infant.

First trimester

All women experience some physiological changes in the first trimester of pregnancy, but not all will experience the physical effects of these changes, as outlined in Table 17-4. The midwife's role is to work with women to assess and monitor physical signs and symptoms, to monitor fetal health and growth, to suggest strategies to minimise discomfort from morning sickness or fatigue, as well as to refer the woman to medical services if any signs suggest a maternal or fetal problem.

Second trimester

During the second trimester women often report increased energy levels and, for most, nausea experienced during the first trimester reduces or disappears. Urinary frequency often experienced in the first trimester also ceases. Growth of the uterus and fetus results in a woman's shape visibly changing during this trimester. The pregnant woman often experiences changes in sensory perception. Temporary changes occur in visual and hearing acuity, taste and smell. Many pregnant women stroke their abdomen, possibly because of a change in the sensation of touch or other increased sensory need, or to initiate the attachment process with their child (Chapter 15).

Third trimester

During the third trimester some women feel increasingly fatigued and some will experience the return of uncomfortable symptoms such as urinary frequency and heartburn. Many, but not all, will experience Braxton Hicks contractions (irregular, short contractions) during this trimester. These are often mistaken for the beginning

TABLE 17-4 Major physiological changes during pregnancy

Signs and symptoms	Causes
First trimester	
Amenorrhoea	Fertilisation and implantation of egg
Morning sickness	Increased serum hormone levels
Breast changes Enlargement Tenderness Darkened and enlarged nipples	Increased oestrogen levels
Urinary frequency	Pressure of uterus on bladder
Fatigue	Increases in hormone levels Increased nutritional demands Decreased nutritional intake resulting from morning sickness
Second trimester	
Integumentary changes Pigmented nipple and breast Hyperpigmentation of abdominal line (linea nigra) Mottling of cheeks or forehead (chloasma or 'mask of pregnancy') Local or generalised pruritus	Increased levels of melanocyte-stimulating hormone
Hypertrophy of gums causing gingival swelling and bleeding	Proliferation of interdental papillary blood vessels resulting in local inflammation and hyperplasia
Increasing size of uterine fundus	Growth of fetus
Sensation of movement or gas-like movements (quickening)	Fetal movement
Braxton Hicks contractions	Expanding uterus and preparation of uterus for labour
Third trimester	
Increased colostrum	Hormonal influence; preparation of breasts for lactation
Increased urinary frequency	Pressure on bladder from enlarged fetus

Data from Dickason E et al 1998 Maternal–infant nursing care. Mosby, St Louis; Lowdermilk D, Perry S 1998 Maternity nursing, 6th edn. Mosby, St Louis.

of labour and this in itself can be frustrating and confusing. Women prepare for childbirth and parenting in a range of different ways and during this time their efforts can be supported through regular prenatal care.

Puerperium

The **puerperium** is the period approximately 6 weeks after childbirth. During this time the woman's body reverts to its pre-pregnant physical status. The nurse/midwife supports early parenting and the transition to motherhood in the first instance through systematic assessment of the woman's physical status and psychosocial wellbeing, as well as promoting attachment.

Education

The entire childbearing family may choose to be supported through educational processes about aspects of pregnancy, labour, birth, breastfeeding, sleep and settling practices, as well as the more general transitions to parenthood and integration of the newborn into the family. Traditionally, childbirth (antenatal or prenatal) classes help parents plan for the birth of the child and focus on the normal physiological changes of pregnancy, symptoms of impending labour, methods of pain control, the processes of labour and birth, and care of the newborn. Many healthcare centres also have sibling and grandparent preparation classes. Not all pregnant women will attend childbirth classes: childbirth education may not be accessible to women of all socioeconomic groups, and some may choose not to attend because of cultural beliefs about childbirth or lack of knowledge about the importance of childbirth education.

Prenatal classes can prepare pregnant women, their partners and other support people for participation in the birthing process. Social support has been associated with improved health practices in pregnant women (Cannella 2006) and with a lower incidence of postnatal depression

(Xie et al 2009). A current trend in some healthcare agencies is to provide a support person during labour to help women who have no other sources of support.

Psychosocial changes

Similar to the physiological changes of pregnancy, psychosocial changes occur at various times during the nine months of pregnancy and into the puerperium. Major psychosocial changes involve changing body image, role, sexuality, and coping mechanisms and stress during the puerperium. Table 17-5 summarises these psychosocial changes and their implications for nursing/midwifery intervention.

Health concerns

It is normal for the pregnant woman and her partner to have many questions. For example, they may wonder whether the pregnancy and baby will be normal. The majority of health needs related to pregnancy can be met during antenatal care, but this relies on parents having access and the opportunity to attend.

Middle adulthood

Middle adulthood is marked by the individual making lasting contributions through their involvement with others. Generally, the middle adult years begin around the early to mid-30s and last through to the late 60s. This period is one of happiness and stability for many as personal and career achievements are being realised. Although there is also reasonable socioeconomic stability for many middle-aged adults, there are also many pressures on domestic finances such as mortgages, lifestyle and family-related expenses. Changes in workplace organisation have significantly altered employment patterns in recent years. Although the overall unemployment rate is lower than during the late 20th century, many more adults work part-time, choosing to explore more balance in their lives, or with increased employment flexibility, organising their lives around more than one part-time job.

Many middle-aged adults find particular satisfaction in helping their children and other young people to become productive and responsible adults. This is also a time when many middle-aged adults help ageing parents. This is particularly true for women, daughters and daughters-in-law (Perrig-Chiello & Hutchison 2010). Using leisure time in satisfying and creative ways is a challenge for some and a necessity for others. If met satisfactorily, creativity in pursuing activities outside employment enables middle-aged adults to prepare for a productive and successful retirement (see Chapter 18).

Acute illnesses and conditions experienced in middle adulthood are similar to those of young adulthood. However, injuries and acute illness experienced in middle adulthood may take longer to recover from because of the slowing of recuperative processes with advancing age.

TABLE 17-5 Major psychosocial changes during pregnancy

Category	Implications for nursing
Body image	Morning sickness and fatigue may contribute to poor body image
	Client may feel big, awkward and unattractive during third trimester when fetus is growing more rapidly
	Increase in breast size may make the woman feel more feminine and sexually appealing
	May take extra time with hygiene and grooming, trying new hairstyles and makeup
	Begins to 'show' during the second trimester and starts to plan maternity wardrobe
	General feeling of wellbeing when woman can feel the baby move and hear the heartbeat
Role changes	Both partners think about and can have feelings of uncertainty about impending role changes
	May have feelings of ambivalence about becoming parents and concern about ability to be parents
Sexuality	Need reassurance that sexual activity will not harm fetus
	Desire for sexual activity may be influenced by body image
	May desire cuddling and holding rather than sexual intercourse
Coping mechanisms	Need reassurance that childbirth and childrearing are natural and positive experiences, but can also be stressful
	Often unable to cope with particular stressors such as finding new housing, preparing the nursery or participating in childbirth classes
Stresses during puerperium	May return home from hospital fatigued and unfamiliar with infant care
	May experience physical discomfort or feelings of anxiety or depression
	May be necessary for woman to return to work soon after delivery with subsequent feelings of guilt, anxiety or, possibly, sense of freedom or relief

Further, acute illnesses and injuries experienced in middle adulthood are more likely to become chronic conditions. Stress remains a significant confounder for middle-aged adults experiencing an injury or acute illness as they try to balance responsibilities related to their employment, finances, family life, care of children and care of ageing parents, especially while recovering.

Chronic illnesses such as type 2 diabetes, hypertension, rheumatoid arthritis, chronic obstructive pulmonary disease or multiple sclerosis may impact on the roles and responsibilities assumed by the middle-aged adult. Strained family relationships, modifications in family activities, increased healthcare tasks, increased financial stress, the need for housing adaptation, social isolation, medical concerns and grieving may also result from chronic illness. The degree of disability and the client's perception of both the illness and the disability determine the extent to which lifestyle changes and adaptation will occur. Some examples of the challenges experienced by clients who develop debilitating chronic illness during adulthood include role reversal, changes in sexual behaviour and alterations in self-image and self-identity (see Chapter 20).

Men and women in middle adulthood must also adjust to the inevitable biological changes of ageing. As in adolescence and youth, middle-aged adults use considerable emotional energy to adapt self-concept and body image to physiological realities, changes in physical appearance and societal pressures and values.

Physical changes

Major physiological changes occur between 40 and 65 years of age. Table 17-6 summarises normal developmental changes to consider when conducting a physical examination of the middle-aged adult. The most visible changes are the greying of the hair, wrinkling of the skin and thickening of the waist. Balding commonly begins during the middle years, but may also occur in young adult males. Decreases in hearing and visual acuity are often noted during this period. For many, the visibility of physiological changes of ageing have the most impact on self-concept and body image. Two of the most significant physiological changes during middle adulthood are menopause in women and the climacteric in men.

Menopause

Menstruation and ovulation occur in a cyclical rhythm in the woman from adolescence into middle adulthood. **Menopause** is the disruption of this cycle, mainly because of the inability of the neuro-hormonal system to maintain its periodic stimulation of the endocrine system. The ovaries

TABLE 17-6 Physical assessment in the middle-aged adult

Body system	Findings
Integument	Intact condition Appropriate distribution of pigmentation Slow, progressive decrease in skin turgor Greying and loss of hair (baldness patterns in males are established by age 55; hair loss after this time might have other causes)
Head and neck	Symmetry of scalp, skull and face Normal accessory organs of vision
Eyes	Visual acuity by Snellen chart that is less than 20/50 Pupillary reaction to light and accommodation Normal visual fields and extraocular movements Normal retinal structures
Ears	Normal auditory structures and acuity
Nose, sinuses and throat	Patent nares and intact sinuses, mouth and pharynx Location of trachea at midline Non-palpable lateral thyroid lobes
Thorax and lungs	Increased anteroposterior diameter Respiratory rate 16–20 breaths per minute and regular Ratio of respiratory rate to heart rate: 1 : 4 Normal tactile fremitus, resonance and breath sounds
Heart and vascular system	Normal heart sounds Systole: S1 less than S2 at base Diastole: S1 greater than S2 at apex Point of maximal impulse: at fifth intercostal space in midclavicular line and 2 cm or less in diameter Vital signs Temperature: 36.7°C to 37.6°C Pulse: 60–100 (conditioned athlete < 50) Blood pressure: 95–140/60–90 mmHg Respirations: 12–20 breaths per minute All pulses palpable
Breasts	Decreased size resulting from decreased muscle mass Normal nipples
Abdomen	No tenderness or organomegaly Decreased strength of abdominal muscles
Female reproductive system	Change in menstrual cycle and in duration and quality of menstrual flow 'Hot flushes' Change in cervical mucosa
Male reproductive system	Normal penis and scrotum Prostatic enlargement in some individuals
Musculoskeletal system	Decreased muscle mass Decreased range of joint motion
Neurological system	Appropriate affect, appearance and behaviour Lucidity and appropriate level of cognitive ability Intact cranial nerves Adequate motor responses Responsive sensory system

RESEARCH HIGHLIGHT

Research abstract

Menopause is a universal life experience. Historically, menopause has been conceived as a pathological condition and, therefore, medicalised by healthcare providers. The purpose of the study was to give voice to the menopausal experiences of women. The research question was: What has your experience been with perimenopause and/or menopause? Thirteen women, meeting inclusion criteria and obtained through snowball effect, were interviewed. Data were collected through semi-structured interviews and drawings. The women interviewed repeatedly had questions and concerns regarding perimenopause, and often reported receiving conflicting and confusing information. Transition theory was used to understand the thematic results. The major themes that emerged were My Body, Sharing with Others, Not My Mother and Going on with Life.

Evidence-based practice

- Menopause is a universal life event for women.
- Women lack information regarding menopause and are often confused and anxious about it.
- The information they receive is often inadequate and presents menopause as a deficit condition and a negative experience.
- Nurses and other healthcare practitioners should provide accurate and positive information to women well before they have symptoms and thus decrease some of the anxiety and misunderstanding associated with it.

Reference

Marnocha SK, Bergstrom M, Dempsy LF 2011 The lived experience of perimenopause and menopause. Contemp Nurse 37(2):229–30.

no longer produce oestrogen and progesterone, and the blood levels of these hormones drop markedly. Menopause typically occurs between 45 and 60 years of age. Menopause can be a particularly challenging transition in women's lives if it occurs before the age of 40 (see *Research highlight*). Approximately 10% of women have no symptoms of menopause other than cessation of menstruation, 70–80% are aware of other changes but have minimal disruption and approximately 10% experience changes severe enough to interfere with activities of daily living (Lowdermilk et al 2011). While a universal phenomenon, it is important to understand that menopause can be perceived and experienced very differently by individual women (see *Working with diversity*).

Climacteric

The **climacteric** occurs in men in their late 40s or early 50s (see Chapter 21) and is caused by decreased levels of androgens. Throughout this period and thereafter, a man is still capable of producing fertile sperm and fathering a child. However, penile erection is less firm, ejaculation is less frequent and the refractory period is longer.

Cognitive changes

Changes in the cognitive function of middle-aged adults are rare except with illness or trauma. The middle-aged adult can continue to learn new skills and information. For many, middle adulthood is a significant period for enrolling in educational or vocational programs to prepare for promotion or other employment opportunities.

Psychosocial changes

In the middle adult years, as children depart from the household, the family enters the post-parental family stage. Time and financial demands alter, and adults face the task of redefining their own relationships. As grandchildren arrive, grandparenting styles must be chosen. It is during this period that many middle-aged adults begin to take on a healthier lifestyle. Although it is not advisable to wait until this stage in life to think about health promotion, 'better late than never' does apply. The assessment of health-promoting activities for the middle-aged adult include ensuring adequate rest, encouraging leisure activities, regular exercise, good nutrition, reduction or cessation in the use of tobacco or alcohol, and regular health-screening examinations. Assessment of the middle-aged adult's social environment is also important, including relationship concerns; communication and relationships with children, grandchildren and ageing parents; and caregiver concerns with their own ageing or disabled parents.

According to Erikson's psychosocial developmental theory (see earlier), the main developmental task of the middle years is to achieve **generativity** (Erikson 1968, 1982). Middle-aged people who have successfully negotiated the task of young adulthood are well placed to contribute to the development of those younger than themselves. Generativity is the willingness to care for and guide others and can be a great source of satisfaction and fulfilment in middle adulthood. Middle-aged adults can achieve generativity through the guidance of their own children, their junior work colleagues, the children of

WORKING WITH DIVERSITY

Focus on cultural care

Understanding women's perceptions of menopause and its impacts on their lives, health and wellbeing is at the heart of engaging in illness prevention and health promotion strategies with perimenopausal women. In Western societies, perceptions of menopause have been dominated by biophysical changes and medical treatments that potentially minimise symptoms and reduce the risk of other disorders that may increase in likelihood following menopause. However, perceptions of menopause, its symptoms and challenges vary greatly between different cultures and ethnic groups. The cultural value placed on reproductive ability, social status in midlife and understandings of the links between menstruation and good health are just a few of the perceptions that form the basis for the way women understand and respond to menopause. Although there is high reporting of physical symptoms in Western countries, this is not the case in many societies, although there are differences between rural and urban groupings in some cultures. The way women respond to menopause issues also varies. They use traditional, complementary, Western and spiritual practices. Many women will use a combination of strategies; some are more focused on managing issues and some on preventing ill effects. Culturally competent nursing practice requires the provision of culturally appropriate care.

Implications for practice

- Understanding women's perceptions of their health, the transitions they face and the implications of menopause, on an individual basis, is critical.
- Listening to women's perceptions and issues without cultural bias and setting aside one's own imperatives is important in order to support women's needs.
- Accessible and appropriate health services with adequate language support are required.
- Peer support is valued and helps many women learn strategies that are appropriate for their socio-cultural context – nurses can facilitate community advocates.
- Information and explanation of symptoms and treatment options need to be provided in culturally appropriate forms.

References

Al-Qutob R 2001 Menopause-associated problems: types and magnitude. A study in Ain Al Basha area, Jordan. J Adv Nurs 33(5):613.

Chirawatkul S, Patanasri K, Koochiayasit C 2002 Perceptions about menopause and health practices among women in northeast Thailand. Nurs Health Sci 4:113.

National Multicultural Advisory Council 1999 Australian multiculturalism for a new century: toward inclusiveness. AGPS, Canberra.

Tsao L-I 2002 Relieving discomforts: the help seeking experiences of Chinese perimenopausal women in Taiwan. J Adv Nurs 39(6):580.

close friends, or through social interactions with younger generations. There is satisfaction in knowing that they have helped those who will outlive them. Adults who have not been able to achieve successful development in their young adult years tend to remain socially isolated and are less likely to achieve generativity. This may lead to developmental stagnation – expressed as excessive concern with themselves at the expense of those younger, or destructive behaviours towards their children and the community.

Career transition

Career changes may occur by chance or by choice, or as a result of changes in the workplace or society. In contrast to the previous 'one job for life' generations, middle-aged adults are increasingly likely to change occupations to improve their upward mobility, to pursue employment security or to seek an occupation that is more challenging or exciting. In some cases, technological advances or economic downturns have driven middle-aged adults to seek new careers. Being made redundant or losing a job can be a major source of stress as the middle-aged person worries about their ability to compete and find another job (Gabriel et al 2010). The stress caused by such changes, particularly when unanticipated or undesired, can affect health, family relationships, self-concept and other dimensions.

Sexuality

Sexuality and sexual relationships undergo transition in the middle adult years. For some people, refocusing on an existing partnership leads to increasing sexual satisfaction. For others, new relationships and partnerships are formed. Sexual practices are affected not only by realignment of relationships but also by biophysical changes. The onset of menopause can affect the sexual health and libido of some women, and during middle age, a man may notice changes in the strength of his erection and a decrease in his ability to experience repeated orgasm. Other factors influencing sexuality during this period include work stress, diminished health of one or both partners, and the use of prescription medications such as antihypertensive agents with side effects that may influence sexual desire or functioning. Middle-aged adults may experience stresses related to sexual changes or a conflict between their sexual needs and self-perceptions and social attitudes or expectations (see Chapter 21).

Family orientation and relationships

Psychosocial factors involving the family may include the stresses of singlehood, marital changes, transition of the family as children leave home, and the care of ageing parents. The departure of the last child from the home may be particularly stressful. Many parents welcome freedom from childrearing responsibilities, whereas others feel lonely or without direction because of this change. Eventually, partners must reassess their relationships

and plan for their future. Changes in marriage and partnerships that may occur during middle age include death of a spouse, separation, divorce and the choice of remarrying or remaining single. A widowed, separated or divorced adult experiences a period of grief and loss in which it is necessary to adapt to the change. Grieving is complex and involves a series of phases taking time to resolve. How much time is difficult to assess, but it may take years for some people.

Care of ageing parents

The increasing life spans of people living in Australia and New Zealand has led to increased numbers of older adults in the population. As a result, greater numbers of middle-aged adults are attending to the personal and social needs of their ageing parents for a longer period of time. Many middle-aged adults, particularly women, find themselves in the 'sandwich generation', caught between the responsibilities of caring for dependent children and those of caring for ageing or ailing parents (see Chapter 18).

Housing, employment, health and economic realities have changed the traditional social expectations between generations in families. The middle-aged adult and the older adult parent may have conflicting priorities related to their relationship, while the older adult strives to remain independent. Negotiations and compromises help in defining and resolving problems. Nurses deal with middle-aged and older adults in the community, extended-care facilities and in hospitals. The nurse has a role in identifying the health needs of both groups and can help the multigenerational family determine the health and community resources available to them as they make healthcare decisions and plans. Assessing environmental resources (e.g. access to stairs, bathrooms, home safety) in relation to meeting the healthcare demands of the older adult can also be helpful to the family.

• CRITICAL REFLECTION POINT

Paulina is 48 years old. She is married and is the mother of two sons aged 13 and 16. Paulina has recently had to assume responsibility for caring for her 78-year-old mother after she suffered a stroke. Paulina presents to the local hospital emergency department with breathlessness and reports feeling highly stressed.

Describe the nurse's role in helping Paulina care for her mother.

Health challenges

Health challenges during middle adulthood include managing stress, maintaining a level of wellness, embracing positive ageing, self-care and the continuation of positive health habits, such as adequate exercise and healthy eating. In 2013, heart disease was identified as the leading cause of death among Australians, with dementia and Alzheimer's disease now recorded as the second leading causes (ABS 2015). For New Zealanders, the leading causes of death in 2011 were cancer, ischaemic heart disease (heart attacks) and cerebrovascular (stroke) disease, and for the Māori population specifically, cancer, ischaemic heart disease and chronic lower respiratory disease (Ministry of Health 2014).

Stress and stress reduction

Similar to all developmental stages, the perceptions of middle-aged adults are important to maintaining a sense of wellbeing during physiological change. Middle-aged people are often at the top of their career trajectory and, as already discussed, are likely to have responsibilities for teenage or young adult children, as well as ageing parents. Today's complex world makes individuals more prone to stress-related illnesses such as hypertension, migraine headaches, ulcers, inflammatory bowel disease, autoimmune diseases, backache, arthritis, cancer and heart attack. When middle-aged adults seek health care, a focus on the goals of wellness and balance can guide clients to evaluate their current health behaviours, lifestyle and environment. Attention to modifiable risk factors to improve health such as stress reduction, weight loss, reducing alcohol or tobacco consumption and improving nutrition and exercise can markedly increase the quality of life.

Throughout life, people are exposed to many stressors (see Chapter 37). Identifying these stressors is the first step towards intervening to modify the stress response. Specific interventions for stress reduction can fall into three categories.

1. Efforts to reduce the frequency of stress-producing situations are discussed with the client and coping strategies are offered. Together the nurse and client identify approaches to prevent stressful situations, such as habituation, change-avoidance, time blocking, time management and environmental modification.
2. Psycho-physiological preparation to increase stress resistance is commenced, such as increasing self-esteem, improving assertiveness, redirecting goal alternatives and reorienting cognitive appraisal.
3. The physiological response to stress is avoided. The nurse may suggest relaxation techniques, imagery and biofeedback to recondition the client's response to stress. These general interventions are explained in greater detail in Chapter 37. Advice can also be given about community services that provide stress reduction programs.

Forming positive health habits

A *habit* is a person's usual practice or manner of behaviour. This behaviour pattern is reinforced by frequent repetition until it becomes the individual's customary way of behaving. Some habits support health, such as healthy eating, exercise and brushing and flossing the teeth each day. Other habits involve risk factors to health, such as smoking or eating foods with little or no nutritional value. During assessment, the nurse often obtains data indicative of both positive and negative health behaviours. Examples of positive health behaviours include regular exercise, adherence to healthy dietary habits, avoidance of excess consumption of alcohol and recreational drugs, participation in **routine health screening** and diagnostic tests for disease prevention (e.g. blood testing for serum cholesterol, blood pressure monitoring, mammography), and lifestyle changes to reduce stress.

Health education and health counselling are directed at improving health habits (Box 17-5). In the planning, implementation and evaluation phases, nurses work with their clients to maintain habits that protect and promote health in daily life. The more fully the nurse understands the dynamics of behaviour and habits, the more likely it is that interventions will help the client to achieve or reinforce health-promoting behaviours.

BOX 17-5 Education for positive health habits

Objective

- Client will increase exercise patterns to include several walks per week to assist weight loss and improve cardiopulmonary function.

Education strategies

- Review with client the daily work schedule and identify potential times for exercise.
- Inform client about the effect of exercise on weight control and improved cardiac function.
- Demonstrate how to calculate target heart rate and assess pulse correctly.
- Provide warm-up and cool-down exercises and demonstrate how to do them.
- Instruct client about support shoes for walking exercises.

Evaluation

- Have client keep log of exercise periods.
- Have client demonstrate pulse measurement.
- Have client demonstrate warm-up and cool-down exercises.
- Inspect client's feet for blisters or sores.

The forming and sustaining of positive health habits is facilitated by listening to the client's interests, imperatives, likes and dislikes and negotiating activities and outcomes supported by accurate, evidence-based and useful information. While consciousness-raising is important, barriers to change do exist (Box 17-6). Some barriers are more amenable to change than others; some can be built into the nurse–client relationship, and others require community, health service and political action. Ultimately, it is the client who decides whether to change their health behaviours and which of these will become sustained habits of daily living.

Psychosocial health and positive ageing

The **middle-age** years are a time of great satisfaction for many adults. Children are becoming or are independent, life and work are settled and there is a sense of being able to regain one's sense of self. However, some adults experience anxiety in response to the physiological and psychosocial changes of middle age. In a positive way, anxiety can motivate the adult to rethink life goals and stimulate productivity. For others, however, this anxiety can precipitate **psychosomatic illness** or a preoccupation with the amount of time left to live. Anxiety is a critical maturational phenomenon related to change, conflict and perceived control of the environment (Erikson 1968). Clearly, a life-threatening illness, a relationship transition or job stressor can increase anxiety. Crisis intervention or stress management techniques may help the client more successfully adapt to the changes of the middle adult years (see Chapter 37).

Although depression most commonly begins in adolescence or young adulthood, it is increasingly present in middle age with the incidence in women twice that of men. Depression affects individuals differently and can

BOX 17-6 Barriers to changing health behaviours

External barriers

- Societal perceptions of healthy activities
- Workplace practices and values
- Community resources, including green spaces and safe environments
- Lack of social support
- Lack of material resources

Internal barriers

- Conflicting priorities and goals
- Motivation
- Insufficient skill or knowledge

manifest in a variety of ways. Adults in their mid- to late 50s may begin to notice mild cognitive impairment and memory loss, or an increase in somatic symptoms and insomnia. Possibly associated with the grief and loss of children leaving home or changes in adult relationships, for example, this may not be immediately recognised as depression (Wolitzky-Taylor et al 2010). The onset of depression, or increased depressive symptoms during middle age, is associated with an increased risk of dementia (Barnes et al 2012). People experiencing mild depression describe themselves as being stressed, as feeling sad, blue, downcast, down in the dumps and tearful. Other symptoms include alterations in sleep patterns such as difficulty in sleeping (insomnia) or sleeping too much (hypersomnia), irritability, feelings of social disinterest, and decreased alertness. Physical changes such as weight loss or gain, headaches or feelings of fatigue, regardless of the amount of rest, may also indicate depression. Depression occurring during the middle adult years is commonly characterised by moderate-to-high anxiety and physical complaints. Mood changes and depression are common during menopause. Depression may be worsened by alcohol abuse or other substances.

Focused data collection regarding individual and family history of depression, mood changes, cognitive changes, behavioural and social changes, and recent physical changes are essential elements in the assessment of the middle-aged adult. In determining whether a client may be depressed, assessment data should be collected from both the client and the client's family, since the family may be able to offer particular insights, depending on the level of depression being experienced.

Community health and primary healthcare

Community health programs are designed to prevent illness, promote health and detect the early stages of disease. Many young and middle-aged adults participate in regular community health screening (e.g. breast, bowel and prostate cancer, hypertension and diabetes) or exercise programs (yoga, pilates, gym classes) offered in private or community settings. Nurses can make valuable contributions to the health of the community by taking an active part in the planning of screening and education programs at local community centres, supporting community development initiatives and through their work in general practices or community nurse-led clinics. Liaison with other health, housing and social services, general practitioners, community organisations and businesses is integral to a community nursing role which is broad, complex and multidisciplinary.

CRITICAL REFLECTION POINT

Greg is a 49-year-old man. He is married with two young children and works in a plant nursery as a horticulturist. Apart from his work he gets little exercise, mainly because of the demands of his family. He is moderately overweight, reports experience of feeling stressed and his blood cholesterol and blood pressure are both on the high side of normal.

What strategies should be considered when devising a plan for Greg to develop a healthier lifestyle? Who might you consider should be involved in Greg's care?

Key concepts

- Human development does not end at adolescence. Human adults continue to grow and develop in response to life experiences to an optimal state of organised and specialised functional capacity.
- Nurses care for human beings at various developmental stages, and during health and life crises.
- Developmental theory provides a basis for nurses to assess and understand their clients' behaviour and vulnerability in response to illness or trauma.
- Biophysical development explores theories of why individuals grow and age from a biological standpoint.
- Psychosocial developmental theory is a way to predict, understand and explain how and why people become and behave as they do.
- Psychosocial theories attempt to describe the development of the human personality with varying degrees of influence from internal biological forces and external socio-cultural forces.
- Psychosocial developmental crisis refers to a person's difficulty in meeting and resolving tasks of the current developmental period. Relative success at each stage is built upon by each subsequent stage to bring about adult maturity.
- Cognitive development focuses on rational thinking processes, which include changes in how children and adolescents perform intellectual operations.
- Socialisation is the process whereby humans interact with each other to form families, communities and the broader society.
- Moral development attempts to define how moral reasoning matures for an individual.

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References

Ashburn SS 1978 Selected theories of development. In Schuster CS, Ashburn SS (eds), The process of human development: a holistic approach. Little, Brown, Boston.

Australian Bureau of Statistics 2016 Facts and stats about suicide in Australia. Cat. no. 3309.0. ABS, Canberra.

Australian Bureau of Statistics 2015 Causes of Death, Australia. Cat no. 3303.0. ABS, Canberra. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/3303.0~2013~Main%20Features~Summary%20of%20findings~10000; accessed 4 Feb 2016.

Australian Bureau of Statistics 2013a Aboriginal and Torres Strait Islander suicide: origins, trends and incidence, ABS, Canberra. Online. Available: www.health.gov.au/internet/publications/publishing.nsf/Content/mental-natsisps-strat-toc~mental-natsisps-strat-1~mental-natsisps-strat-1-ab.anatsisps-strat-1~mental-acessed 26 May 2015.

Australian Bureau of Statistics (ABS) 2013b Causes of Death, Australia. Cat. no. 3303. ABS, Canberra. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/3303.0~2013~Main%20Features~Suicide%20by%20Age~10010; accessed 26 May 2015.

Australian Bureau of Statistics (ABS) 2010 Family, community and social cohesion, Cat. no. 1370.0 – Measures of Australian progress, 2010. ABS, Canberra. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1370.0~2010~Chapter~Suicide%20(4.5.4); accessed 23 Apr 2012.

Australian Bureau of Statistics (ABS) 2007a Marriages, Australia, Cat. no. 3306.0.55.001. ABS, Canberra. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/mf/3306.0.55.001; accessed 5 Dec 2011.

Australian Bureau of Statistics (ABS) 2007b Lifetime marriage and divorce trends, Cat. no. 4102.0. ABS, Canberra. Online. Available: www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/0B6F42BBA4622404CA25732F001C93F1/$File/41020_Lifetime%20marriage%20and%20divorce%20trends_2007.pdf; accessed 13 Dec 2011.

Australian Bureau of Statistics (ABS) 2007c Australian social trends, 2007, Cat. no. 4102.0. ABS, Canberra. Online. Available: www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/3550D34DA999401ECA25748E00126282?opendocument; accessed 5 Dec 2011.

Australian Institute of Health and Welfare (AIHW) 2011 Health priority areas. AIHW, Canberra. Online. Available: www.aihw.gov.au/health-priority-areas; accessed 23 April 2011.

Australian Institute of Health and Welfare (AIHW) 2010 Australia's health, Australia's health series, Cat. no. AUS 122. AIHW, Canberra. Online. Available: www.aihw.gov.au/publication-detail/?id=6442468376; accessed 5 Dec 2011.

Australian Institute of Health and Welfare (AIHW) 2007 Australia's welfare, Cat. no. ABS 93. AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2006 Mortality FAQs. AIHW, Canberra. Online. Available: www.aihw.gov.au/deaths-faq; accessed 23 Apr 2012.

Australian Institute of Health and Welfare (AIHW) 2005 Female SAAP clients and children escaping domestic and family violence 2003–04, Cat. no. AUS 64. AIHW, Canberra. Online. Available: www.aihw.gov.au/publicationdetail/?id=6442467758; accessed 5 Dec 2011.

Baker M 2001 Families, labour and love. Allen & Unwin, Sydney.

Barnes DE, Yaffe K, Byers AL et al 2012 Midlife vs late-life depressive symptoms and risk of dementia: differential effects for Alzheimer disease and vascular dementia. Archives of General Psychiatry 69(5):493–8.

Breast Cancer Australia 2011 Website information. Online. Available: www.breastcanceraustralia.org/home.html; accessed 12 Dec 2011.

Brooks GR 2010 The crisis of masculinity. In Brooks GR (ed), Beyond the crisis of masculinity: a transtheoretical model for male-friendly therapy. American Psychological Association, Washington, DC.

Brown D, Edwards H 2007 Lewis's Medical–surgical nursing, 2nd edn. Elsevier, Sydney.

Birks J, Grimley Evans J 2009 Ginkgo biloba for cognitive impairment and dementia. Cochrane Database Syst Rev (1): CD003120. DOI:10.1002/14651858.CD003120.pub3.

Breyer JL, Botzet AM, Winters, KC et al 2009 Journal of Gambling Studies 25(2):227–8.

Bronfenbrenner U 1995 The bio-ecological model from a life course perspective: reflections of a participant observer. In Moen P & Elder GHJ (eds), Examining lives in contexts: Perspectives on the ecology of human development. American Psychological Association, Washington.

Bukowski WM, Cillessen AH 1998 Sociometry then and now: Building on six decades of measuring children's experiences with the peer group. Jossey-Bass, San Francisco.

Cannella BL 2006 Mediators of the relationship between social support and positive health practices in pregnant women. Nurs Res 55(6):437–45.

Cavanaugh JC 1993 Adult development and aging, 2nd edn. Brooks/Cole, Pacific Grove, CA.

Chartier K et al 2011 Alcohol problems in young adults transitioning from adolescence to adulthood: the association with race and gender. Addict Behav 36(3):167–74.

Cox JM, Holden, JM, Sagovsky R 1987 The Edinburgh Post Natal Depression Scale (EPDS). British Journal of Psychiatry 150:782–6.

Crain W 1992 Theories of development: concepts and applications, 3rd edn. Prentice Hall, Englewood Cliffs, NJ.

Department of Health and Human Services Tasmania 2007 Palliative Care Psychosocial Assessment Tool. Online. Available: www.dhhs.tas.gov.au/__data/assets/pdf_file/0009/37539/PCS20Protocol203.1.520Comprehensive20Assessment20Appendix209B1.pdf; accessed 22 Feb 2016.

Eliopoulos C 1999 Manual of gerontologic nursing. Mosby, St Louis.

Erikson E 1987 The lifecycle completed. Norton, New York.

Erikson EH 1968 Identity youth and crisis. WW Norton Company, New York.

Erikson E 1963 Childhood and society. Norton, New York.

Francis RC 2012 Epigenetics. How environment shapes our genes. Sales Territory Worldwide.

Freud S 1962 Three essays on the theory of sexuality (trans J Strachey). Basic Books, New York.

Gabriel Y et al 2010 Temporary derailment or the end of the line? Managers coping with unemployment at 50. Organ Stud 31(12):1687–712.

Gesell A 1948 Studies in child development. Harper, New York.

Gilligan C 1982 In a different voice: psychological theory and women's development. Harvard University Press, Cambridge, MA.

Haber J, Krainovich-Miller B, Price-Hoskins P 1997 Comprehensive psychiatric nursing. Mosby, St Louis.

Hale S et al 2010 Male GPs' views on men seeking medical help: a qualitative study. Br J Health Psychol 15(4):697–713.

Harrison J et al 2010 Youth suicide and self-injury Australia, suppl to issue 15. Research Centre for Injury Studies, Flinders University, Adelaide. Online. Available: www.nisu.f linders.edu.au/pubs/bulletin15/bulletin15sup.html#Heading2; accessed 5 Dec 2011.

Hayatbakhsh MR, Clavarino A et al 2012 Young adults' gambling and its association with mental health and substance use problems. Australian New Zealand Journal of Public Health 36(2):160–6.

Huether SE, McCance KL 2012 Study guide for understanding pathophysiology, 5th edn. Elsevier Mosby, St Louis.

Isaac M, Quinn R, Tabet N 2008 Vitamin E for Alzheimer's disease and mild cognitive impairment. Cochrane Database Syst Rev (3):CD002854. DOI: 10.1002.

Kerkez FI 2011 Effects of a structured physical activity program on fundamental motor skill development of disadvantaged institutionalised children. Middle-East Journal of Scientific Research 9(6):728–33.

Kohlberg L 1973 Continuities in childhood and adult moral development revisited. In Baltes PB, Schaie KW (eds), Life-span developmental psychology. Academic Press, New York.

Kohlberg L 1981 The philosophy of moral development: moral stages and the idea of justice. Harper Row, San Francisco.

Kurtines WM, Gewirtz JL 1984 Morality, moral behavior and moral development. John Wiley & Sons, New York.

McCance K, Huether S 2012 Understanding pathophysiology, 5th edn. Mosby, St Louis.

Messerlian C, Derevensky J, Gupta R 2005 Health Promotion International 20(1):69–79.

Ministry of Health 2014 Mortality and Demographic Data 2011. Wellington. Online. Available: www.health.govt.nz/publication/mortality-and-demographic-data-2011; accessed 4 Feb 2016.

Ministry of Health 2011 Health targets. Ministry of Health, Wellington. Online. Available: www.health.govt.nz/new-zealand-health-system/health-targets; accessed 5 Dec 2011.

Ministry of Health 2009 Suicide facts: deaths and intentional self-harm hospitalisation 2007. Ministry of Health, Wellington. Online. Available: www.health.govt.nz/publication/suicide-facts-deaths-and-intentional-self-harmhospitalisations-2007; accessed 24 May 2011.

Orrell RW, Lane RJM, Ross M 2007 Antioxidant treatment for amyotrophic lateral sclerosis or motor neuron disease. Cochrane Database Syst Rev (1):CD002829. DOI: 10.1002/14651858.CD002829.pub4.

National Health and Medical Research Council (NHMRC) 2003 Dietary guidelines for all Australians. NHRMC, Canberra. Online. Available: www.nhmrc.gov.au/guidelines/publications/n29-n30-n31-n32-n33-n34; accessed 5 Dec 2011.

National Youth Mental Health Foundation 2013 Headspace psychosocial assessment tool. Online. Available: http://headspace.org.au/assets/Uploads/headspace-psychosocial-assessment.pdf; accessed 4 Feb 2016.

Perrig-Chiello P, Hutchison S 2010 Family caregivers of elderly persons: a differential perspective on stressors, resources, and well-being. J Gerontopsychol Geriatr Psych 23(4):195–206.

Piaget J 1954 The construction of reality in the child. Basic Books, New York.

Statistics New Zealand 2011 Births and deaths: year ended September 2011. Statistics New Zealand, Wellington. Online. Available: www.stats.govt.nz/~/media/Statistics/Browse%20for%20stats/BirthsAndDeaths/HOTPYeSep11/BirthsAndDeathsYeSep11HOTP.pdf; accessed 7 Dec 2011.

Thomas RM 1997 Moral development theories: secular and religious: a comparative study. Greenwood Press, Westport, CT.

Wolitzky-Taylor KB, Castriotta N, Lenze EJ et al 2010 Depression and anxiety. Anxiety disorders in older adults: A comprehensive review 27:190–21.

Xie R-H et al 2009 Prenatal social prenatal social support, postnatal social support, and postpartum depression. Ann Epidemiol 19(9):637–43.

CHAPTER

18

Working with older people

Susan Hunt

Learning outcomes

Mastery of content will enable you to:

- describe healthy ageing and common myths and stereotypes about older adults
- discuss the significance of nurses' attitudes towards older adults
- describe the types of community-based healthcare services available to older adults
- describe some of the biological and psychosocial theories of ageing
- discuss common developmental tasks of older adults
- discuss common physiological changes of ageing
- discuss common health issues experienced by older adults
- differentiate between delirium, dementia and depression
- discuss issues related to psychosocial changes of ageing
- identify nursing interventions related to the physiological, cognitive and psychosocial changes of ageing.

KEY TERMS

Abuse of the elderly, p. 399
Ageism, p. 397
Alzheimer's disease, p. 409
Biological theories of ageing, p. 400
Chronological age, p. 400
Consumer directed care, p. 416
Decubitus ulcers, p. 401
Delirium, p. 408
Dementia, p. 409
Dementia with Lewy bodies, p. 409
Depression, p. 410
Detrusor instability, p. 404
Dorsal kyphosis, p. 403
Geriatrics, p. 396
Gerontological nursing, p. 396
Gerontology, p. 396
Healthy ageing, p. 396
Incontinence, p. 404
Non-stochastic theories, p. 400
Osteoporosis, p. 403
Physiological age, p. 400
Physiological changes, p. 400
Positive ageing, p. 394
Presbycusis, p. 403
Presbyopia, p. 403
Prostatic hypertrophy, p. 404
Psychological theories of ageing, p. 400
Sarcopenia, p. 407
Stochastic theories, p. 400
Therapeutic communication, p. 418
Vascular dementia, p. 409

Unlike other life stages, it is not clear when older adulthood begins. Many people find themselves described as 'older' from 50 years, and travel and shopping concessions generally begin at 55 years. In the past, retirement from work has been used as a marker of older adulthood – traditionally at 65 years. However, being retired is no longer a useful indicator of older adulthood. With the introduction of superannuation schemes, many people have been able to retire at 55 years or earlier, while others, because of their good health and continued interest in their work, have delayed retirement to work productively into their 70s and 80s. Others may choose a pre-retirement phase, negotiating shorter and more flexible work hours for a period of time. Recent changes in world economics have also contributed to adults working longer. A decrease in savings, as well as anxiety that savings will not fund a lengthy retirement period, have influenced many older adults to either stay within the workforce or to return to part- or full-time work.

Similar to many developed countries, Australian and New Zealand governments use the age of 65 years and over as a basis for planning health and welfare services for older adults. The population characteristics of both countries are changing, with more people living into older age. For some years there have been warnings that the growing numbers of older people and their need for services will challenge both countries, coupled with public debate about how these services should be funded.

While the number of older people is growing as a proportion of the population of both countries, it is important to remember that the majority of older people have active and productive lives which are generally healthier than in previous generations (Figure 18-1). There are many older people, such as those involved in running households, properties and farms who will never actually retire from work. Healthy ageing (or **positive ageing**) refers to maintaining a focus on the opportunities and rewards of ageing, rather than on the challenges. The Australian Psychological Society describes positive ageing as the 'process of maintaining a positive attitude, feeling good about yourself, keeping fit and healthy, and engaging fully in life as you age' (APA 2015). Increasing numbers of older adults across the world are experiencing better long-term physical and mental health due to the effects of maintaining a positive attitude and re-imagining the types of contribution they can make to community and society.

A challenge for healthcare professionals is the scope of older adulthood. Older adulthood can span 40-plus years and includes a range of older people who are active and healthy through to those who have low, medium or high levels of disability. The prevalence of disability generally



Figure 18-1 Enjoying life in older age improves both physical and mental health.

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increases gradually throughout middle age and then, after the age of 50, disability prevalence rises from 20% in the 50–54 age groups to 81% among people aged 85 and over. Rates of severe activity limitations are even more strongly associated with age, with limited activity reported by almost one-third (31%) of people aged 75 and over (AIHW 2014). Consequently, the group of people known as 'older adults' in contemporary Australian and New Zealand societies must be considered a heterogeneous group, and it is therefore difficult to make generalisations about their needs. Family circumstances, physical abilities, economic circumstances and health and welfare service needs are likely to vary greatly among people of 65–90+ years.

Older adults are consumers of services in all health-delivery settings: community care, rehabilitation, acute care, specialised outpatient clinics, residential aged care and palliative care. It is important, therefore, for healthcare professionals to understand the diverse needs of older people and to work with them in two ways: firstly

to ensure that the services provided are appropriate to their needs; and secondly, to understand these needs from the perspective of the older person. Like people at all ages and stages of development, older people want to have greater control of the services they receive, and want to be considered as active partners in their care. All people increasingly expect health professionals to work 'with' them rather than 'on' them, and in most care settings for older people, the contemporary concepts of restorative care, reablement and enablement form the basis of care delivery (Lewin et al 2013). Given the increasing emphasis on quality and safety as part of service provision, it is also important that healthcare professionals are aware of the special quality and safety needs of older adults, as well as the increasing diversity of people within this group.

Older adults as part of our population

Those aged 60 years and over are the fastest growing global population (United Nations 2013). In New Zealand and Australia, populations are ageing *numerically* (in that the numbers of older people are increasing), and *structurally* (in that the proportion of people aged over 65 years is rising) (ABS 2013, Statistics New Zealand 2015). Consequently, the age composition of both countries is projected to change considerably as a result of population ageing. For example, it is projected that one in five New Zealanders will be aged 65+ years by 2031, compared with one in eight in 2009 (Statistics New Zealand website 2016). It is projected that between 2012 and 2032 the number of people of 65 years and over in the Australian population will increase by 82% (AIHW 2013) coupled with a lower proportion of people aged under 15 years in both Australia and New Zealand (ABS 2013, Statistics New Zealand website 2016).

There is a staggering 100% increase projected in the number of people aged 85 years and over in the Australian population between 2012 and 2032, with a similar pattern occuring in New Zealand (ABS 2013, Statistics New Zealand 2015). Growth in the population aged 85 years and over is particularly significant for aged care service planning, as this group is more likely to require health services, including residential care.

Life expectancy

The main factors affecting the ageing of Australia's and New Zealand's populations are the sustained low birth rates combined with low mortality rates, resulting in increasing life expectancy at birth. Improved living conditions and healthier lifestyles along with medical advances, particularly in the treatment of cancer and cardiovascular disease, have greatly increased life expectancy (AIHW 2014). However, overall, those who are economically or socially disadvantaged still experience lower health status and a reduced life expectancy.

Life expectancy is not uniform across populations within Australia and New Zealand. While life expectancy at birth for non-Māori New Zealand men and women in 2013 was 80.3 years and 83.9 years respectively, the life expectancy of Maori people at birth was 73.0 years and 77.1 years, respectively (Ministry of Health 2013, 2015). While the gap between Māori and non-Māori life expectancy at birth has continued to narrow, Māori people still remain overrepresented in most disease groups, with an estimated 26% of the excess burden of disease experienced by Māori people caused by vascular disorders (Ministry of Health 2013, 2015). Aboriginal and Torres Strait Islander peoples also have a much lower life expectancy than the general Australian population and an overall burden of disease two to three times greater than the general Australian population (AIHW 2014). The estimated life expectancy for Indigenous males is about 10.6 years less than that of non-Indigenous males; for Indigenous females the gap is approximately 9.4 years (AIHW 2014). In addition, the incidence of ill-health for many Aboriginal and Torres Strait Islander people is higher than that of non-Indigenous people, for example, higher levels of injury, diabetes, kidney disease and psychological distress (AIHW 2014).

Immigration

Both Australia and New Zealand have had active migration programs, and consequently the populations of both countries are culturally and ethnically diverse. Overseas-born people in both countries have a lower death rate for most of the major causes of death, and overall, their experience is as good as, if not better health than, that of native-born people. In general, immigrant populations have a lower rate of death and hospitalisation as well as lower rates of disability. Known as the 'healthy migrant effect', it has been hypothesised that the general good health and the resulting longer life span of overseas-born people is a result of the selection processes for migration, which generally favour healthy people (AIHW 2011). However, both Australia and New Zealand have also accepted vulnerable people as refugees. The life expectancy of these more recent migrants may prove not to be as high as other migrants. Further, accessing health care and navigating the health system (often described as a 'maze'), has been noted to be extremely difficult for those with low health literacy or with English as a second language (AIHW 2014).

Gerontology as a nursing specialty

While working with older adults is increasingly recognised as a specialty area of nursing, most nurses who work with older people identify themselves as working within a specific care context, for example, rehabilitation, community care or residential aged care. Some nurses identify themselves as specialising in specific conditions common to older adults, for example, dementia care or continence promotion. Knowledge of the most frequently used terms in caring for older adults, and their definitions, clarifies the differences and improves communication between families and health professionals.

Geriatrics is the branch of medicine dealing with the illness of old age. Geriatric care is concerned with the physiological and psychological aspects of ageing and with the diagnosis and treatment of diseases affecting older adults.

Gerontology is the study of all aspects of the ageing process and its consequences. **Gerontological nursing**, a term frequently used in Australia and New Zealand, is concerned with assessment of the health and functional status of older adults; diagnosis, planning and implementing of health care and services to meet identified needs; and evaluating the effectiveness of such care. Gerontology nursing can encompass personal care, restorative care and rehabilitation, as well as end-of-life care. By working in partnership with an older person and their family or carers, the overall aim is to increase the quality of life of an older person and assist in minimising their functional decline. Gerontic nursing is a term often used in the international literature and is used interchangeably with gerontology or gerontological nursing.



Figure 18-2 **Eating well is an important part of healthy ageing.**

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There is increasing acceptance that working with older adults is a challenging area that demands highly skilled and knowledgeable nurses. Given the age range and variability of needs that an older adult may have, a critically informed understanding of how older people contribute and relate to society, as well as knowledge of ageing and the common health issues experienced by older people, is necessary for appropriate clinical decision-making.

Healthy ageing

Maintaining a positive attitude towards ageing can significantly influence the choices older people make, and the degree to which they maintain control over important decisions in their life. Education, supportive personal and social environments, good medical care and superannuation entitlements all contribute to better life chances in old age and to the likelihood of maintaining good health into advanced age. Increasingly, there is an emphasis on older people continuing to be active members of their communities, with the health authorities of both New Zealand and Australia undertaking community campaigns to promote healthy eating, regular exercise and continued social and community involvement as beneficial to ageing productively and well.

Healthy ageing describes the ongoing activities and behaviours that each person undertakes to reduce the risk of illness and disease, with the result of an increase in physical, emotional and mental health. Healthy ageing activities assist in minimising functional decline and increasing the quality of life as people age. Healthy ageing also incorporates activities to combat illness and disease, resulting in a faster and more enduring recovery should illness occur. Activities contributing to healthy ageing include maintaining social connections; exercising the body and mind; eating and sleeping well; volunteering or maintaining part-time work; managing stress; and maintaining a positive attitude.

There is a common misperception that older people are all dependent in some way, and are destined to live in residential aged care. However, although the proportion of older people living in non-private dwellings increases with age, the reality is that the majority of older people live in private dwellings – either with a partner or as part of a family household, as a member of a group, or by themselves. Less than 6% of older people in Australia are estimated to live in non-private dwellings, including

private hostels or hotels, guest houses and residential aged care (AIHW 2013). There is a similar picture in New Zealand (Statistics New Zealand website 2016).

The likelihood of living alone increases with age, with 35% of those aged 85 years and over living in lone-person households (AIHW 2013). The policies of successive governments of both New Zealand and Australia have focused on community care, and increasingly older people with disability or impaired health are able to be supported at home or in the community. Consequently, those living in residential aged care tend to be older, with the majority being over 75 years, and with a greater level of disability and ill-health (AIHW 2013, Statistics New Zealand website 2016).

As noted earlier, being retired is no longer a useful indicator of when a person has entered older adulthood. Many older adults undertake a planned pre-retirement period as a test of their financial, social and accommodation needs. Those who are self-employed, such as farmers or small business owners, make decisions about work and succession planning with family and others. Workplaces offering pre-retirement contracts, for example, provide opportunities to reduce working hours over a number of years, or more flexible hours to ease out of full-time into part-time work, and eventually to full retirement. The majority of older people continue to make valuable contributions to their families and to society. People aged 65 years and over provide a substantial proportion of volunteer hours (AIHW 2013, Statistics New Zealand 2009), and therefore contribute to the economic, political, social and cultural life of society. In addition, older people provide the majority of the informal caring for friends and family, including children, people with disabilities, and other older people (AIHW 2013). A recent phenomenon is the increasing number of grandparents who are taking on caregiver roles for grandchildren. This may be due to current economic pressures on parents to maintain full-time employment or may be due to family-related events such as death, divorce, substance abuse, incarceration, abandonment, ill-health or child abuse. Many more grandparents are raising (or parenting) their grandchildren, in addition to contributing unpaid child-minding.

It is also relatively common for older New Zealanders and Australians to use their time following retirement for travelling (known colloquially as the 'Grey Nomads'), or to change their way of life and move to either the country or the coast to begin a new phase of their lives. Future ideas of old age and the role that older people play in society are changing as we see increasing numbers of 'Baby Boomers' – those born between 1946 and 1961 – reach retirement age. It has been suggested that this group have seen what has been offered by society to their own parents, and want something more for themselves in older age (Hunt 2007). The large cohort of Baby Boomers are said to have redefined a number of the 'age stages' as they have passed through them, and come with their own ideas as to what is acceptable in terms of lifestyle, choice and access to health services and health care. It is expected that this group will continue to change how older age is defined as they live within and beyond each stage.

• CRITICAL REFLECTION POINT

It is likely that there are older adults in your own family. Are the older adults in your family physically well? Would you consider them active members of your family, despite any disability? What role does the older person have in the family unit?

Perhaps you have worked in a healthcare setting with a client who was an older person. Do your expectations of older people affect how you talk and interact with them? Have you ever witnessed interactions that were demeaning to an older person?

Ageism

The term **ageism** is attributed to Robert Butler, who first used it in 1969 to describe the process of stereotyping and discriminating against people because they are old (Butler 1969). The United Nations has identified three types of security needed in late life: *human capital* (health, work skills and self-knowledge); *social capital* (family and community networks); and *economic capital* (savings and pension plans). Programs to eradicate poverty, unemployment and social exclusion are needed to help people balance these resources, as well as gain access to financial services and safeguards from physical, mental and financial abuse (United Nations 2010a). Ageism is seen as a barrier to these programs and, in the opinion of the United Nations, must be eradicated. Indicators of ageism in the broader community include myths, stereotyping and negative attitudes towards older people (Table 18-1). The United Nations has provided a number of examples of how ageism can be expressed: in compulsory retirement; consideration for employment; migration; travel insurance; access to mortgages and bank loans; and for health or life insurances.

Myths of ageing and stereotyping of older adults continues, despite ongoing research in the field of gerontology that continually shows the majority of older adults are not ill, disabled or dependent. For example, a common misconception is that older adults are not interested in sex and that any interest in sexual activities

TABLE 18-1 Myths about older adults

Misconception	Reality
All old people are senile	*Senility* is an outdated term and is definitely not part of normal ageing Memory problems are a feature of some disease processes, e.g. Alzheimer's disease
Older people are preoccupied with dying	Older people do think about mortality, as do people of all ages
Older people cannot learn new skills	This is a variation on 'you can't teach an old dog new tricks'. Many older people enjoy learning, as testified to by the numbers of older people who enrol in university courses and local adult education activities. Older people are also among the 'early adopters' of new technology, particularly the use of the internet and communication devices such as Skype
Most older people live in nursing homes	The majority of older people live in the community in private dwellings rather than in institutions
Older people are not interested in sex	Many older people remain very interested in sex and seek ways to express their sensuality and sexuality. This remains a challenge to younger people and healthcare professionals who often do not wish to explore this area of health care
Older people are a burden on society	The majority of older people lead productive, independent lives. They participate in all areas of society, including undertaking the bulk of volunteer work Over half of older people aged 85+ years live alone, maintaining their own day-to-day care needs

Nay R, Garratt S, Fetherstonehaugh, D 2013 Older people: issues and innovations in care, 4th edn. Churchill Livingstone, Sydney; AIHW 2013 Australia's welfare 2013, Cat. no. AUS 174. Canberra. Online. Available:www.aihw.gov.au.

is abnormal and should be discouraged. Yet older adults report continued enjoyment of sexual relationships and research shows a positive correlation between sexual expression and quality of life for older people (Flynn et al 2014) (Box 18-1). A study of sexuality and health among older adults illustrates that part of the problem for many older adults is their reluctance to discuss sexual issues with healthcare professionals, possibly because of a fear of disapproval (Connaughton et al 2015). It is the disapproval of others that has caused some older people who identify themselves as being lesbian, gay, bisexual, transgender or intersex (LGBTI) to hide their sexual orientation from service providers (Department of Health and Ageing 2012b). With policies of inclusiveness, governments are encouraging service providers to consider how their current practices may discriminate against older people in general, and against specific groups of older people in particular.

Although the process of continual learning may be affected by age-related changes in vision or hearing, or by reduced energy and endurance, older adults are lifelong learners. Importantly, the benefits for an older adult taking part in education and health-promoting activities are usually quite high. There is evidence that activities which promote smoking cessation and encourage healthy eating, increased physical activity and social engagement are very successful with older adults (Haber 2007), particularly when framed within the perspective of the older person. Recent research from New Zealand indicates that physical comfort, integration, contribution, security, autonomy

BOX 18-1 Sex and sexuality

- Research has consistently shown that sexual activity remains important for many older people.
- For many older people there is a link between sexual expression and their quality of life.
- Sexual expression can include touching/holding hands, embracing/hugging, kissing, mutual stroking, masturbating and intercourse.
- With reasonable health and a partner, sexual relations are possible into the ninth decade of life.
- Sexual drive varies with each person, and in each person, from time to time.
- Older people may be heterosexual or identify as being lesbian, gay, bisexual, transgender and intersex.
- Not all older people want to be sexually active and those that do may choose to express their sexuality in a range of ways.
- Denial of an individual's sexuality is an infringement of that individual's human rights.
- Sexual problems are frequent among older adults, but these problems are infrequently discussed with healthcare professionals.

Flynn T-J, Gow AJ 2015 Examining associations between sexual behaviours and quality of life in older adults. Age and Ageing; Connaughton C, McCabe M 2015 Sexuality and Aging. Encyclopaedia of Geropsychology; United Nations 1948 The Universal Declaration of Human Rights. United Nations, Geneva. Online. Available www.un.org

and enjoyment are concepts and activities that older people think are important for their health (Stephens et al 2015). Like people of all ages, it is important to provide health-promoting messages that correspond to the identified interests of the older adult, rather than to areas believed to be important by the healthcare professionals. Understanding the needs and interests of the older person also ensures that self-care education includes techniques that compensate for any sensory changes, provides additional time for remembering and responding, is appropriate to context and draws on the older adult's past experiences, culture and values.

• CRITICAL REFLECTION POINT

Take a moment to consider the health-promoting activities that are currently on offer to older adults in the community in which you live. You may not be aware of all of them – many activities are offered through places like the local bowling club, golf club or local art centre, as well as the local community centre and public library.

What activities do you recommend to your older clients as part of their ongoing health promotion? Do you advise a varied set of activities? Do you check out their interests before making your suggestions?

The general perception of the value and contribution of older adults to Australian and New Zealand societies is mixed. On the one hand, older people are considered to be sources of valuable life knowledge, experience and support. On the other hand, they are often invisible within the community and excluded from opportunities to contribute. Older people tend to regard age as a relative term. The main discriminators of ageing are more likely to be the state of mind of the individual, their quality of life and their state of health.

Older people have expressed concerns about the use of unrealistic and negative stereotyping in the media, with older people frequently depicted as frail, defenceless victims described in terms of their dependency rather than their contribution. These unhelpful images not only undermine older people's self-confidence, but also the confidence that other people have in them, particularly younger people. The United Nations has identified the media as a principal agent for eradicating ageism by showing older people as being capable, rich in experience and history, and independent in thought and action.

The attitudes of healthcare professionals can also be influenced by stereotypes, and this may have flow-on effects to the type and standard of care provided to older adults. At times, institutional settings such as hospitals and residential aged care facilities have treated older adults as patients or objects, rather than independent, dignified contributors to society. Because of the nature of their interactions with clients, nurses are in a unique position to encourage and reinforce the positive self-image of an older person and contribute to eradicating ageism.



Figure 18-3 Technology is accessible to all age groups and offers many opportunities for health and health care.

iStockphoto/Svetlana Braun.

Abuse of the elderly

Abuse of the elderly is a significant social issue and can be described as the poor and often illegal behaviours of trusted people, such as family members or caregivers, towards an older person or their carers. Abuse of an older adult is often not recognised or acknowledged. Abuse may be directed towards an older person or the carer and can take different forms: physical, psychological, financial, sexual or neglect.

Abuse of an older person can include:

- physical and chemical restraint
- over-medication
- actions which show lack of respect
- hitting, slapping, pushing
- threats, humiliation, bullying
- swearing at the person
- treating the person like a child
- name-calling
- denying the right to money
- misappropriating money/valuables
- sexual teasing, innuendo or inappropriate/unwanted touching
- sexual assault
- failure to provide food/fluid/hygiene/personal care
- neglect/avoidance
- ignorance leading to mistreatment.

The abuse of older adults is thought to be under-reported. In 2008, the World Health Organization (WHO) recommended that screening for abuse should be included in all areas of care delivery, particularly primary care. However, in 2015, screening for abuse was still to be implemented as part of the routine assessment undertaken on the admission of older people to most services.

There may be many reasons for an older adult not to report abuse, including feelings of shame to admit that a person close to them mistreats them or blaming themselves for the behaviour. They may also be worried about what other people might think, or think that people might not believe them. They may also be frightened of the consequences of telling someone about their situation. For those living in rural and remote locations, options for family or other types of care are limited. It is important to note that there is legislation in both Australia and New Zealand to protect older people from elder abuse (see Chapters 10 and 11).

Care issues identified by the WHO (2015) that have been found to increase the risk of abuse occurring are:

- social and physical isolation of the older person or their carers
- language and cultural barriers
- a family member who is financially dependent on the older person
- a carer with addiction or mental illness
- a carer experiencing significant stress.

• CRITICAL REFLECTION POINT

The WHO considers that abuse of older people is a common problem. In the care setting where you work, what cues could indicate that an older client might be experiencing abuse? Would you be alert to the potential for abuse? Is screening for abuse part of the general assessment of the older person in the areas you have worked?

There is a fine line between abuse and poor-quality care. The language used by healthcare professionals when working with older people can be a subtle expression of underlying attitudes, such as their use of child-like or demeaning language. Abuse of the elderly rarely has a single cause. Ignorance about the ageing process and the needs of older people, and a lack of skill on behalf of caregivers are among the factors that contribute to an abusive situation.

Towards an understanding of how we age

Throughout history, people have been trying to understand the process of ageing – what causes it, what its purpose is. There is no single accepted theory of ageing; instead, a number of theories have been developed to explain the ageing process (Box 18-2). **Biological theories of ageing** seek to explain the anatomical and **physiological changes** that occur with ageing, and **psychological theories** attempt to explain the thought processes and behaviours of ageing people – the changes in behaviour, roles and relationships that occur as an individual ages. It is important to remember that theories of ageing are hypotheses and are attempts to seek explanation or meaning for what is observed or experienced.

Ageing can be defined in terms of biological age or chronological age. However, there is no agreement as to the definition of human ageing, nor are there any precise measures of ageing. One of the difficulties with the study of ageing is the lack of biomarkers of ageing. A question that is often posed in the research literature is how or against what we can measure the rate of ageing – since chronological age is the least useful method. **Chronological age** (age in years) and **physiological age** (functional capacity) do not always coincide. People can look younger or older than their chronological age: some people appear to age quickly, others slowly. The definitions of old age used for policy development, research or the planning of services are essentially socially constructed – they have a tenuous relationship to the biological 'ageing' of individuals. It is important to realise that 'old age' is generally defined in an arbitrary way.

What has puzzled researchers is why some older adults are active and vital at age 90 years while others are frail at age 60. Why is there so much variation in ageing? Biological theories have sought to answer these questions, and can be divided into two main groups: **stochastic theories**, which propose that ageing is the accumulated effect of cellular and molecular errors or damage over time; and **non-stochastic theories**, which propose that ageing is predetermined by the programmed mechanisms of the body (Box 18-2).

Understanding normal ageing

The nursing care of older adults poses special challenges because of the large variations in physiological, cognitive and psychosocial health status. Older adults also vary widely in their levels of functional ability. While rating themselves as having poorer health than younger people, older people tend to have a positive view of their health. Thirty five per cent of Australians aged 75–84 years currently rate their health as 'excellent' or 'very good' and 33% as 'good'. About 30% of those aged 85 and over also rated their health as 'excellent' or 'very good' and 32% as 'good' (AIHW 2014).

BOX 18-2 Theories of ageing

Biological theories of ageing

Stochastic theories

Free-radical structure theory Cellular structure is altered through parts breaking off, or from the loose electrons from these free parts attaching to other cells. Environmental pollutants are thought to promote free-radical activity. Foods that are thought to reduce free-radical activity are those rich in vitamins A, C and E.

Somatic mutation theory Defective cellular structure and function structure as a result of DNA alteration, RNA mutations and protein or enzyme synthesis.

Cross-linked collagen theory Collagen constitutes 25–30% of body protein and forms gelatine-like cell matrix. With age, collagen cross-links become more insoluble and rigid.

Wear and tear theory Damage from external as well as internal sources leads to the progressive failure of the body to repair itself.

Non-stochastic theories

Programmed cells theory Cells are thought to be programmed to 'age' at specific times.

Run-out-of-program theory This is an extension of the programmed cell theory – each organism is thought to have a specific number of cell divisions and specific life span.

Neuroendocrine theory Efficiency of signals between body's control mechanisms – pituitary and hypothalamus – is altered or lost.

Autoimmune reactions Immunological system loses capacity for self-regulation and begins perceiving normal or age-altered cells as foreign matter. System reacts by forming antibodies to destroy cell.

Psychological theories of ageing

Disengagement theory The foundation of this theory is that there is decreased interaction between the old and others within their environment, and that this is an inevitable and universal consequence of ageing. A significant argument is that the social withdrawal experienced by the elderly is due to their deprived situation rather than a consequence of ageing.

Activity theory This theory emerged in the 1950s and essentially links keeping active with happiness and 'successful' ageing. Studies have demonstrated the relationship between physical activity and wellbeing.

Continuity (development) theory This theory suggests that essential psychological patterns such as personality and basic patterns of behaviour are consistent throughout the life span. Concepts and patterns developed over a lifetime will determine whether individuals remain engaged and active or become disengaged and inactive.

Bengston VL 2009 Handbook of theories of aging. New York, Springer.

Physiological changes

Normal physiological changes are expected in older adults (Table 18-2). These physiological changes are not pathological processes, but may make older adults more vulnerable to some common clinical conditions and threaten self-identity. Some older adults experience all of these changes, and others experience only a few. The body changes continuously with age, but the effects depend on genetics, health, lifestyle, stressors and environmental conditions. Being aware of the normal effects of ageing assists nurses to provide appropriate care for older adults, and to work with older adults adapting to physiological change. Older adults are subject to more frequent questioning and testing of their physiological and cognitive abilities; for example, driving tests and health checks are required more frequently.

Integumentary system

The skin loses resilience and moisture in older adulthood. The epithelial layer thins, and elastic collagen fibres shrink and become rigid. Wrinkles of the face and neck reflect lifelong patterns of muscle activity and facial expressions, the pull of gravity on tissue, and diminished elasticity (Marieb 2014). Spots and lesions may also be present on the skin. Smooth, brown, irregularly shaped spots (age spots, or senile lentigo) initially appear on the backs of the hands and on forearms. Small, round, red or brown cherry angiomas may be found on the trunk (Marieb 2014). Seborrhoeic lesions or keratoses may appear as irregular, round or oval, brown, watery lesions. Years of sun exposure contribute to the ageing of the skin and may lead to premalignant and malignant lesions. Examination of skin lesions aims to rule out three different types of malignancies related to solar exposure: melanoma, basal cell carcinoma and squamous cell carcinoma. If any suspicious areas are noted, the client should be referred for medical assessment.

Pressure ulcers (**decubitus ulcers**) are areas of skin breakdown (usually over a bony prominence) that result from prolonged pressure on the skin by an external object, such as a bed or chair (Box 18-3). Most commonly occurring

TABLE 18-2 Normal physiological changes of ageing

System	Normal findings
Integument	
Skin colour	Spotty pigmentation in areas exposed to the sun; pallor even in absence of anaemia
Moisture	Dry, scaly condition
Temperature	Cooler extremities; decreased perspiration
Texture	Decreased elasticity; wrinkles; folding,
Fat distribution	Decreased amount on extremities; increased amount on abdomen
Hair	Thinning and greying on scalp; often, decreased amount of axillary and pubic hair and hair on extremities; decreased facial hair in men; possible chin and upper lip hair in women
Nails	Decreased growth rate
Head	Sharp and angular nasal and facial bones; loss of eyebrow hair in women; bushier eyebrows in men
Eyes	Decreased visual acuity; decreased accommodation; reduced adaptation to darkness; sensitivity to glare; diminished light reflex
Ears	Decreased pitch discrimination; diminished hearing acuity
Nose and sinuses	Increased nasal hair; decreased sense of smell
Mouth and pharynx	Use of bridges or dentures; decreased sense of taste; atrophy of papillae of lateral edges of tongue
Neck	Nodular thyroid gland; slight tracheal deviation resulting from muscle atrophy
Thorax and lungs	Increased anteroposterior diameter; increased chest rigidity; increased respiratory rate with decreased lung expansion; increased airway resistance
Heart and vascular system	Significant increase in systolic pressure with slight increase in diastolic pressure; usually insignificant changes in heart rate at rest; common diastolic murmurs; easily palpated peripheral pulses; weaker pedal pulses and colder lower extremities, especially at night
Breasts	Diminished breast tissue; pendulous
Gastrointestinal system	Decreased salivary secretions, which may make swallowing more difficult; decreased peristalsis; decreased production of digestive enzymes, including hydrochloric acid, pepsin and pancreatic enzymes; reduced motility leading to constipation
Reproductive system	
Female	Decreased oestrogen; decreased uterine size; decreased secretions; atrophy of epithelial lining of vagina
Male	Decreased levels of testosterone; decreased sperm count; decreased testicular size
Urinary system	Decreased renal filtration and renal efficiency; subsequent loss of protein from kidney; nocturia; decreased bladder capacity
Female	Decrease in perineal muscle tone
Male	Prostatic enlargement
Musculoskeletal system	Decreased muscle mass and strength; bone demineralisation; shortening of trunk as result of intervertebral space narrowing; decreased joint mobility; decreased range of joint motion; enhanced bony prominences
Neurological system	Decreased rate of voluntary or automatic reflexes; decreased ability to respond to multiple stimuli; insomnia; shorter sleeping periods

Marieb EN, Hoehn KN 2014 Human anatomy and physiology. 9th edn. Pearson New International, Harlow, Essex.

on the elbow or sacrum, there is international support to rename pressure ulcers 'pressure injuries' to reflect that the majority of such ulcers can be prevented (Australian Wound Management Association 2012). Pressure ulcers are not part of normal ageing; however, older adults who are bed- or chair-bound are at risk of developing a pressure injury. *The Pan Pacific clinical practice guidelines for the prevention and management of pressure injury* (2012) is a useful tool to inform the prevention and management of pressure injuries (see *Online resources*).

BOX 18-3 Risk factors for the development of a pressure injury

- Immobility
- Malnourishment
- Loss of subcutaneous fat over bony prominences
- Excessive moisture on skin surfaces or in skin folds
- Urinary and/or faecal incontinence
- Cardiovascular disease
- Poor arteriole pressure
- Cognitive impairment
- Diminished sensory perception

Head and neck

The facial features of the older adult become more pronounced from loss of subcutaneous fat and skin elasticity (Marieb 2014). Facial features may appear asymmetrical because of missing teeth or improperly fitting dentures. Common vocal changes include a rise in pitch and a loss of power and range in the voice.

The older adult's visual acuity declines. This may be the result of retinal damage, reduced pupil size, development of opacities in the lens or loss of lens elasticity. **Presbyopia**, a progressive decline in the ability of the eyes to accommodate for close, detailed work, is common. There is a reduced ability to see in darkness and to adapt to abrupt changes from dark areas to light areas (and the reverse). Older adults also have increased sensitivity to the effects of glare. Changes in colour vision and discolouration of the lens make it more difficult to distinguish between blues and greens, and among pastel colours (Marieb 2014).

Auditory changes are often subtle. The earliest losses of hearing acuity may be ignored until compensatory attempts such as turning up the volume on televisions and radios are commented on by friends and family members. A common age-related change in auditory acuity is called presbycusis. **Presbycusis** affects the ability to hear high-pitched sounds and sibilant consonants such as s, sh and ch (Marieb 2014). Before assuming presbycusis, inspect the external auditory canal for the presence of cerumen (ear wax). Impacted cerumen is an easily treated cause of diminished hearing acuity.

Taste buds atrophy and lose sensitivity. The older adult becomes less able to discern salty, sweet, sour and bitter tastes. The sense of smell is also decreased, further reducing taste. Salivary secretion is also reduced (Marieb 2014).

Thorax and lungs

Because of changes in the musculoskeletal system, the configuration of the thorax sometimes changes. Around 55 years of age, respiratory muscle strength begins to decrease. The anteroposterior diameter of the thorax increases. Vertebral changes due to **osteoporosis**, which involves the loss of minerals such as calcium more quickly than the body can replace them, lead to a loss of bone mass or density which in turn leads to **dorsal kyphosis**, the curvature of the thoracic spine sometimes called 'dowager's hump' because of the increased incidence in older women. Calcification of the costal cartilage can cause decreased mobility of the ribs. The chest wall gradually becomes stiffer. Lung expansion decreases. If kyphosis or chronic obstructive lung disease is present, breath sounds are distant (Marieb 2014).

Heart and vascular system

Decreased contractile strength of the myocardium results in a decreased cardiac output (Marieb 2014). The decrease is significant when the older adult is stressed by anxiety, excitement, illness or strenuous activity. The body tries to compensate for decreased cardiac output by increasing the heart rate during exercise. However, after exercise, it takes longer for the older adult's rate to return to baseline.

No significant rise in diastolic pressure occurs with ageing, but due to stiffening of the large arteries there is a gradual increase in systolic pressure (Marieb 2014). Although common, hypertension is not a normal ageing change, but predisposes an older adult to heart failure, stroke, renal failure, coronary heart disease and peripheral vascular disease. Peripheral pulses are often weaker, although still palpable in the older adult. Older adults may complain that their lower extremities are cold, particularly at night.

Breasts

Decreased muscle mass, tone and elasticity result in smaller breasts in older women (Marieb 2009). In addition, the breasts sag. Atrophy of glandular tissue, coupled with more fat deposits, results in a slightly smaller, less dense and less nodular breast. Gynaecomastia (enlarged breasts in men), may be due to medication side effects, hormonal changes or obesity. Both older men and older women remain at risk of breast cancer development (Marieb 2014).

Gastrointestinal system and abdomen

Ageing leads to an increase in the amount of fatty tissue in the trunk. As a result, the abdomen may increase in size. Because muscle tone and elasticity decrease, the abdomen may also appear more protuberant (Marieb 2014).

RESEARCH HIGHLIGHT

Translating research into practice

Although the prevalence of venous leg ulcers in the community is not known, they are a very common health problem in both Australia and New Zealand. Part of the problem for understanding exactly how common venous leg ulcers are is the lack of a consistent definition for a venous leg ulcer, including aetiology.

Venous leg ulcers affect the quality of life of the sufferer: they are painful, affect mobility and are difficult to heal. Venous leg ulcers are costly both to the individual – wound-care products are expensive and not covered entirely by the national health schemes of either Australia or New Zealand – and costly to the community. Community-dwelling older adults with a venous ulcer require a high level of domiciliary nursing services, and sufferers often require lengthy hospitalisations. The cost impact includes pathology, radiology investigations and pharmaceuticals as well as adjunct therapies.

Access to appropriate services for diagnosis and management of venous leg ulcers is not equal throughout New Zealand and Australia; rural areas in particular do not have sufficient resources.

The Australian Wound Management Association (AWMA) and the New Zealand Wound Care Society (NZWCS) sought to address the issue by developing a clinical practice guideline for the prevention and management of venous leg ulcers that would guide the practice of all healthcare professionals, with specific reference to the practice of nurses. A priority is to optimise the prevention, assessment and management of venous leg ulcers via the dissemination of best available evidence, and to simplify clinical decision-making processes for healthcare professionals.

The research

The development of a clinical practice guideline is an important step in the translation of research into practice. The development of the guideline required both organisations to work together, review the relevant literature and manage a consensus process with the experts of both countries. A rigorous approach must be taken which evaluates the available evidence. The guideline presents a comprehensive review of the assessment, diagnosis, management and prevention of venous leg ulcers within the Australian and New Zealand healthcare context, based on the best evidence available up to January 2011.

Reference

Australian Wound Management Association and New Zealand Wound Care Society 2011 Australian and New Zealand clinical practice guideline for prevention and management of venous leg ulcers. Online. Available: www.awma.com.au/publications/2011_awma_vlug.pdf; accessed 16 Jan 2016.

Changes in gastrointestinal function include a slowing of peristalsis and alterations in secretions. The older adult may experience these changes as the development of intolerance to certain foods, or discomfort due to delayed gastric emptying. Alterations in the lower gastrointestinal tract may lead to constipation, flatulence or diarrhoea.

Reproductive system

Changes in the structure and function of the reproductive system occur as the result of hormonal alterations. Female menopause is related to a reduced responsiveness of the ovaries to pituitary hormones and a resultant decrease in oestrogen and progesterone levels. In men, there is no definite cessation of fertility associated with ageing. Spermatogenesis begins to decline during the fourth decade but continues into the ninth (Marieb 2014). The changes in reproductive structure and function, however, do not affect libido. Many older people remain sexually active but less-frequent sexual activity can result from illness, death of a sexual partner, decreased socialisation or loss of sexual interest.

Urinary system

While urinary incontinence is not a normal part of ageing, there are some physiological changes that put older adults at risk of developing **incontinence**. The bladder capacity gradually declines so that it can hold less maximal volume, and it becomes more prone to unstable contractions known as **detrusor instability**. If these contractions are strong enough they may result in urge incontinence. Stress incontinence is also common, particularly in men who have undergone prostate surgery (Abrams et al 2012).

Hypertrophy of the prostate gland may develop in older men. This hypertrophy enlarges the gland, which may cause pressure on the neck of the bladder. As a result, urinary retention, frequency, incontinence and urinary tract infections can occur. In addition, **prostatic hypertrophy** can result in difficulty initiating voiding and maintaining a urinary stream (Abrams et al 2012).

Musculoskeletal system

With ageing, muscle fibres are reduced in size. Muscle strength diminishes in proportion to the decline in muscle

mass. Bone mass also declines. Older adults who exercise regularly do not lose as much bone and muscle mass or muscle tone as those who are inactive. Postmenopausal women have a greater rate of bone demineralisation than older men, although osteoporosis is also a problem for older men (Marieb 2014). Older men with poor nutrition and decreased mobility are at risk of bone demineralisation. Older adults who maintain calcium intake, coupled with vitamin D (either as a supplement or through sun exposure) throughout life, have less bone demineralisation than those who do not.

Neurological system

The number of neurons in the nervous system begins to decrease during the second decade of older age, leading to possible functional changes (Marieb 2014). These changes can affect the senses (smell, sight etc.), as described earlier. In addition, the older adult may experience a decreased sense of balance or uncoordinated motor responses.

Older adults often report alterations in the quality and quantity of their sleep. This may include difficulty falling asleep, difficulty staying asleep, difficulty falling asleep again after waking during the night, waking too early in the morning and excessive daytime napping. Age-related sleep changes are summarised in Box 18-4 and are also discussed in Chapter 30.

Cognitive changes

A common misconception about ageing is that cognitive impairment is an inevitable consequence. Because of this misconception, older adults may fear that they are, or soon will be, cognitively impaired. Similarly, younger adults may assume that all older adults are confused and no longer able to make decisions or handle their affairs. Disorientation, loss of language skills, loss of the ability to calculate, and poor judgement are not normal ageing changes. Structural and physiological changes within the brain, such as reduction in the number of cells, deposition of lipofuscin and amyloid in cells, and changes in neurotransmitter levels are seen in older adults with and without cognitive impairment (Marieb 2014).

Psychosocial changes

Psychosocial changes occurring with ageing mainly involve changes in roles and relationships as parents become grandparents, partners or adult children become caregivers, or partners die. Group membership roles and relationships also change as the older adult retires from work, moves away from a familiar neighbourhood or stops attending social activities because of the inability to drive, to hear social conversation in group situations or declining health. These changes are particularly isolating for those living in remote or rural communities where losing the ability to drive, for example, has significant consequences for work and daily living.

BOX 18-4 Age-related sleep changes

- Ageing does not increase sleep disorders; however, approximately 50% of older adults complain of difficulty in sleeping.
- Older adults report sleeping on average 7 hours per night – the same or more than that reported by younger adults.
- Awakenings are frequent, increasing after age 50 years.
- Sleep is subjectively and objectively lighter (more stage I, less stage IV, more disruptions).
- A side effect of many medicines prescribed to older adults is changes to sleep.
- Sleep disturbances are associated with indications of poor health.
- Restless leg syndrome is more common in older adults.
- Insomnia – difficulty in falling or staying asleep – is often comorbid with medical and psychiatric illness.
- Sleep-disordered breathing (SDB) – snoring through to sleep apnoea – is more prevalent in the older population. The main symptom of SDB is snoring.
- Continuous positive airway pressure (CPAP) is a useful treatment for SDB in older adults, with research showing that older adults are compliant with CPAP usage.
- Assessment of sleep problems should include a sleep history including unintentional napping, plus medical history, details of medication regimen, and food and alcohol consumption patterns.

Neikrug AB, Ancoli-Israel S 2010 Sleep disorders in the older adult – a mini-review. Gerontology 56(2):181–9.

Assessment of the older adult

Gerontological nursing offers creative approaches for maximising the potential of older adults. With a comprehensive assessment including the older adult's strengths, resources and limitations, the nurse and older adult together identify needs and problems and select interventions that maintain the older adult's physical abilities and create an environment for psychosocial and spiritual wellbeing. A thorough assessment requires the nurse to actively engage with the older adult and provide them with enough time to share important information about their health. Most health services have adopted or developed valid and reliable assessment tools relevant

to their service provision. However, some services do not utilise assessment tools to support clinical decision-making and may only collect limited demographic data.

Obtaining a comprehensive assessment of an older adult may take more time than the assessment of a younger adult because of the longer life and medical history and the potential complexity of that history. Planning extra time for the assessment ensures the nurse and older adult are less likely to feel rushed. During the assessment process the nurse may find it necessary to allow rest periods or to conduct the assessment in several sessions because of the reduced energy or limited endurance experienced by some frail older adults.

Sensory changes may also affect data gathering. The nurse's choices of communication techniques will be influenced by visual or hearing impairments in the older adult. If older adults are unable to understand the nurse's visual or auditory cues, assessment data may be inaccurate or misleading. For example, if older adults have difficulty hearing the nurse's questions, inappropriate responses may lead the nurse to believe that they are confused. Table 18-3 suggests techniques to use during the assessment of older adults with sensory problems.

Memory deficits may affect the accuracy and completeness of the data collected. Information contributed by a family member or other caregiver may be needed to supplement the older adult's recollection of past medical events and gain information about allergies and immunisations. Tact must be used when involving another person in the assessment interview with the older adult.

TABLE 18-3 Techniques for assessing older adults with sensory problems

Sensory alteration	Assessment technique
Visual disturbance	Position self in full view of client
	Provide diffuse, bright light; avoid glare
	Make sure client's glasses are worn and in good working order
	Face client when speaking; do not cover mouth
Hearing deficit	Speak directly to client in clear, low tones at a moderate rate; do not cover mouth
	Articulate consonants with special care
	Re-state if client does not understand question initially
	Speak towards 'good' ear
	Reduce background noises
	Make sure client's hearing aid is worn and is working properly

With the older adult's consent, an additional person can supplement answers to assessment questions, particularly if they are a carer of the older adult, but the older adult should remain the focus of the interview.

Perception of wellbeing can define quality of life. Understanding the older adult's perceptions about their health status is essential for accurate assessment and development of clinically and personally relevant interventions. Older adults' ideas of health generally depend on personal perceptions of functional ability and their expectations of older age. Older adults engaged in the normal activities of daily living (ADLs) usually consider themselves healthy, whereas those whose activities are limited by physical, emotional or social impairments may perceive themselves as unwell.

The nurse assesses the nature of the psychosocial changes facing an older adult and the adaptation of the older adult to those changes. Areas covered during the health assessment include understanding family and/or partner support, culture and values, intimate relationships, past and present occupations, finances, housing, social networks, activities and spirituality. Specific topics related to these areas may include questions about retirement, housing and environment, social isolation, sexuality and death.

Risks to healthy ageing

There are a number of contributors to loss of healthy-life years among older adults. Important risk factors to explore during the nursing assessment are physical inactivity, obesity, high blood cholesterol, inadequate intake of fruit and vegetables, smoking and excessive alcohol consumption (AIHW 2014). It is important to remember that risk factors are not necessarily causes of disease, but they may put an individual at risk of experiencing disease. Risk factors often co-exist, so it is not unusual for a nursing assessment to reveal a number of risk factors. There is, however, potential for health gain at all life stages through appropriate management of risk factors, in addition to early prevention. Making changes to lessen one risk factor generally lessens other risk factors.

Common conditions experienced by older adults include arthritis, cardiovascular disease, including hypertension, and sensory loss – particularly hearing disorders (AIHW 2014). Heart disease, stroke and cancer remain the highest causes of death in Australia and New Zealand but dementia is the greatest single contributor to the burden of disease due to disability, as well as the greatest single contributor to the cost of care in residential aged care.

Risk factors

Bodyweight

People who are overweight at any age have higher mortality and morbidity rates for non-insulin-dependent (type 2) diabetes, coronary heart disease, respiratory disease, some types of cancers, gallbladder disease and osteoporosis. Weight loss among those who are overweight reduces the incidence and severity of high blood pressure, high blood cholesterol, diabetes, osteoarthritis and some types of cancers. However, unintentional weight loss in an older person is a cause for concern and always needs to be investigated. Such weight loss may actually mean that the older person is losing muscle rather than adipose tissue. This can lead to a condition called **sarcopenia**, which results in loss of muscle bulk and tone giving rise to functional decline, poor wound healing, increased risk of falls and an overall loss of quality of life. Prevention of sarcopenia includes ensuring adequate calorie intake, ensuring the diet has sufficient protein – protein requirements for older people are similar to those of younger people – and weight-bearing exercise (Australian Institute of Musculoskeletal Science 2015).

Physical inactivity

Physical inactivity is an independent risk factor for cardiovascular disease, and is also associated with other risk factors such as high blood pressure, high blood cholesterol and excess bodyweight. Participation in physical activity by older people has benefits in relation to falls prevention and musculoskeletal health, the promotion of urinary continence, mental health and relief of pain from arthritis. Physical activity can also help in the prevention and treatment of type 2 diabetes especially among people already at risk. Physical exercise is an important factor in preventing sarcopenia. Greater understanding of the importance of exercise for older people is reflected in an increase in the number and type of programs that specialise in movement for older people, such as gyms, tai chi groups, aqua aerobics and dance groups. Residential aged care homes are increasingly introducing weight-bearing and other exercise programs for residents, including for those with advanced dementia.

Blood cholesterol

High blood cholesterol is a major risk factor for coronary heart disease. Saturated fat in the diet is a major factor in raising blood cholesterol levels for most people. Diet modification, increased exercise and, if necessary, medication, are the usual treatments.

Hypertension

High blood pressure is also a major risk factor for coronary heart disease as well as stroke, heart failure, peripheral vascular disease and renal failure. The risk of disease increases as the level of blood pressure rises. High blood pressure is more likely to develop among people who are overweight or physically inactive, or have high dietary salt intakes.

Impaired glucose tolerance

Impaired glucose tolerance (IGT) is common in people who are physically inactive and overweight, and is more common in older people. As well as being a risk factor for type 2 diabetes, IGT is linked to a greater risk of heart disease. With increasing age, the cells in the pancreas that produce insulin – the hormone that enables the body to convert glucose to energy – become less efficient. This, combined with decreased physical activity and increased bodyweight, contributes to the higher prevalence of IGT (and type 2 diabetes) among older people.

Tobacco smoking

Smoking increases the risk of lung cancer, chronic obstructive pulmonary disease, ischaemic heart disease and other diseases; there are benefits to stopping smoking at all ages.

Alcohol consumption

Excessive and long-term alcohol consumption is associated with liver disease, pancreatitis, diabetes, epilepsy and some cancers. The body's tolerance for alcohol decreases with age. Of particular relevance to older people are the risks associated with drinking and driving and the risk of alcohol interacting with medicines. However, there is some evidence to suggest that low to moderate levels of alcohol consumption may protect against hypertension, ischaemic heart disease and stroke.

Health issues experienced by older people

A number of health issues experienced by older people can have a profound effect on their functional ability, quality of life and ability to remain independent, and can precipitate admission into residential aged care.

Impaired cognition

Three common conditions affecting cognition are *delirium*, *dementia* and *depression*. Distinguishing between these three conditions is challenging, but essential (see Table 18-4, which compares the clinical features). Remember

TABLE 18-4 A comparison of the clinical features of delirium, dementia and depression

Clinical feature	Delirium	Dementia	Depression
Onset	Acute/subacute, depends on cause, often at twilight or in darkness	Chronic, generally insidious, depends on cause	Coincides with major life changes, often abrupt
Course	Short, diurnal fluctuations in symptoms, worse at night, in darkness and on awakening	Long, no diurnal effects, symptoms progressive yet relatively stable over time	Diurnal effects, typically worse in the morning, situational fluctuations, but less than with delirium
Progression	Abrupt	Slow but uneven	Variable, rapid or slow but even
Duration	Hours to less than 1 month, seldom longer	Months to years	At least 6 weeks, can be several months to years
Awareness	Reduced	Clear	Clear
Alertness	Fluctuates, lethargic or hypervigilant	Generally normal	Normal
Attention	Impaired, fluctuates	Generally normal	Minimal impairment, but is easily distracted
Orientation	Generally impaired, severity varies	Generally normal	Selective disorientation
Memory	Recent and immediate impaired	Recent and remote impaired	Selective or 'patchy' impairment, 'islands' of intact memory
Thinking	Disorganised, distorted, fragmented, incoherent speech, either slow or accelerated	Difficulty with abstraction, thoughts impoverished, judgement impaired, words difficult to find	Intact but with themes of hopelessness, helplessness or self-deprecation
Perception	Distorted, illusions, delusions and hallucinations, difficulty distinguishing between reality and misperceptions	Misperceptions usually absent	Intact, delusions and hallucinations absent except in severe cases
Psychomotor behaviour	Variable, hypokinetic, hyperkinetic, and mixed	Normal, may have apraxia	Variable, psychomotor retardation or agitation
Sleep–wake cycle	Disturbed, cycle reversed	Fragmented	Disturbed, usually early-morning awakening
Associated features	Variable affective changes, symptoms of autonomic hyperarousal, exaggeration of personality type, associated with acute physical illness	Affect tends to be superficial, inappropriate and labile, attempts to conceal deficits in intellect, personality changes, aphasia, agnosia may be present, lacks insight	Affect depressed, dysphoric mood, exaggerated and detailed complaints, preoccupied with personal thoughts, insight present, verbal elaboration
Assessment	Distracted from task, numerous errors	Failings highlighted by family, frequent 'near miss' answers, struggles with test, great effort to find an appropriate reply, frequent requests for feedback on performance	Failings highlighted by individual, frequently answers 'don't know', little effort, frequently gives up, indifferent towards test, does not care or attempt to find answer

Phillips J et al 2010. No time like the present. Online. www.dementia-assessment.com.au/resource/No_time_like_the_present.pdf; accessed 18 Jan 2016; Sansoni J et al 2008. Online. Available: http://ro.uow.edu.au/cgi/viewcontent.cgi?article=1348&context=ahsri; accessed 18 Jan 2016; Department of Health and Human Services 2006 Clinical practice guidelines for the management of delirium in older people © Commonwealth of Australia.

that these conditions are not mutually exclusive, and that individuals may have more than one condition at any one time. Appropriate nursing interventions are specific to the cause of the cognitive impairment.

Delirium

Delirium is a transient disorder characterised by impaired cognitive function and reduced ability to focus, sustain or shift attention. The disturbance develops over a short period of time. Some common causes include:

- pain
- medication – side effects, drug–drug interactions (prescribed, over-the-counter, complementary medicines)
- alcohol use
- infection, e.g. pneumonia, urinary tract infection

- malnourishment
- dehydration
- urinary retention
- hypoxia, hypotension, cardiopulmonary disorders leading to anoxia or transient ischaemia
- electrolyte imbalance
- constipation and faecal impaction.

Delirium may occur in any setting – the home or community, hospital or in residential care. The onset of delirium is typically sudden, and there are rapid fluctuations in symptoms and severity. The presence of delirium requires prompt assessment and intervention. In some emergency departments delirium is treated as a medical emergency, in the same way as a suspected heart attack. The cognitive impairment secondary to delirium is usually reversed once the cause is identified and treatment started. Being potentially reversible is one of the characteristics that differentiate delirium from dementia. If delirium in the older adult is not recognised and treated promptly, the sufferer can become very unwell. Delirium is often not recognised, and consequently treatment can be delayed; however, a number of guides for the management of delirium are available, including from the Australian Commission on Safety and Quality in Health Care (see *Online resources*).

• CRITICAL REFLECTION POINT

Reflect on the last time you worked with an older adult who had impaired cognition. What common causes of delirium were investigated during the assessment? An older adult may have dementia, with delirium occurring as an acute problem. The onset of delirium may be related to urinary retention, dehydration or pain.

Dementia

Dementia describes a collection of symptoms caused by disorders affecting the brain; therefore, dementia is not one specific disease. Dementia affects thinking, behaviour and the ability to perform everyday tasks. Brain function is affected enough to interfere with the person's normal social or working life. The deterioration of cognitive function leads to a decline in the person's ability to perform basic and instrumental ADLs such as managing personal hygiene and nutrition. There is memory loss, impaired visual spatial skills, and behavioural and personality changes, known as the behavioural and psychological symptoms of dementia or BPSD, as well as a decline in thinking ability. The progression of dementia in each individual is unique to that person. Clinical signs of depression may be present. The earliest symptoms of dementia may be very subtle and may be dismissed by the older adult's family as insignificant. The older adult may attempt to conceal the effects of memory loss, to compensate for or deny them.

Unlike delirium, dementia is characterised by a gradual, progressive, irreversible cerebral dysfunction. Because of the close resemblance between delirium and dementia, the presence of delirium must be ruled out whenever dementia is suspected.

The most common form of dementia is **Alzheimer's disease**, named after Dr Alois Alzheimer who published the first description of it. Alzheimer's disease, also called dementia of the Alzheimer type, is characterised by brain atrophy and the development of senile plaques and neurofibrillary tangles in the cerebral hemispheres. The cause of the disease is not known, and although several theories are being studied, none are definitive at this time.

Vascular dementia results from interruptions in blood flow to the brain, as in cerebrovascular disease, cardiovascular disease and haemorrhage. Formerly referred to as multi-infarct dementia, vascular dementia is also very common. Diagnosis may not be made until the cumulative effect of a series of small vascular events becomes clinically apparent. Although older adults with this form of dementia may display symptoms similar to dementia of the Alzheimer's type, vascular dementia is distinguished by periods of remission, preservation of personality, insight and unstable emotions.

Dementia with Lewy bodies (DLB) accounts for almost 10% of dementia diagnoses. It is a form of dementia associated with the growth in the brain of intracellular bodies (Lewy bodies). While the development of Lewy bodies is not completely understood, DLB is characterised by fluctuating cognition, visual and auditory hallucinations and motor features in common with those of Parkinson's disease. The older person may present with frequent falling, syncope, sensitivity to neuroleptic drugs, delusions and memory impairment.

Other forms of dementia include the dementias that occur in some individuals with Parkinson's disease, acquired immunodeficiency syndrome (AIDS) and Huntington's chorea (AIHW 2014). Dementia may also follow head injury, as with dementia pugilistica, in which the injuries are sustained from the sport of boxing.

The nursing management of older adults with any form of dementia can be complex. Interventions must reflect the needs of the older adult and their family. Pre-existing acute and chronic physical conditions, sensory impairments, depression and environmental stressors may also be present for the person living with dementia. Environmental stressors include unfamiliar environments, such as hospitals, and conditions within

any environment, such as glare, excessive noise, hurried activities and unfamiliar people. The accident and emergency department of a public hospital, for example, can be a frightening and confusing place for someone with dementia and/or delirium.

The older adult living with dementia often poorly understands environmental stressors, for example, noise. These misunderstandings lead to increased confusion and agitation. There is increasing emphasis on good environmental design within hospitals and aged care homes to facilitate people with impaired cognition to live with minimum anxiety.

Depression

Delirium and depression are both reversible disorders, but are often mistaken for irreversible dementia in the older adult. This is because cerebral dysfunction and cognitive impairment occur with delirium and depression, as well as with dementia. Consequently, older adults with such disorders may not be appropriately assessed and treated. When dementia and depression occur together, the distress of the older adult and the family is markedly increased.

Depression reduces happiness and wellbeing, contributes to physical and social limitations, complicates the treatment of concomitant medical conditions and increases the risk of suicide. There is chronic underreporting of depression in all populations, but older people are particularly vulnerable as they may be experiencing loss of health, vitality, independence and possibly relationships (beyondblue, see *Online resources*). It is thought that one cause is the failure of healthcare professionals to recognise the symptoms of depression, which can present or be described differently in older people. Another reason is the false belief that depression is normal in older people. Therefore, depression in older people is not always recognised or treated.

Other risk factors for depression in older adults include:

- being female
- recent bereavement
- living in a residential aged care home
- multiple physical comorbidities
- dementia
- medication regimen which includes antihypertensive, analgesics or hypoglycaemic agents
- social isolation
- prior history of depression.

Cognitive impairment related to alcohol abuse

Apart from those with a lifelong pattern of heavy drinking, alcohol abuse often arises in older age as a coping mechanism to deal with loss, anxiety, depression, boredom or to relieve pain. In addition to the physiological effects, alcohol abuse can affect cognitive functioning. As a result of normal physiological changes, older adults are more susceptible to the effects of alcohol. A greater proportion of alcohol is delivered to the brain because of changes in the distribution of body fluids and the proportion of body fat to muscle.

Abuse of alcohol may be under-identified in older adults as the clues to alcohol abuse are subtle, and assessment may be complicated by co-existing dementia or depression. Suspicion of alcohol abuse increases when there is a history of repeated falls and accidents, a change in behaviour or personality, social isolation, recurring episodes of memory loss and confusion, a history of skipping meals or non-compliance with a medication regimen and difficulty managing household tasks and finances. When abuse of alcohol is suspected, treatment includes age-specific approaches that acknowledge the stresses experienced by the older adult and encourage involvement in activities that match the older adult's interests and improve feelings of self-worth. The identification and treatment of co-existing depression is also important.

Falls

Falls in people aged 65 years and over are of particular concern because of their frequency, associated morbidity and mortality, and cost to the healthcare system and community. Falls are the leading cause of hospitalisation among people 65 years and over.

It is recognised that the cause of falls is multifactorial – a number of factors may be present simultaneously contributing to the risk of a fall. While the physical changes in an older adult can contribute to increased falls risk – stooped posture, bone and joint problems – so can the effects of medicines and environmental hazards such as rugs, electrical cords, slippery floors, poor lighting and unsafe shoes (see Box 18-5).

Many people experience a fall when they get up to use the toilet at night. Research evidence suggests that exercise, such as strength and balance training, tai chi or walking is effective in reducing the risk of falls in older people. High-dose vitamin D with calcium has been found to be effective in reducing fractures of older adults living in residential aged care and in the community. In addition, hip protectors have been shown to dramatically reduce hip fractures in people in residential aged care. Evidence-based guidelines for falls prevention in acute care, the community and in residential aged care can be found on the website of the Australian Commission on Quality and Safety in Health Care (see *Online resources*).

BOX 18-5 Risk factors for falls

Residential aged care facilities

Intrinsic factors

- Acute health status
- History of falls
- Wandering behaviour
- Cognitive impairment
- Maximal drop in postprandial systolic blood pressure
- Deterioration in performance of activities of daily living
- Reduced lower extremity strength or balance
- Unsteady gait/use of a mobility aid
- Use of antidepressants medication/polypharmacy
- Independent transfers/wheelchair mobility

Extrinsic factors

- Relocation between settings
- Environmental hazards

Acute care settings

Intrinsic factors

- Age (sharp rise over 60 years of age)
- Circulatory system disorders most likely, followed by nervous system, respiratory system, musculoskeletal and digestive system disorders
- Previous cerebrovascular accident
- History of falls
- Depression
- Cognitive impairment
- Incontinence of bowel or bladder
- Requiring assistance with walking/impaired balance
- Sensory deficits such as impaired vision and dizziness/vertigo
- Use of psychotropic medicines (with greatest risk for those taking more than two medicines)

Extrinsic factors

- Hospitalisation for 19 days or more
- Environmental factors

Department of Health and Ageing 2004 An analysis of research on preventing falls and falls injury in older people: Community, residential care and hospital settings. Australian Commission on Safety and Quality in Health Care (ACSQHC) 2009 Preventing falls and harm from falls in older people: best practice guidelines for community care.

Urinary incontinence

Urinary incontinence is a debilitating disorder, which can affect the sufferer physically, psychologically, socially and economically. Although urinary incontinence can affect all age groups, women, the elderly and the disabled are particularly vulnerable. Over the last 30 years there have been great advances in our understanding of how to promote healthy bladder function. The modern approach to this problem is one of the promotion of continence, rather than the management of incontinence.

It is recognised that seeking treatment for incontinence is difficult for some people, and many sufferers never seek treatment. Although it is not known how many sufferers could be cured, it is thought that a large percentage of those experiencing urinary incontinence could become dry. It would be easy to think that everyone living in a residential aged care facility is incontinent. However, with good assessment and help with maintaining good bladder habits, avoidance of constipation and the use of bladder re-education programs, many residents of aged-care facilities can be helped to become continent or have their incontinence minimised.

Although urinary incontinence is common in older people, ageing does not cause it – that is one of the myths about ageing. Damage and disease can cause incontinence, such as damage to the bladder, sphincters and pelvic floor, or diseases such as diabetes or trauma such as a cerebrovascular accident (stroke). In addition, one of the common problems that can aggravate urinary incontinence is constipation (Abrams et al 2013). Urinary incontinence has been defined by the International Continence Society expert review as the involuntary loss of urine that can be objectively demonstrated (Abrams et al 2013). The main types of incontinence in older people are described in Box 18-6.

Constipation and faecal incontinence

Faecal incontinence affects a relatively small number of people, although the numbers affected are not really known (see Chapter 32). Predisposing factors include damage to pelvic floor muscles through childbirth, side effects of some medicines, and diseases such as ulcerative colitis or Crohn's disease. The most common cause of faecal incontinence among older and disabled people is constipation and impaction of faeces. Factors that contribute to constipation in older people include poor diet, particularly a diet low in fibre, poor fluid intake,

BOX 18-6 Major types of incontinence

Functional incontinence – a condition that many older people living in an institution are described as having. It means that, because of functional decline, e.g. from immobility, impaired dexterity or impaired cognition, the person is unable to manage to use a toilet. It is also thought that there is no such condition as functional incontinence, merely a lack of appropriate help and support.

Nocturnal enuresis – the involuntary loss of urine occurring during sleep.

Post-micturition dribble – leakage of urine following voiding, common in older men.

Stress incontinence – the involuntary leakage of urine on effort or exertion, or on laughing, coughing or sneezing. Aggravated by pregnancy or obesity. Common in men post-prostate surgery.

Urge incontinence – the involuntary leakage of urine accompanied by or immediately preceded by urgency.

limited exercise, and the side effects of medicines. Like many clinical problems affecting older people, it is better to prevent the condition occurring than to treat an established condition. Aspects of assessment are outlined in Box 18-7.

Pain

Unrecognised and poorly managed pain results in an unnecessary and serious decline in the quality of life of an older person. Pain is not a normal part of ageing; however, the incidence of pain increases with age and illness. There is commentary within the research literature about the widespread lack of awareness of good pain management techniques for older people, particularly in residential aged care. Some of the possible reasons for the lack of awareness of pain experienced by older people include:

- a lack of understanding of the extent of pain among the older population
- a lack of understanding of the varied expression of pain in older people
- inconsistent pain identification assessment and treatment
- use of poor assessment tools which do not facilitate clinical decision-making
- a lack understanding how pain might be the cause of impaired cognition (delirium) or how pain might be expressed by someone with dementia or depression
- a culture which considers behaviours of an older person as 'challenging' or a 'problem to be controlled or managed' rather than the expression of an underlying issue
- a lack of understanding of the potential therapies available.

Pain management, whether for community-dwelling older people or within acute care or residential aged care, is an area where nurses can make an effective contribution. Nursing management requires being alert for the possibility of pain and, using good assessment techniques, being able to help the older person problem-solve the cause of the pain and develop effective management strategies.

BOX 18-7 Assessment of bowel and bladder problems in the older adult

Complete history

Resident's perception of the problem
Date of onset
Nursing history
Medical history
Drug therapy
Previous surgery
Finances
Incontinence aids

Physical examination

Mental awareness
Physical status
Mobility
Dexterity
Activity tolerance
Environment
Physical
Psychosocial

Bladder/continence chart

Frequency
Volume
Urgency
Circumstances

Diagnostic investigations

Urinalysis
Urodynamics

Plus

Bowel chart
Fluid intake
Fibre intake
Medication review

Hunt S 2001 Making sense of assessment data – continence charts, ACCNS J Comm Nurses 7(1):17; O'Connell B et al 2011 A suite of evidenced-based continence assessment tools for residential aged care. Australas J Ageing 30(10):27–32.

Like many aspects of working with older people, assessing and managing pain can be a challenge, but if managed well it will greatly minimise functional decline and promote quality of life for the older person. See Table 18.5 for pain assessment and management strategies.

Adverse drug events

It has been well documented that the levels of total medicine use (prescribed and non-prescribed) are higher in older than in younger people (Hunt 2007). Although ageing itself is not a disease process, as people age they tend to develop pathologies for which medicines are used to reduce the effects. The elderly, however, have a reduced ability to cope with medication, due to altered drug kinetics and responses, altered sensitivity to drugs and impaired compensatory mechanisms. This creates clinical dilemmas for the prescriber, the carer, and for the older adult (the consumer of health care). Although medicine use can do much to contribute to the quality of life of an older person, a large number of older people experience negative health outcomes directly related to medicine usage. For example, immobility and instability, falls, urinary incontinence and intellectual impairment including delirium and sedation have all been identified in the literature. Each of these clinical issues has implications for the quality of life of the older person and the cost of providing care, whether the older person involved is community-dwelling or living in residential care.

An adverse drug event might result from a medication prescribing error, a dispensing error, medication administration error, interaction between medicines or between food and medicines or, as a result of polypharmacy. Box 18-8 lists the risk factors for an adverse drug event.

Many healthcare organisations have nominated a specific number (e.g. five or nine medicines) to indicate polypharmacy, however, there is little research to support an arbitrary number. Recognising that medicines help older people to maintain a healthy lifestyle, it is increasingly thought that 'inappropriate polypharmacy' may be a better term. Several medicines may be needed to promote the health of an older person with hypertension and/or diabetes and/or arthritis, but an older person can have an adverse drug event from any or only one of these. It is important that all healthcare professionals maintain a watchful stance related to medicines, older people and

TABLE 18-5 Pain assessment and management

Successful pain management needs:

- Alertness that an older person may be experiencing pain
- Clinicians to have genuine concern and a sympathetic approach
- Good observations skills
- The correct diagnosis of the cause

Good pain assessment includes:	Management strategies includes:
• Being alert for the presence of pain • Watching for non-verbal expressions of pain: frowning, sadness, anxiousness, sighing, moaning, calling out, impaired cognition or confusion, pacing, rigid body posture, guarding, restricted movement, mobility changes • Use of valid and reliable assessment tools to assist with clinical decision-making • Assessment data: – Pain history – when did pain begin, site, quality, severity, aggravating and relieving factors, radiation – General medical history – relevant diseases (arthritis, dementia, depression, vascular, neurological, gastrointestinal, renal) – Physical examination – sites of reported pain, signs of arthritis, inflammation, musculosketal and neurological systems – Impact of pain on ADLs, movement, comfort, activity – Psychosocial assessment – coping mechanisms, cognitive state, beliefs about pain, expectations about relief, effect on sleep – Social impact – impact on relationships and social activities – Review of medication and other treatments – what has been tried, effectiveness	• Understanding the meaning of the pain for the older person • Educate client as to reason for pain • Taking a multidisciplinary approach • Treat underlying cause • Analgesia – monitoring effectiveness carefully • Comfort measures – positioning, supportive chairs, heat/cold • Physical therapies – TENS, massage, passive exercises, strength training, stretch exercises • Consider use of psychological-educational approaches – cognitive-behaviour therapy, teaching new coping mechanisms, relaxation training, distraction and imagery techniques, stress reduction • Monitor effectiveness, change care plan as required

BOX 18-8 Risk factors known to predispose older people to medication-related problems

- Currently taking 5 or more regular medicines
- Taking more than 12 doses of medication per day
- Significant changes in medication treatment regimen during the last 3 months
- Medication with a narrow therapeutic index and/or requiring therapeutic monitoring (e.g. warfarin, digoxin)
- Symptoms suggestive of an adverse drug reaction
- Poor response to treatment with medicines
- Suspected non-compliance or inability to manage medication-related therapeutic devices
- Literacy or language difficulties
- Dexterity problems
- Impaired sight
- Confusion/dementia or other cognitive difficulties
- Attending a number of different doctors, both general practitioners and specialists
- Recent discharge from an acute care facility (in the last 4 weeks)

Department of Health and Ageing 2012a Guiding principles for medication management in residential aged care facilities. Australian Government; Therapeutic Goods Administration 2011. Adverse events. Australian statistics on medicine.

the potential for adverse health outcomes. The key is in monitoring for expected effects as well as unexpected side effects, and to minimise the number of medicines an older person is either prescribed or administered.

Medication review

Medication reviews undertaken by an accredited pharmacist are now an established part of the routine health monitoring of both community-dwelling older people and those living in residential aged care. Consumer medicines information provided by the supplying pharmacist on dispensing a medicine, or available through NPS MedicineWise (see *Online resources*), provide consumers and their carers with relevant information about their medicines. Packaging of medicines in dose-administration aids has been demonstrated to help community-dwelling older people to manage their medicine regimes. There is little research to demonstrate the usefulness of this practice within residential aged care settings, although packaging medicines into some form of aid has become a widespread practice. There is a distinct role for nurses to promote the quality and safe use of medicines in all clinical situations. Ensuring that older clients know and understand their medicines is the responsibility of all healthcare professionals.

Medication management

Reducing adverse drug events or drug errors and maximising the effect of a medicine regimen is the goal of care. This is a high priority for institutionalised elderly people who are at particular risk of experiencing ill-health related to their medications. A medication review enables a current relevant drug profile to be created for each person. Ongoing monitoring and evaluation of that drug profile is essential. Nurses tend to be responsible for the administration of medication, or have oversight of medication management with this vulnerable group. Therefore, nurses have an important role in monitoring desired effects and the possible side effects of medicines, for example, ensuring that adequate and appropriate pain, bowel or sleep assessment is undertaken to ensure that prescribed, *prn* (as needed) or nurse-initiated medicines or over-the-counter medicines remain effective.

As many non-pharmacological options are very effective, for example, changing diet to include more fibre to prevent constipation, the prescription of medicines is not always the first treatment option, particularly for the management of challenging or concerning behaviours. It is important that nurses take the opportunities to increase their understanding of clinical conditions and the various non-pharmacologic and pharmacologic therapies available, and their effects on older people. There are many resources available for nurses, other health professionals, and for consumers on the NPS MedicineWise website (see *Online resources*).

Successful ageing

Each stage of life brings challenges, needs and adjustments, known as developmental tasks (Box 18-9). These tasks are considered part of an adult's continual growth. Older adults face adjusting to the physical and emotional changes that accompany ageing. The extent and timing of these changes vary from individual to individual, but as body systems age, changes in appearance and functioning occur. These changes are inevitable but are not associated with a disease. The presence of disease may alter the timing of the changes or their impact on daily life.

Some older adults find it difficult to accept ageing. This is seen in benign behaviours, for example, understating one's actual age in years. But some older adults deny

BOX 18-9 Developmental tasks of the older adult

- Adjusting to decreasing health and physical strength
- Adjusting to retirement and reduced or fixed income
- Adjusting to death of a spouse
- Accepting self as an ageing person
- Maintaining satisfactory living arrangements
- Redefining relationships with adult children
- Finding ways to maintain quality of life

their own ageing in ways that are potentially problematic, such as denying functional decline and/or refusing to ask for assistance with tasks that place their safety at risk. Acceptance of personal ageing does not mean retirement into inactivity, but it does require a realistic review of strengths and limitations. The pre-retirement period can be used effectively to test and challenge significant changes to work and social life, and to work out what financial and practical planning is required and what replacement activities will be pursued. Papers related to successful ageing can be found on the United Nations website (see *Online resources*).

Although no two individuals age in the same way, either biologically or psychosocially, ageing occurs within the context of an individual's community. The United Nations suggest that the community challenges identified for successful ageing are:

- changes in work patterns to enable older people to remain active in the workforce
- pre-retirement planning and education
- the provision of appropriate housing for older people
- the provision of appropriate community services
- the provision of public transport that is convenient and easy to use
- protection of the legal position of older adults in society, including issues associated with euthanasia, abuse and violence.

Older adults retired from employment outside the home may be challenged to cope with the loss of their work role and identity (see Chapter 20). Older adults who have worked at home also face role changes as their relationship adapts to both partners being together each day in the home or in retirement activities. Many older adults welcome retirement as a time to pursue new interests and hobbies, to spend more time with grandchildren or contribute to family, to participate in volunteer activities, to continue their education, to start a new business career or to travel. Retirement plans for some older adults include changes of residence, such as moving to a different city or state or moving to a different type of housing within the same area.

Reasons other than retirement may also lead to changes of residence. For example, physical impairments may require relocation to a smaller, single-level home. Severe health problems may require the older adult to live with relatives or friends. A change in living arrangements for the older adult may require an extended period of adjustment, during which assistance and support from healthcare professionals, friends and family members are needed.

A large number of older people have to adjust to the death of a spouse, partner, friend or adult children and grandchildren. These deaths represent both losses and reminders of personal mortality. Coming to terms with these deaths can be difficult, and there is an important role for nurses and other health professionals in helping with the grieving process (Chapter 22). The redefining of relationships with children that occurs as those children grow up and leave home continues as older adults experience the challenges of ageing. A variety of issues may arise, including but not limited to, role reversal, control of decision-making, dependence, conflict, guilt and loss. How these issues surface and how they are resolved depends in part on the past relationship between the older adult and their adult children, other family members or friends. All parties bring past experiences and powerful emotions to the situation. When adult children help the older adults of their family, they must find ways to balance the demands of their own children and careers. As adult children and ageing parents go through these changing roles, nurses can help by listening, advising, and helping families to understand and differentiate between behaviours related to their parents' illness from those related to normal ageing, and to take account of their parents' lifelong preferences and patterns of behaviour in planning care.

As the ageing process brings both physical and social change, the adult may also suffer loss of status and social

CLINICAL EXAMPLE

Joyce is a 76-year-old woman who has just been diagnosed with breast cancer. She also has severe cardiovascular disease that limits her choices of treatment. Her oncologist has recommended a series of chemotherapy treatment that her cardiologist believes would be fatal. Her family is urging her to do all that is recommended to stay alive. Joyce is in good spirits despite her diagnosis and after discussing her options with her cardiologist and family, chooses palliative care. How can you help the family adjust to her choice?

function. External struggles are also met with internal struggles, such as the search for meaning in the life they have lived. Meeting these challenges creates the potential for developmental growth and wisdom. Many older people review their lives with a sense of satisfaction, even with the inevitable mistakes. Others may see themselves as failures with a despair that comes from the realisation that it is now too late to achieve hoped-for goals. Nurses are in positions of influence within their workplace and communities to contribute to the valuing of people of all ages and stages of their lives, and to discourage stereotypical views of ageing and ageism.

Ageing is an inevitable process, and despite claims made by the cosmetic industry, it is a process that cannot currently be eliminated or reversed. However, people can make the most of their potential and age positively and well by:

- being physically active, particularly by doing weight bearing exercises (such as walking and weight-training) and exercise that promotes flexibility (such as swimming and tai chi)
- remaining mentally active, for example, by talking with others, reading, listening to the radio, joining in club activities
- eating a fat- and kilojoule-controlled diet which is varied and includes all food groups with particular attention to intake of calcium and vitamin D
- managing stress effectively, for example, talking over concerns, using exercise to dispel stress
- avoiding physical insults to the body, for example, exposure to tobacco, drugs, excessive alcohol, excessive noise, ultraviolet light
- ensuring adequate rest and sleep
- preventing infections and diseases and seeking assistance early when these are identified.

Services for older people

The policies of successive Australian and New Zealand governments have resulted in the majority of older people being able to access support in the community. The type and mix of services offered in both countries is consistently under change, with forms of transition care for older people leaving hospital before returning home, and restorative or rehabilitation services increasing for community-dwelling older people. Consequently, reference to legislation that provides for service provision and how that might be funded or subsidised is not explored here. **Consumer-directed care**, where older people are either in direct control of the money they pay for services or have greater control as to who provides their services, is increasingly being considered as the basis of how governments will fund care delivery in the future. This may bring a shift in the *type* of services offered as well as *how* services are provided.

Home (community) care

Home care and home help services prevent or delay the need for older adults who need assistance with daily living to move into residential care. Professional nurses and therapists, or non-professional staff, such as personal care assistants, can all be involved with providing direct care in the home and in recommending safety improvements or procuring adaptive equipment, such as shower chairs. Technical care can also be offered within a home environment, ranging from the use of a syringe driver for medication administration, through to the equipment needed to support a person dependent on a ventilator. The installation of ramps and hand rails, for example, can make a huge difference to an older person being able to continue to cook or bathe themselves. The result of changes to home care has seen more frail older people being supported to remain within their community rather than moved into residential care. Services provided to older people at home vary according to funding sources.

Retirement villages or communities

Retirement villages offer an alternative to living in a single-family dwelling. Generally, retirement villages have apartment-style units with design features that support the independence of older adults and services to help with day-to-day living. Some retirement villages have been developed on a resort-style model with golf courses and swimming pools, and residents are encouraged to have an independent and active lifestyle inclusive of daily exercise and social activities. Others incorporate spare bedrooms to encourage and accommodate family members such as grandchildren to 'sleep-over'. Some are built adjacent to child care centres to permit older people to contribute and be visible to children in daycare. Residents in retirement communities may be offered a choice of services according to their needs, such as meals, housekeeping, transport, emergency response systems and planned social activities.

Adult daycare

Adult daycare offers health and rehabilitative services for the older adult and respite from caregiving activities for family caregivers. Clients of daycare centres are usually not seriously ill, although they may have chronic conditions, disabilities or cognitive impairments that limit independence. Activities offered by the day centre might focus on minimising functional decline.

Respite care

Respite care is temporary relief for the primary caregiver of a dependent older adult. Service is provided either in the home of the older person, or within an institution such as a residential aged care facility. Respite care enables the caregiver to be away from home for a few hours, several days or weeks.

Subacute care/rehabilitation care

There has been substantial growth in subacute and rehabilitative care services in both Australia and New Zealand. Subacute care provides assessment and rehabilitation services for people who might otherwise be admitted (or remain as inpatients) within acute care settings. Rehabilitation services specifically for older adults include transition and restorative services. Early development of rehabilitative care evolved from the need to manage disability resulting from wars, industry or road trauma. More recently, quality-of-life issues have driven the focus of rehabilitative care for older people, for example, for those who have suffered a cardiovascular accident, have musculoskeletal injuries such as hip fracture or suffer diseases such as severe osteoarthritis or Parkinson's disease. Fast becoming a specialty area within health care, the major goal of rehabilitation programs for older people is to help them manage personal ADLs through the use of adaptive techniques and equipment, with the goal to minimise the need for external assistance.

Subacute facilities admit clients from the community or from acute care settings, and provide multidisciplinary assessment and ongoing care planning. These facilities generally combine the services of a geriatrician, case coordinators, therapists who specialise in the health needs of older people, and specialist services such as a memory (dementia) clinic, wound clinic, continence services, pain management and/or falls clinics. Many subacute facilities offer day-time services for community-dwelling elderly people who visit the facility on an outpatient basis for treatment or social activity. Some of the larger subacute facilities also have specialist nurses and therapists who visit community-dwelling older people in their own homes and therefore forestall admission to care. In particular, modification of the home environment with rails or other equipment can do much to ensure a safe environment and therefore a longer stay within the person's own community.

Chronological age was often used as a basis for offering rehabilitation services in the past, but current thinking is that the major consideration regarding suitability for rehabilitation services should be the ability of the individual to benefit from it. For those admitted to a

WORKING WITH DIVERSITY

Focus on cultural care

The move to person-centred care

Older people from culturally and linguistically diverse backgrounds can face barriers to accessing appropriate aged care services. There is as yet very little provision for the necessary cultural and linguistic services to provide holistic, culturally appropriate care to all of the groups that make up Australia and New Zealand. Institutionalised care can compound cultural isolation of a client by the removal of a person from their language and from interactions with others from their cultures.

This alienation can cause both the older person and family members extreme distress, and can have a direct impact on care provided and accepted. For example, the move to residential aged care is a stressful time for all family members. This is highlighted when family members feel guilty that they can no longer care for their older relative at home. This guilt can lead to a situation where a family member's inability to discuss the care their relative needs makes it difficult for the staff of the facility to provide appropriate care.

Older adults may feel the need to hide their cultural values and preferences for fear of being considered abnormal.

There is increasing recognition in both Australia and New Zealand that aged care is a reflection of the diverse population that make up either country – people wish to be treated as unique individuals, consulted about their care and treated with respect. In both countries, person-centred care is becoming the foundation of care.

Implications for practice

Nurses can work towards providing person-centred care by:

- accepting that they are cultural beings
- critically examining their own values and attitudes
- dispelling simplistic assumptions about how people of culturally and linguistically diverse backgrounds might think, feel or behave about their harmony and collectivity, e.g. an assumption that the family will always look after an older person
- accepting that there are differences within cultural groups because of a variety of migration patterns, work opportunities and language abilities
- clarifying with the older person and family members the importance of culturally unfamiliar behaviours
- avoiding labelling
- being educated – attending workshops and seminars, reading about cultural differences and specific needs of people from culturally and linguistically diverse backgrounds; about sexual expression in the older adult; and how person-centred care can be promoted.

subacute facility, the future might mean being transferred home with community support, such as district or home nursing, moving to a location that offers greater access to health and community care, linen services or meals-on-wheels, or transfer to the appropriate level of residential aged care. The increasing emphasis is on minimising functional decline and increasing the quality of life of an older person.

Residential aged care

Declining health, decreased physical strength, cognitive impairment, increased dependence and limited caregiver resources may make it necessary for an older adult to move to a residential aged care facility. Licensed facilities range from assisted-living through to facilities that provide for a high level of frailty. Australia and New Zealand, like similar industrialised countries, face difficult decisions related to the amount of care that can be financially subsidised, and the amount of resources required to provide appropriate services. Currently, Australian and New Zealand governments both require an assessment of the need for care before admission, if the care is to be subsidised by public funds.

Those needing residential aged care tend to have high levels of self-care deficit, and are likely to suffer from impaired mobility and/or impaired cognition; heart disease, hypertension, musculoskeletal conditions and one of the various forms of dementia. Urinary incontinence, a history of falls and impaired cognition tend to be predictors of the need for admission to residential aged care facilities (AIHW 2014).

Residents requiring care may need a mix of personal care assistance, professional nursing services (aged care nursing), supervision of prescribed medical care, rehabilitation services and psychosocial services. In facilities that offer care to older adults with high dependency needs, residents tend to be older with multiple health problems, and may have greater cognitive deficits and functional impairments. It is important that care delivery in residential aged care is culturally sensitive in order to enable and support the health needs of diverse groups (see *Working with diversity*).

The decision to move into a residential facility is not easy, and should be made only after the older adult and their family have considered the full range of care choices. Although the decision is never final and, once admitted to a facility a resident may be discharged home or to another facility, many older adults view the residential aged care facility as their final residence. As a result of the general ill-health of those admitted into residential aged care, access to specialised palliative care services may be needed.

Maintaining psychosocial health

Interventions supporting the psychosocial health of older adults resemble those for other age and developmental groups. However, some interventions are more crucial for older adults experiencing social isolation, cognitive impairment or stresses related to retirement, relocation or approaching death. These interventions include therapeutic communication, touch, reality orientation, validation therapy, reminiscence and interventions to improve body image.

Therapeutic communication

Therapeutic communication respects the older adult's uniqueness. The nurse who communicates effectively will be accepted as one who shares a genuine concern for the older person's welfare. It is not possible for any health professional to simply enter an older adult's environment and immediately establish a therapeutic relationship. Nurses and other health professionals must first acknowledge their own and others perceptions and biases, and be knowledgeable and skilled in therapeutic communication techniques.

Touch

Throughout life, touch tells us about our environment and the people around us. Gentle touch conveys affection and friendliness. A firm handclasp may convey security or dominance. Older adults may be deprived of touching when separated from family or friends. An older adult who is isolated, dependent or ill, who fears death or who lacks self-esteem has a greater need for touch.

Touch is a therapeutic tool that nurses can use to help comfort the older adult. Touch can provide sensory stimulation, induce relaxation, provide physical and emotional comfort, orient the person to reality, convey warmth and communicate interest. Touch is therefore a powerful physical expression of a relationship.

Nurses frequently touch others during the course of offering assistance with hygiene or nutrition or delivering treatment. Therefore, nurses are usually the one healthcare professional who can recognise that older adults may be suffering from *touch deprivation*. Older adults may demonstrate this need for touch by reaching for the nurse's hand. Unfortunately, older men are sometimes wrongly accused of sexual advances when they reach out to touch others. Nurses' use of touch should never be condescending, such as patting an older adult on the head, but should always convey respect and sensitivity.

Reality orientation

Reality orientation is a communication technique used to help an older adult be more aware of time, place and person. The purposes of reality orientation include restoring a sense of reality, improving the level of awareness, promoting socialisation, elevating independent functioning and minimising confusion, disorientation and physical regression.

Although reality orientation techniques can be used in any healthcare setting, they may be especially useful in the acute care setting. The older adult experiencing a change in environment, surgery, illness or emotional stress is at risk of becoming disoriented. Environmental changes, such as bright lights, unfamiliar noises, sleep deprivation and lack of windows in specialised units of a hospital, often lead to disorientation and confusion. Absence of familiar caregivers is also disorienting. When anaesthesia, sedatives, tranquillisers, analgesics and physical restraints are used, disorientation is increased. It is important to monitor for disorientation and confusion as possible consequences of hospitalisation, relocation, surgery, loss or illness, and to incorporate interventions based on reality orientation into the care plan.

The key elements of reality orientation include frequent reminders of person, time and place; the use of environmental aids such as clocks, calendars and personal belongings; and stability of environment, routine and staff. Communication is always respectful, patient and calm. The nurse answers questions from the older adult simply and honestly with sensitivity and a caring attitude.

Validation therapy

Validation therapy is an alternative approach to communication with a confused older adult. Where reality orientation insists that the confused older adult should agree with the nurse's statements of time, place and person, validation therapy accepts the description of time and place as stated by the confused older adult. In validation therapy, statements and behaviours of the confused older adult are not confronted. They are believed to represent an inner need or feeling. By listening with sensitivity and validating what is expressed, the nurse conveys respect, reassurance and understanding. Validation does not involve reinforcing the confused older adult's misperceptions, but reflects sensitivity to hidden meanings in statements and behaviours. Validating or respecting the feelings of confused older adults in the time and place that is real to them is more important than insisting on the literally correct time and place.

Reminiscence

Reminiscence is recalling the past. Looking back at positive resolutions to problems reminds the older adult of coping strategies used successfully in the past. Reminiscing is also a way to express personal identity. Reflection on past achievements supports self-esteem. For some older adults, the process of looking back on past events uncovers new meanings for those events.

During the assessment process, the nurse may use reminiscence to assess self-esteem, cognitive function, emotional stability, unresolved conflicts, coping ability and expectations for the future. Reminiscence also occurs during direct care activities. Taking time to ask questions about past experiences and listening attentively conveys to an older adult the nurse's respect and concern for them.

Body image

The way older adults present themselves has a significant impact on body image and feelings of isolation. Some physical characteristics of older adulthood are socially desirable, such as distinguished-looking grey hair. Other features are also impressive, such as a lined face that displays character or wrinkled hands that convey a lifetime of hard work. Too often, however, society sees older people as incapacitated, deaf, confused, ugly or shrunken in stature. Consequences of illness and ageing that threaten the older adult's body image include invasive diagnostic procedures, pain, surgery, and loss of sensation in a body part, skin changes, loss of teeth and hair, and incontinence. Body image is also affected by the need to use replacement devices and aids such as dentures, hearing aids or artificial limbs, and by temporary or permanent solutions for chronic conditions such as indwelling catheters, ostomy devices and enteral feeding tubes.

The importance to the older adult of presenting a socially acceptable image must be considered. When older adults have acute or chronic illnesses, the related physical dependence makes it difficult for them to maintain body image. By helping with grooming and hygiene, nurses can have a direct influence on the older adult's appearance and therefore, their self-esteem. It takes little effort to help the older adult with combing hair, cleaning dentures, shaving or changing clothing. The older adult does not choose to have an objectionable appearance. In addition, it is important to be sensitive to odours in the environment caused by urine, faeces or specific illness presentations. Unpleasant odours may cause visitors to shortening their stay or not come at all.

Conclusion

In summary, older adults are likely to access all facets of health and welfare services: acute, subacute, rehabilitation and community-based care, as well as residential aged care and palliative care. Nurses are often in a unique position to partner with older people and their families to provide sensitive care that is based on current knowledge about older adults, and that is respectful of their cultural and personal needs and requirements. Gerontology nursing is a specialty area in which knowledge of the physical, psychological and psychosocial aspects of ageing are brought together in an exciting, demanding and challenging area of nursing practice. It is important to remember that the majority of older adults lead healthy and productive lives and working with this age group requires actively embracing concepts of healthy and positive ageing, as well as direct care and high-level communication skills. Ageing and gerontology nursing is an area of practice that is immensely rewarding.

Key concepts

- The number of older people, especially over age 85 years, is increasing in the Australian and New Zealand populations.
- Positive ageing refers to maintaining a focus on the opportunities and rewards of ageing
- Because nurses' attitudes towards older adults influence the quality of care, those attitudes need to be based on accurate information about older adults, rather than on myths and stereotypes.
- Older adults adapt to physical changes in all organ systems as they age.
- Changes in social roles, family responsibilities, financial circumstances and health status influence the choice of living arrangements of an older adult.
- Older people access health and welfare services that are community-based, subacute and rehabilitation services, as well as in acute care and residential settings.
- The physical changes that accompany ageing are considered to be normal, not pathological, although they may predispose the older person to disability or disease.
- Cognitive impairment is not normal in an older person and requires assessment and intervention.
- Issues related to psychosocial changes in ageing may include retirement, change in housing, sexuality, grief, change in relationships with children and possible social isolation.
- Nursing interventions for psychosocial concerns include therapeutic communication, touch, reality orientation, validation therapy, reminiscence and interventions to improve body image.
- Healthy ageing recommendations for older adults include good nutrition, regular exercise, smoking cessation and measures to reduce the risk of falls and adverse drug events.
- Rehabilitative nursing interventions, whether accomplished in the older person's home or in an institutional setting, stabilise chronic conditions, minimise functional decline and promote health, increase quality of life and independence in activities of daily living.

Online resources

Agewell; health promotion for older people in New Zealand, www.agewell.org.nz

Alzheimer's Australia; research publications related to dementia and its potential impact on society, www.fightdementia.org.au

Australian Bureau of Statistics; a number of short summaries covering the demographic details of Australian population, www.abs.gov.au

Australian Commission on Safety and Quality in Health Care; resources related to medication safety, falls, infections delirium and more, www.safetyandquality.gov.au

Australian Institute of Musculoskeletal Science; details of research covering all aspects of the muscloskeletal system, www.aimss.org.au

Australian Psychological Society; Tip Sheet on Ageing Positively, www.psychology.org.au/publications/tip_sheets/ageing/

Australian Wound Management Association; guidelines including for venous ulcers, pressure injury and advice about wound care products, www.awma.com.au/publications/publications.php

beyondblue: practical assistance to assess and manage depression, www.beyondblue.org.au

Department of Health; tools to assist with the care of older people, e.g. decision-making tools for the use of restraints, oral and dental health for older people and depression in older people, www.health.gov.au

Joanna Briggs Institute; evidence-based guidelines and best-practice information on, for example, skin care, hydration and management of constipation, http://joannabriggs.org/

Ministry of Health; age-related residential-care services agreement for New Zealand, www.health.govt.nz/our-work/life-stages/health-older-people/long-term-residential-care/age-related-residential-care-services-agreement

New Zealand Aged Care Association; not-for-profit, national membership organisation which represents all parts of the aged-care residential sector. http://nzaca.org.nz

Statistics New Zealand; a number of short summaries covering the demographic details of New Zealand population, www.stats.govt.nz

United Nations: publications covering the health and welfare needs of older people globally, www.un.org

World Health Organization; publications covering abuse of older people, www.who.int

References

Abrams P et al (eds) 2013 Incontinence, 5th edn. Health Publication Ltd, Paris.

Australian Bureau of Statistics (ABS) 2013 Population projections, Australia, 2006–2101. Cat. no. 3222.0. ABS, Canberra. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/Lookup/3222.0main+features32012%20(base)%20to%202101; accessed 18 Jan 2016.

Australian Commission on Safety and Quality in Health Care (ACSQHC) 2009 Preventing falls and harm from falls in older people: best practice guidelines for community care. Online. Available: www.activeandhealthy.nsw.gov.au/assets/pdf/Community_Care_Guidebook.pdf; accessed 7 Jun 2012.

Australian Institute of Health and Welfare (AIHW) 2014 Australia's health 2014. Cat. no. AUS 122. AIHW, Canberra. Online. Available: www.aihw.gov.au; accessed 15 January 2016.

Australian Institute of Health and Welfare (AIHW) 2013 Australia's welfare 2013. Australia's welfare series no. 11. Cat. no. AUS 174.

Australian Institute of Musculoskeletal Science 2015 Sarcopenia. Online. Available: http://aimss.org.au/diseases/sarcopenia; accessed 15 Jan 2016.

Australian Psychological Society 2015 Ageing positively. Online. Available: www.psychology.org.au/publications/tip_sheets/ageing/; accessed 16 Jan 2016.

Australian Wound Management Association 2012 The Pan Pacific clinical practice guidelines for the prevention and management of pressure injury. Online. Available: www.awma.com.au/publications/2012_AWMA_Pan_Pacific_Guidelines.pdf; accessed 16 Jan 2016.

Bengston VL et al 2009 Handbook of theories of aging. Springer, New York.

beyondblue Risk factors for older people. Online. Available: www.beyondblue.org.au/for-me/older-people/risk-factors-for-older-people; accessed 16 Jan 2016.

Butler RN 1969 Age-ism: another form of bigotry. Gerontologist 9(4):243–6.

Connaughton C, McCabe M 2015 Sexuality and Aging. Encyclopaedia of Geropsychology.

Department of Health. Therapeutic Goods Administration 2015. Adverse events. Australian statistics on medicine. Online. Available: www.tga.gov.au/publication/adverse-events-australian-statistics-medicines; accessed Jan 2016.

Department of Health and Ageing 2012a Guiding principles for medication management in residential aged care facilities. Canberra. Online. Available: www.health.gov.au/internet/main/publishing.nsf/Content/nmp-pdf-resguide-cnt.htm; accessed 18 Jan 2016.

Department of Health and Ageing 2012b National Lesbian, Gay, Bisexual, Transgender and Intersex (LGBTI) Ageing and Aged Care Strategy. Australian Government. Online. Available: https://www.dss.gov.au/sites/default/files/documents/08_2014/national_ageing_and_aged_care_strategy_lgbti_print_version.pdf; accessed 18 Jan 2016.

Department of Health and Ageing 2004 An analysis of research on preventing falls and falls injury in older people: Community, residential care and hospital settings. Australian Government. Online. Available: www.health.gov.au/internet/main/publishing.nsf/Content/14D0B87F9C15C1E8CA257BF0001DC537/$File/falls_community.pdf; accessed 18 Jan 2016.

Flynn T-J, Gow AJ 2015 Examining associations between sexual behaviours and quality of life in older adults. Age and Ageing 44(5):823–8.

Nay R, Garratt S, Fetherstonehaugh, D 2013 Older people: issues and innovations in care, 4th edn. Churchill Livingstone, Sydney.

Haber D 2007 Health promotion and aging: practical application for health professionals. New York, Springer.

Hunt S 2007 Quality use of medicines. In Brown S (ed) Health and illness in older adults. Pearson Education Australia, Frenchs Forest.

Lewin GF, Alfonso HS, Allen JJ 2013 Evidence for the long term cost effectiveness of homecare reablement programs. Clinical Interventions in Aging 8:1273–81.

Marieb EN, Hoehn KN 2014 Human anatomy and physiology. 9th edn. Pearson New International Edition, Harlow, Essex.

Ministry of Health 2015 Tatau Kahukura: Māori Health Chart Book 2015 3rd edn. Ministry of Health, Wellington. Online. Available: www.health.govt.nz/publication/tatau-kahukura-maori-health-chart-book-2015-3rd-edition; accessed 16 Jan 2016.

Ministry of Health 2013 Health loss in New Zealand: A report from the New Zealand Burden of Diseases, Injuries and Risk Factors Study 2006–2016. Ministry of Health, Wellington. Online. Available: www.health.govt.nz/publication/health-loss-new-zealand-report-new-zealand-burden-diseases-injuries-and-risk-factors-study-2006-2016; accessed 16 Jan 2016.

Nay R, Garratt S, Fetherstonehaugh, D. 2013. Older people: issues and innovations in care, 4th edn. Churchill Livingstone, Sydney.

Neikrug AB, Ancoli-Israel S 2010 Sleep disorders in the older adult – a mini-review. Gerontology 56(2):181–9.

Phillips J et al 2010 No time like the present. Online. Available: www.dementia-assessment.com.au/resource/No_time_like_the_present.pdf; accessed 18 Jan 2016.

Sansoni J et al 2008 Online. Available: http://ro.uow.edu.au/cgi/viewcontent.cgi?article=1348&context=ahsri; accessed 18 Jan 2016.

Statistics New Zealand website 2016 National populations projections, 2009 (base)–2061. Statistics New Zealand, Wellington. Online. Available: www.stats.govt.nz/browse_for_stats/population/estimates_and_projections/NationalPopulationProjections_HOTP09base-61.aspx; accessed 16 Jan 2016.

Stephens C, Breheny M, Mansvelt J 2015 Healthy ageing from the perspective of older people: A capability approach to resilience. Psychology and Health 30(6):715–31.

Therapeutic Goods Administration 2015 Adverse drug reactions: Australian Statistics on medicines 2010. Department of Health and Ageing, Canberra. Online. Available: www.tga.gov.au/publication/adverse-events-australian-statistics-medicines; accessed 18 Jan 2016.

United Nations Department of Economic and Social Affairs Population Division 2013 World Population Ageing. Online. Available: www.un.org/en/development/desa/population/publications/pdf/ageing/WorldPopulationAgeing2013.pdf; accessed 18 Jan 2016.

United Nations 2010a Follow-up to the Second World Assembly on Ageing: comprehensive overview. Report of the Secretary-General. United Nations General Assembly, Geneva. Online. Available: www.globalaging.org/agingwatch/GA/res63-151.pdf; accessed 16 Jan 2016.

United Nations 2010b Strengthening older people's rights: towards a UN convention. United Nations General Assembly, Geneva. Online. Available: www.inpea.net/images/Strengthening_Rights_2010.pdf; accessed 16 Jan 2016.

United Nations 1948 The Universal Declaration of Human Rights. United Nations, Geneva. Online. Available: www.un.org; accessed 16 Jan 2016.

World Health Organization 2015 Elder Abuse Fact sheet, no. 357. Online. Available: www.who.int/mediacentre/factsheets/fs357/en/; accessed 15 Jan 2016.

CHAPTER

19

Considering the person with disability

Julie Pryor and Murray Fisher

Learning outcomes

Mastery of the content will enable you to:

- identify your own attitudes towards persons with disability
- identify and discuss a range of definitions of disability
- discuss a variety of mechanisms of disability
- discuss the lived experience of disability
- identify environmental factors and how they influence a person's functional performance
- discuss how nurses and other healthcare workers can act as enablers or barriers to human functioning
- identify strategies for interacting authentically and respectfully with persons with disability
- plan nursing care to prevent or minimise sensory alterations
- plan nursing care to facilitate communication with persons experiencing impaired communication
- discuss a range of assistive technologies and identify sources of information about assistive technologies
- plan nursing care to prevent functional decline
- discuss strategies for enriching inpatient and institutional care environments.

KEY TERMS

Ageusia, p. 427
Agraphia, p. 430
Anosmia, p. 427
Apraxia, p. 430
Asphasia, p. 430
Autonomy-supportive interventions, p. 439
Deconditioning, p. 439
Disability, p. 424
Dysarthria, p. 430
Dysgeusia, p. 427
Enriched environments, p. 440
Functional decline, p. 439
Functional performance, p. 439
Functioning, p. 424
Function-promoting nursing practice, p. 439
Hypogeusia, p. 427
International Classification of Functioning, Disability and Health, p. 428
Lived experience, p. 423
Neuroplasticity, p. 440
Perception, p. 432
Person-centred care, p. 429
Personhood, p. 423
Proprioception, p. 431
Reception, p. 431
Sensory deficit, p. 433
Sensory deprivation, p. 434
Sensory overload, p. 434
Stereognosis, p. 431

Disability is a commonly used word, and it is likely that each of us knows someone with a disability. Knowing someone with a disability can inform the way we think about people with disability. But the way we think about people with disability is also informed by a much wider range of influences.

It is most important to be aware that these influences (both positive and negative) can be subtle and resistant to change; some are cultural while others may be embedded in legislation and policies, and the structures and processes they inform. Some are literally set in stone in the way we design our public spaces and buildings. How accessible is your local cafe or park for a person using a walking frame?

Awareness of our personal understanding of what constitutes a disability and awareness of own attitudes and beliefs about people with disability is the starting point for nurse-effectiveness when working with people with disability.

• CRITICAL REFLECTION POINT

Write down your personal understanding of what constitutes a disability.

Reflect upon your attitudes and beliefs about people with disability, noting what you think they should and should not do. Also note how you feel about people with disability and how you think they should be treated. Do you feel sorry for people with disability? Do you feel uncomfortable in the presence of people with particular types of disability? If so, what type/s of disability?

In this chapter you will be introduced to the 'disabled person' as a person with disability and abilities. Mechanisms of disability will be explained and person-centred nursing care for the person with disability will be explored. Key terms listed at the beginning of the chapter will be explained throughout.

Who is the person with disability?

Disability can be seen as a defining characteristic of some people. As a word, disability denotes limitations and inability. When used as a comparative term, the comparison always determines the person with a disability as lacking something; lacking normality or even some degree of personhood. The undesirability of disability seems to be related to being different and, more specifically, different to an extent that falls outside the range of acceptable difference (Patston 2007).

In explaining **personhood** as a 'status that is bestowed upon a human being by others', Kitwood (1997:8) highlights the fragility and dependence of an individual's status. If a person with disability is regarded by someone else as a lesser person, their very personhood may be questioned.

Disability is more than a characteristic or static state. It is a **lived experience**, which, along with day-to-day challenges, is more generally often associated with disadvantage. For example, persons with disabilities 'experience worse educational and labour market outcomes and are more likely to be poor than persons without disabilities' (WHO 2011:39).

• CRITICAL REFLECTION POINT

The range of acceptable difference varies from one person to another. Do Angus, Diane or Molly, in the following stories, fall within or outside your range of acceptable difference? Do you consider one or more of them to be disabled?

- **Angus, a man in his early 50s with chest pain, is in your emergency department patient allocation. Angus is a footy fan and is keen not to miss Saturday's match as he has tickets to attend with his friend Daniel. Angus and Daniel work together, both have an intellectual disability, are deaf and use sign language. Angus is fretting about the upcoming football match and wants to go home, despite the pain in his chest.**
- **Diane has been teaching science at the local high school for the past 6 years. She is highly regarded by teaching colleagues and parents. The students like her best in the role of coach of the elite basketball team, a team that has been undefeated for the past 3 years. Her 10-year-old twins often attend matches along with their dad to cheer the team on. Diane has used an electric wheelchair for the past 8 years following a motor vehicle accident on the way to a basketball match; she has a spinal cord injury and as a result has no movement or sensation below her armpits. She has been admitted to your ward with sepsis and her priority is to organise today's after-school pick-up for her children because her partner is working interstate for the week.**
- **At 95, Molly has many stories to tell of her adventures travelling the world as a young woman, but does not recognise any of her grandchildren who visit her regularly. Interactions with her children are unpredictable and often stressful given her advancing dementia. A fall in the garden triggers much discussion about treatment options for her fractured neck of femur and Molly's wishes.**

Disability, especially profound disability, can trigger questions about the definition of personhood and whether there is ever a circumstance when a human body is no longer a person. The inability to respond to others in a recognisable manner is one such situation where these questions might arise. Profound brain injury can render someone minimally responsive, and at times, not responsive at all. An important point to note is that 'post-

coma unresponsiveness' and 'brain dead' are not the same thing; while the former is about living and the latter is not (National Health and Medical Research Council 2008), decisions in these situations are complex and often take protracted periods of time to make.

Knowing the wishes of a person in an unresponsive or minimally conscious state is far from straightforward. Personhood is not static; it can have experiential, temporal and perhaps spatial and situational variations. The decisions I make in today's context may differ from decisions I would make in a different context. Consider how well informed a person can be when, in a perfectly healthy state, they say they don't want lifesaving treatment if they have a major injury. Compare this to a situation in which the person may appear not to uphold the same view if they are conscious and in no discernible distress, despite severe cognitive impairment.

Imagine being fully aware of one's surroundings, but unable to communicate your wishes to anyone. You may have read *Ghost Boy* (Pistorius with Davies 2011), an autobiography of Martin Pistorius who has lived with locked-in syndrome since the age of 12 when he contracted an unexplained illness. While at the time of writing his book Martin was a participating member of society, this was not always the case. This story highlights the role that others play in defining personhood for individuals unable to communicate their preferences and priorities. The important point here is that unresponsive does not always mean the person is not aware of what is going on around them.

While understanding disability and the experience of living with disability are central to nurse-effectiveness, this responsibility is not limited to our professional lives. In 2007, Australia and New Zealand joined a long list of countries as signatories to the 2006 United Nations Convention on the Rights of Persons with Disabilities (see *Online resources*). This means that all Australians and New Zealanders have a responsibility to uphold the purpose of the Convention, namely, 'to promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and to promote respect for their inherent dignity' (United Nations 2006, 2015).

Definitions of disability

On a conceptual level, our understanding of disability is informed by the World Health Organization (WHO), which defines key terms relevant to disability in the *International Classification of Functioning, Disability and Health* (WHO 2001). **Functioning** is 'an umbrella term for body functions, body structures, activities and participation' (WHO 2001:212–13). **Disability** is 'an umbrella term for impairments, activity limitation and participation restrictions' (WHO 2001:213, AIHW 2015b). Functioning and disability are ends of the one continuum in relation to each and every aspect of human life. An important point to note here is that this classification system 'is about all people' (WHO 2001:7).

While disability is a natural part of the human condition, tighter definitions of disability are needed for various purposes. For example, in Australia the definitions used to determine eligibility for disability-related support services or payments differ from those used in population-based surveys on disability. People responding to the 2012 Australian Bureau of Statistics (ABS) Disability, Ageing and Carers Survey were guided by a definition of disability which included their experiencing one of a list of 17 limitations, restrictions or impairments (see Box 19-1), which had lasted, or were likely to last, for at least 6 months, and restricted everyday activities (ABS 2015).

New Zealand used a slightly different definition in their *2006 Disability Survey* (Statistics New Zealand 2009). Disability is defined as 'any self-perceived limitation in activity resulting from a long-term condition or health

BOX 19-1 ABS survey definitions of disability

- loss of sight (not corrected by glasses or contact lenses)
- loss of hearing where communication is restricted, or an aid to assist with, or substitute for hearing is used
- speech difficulties
- shortness of breath or breathing difficulties causing restriction
- chronic or recurrent pain or discomfort causing restriction
- blackouts, fits, or loss of consciousness
- difficulty learning or understanding
- incomplete use of arms or fingers
- difficulty gripping or holding things
- incomplete use of feet or legs
- nervous or emotional condition causing restriction
- restriction in physical activities or in doing physical work
- disfigurement or deformity
- mental illness or condition requiring help or supervision
- long-term effects of a head injury, stroke or other brain damage causing restriction
- receiving treatment or medication for any other long-term conditions or ailments and still being restricted
- any other long-term conditions resulting in a restriction.

ABS 2015 Psychological disability, 2012. ABS Cat. No. 4433.0.55.004. Online. Available: http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/3A5561E876CDAC73CA257C210011AB9B?opendocument; accessed 4 May 2016.

problem; lasting longer or expected to last longer than six months or more and not completely eliminated by an assistive device'. Inclusion of the role of an assistive device is an interesting one in the New Zealand definition as it suggests a person no longer has a disability if self-perceived activity limitations are eliminated by the device. However, this is only possible when the assistive device is fully accessible by the person. Recognition of the role of contextual factors in relation to disability, especially as enablers or barriers to functioning, highlights the possibility (and perhaps probability) of variations in accessibility of assistive devices between different situations. For example, when a person's walking aid is put out of reach, dependence and disability may result; this can happen when the person is in bed, in a café or at the cinema.

While the term disability is commonly thought to relate to long-term physical, mental, intellectual or sensory impairments (United Nations 2006), Patston (2007) presents a wider view. In describing nine types of human functioning, namely biological, aesthetic, motor, sensory, cognitive, social, emotional, creative and spiritual, he suggests nine areas for potential dysfunction (i.e. disability). In so doing he sheds light on the 'doing' and 'being' aspects of personhood, while at the same time recognising that 'doing' is commonly more highly valued than 'being'.

• CRITICAL REFLECTION POINT

Think about your own family members. Identify those with disabilities and the nature of those disabilities. How many of your family members have disabilities? Is it more or less than 50%?

The extent of disability in Australia and New Zealand

Disability is a 'complex multidimensional experience' (WHO 2011:21) which causes challenges in its measurement. The WHO (2011) estimates the global disability prevalence rate among the adult population to be between 15.6% (2002–04 *World Health Survey*) and 19.4% (2000–04 *Global Burden of Disease Study*). Based on 2010 worldwide population estimates, 785 to 975 million persons aged 15 years or older are living with a disability (WHO 2011).

In Australia, the *2012 Survey of Disability, Ageing and Carers* estimated that just under 1 in 5 people or 18.5% of the population (4.2 million Australians) have a disability; this is a 1.5% reduction in the prevalence of disability since 2003 (ABS 2012).The rate of people with a profound or severe core activity limitation (6.1% in 2012) has remained stable over this period. In New Zealand, the *2013 Disability Survey* identified 24% of the population (1.1 million New Zealanders) as disabled; an increase of 20% since 2001 (Statistics New Zealand 2014). This increase is attributed to an increase in the proportion of the population over 65 years of age.

In Australia and New Zealand, more than 50% of older adults (> 65 years) report having a disability of some kind (ABS 2012, Statistics New Zealand 2014). In both countries, a higher rate of disability occurs in females; however, this is likely to be the result of females being over-represented in the older adult age group. In child populations (5–14 years), a higher proportion of people with disability were males (11.2% compared to 6.2% for females in Australia); however, the overall prevalence of disability is lower for children < 15 years (7%) compared with adults 25–65 years (17%) (Australian Institute of Health and Welfare (AIHW) 2013a).

Government data collections can only provide a snapshot of the nature and scope of disability in Australia and New Zealand. In reality, disability is more widespread and more diverse. Looking at the mechanisms of disability can help us understand this.

Mechanisms of disability

There are many and varied ways of understanding the mechanisms by which disability occurs. The four mechanisms discussed here present just one way of thinking about this.

Physiological mechanisms of disability

Physiological mechanisms of disability can be classified under four broad causes: congenital disorders, trauma, chronic disease and ageing.

Congenital disorders

Congenital disorders occur prenatally or during birth and include structural deformities in a developing fetus. Congenital defects can occur in response to environmental and/or genetic (or chromosomal) abnormality. Exposure to certain medications and substances during pregnancy can lead to congenital defects. Examples of teratogenic medications and substances include certain anticonvulsant drugs, warfarin, retinoic acid, cigarette smoking and alcohol (see Chapter 16). However, not all congenital defects are identifiable at birth. Many familial or genetic defects may lead to degenerative conditions that become evident later in life.

Trauma

Trauma is a leading cause of disability. For example, in Australia, motor vehicle-related trauma is the major

cause of spinal (AIHW 2010) and brain injury (AIHW 2007). Sport, work and violence are also major causes of trauma that can lead to disabilities. A person's occupation can place them at risk of visual, hearing and peripheral nerve alterations (Box 19-2), in addition to the risk of accidental injury such as falls. Individuals who are exposed to loud noises at work or who have occupations involving exposure to chemicals or flying objects should be screened for hearing and visual problems. People who use their hands in a repetitive fashion, causing trauma to the median nerve, can develop carpal tunnel syndrome, the most common peripheral nerve disorder. Occupations that involve strenuous movement or long periods of extension and flexion of the wrist may cause a person to develop inflammation, which creates pressure on the nerve as it passes between the carpal bones and the transverse carpal ligament in the wrist and may cause numbness, tingling, pain and weakness in the hand while performing fine movements (Scanlon & Maffei 2009).

BOX 19-2 Occupations and leisure activities that pose risk of sensory alterations

Hearing
- Factory worker
- Airport worker
- Rock musician
- Construction worker with power tools

Vision
- Exposure to irritating gases
- Welder
- Exposure to high-speed machinery
- Squash or fencing
- Motorcycle riding
- Power-tool use

Peripheral nerve injury
- Computer operator
- Manual labour requiring repetitive motion
- Trauma

Chronic diseases

Disability can be directly or indirectly caused by the physiological disruption related to specific chronic diseases. For example, multiple sclerosis, myasthenia gravis and Guillain-Barré syndrome are neuromuscular disorders where the immune system attacks the nervous system, blocking nerve impulses and causing muscle weakness and alterations in sensation – therefore, disability. Conversely, poorly controlled diabetes mellitus is an example of an indirect cause of disability associated with an increase in eye disease (e.g. diabetic retinopathy, cataract and glaucoma), which can lead to loss of sight; and nerve damage and poor circulation in the lower limbs, which can lead to altered sensation in the limb and restrictions in physical activity (AIHW 2013b). Atherosclerosis is the disease process of fatty plaque formation in arteries, and depending on the location of the artery, is the cause of stroke, heart attack and peripheral vascular disease. All of these conditions, depending on the severity of the damage, may restrict a person's physical activity and could impair activities of daily living and create a self-care deficit.

Ageing

The normal physiological changes of ageing also make older adults more vulnerable to common clinical conditions. The physiological changes that occur in ageing are discussed in detail in Chapter 18; however, some of the common physiological changes that may lead to sensory impairment are included in Table 19-1. In addition to these sensory impairments, older adults experience physiological changes to all body systems; for example, older adults experience a reduction in cardiac output and an increased systolic blood pressure, a loss of balance, uncoordinated motor response and a reduction in muscle mass and strength, all of which can restrict physical activity. While there are some normal neurological changes that occur in older adults, this does not mean that ageing inevitably leads to cognitive impairment. However, there are a number of disorders in older adulthood that can cause cognitive impairment, such as Alzheimer's disease.

Focusing on sensory impairments, Table 19-1 provides examples of physiological mechanisms of disability. These examples include mechanisms of disability across the life span, as well as mechanisms of acquired disability such as from injury.

Psychological mechanisms of disability

The definition of what is and what is not a psychological mechanism of disability is less clear than for physiological mechanisms. However, this does not in any way reduce the significance of these types of disability. Primary psychological disability involves changes in thinking, emotions and/or behaviours. While everyone experiences disequilibrium in their thoughts and feelings from time to time, it is only when these changes cause restrictions in everyday life that they become a mechanism of disability.

TABLE 19-1 Sensory impairments and associated physiological mechanisms

Sensory impairment	Congenital	Trauma	Chronic disease	Ageing
Sight	Hyperopia Astigmatism	Corneal abrasions Foreign objects and penetrating injuries Chemical burns Subconjunctival hemorrhage Traumatic iritis	Diabetic retinopathy Glaucoma	Cataracts Senile macular degeneration Presbyopia
Hearing	Sensory neural loss	Ruptured tympanic membrane Fractured middle ear bones	Labrynthitis Acoustic neuroma	Otosclerosis Presbycusis
Touch	Autism Congenital insensitivity to pain with anhidrosis (CIPA) Neurofibromatosis	SCI	Peripheral neuropathy Multiple sclerosis	Reduced ability to detect vibration, touch, pressure and temperature and reduced sensitivity to pain
Taste **Ageusia** – absence of the sense of taste **Hypogeusia** – decreased sense of taste **Dysgeusia** – an unpleasant sense of taste		Head injury Fractures of the temporal bones or the mandible can lead to damage to the facial nerve	Oral infections Periodontal disease Metabolic and endocrine disorders	Hypogeusia due to changes in taste cell membranes
Smell **Anosmia** – lack of ability to smell	Congenital anosmia	Anosmia from brain injury	Neurodegenerative illnesses (such as epilepsy, Alzheimer's disease, Parkinson's disease) and schizophrenia can cause anosmia	Sensory cell loss in the olfactory mucosa

In Australia, the *2012 Survey of Disability, Ageing and Carers* referred to psychological disability as:

- a nervous or emotional condition which causes restrictions in everyday activities that has lasted, or is expected to last for six months or more, or
- a mental illness for which help or supervision is required that has lasted, or is expected to last for 6 months or more, or
- a brain injury, including stroke, which results in a mental illness or nervous and emotional condition which causes restrictions in everyday activities (ABS 2015).

The results of this survey shed light on how common psychological disability actually is. Of all people with any type of disability, 18.5% had a psychological disability. Further, 3.4% of Australians (770,500 people) reported having a psychological disability, with similar rates for men and women. This was an increase from 2.8% (606,000 people) in 2009. Of those with a psychological disability, just over four in ten reported profound levels of core activity limitation, and a further two in ten reported severe core activity limitations. The majority of people who reported a psychological disability reported having one or more other disabling conditions (ABS 2015).

Like physiological disabilities, psychological disability impacts on everyday functioning. Ninety-six per cent of people with psychological disability reported needing assistance or experiencing difficulty in at least one of the broad activity areas of everyday life. Only 1.8% of people with psychological disability who reported needing assistance did not have their need met at all. This survey also revealed lower participation in education and employment for people with psychological disability, compared with those with no disability (ABS 2015).

Social mechanisms of disability

Social mechanisms of disability operate within the context of interactions between persons with disability and others (individually and collectively). More specifically, social mechanisms include spoken language, body language,

social interaction, values and beliefs, power relationships and culture.

The **International Classification of Functioning, Disability and Health** (ICF) (WHO 2001) identifies social mechanisms as environmental factors, which can act either as enablers of or barriers to human functioning. The inclusion of two specific lists of factors (support and relationships, and attitudes) relating to social mechanisms in ICF indicates their importance.

In talking about support and relationships, ICF refers to 'people and animals that provide practical, physical or emotional support, nurturing, protection, assistance and relationships to persons, in their home, place of work, school or at play or in other aspects of their daily life' (WHO 2001:187). Our inclusion within the following groups draws attention to how we each contribute to the social mechanisms of disability: immediate and extended family; friends; acquaintances, peers, colleagues, neighbours and community; people in positions of authority; people in subordinate positions; personal care providers and personal assistants; strangers; health professionals; and other professionals.

It is important to recognise that attitudes underpin all social mechanisms of disability. In the ICF (WHO 2001:190), attitudes relate to customs, practices, ideologies, values, norms, factual and religious beliefs. Attitudes influence the way 'individuals behave at all levels, including interpersonal relationships, socially, and in community associations, as well as influencing political, economic and legal structures' (WHO 2001:190). This means that the personal attitudes and beliefs of every nurse, as well as every other health worker, will influence the social mechanisms of disability. As nurses, we have a responsibility to ensure that this influence is positive, and acts as an enabler of human functioning, not as a barrier to it.

Biopsychosocial mechanisms of disability

Physiological, psychological and social mechanisms, when thought of in isolation, provide a fragmented understanding of how disability really comes about. Bringing the three mechanisms together to adopt a biopsychosocial approach, the ICF (WHO 2001) portrays disability and functioning as outcomes of complex interactive processes (see Figure 19-1).

The inclusion of two types of contextual factors (environmental and personal) in the model in Figure 19-1 is a particular strength. In addition to the two specific subsets of environmental factors discussed above (support and relationships, and attitudes), environmental factors also include: the natural environment and human-made

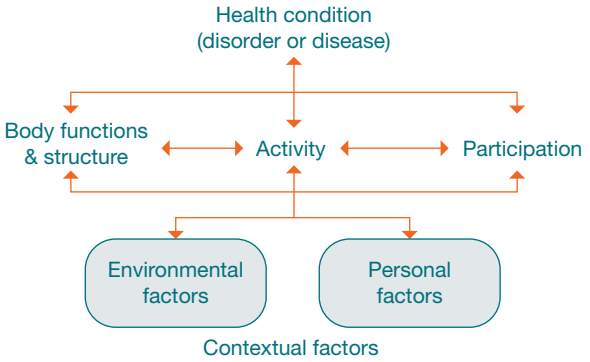


Figure 19-1 Interactions between components of the International Classification of Functioning, Disability and Health (ICF).

WHO 2013 How to use the ICF: A practical manual for using the International Classification of Functioning, Disability and Health (ICF). Exposure draft for comment. WHO, Geneva.

changes to the environment; products and technology; and services, systems and policies. For example, steep hills may be problematic for some people with mobility limitations, but so too might be the period of time a lift door remains open, or the placement of everyday items, such as milk and bread, a long way from the supermarket checkout counter.

Attitudes can be very powerful enablers of or barriers to functioning and disability. The first National Disability Survey in Ireland, conducted in 2006, included two questions about attitudes in an effort to determine the extent of their influence as environmental factors (Kostanjsek et al 2013). Fifteen per cent of people with disability reported frequently or always avoiding doing something they could otherwise do because of the attitudes of other people. The impact was particularly negative for younger men with disabilities (aged 35–44 years) and for people with mental health problems. The attitudes of employers and some service providers towards disability were also more problematic for younger people (and for young men in particular).

In recognising the role of personal factors, ICF does not provide extensive lists of individually mediated factors as it does for environmental factors. Instead, it simply notes that:

> **Personal factors are the particular background of an individual's life and living, and comprise features of the individual that are not part of a health condition or health states. These factors may include gender, race, age, other health conditions, fitness, lifestyle, habits, upbringing, coping styles, social background, education, profession, past and current experiences (past life events and concurrent events), overall behaviour pattern and character style, individual psychological assets and other characteristics (WHO 2001:17).**

Geyh et al (2011) conducted a systematic review of literature and found a further 238 examples of personal

RESEARCH HIGHLIGHT

The first year following acute stroke is difficult for individuals in many ways, but re-engagement with friends and community is reported as a significant source of dissatisfaction.

Using a qualitative systematic review method, the authors synthesised the results of 18 studies to explore individual experiences of reintegration into community in the first year after stroke.

Four themes emerged from the qualitative synthesis as barriers and facilitators of community reintegration:

1. The primary effects of the stroke
2. Personal factors
3. Social factors
4. Relationships with professionals

Survivors of stroke reported that emotional and physical rehabilitation conducted in familiar environments and in real-life situations is a facilitator of individual perseverance and adaptability post stroke and was an enabler of community reintegration. Real-life rehabilitation activity, facilitated and supported by family, friends and the broader community (such as driving to and from work), enabled the stroke survivor to develop a more meaningful reintegration with their community.

Reference

Walsh ME, Galvin R, Loughnane C et al 2015 Factors associated with community reintegration in the first year after stroke: a qualitative meta-synthesis. Disability and Rehabilitation 37(18):1599–608.

factors not named in the ICF definition. Work is underway to more fully understand the scope of personal factors in disability, with subsequent research suggesting that personal factors may fall into 12 broad areas: socio-demographic factors, behavioural and lifestyle factors, cognitive psychological factors, social relationships, experiences and biography, coping, emotional factors, satisfaction, other health conditions, biological/physiological factors, personality, motives/motivation (Muller & Geyh 2014:430).

While it could be argued that focusing on factors within the person contributes to blaming the person for being disabled, in fact the opposite is true. Understanding personal factors encourages a strengths-based approach to thinking about people with disability. This involves looking for characteristics of the person and their life circumstance which are positive enablers of functioning. When positive enablers are purposefully sought and found, personal strengths will also be easier to find. This is illustrated in a study by Walsh et al (2015), where an individual's perseverance and adaptability post stroke were found to be enablers of community reintegration (see *Research highlight*).

Person-centred care for the person with disability

While this chapter is about seeing a person's abilities, understanding the nature of disability and the range of causation mechanisms helps nurses provide the care that best fits the person's individual needs.

Many people with disability live lives that flow on a daily basis similar to our own; waking, washing, dressing and grooming in the morning, engaging in personally meaningful activities, as well as some of the more mundane activities, and seeking out those whose company we enjoy. And like all of us from time to time, people with disability need health care. This means nurses working everywhere across the continuum of health care, regardless of age, diagnosis or setting, will encounter people with disabilities.

Therefore, it is not only nurses working in disability-specific services who need to be competent in the care of people with disability; it is all nurses. Earlier in the chapter, we introduced Angus (see *Critical reflection point*), a man in his early 50s with chest pain. While the treatment plan for a person presenting to the emergency department with chest pain may be routine, meeting Angus's specific needs to enable his optimal level of functioning within the context of the treatment regimen requires **person-centred care**. The central tenet of person-centred care is respect for and integration of individual differences when delivering patient care (Lauver et al 2002:248), with the critical characteristics being:

- understanding the patient as a unique person presenting with individual characteristics, needs, values, beliefs and preferences
- responding flexibly to patients' individual needs and preferences by selecting and delivering interventions that are mindful of, and responsive to, the patients' needs and preferences (Souraya et al 2006:118).

Similarly, Diane (see *Critical reflection point*) will have very specific care regimens already in place to maintain her skin integrity and manage her urinary and faecal elimination that are central to her health and wellbeing. She is the expert in relation to this care and her expertise needs to inform the nursing care she receives. Molly, on the other hand, can probably indicate what she likes and

doesn't like, but decisions about her health care need to involve members of her family or others who are legally appointed to make these decisions on her behalf.

Communication

Communication is central to a nurse's ability to provide person-centred care. Enabling patients to communicate their needs and preferences is a priority for every nurse–patient interaction. For example, interactions with Angus will be enabled by nurses possessing a positive attitude towards people with intellectual disability, showing respect for his concerns and priorities, and in the immediate absence of a sign language interpreter, establishing a communication system that enables two-way communication with Angus that satisfies the needs of both parties. Respect for Diane's expertise in her own care needs, along with support to address her immediate concern about after-school pick-up, will be central to the effectiveness of nurse interactions with Diane. Gaining Molly's trust may be central to her immediate safety; this may require one particular person to engage with Molly in preference to a number of different people.

There are a variety of conditions that can lead to changes in a person's ability to communicate. Communication can be broken down into the ability to express thoughts or ideas and the ability to understand what someone else is communicating. Both of these areas can be affected as the result of disability. A person may experience difficulty expressing themselves as a result of various impairments. For example, they may not be able to produce the words clearly (secondary to **dysarthria**, **apraxia** of speech or impairments affecting their voice) or may have difficulty using the correct words (secondary to **aphasia** or changes to their cognition). This may include difficulties with writing (**agraphia**). Problems understanding what has been said may arise from difficulty understanding words, or a person may be able to understand words but may have difficulty paying attention or remembering what has been said. This can also affect reading. Some people may have difficulty with both expressing themselves, as well as understanding what is being said or read.

People with communication difficulties have been found to have fewer opportunities to communicate, leading to social exclusion (Parr 2007). When being cared for in healthcare settings, they are at risk of not being able to communicate effectively, which may compromise their health care (O'Halloran et al 2008). The single most valuable way of addressing this is to provide these patients with the same opportunities to communicate as you would a patient who does not have communication difficulties.

Every nurse–patient interaction has the potential to be positive or negative for a person living with disability. Professional nursing competence required to maximise positive nurse interactions with individuals with disability is dependent upon specific knowledge, skills and attitudes. A nurse's attitudes towards people with disability and beliefs about their value, their place in society and their right to access health care can be positive or negative. How nurse attitudes can act as enablers or barriers to patient functioning has been highlighted earlier in this chapter.

Context

The experience of disability is often associated with higher usage rates of health services. This is reflected in Australian data from the *2007–08 National Health Survey* and the *2007 National Survey of Mental Health and Wellbeing* conducted by the ABS (AIHW 2011). These surveys found that when compared with people without disability, people with severe or profound disability in the 15–64-year age group were 10 times more likely to have check-ups with general practitioners (GPs) at least once a month (29% versus 3%); 3.5 times more likely to consult specialist doctors in the 12 months before the survey period 2007–08 (56% versus 16%); and 5 times more likely to consult both specialist doctors and other health professionals in the 12 months before the survey period 2007–08 (41% versus 8%) (AIHW 2011:2).

A subsequent Australian report (AIHW 2015a) highlights the complexity of care needed by some people with disability and some of the problems encountered in accessing that care. Up to one-third (32%) of people with disability saw three or more different health professionals for the same health condition, and while 22% received assistance, 16% had difficulties caused by lack of communication or coordination of care among different health professionals. Further, the report identified that approximately 13% of people with disability who reported a need for ongoing help or supervision with healthcare activities (such as taking medications, manipulating or exercising muscles or limbs) had no such source of assistance (AIHW 2015a:1).

Nurses play a central role in not only the provision of such care, but also the coordination of care using a person-centred approach. Three types of knowledge are central to person-centred care for persons with disability: knowledge about normal and abnormal body functioning, knowledge about the lived experience of disability and knowledge of assistive technologies.

Normal and abnormal body functioning

Abnormal body functioning is understood as a deviation from normal functioning. For this reason knowledge

about normal body function is central to understanding the pathophysiology of disabling conditions causing abnormal function (congenital, trauma, chronic diseases and ageing) and the provision of person-centred care for a person with disability. Because sensory stimuli give meaning to a person and an order to events in their environment, normal and abnormal sensory functioning are discussed in this section as one aspect of nursing knowledge.

Stimulation comes from many sources in and outside the body, particularly through the sight (visual), hearing (auditory), touch (tactile), smell (olfactory) and taste (gustatory) senses. The body also has a kinaesthetic sense (**proprioception**) that enables a person to be aware of the position and movement of body parts without seeing them. **Stereognosis** is a sense that allows a person to recognise an object's size, shape and texture. The ability to speak is not considered a sense, but it is similar in that a person without speech may lose the ability to interact meaningfully with other people. Meaningful stimuli allow a person to learn about their environment and are necessary for healthy functioning and normal development. When sensory function is altered, a person's ability to relate to and function within the environment changes drastically.

Normal sensation

Normally, the nervous system continually receives thousands of signals from sensory nerve organs, relays the information through appropriate channels and integrates the information into a meaningful response. Sensory stimuli reach the sensory organs and can elicit an immediate reaction or present information to the brain to be stored for future use. The nervous system must be intact for sensory stimuli to reach appropriate brain centres and for the individual to perceive the sensation. After interpreting the significance of a sensation, the person can then react to the stimulus. Table 19-2 summarises normal hearing and vision.

Reception, perception and reaction are the three components of any sensory experience. **Reception** begins with stimulation of a nerve cell called a receptor, which usually responds to only one type of stimulus, such as light or sound. The receptor is composed of specific sensory fibres which are sensitive to that particular stimulus (Hickey 2008). Simply put, when a nerve impulse is created, it travels along pathways to the spinal cord or directly to the brain. For example, sound waves stimulate hair-cell receptors within the Organ of Corti, which causes impulses to travel along the eighth cranial nerve to the acoustic area of the temporal lobe. Sensory nerve

TABLE 19-2 Normal hearing and vision

Function	Anatomy and physiology
The ear	
Transmits to the brain an accurate pattern of all sounds received from the environment, the relative intensity of these sounds and the direction from which they originate	Two ears provide stereophonic hearing to judge sound direction The external ear canal shelters the eardrum and maintains relatively constant temperature and humidity to maintain elasticity The middle ear is an air-containing space between the eardrum and oval window. It contains three small bones (ossicles) The eardrum and ossicles transfer sound to the fluid-filled inner ear Movement of the stapes in the oval window create vibrations in the fluid that bathes the membranous labyrinth, which contains the end organs of hearing and balance The union of the vestibular (balance) and cochlear (hearing) portions of the labyrinth explains the combination of hearing and balance symptoms of inner ear disorders Vibration of the eardrum is transmitted through the bony ossicles. Vibrations at the oval window are transmitted in the perilymph within the inner ear to stimulate hair cells that send impulses along the eighth cranial nerve to the brain
The eye	
Transmits to the brain an accurate pattern of light reflected from solid objects in the environment and transformed into colour and hue	Light rays enter the convex cornea and begin to converge Fine adjustment of light rays occurs as they pass through the pupil and through the lens Change in the shape of the lens focuses light on the retina The retina has a pigmented layer of cells to enhance visual acuity The sensory retina contains the rods and cones – photoreceptor cells sensitive to stimulation from light Photoreceptor cells send electrical potentials by way of the optic nerve to the brain

pathways usually cross over to send stimuli to opposite sides of the brain. The actual perception or awareness of unique sensations depends on the receiving region of the cerebral cortex, where specialised brain cells interpret the quality and nature of sensory stimuli. When the person becomes conscious of the stimuli and receives the information, perception takes place. **Perception** includes integration and interpretation of the stimuli based on the person's experiences. A person's level of consciousness influences how well stimuli are perceived and interpreted. Any factors lowering consciousness impair sensory perception. If sensation is incomplete, as with blurred vision, or if past experience is inadequate for understanding stimuli such as pain, the person may react inappropriately to the sensory stimulus.

It is impossible to react to all of the multiple stimuli entering the nervous system. The brain prevents sensory bombardment by discarding or storing sensory information. A person will usually react to stimuli that are most meaningful or significant at the time. After continued reception of the same stimulus, however, a person stops responding and the sensory experience goes unnoticed. For example, a person concentrating on reading a good book may not be aware of music in the background. This adaptability phenomenon occurs with most sensory stimuli except those of pain.

The balance between sensory stimuli entering the brain and those actually reaching a person's conscious awareness maintains a person's wellbeing. If a person attempts to react to every stimulus in the environment, or if there is insufficient variety and quality of stimuli, sensory alterations will occur.

Sensory alterations

Many factors change a person's capacity to receive or perceive sensations (Box 19-3), thereby causing sensory alterations. The types of sensory alterations commonly

BOX 19-3 Factors that influence sensory function

Age

Infants are unable to discriminate sensory stimuli.

- Nerve pathways are immature.
- Visual changes during adulthood include presbyopia (inability to focus on near objects) and the need for glasses for reading (usually occurring between ages 40 and 50 years).
- Hearing changes, which begin at age 30 years, include decreased hearing acuity, speech intelligibility, pitch discrimination and hearing threshold. Tinnitus often accompanies a hearing loss as a side effect of drugs. Older adults hear low-pitched sounds the best but have difficulty hearing conversation over background noise.
- Older adults have reduced visual fields, increased glare sensitivity, impaired night vision, reduced accommodation and depth perception and reduced colour discrimination.
- Older adults have difficulty discriminating the sounds f, s, th and ch. Speech sounds are garbled, and there is a delayed reception and reaction to speech.
- Gustatory and olfactory changes include a decrease in the number of taste buds in later years and reduction of olfactory nerve fibres by age 50. Reduced taste discrimination and reduced sensitivity to odours are common.
- Proprioceptive changes after age 60 years include increased difficulty with balance, spatial orientation and coordination.
- Older adults experience tactile changes, including declining sensitivity to pain, pressure and temperature.

Medications

Some antibiotics (e.g. streptomycin, gentamicin) are ototoxic and can permanently damage the auditory nerve; chloramphenicol can irritate the optic nerve. Narcotic analgesics, sedatives and antidepressant medications can alter the perception of stimuli.

Environment

Excessive environmental stimuli (e.g. equipment noise and staff conversation in an intensive care unit) can result in sensory overload, marked by confusion, disorientation and the inability to make decisions. Restricted environmental stimulation (e.g. with protective isolation) can lead to sensory deprivation. Poor-quality environmental stimuli (e.g. reduced lighting, narrow walkways, background noise) can worsen sensory impairment.

Comfort level

Pain and fatigue can alter the way a person perceives and reacts to stimuli.

Pre-existing illness

Peripheral vascular disease can cause reduced sensation in the extremities and impaired cognition. Chronic diabetes mellitus can lead to reduced vision, blindness or peripheral neuropathy. Stroke often produces loss of speech. Some neurological conditions result in altered sensory function.

Noise levels

Constant exposure to high noise levels (e.g. on a construction site) can cause hearing loss.

Endotracheal intubation

Temporary loss of speech results from insertion of an endotracheal tube through the mouth or nose into the trachea or from surgery to the neck, which may also interfere with the recurrent laryngeal nerve.

seen by health professionals are sensory deficits, sensory deprivation and sensory overload. When a client suffers from more than one sensory alteration, the ability to function and relate effectively within the environment is seriously impaired.

Sensory deficits

A deficit in the normal function of sensory reception and perception is a **sensory deficit**. A person may not be able to receive certain stimuli (e.g. a person who is blind or deaf), or stimuli may become distorted (e.g. a person with blurred vision from cataracts). A sudden sensory loss can cause negative emotions and feelings of helplessness. When senses are impaired, the sense of self is impaired. Initially a person may withdraw by avoiding communication or socialisation with others, in an attempt to cope with the sensory loss. It becomes difficult for the person to interact safely with the environment until new skills relying on existing functions are learned. When a deficit develops gradually or when considerable time has passed since the onset of an acute sensory loss, the person learns to rely more on their unaffected senses. Some senses may even become more acute to compensate for an alteration. For example, a blind person often develops an acute sense of hearing.

People with sensory deficits may change behaviour in adaptive or maladaptive ways. For example, one person with a hearing impairment may turn the unaffected ear towards the speaker to hear better, whereas another may shun the company of other people to avoid the embarrassment of not being able to understand their speech. Box 19-4 summarises common sensory deficits and possible influences on those affected.

BOX 19-4 Common sensory deficits

Visual deficits

Diabetic retinopathy: pathological changes occur in the blood vessels of the retina, resulting in decreased vision or vision loss.

Cataract: cloudy or opaque areas in part or all of the lens that interfere with passage of light through the lens. Cataracts usually develop gradually, without pain, redness or watering eyes.

Dry eyes: result when tear glands produce too few tears. Common in older adults and results in itching, burning or even reduced vision.

Open-angle glaucoma: an increase in intraocular pressure caused by an obstruction to the normal flow of aqueous humour through Schlemm's canal. Causes progressive pressure against the optic nerve, resulting in visual field loss, decreased visual acuity, and a halo effect around the eyes if untreated.

Presbyopia: a gradual decline in the ability of the lens to accommodate or to focus on close objects. Individual is unable to see nearby objects clearly.

Senile macular degeneration: a condition in which the macula (specialised portion of the retina responsible for central vision) loses its ability to function efficiently. First signs may include blurring of reading matter, distortion or loss of central vision and distortion of vertical lines.

Hearing deficits

Cerumen accumulation: build-up of ear wax in the external auditory canal. Cerumen, which is normally absorbed in a younger person's ear, becomes hard and collects in the canal, causing a conduction deafness.

Presbycusis: a common progressive hearing disorder in older adults.

Balance deficit

Dizziness and disequilibrium: common condition in older adulthood, usually resulting from vestibular dysfunction. Frequently an episode of vertigo or disequilibrium is precipitated by a change in position of the head.

Taste deficit

Xerostomia: decrease in salivary production that leads to thicker mucous and a dry mouth. Can interfere with the ability to eat and leads to appetite and nutritional problems.

Neurological deficits

Peripheral neuropathy: disorder of the peripheral nervous system. This can occur in older adults, endocrine disorders, entrapment syndromes and connective tissue disorders, and can be associated with potential life-threatening causes such as inflammatory demyelinating polyneuropathy, genetic disorders, toxins, medications, renal and liver disease, infectious diseases, vitamin B (B6 and B12) deficiency and neoplasms (Azhary et al 2010). Symptoms include numbness and tingling of the affected area and stumbling gait.

Stroke: cerebrovascular accident caused by clot, haemorrhage or emboli affecting a blood vessel leading to or within the brain (Scanlon & Kevin 2008). Creates altered proprioception with marked lack of coordination and imbalance. Loss of sensation and motor function in extremities controlled by the affected area of the brain also occurs.

Azhary H, Farooq MU, Bhanushali M et al 2010 Peripheral neuropathy: differential diagnosis and management. Am Fam Physician 81(7):887–92; Scanlon A, Kevin J 2008 Stroke (cerebrovascular accident). In Chang E, Johnson A (eds), Chronic illness and disability: principles for nursing practice. Churchill Livingstone, Sydney, pp. 236–50.

Sensory deprivation

The reticular activating system mediates all sensory stimuli to the cerebral cortex, so that even in deep sleep people are able to receive stimuli. Clients in intensive care units (ICUs) are often exposed to physical touch, but this is usually associated with technical intervention rather than personal, comforting touch (Price 2004). When a person experiences an inadequate quality or quantity of stimulation, such as monotonous or meaningless stimuli, **sensory deprivation** occurs.

Three types of sensory deprivation are:

- reduced sensory input (sensory deficit from visual or hearing loss)
- elimination of order or meaning from input (e.g. exposure to strange environments)
- restriction of the environment (e.g. bed rest or reduced environmental variation) that produces monotony and boredom (Ebersole et al 2008).

Commonly, people at risk of sensory deprivation are thought to be those living in a confined environment such as in residential aged care. Although most good-quality nursing homes offer meaningful stimulation through group activities, environmental design and mealtime gatherings, there are exceptions. The older adult who is confined to a wheelchair, suffers from poor hearing and/or vision, has decreased energy and avoids contact with others is at significant risk of sensory deprivation. If the organisational environment creates monotony, the resident has a reduced capacity to learn and to think.

More generally, persons with deformities or disfigurements, and those displaying atypical behaviours (such as drooling, moaning or uncontrolled limb movements) may be at higher risk of sensory deprivation because people with these characteristics are frequently marginalised by society (Kristeva 1982). Furthermore, much of the care required by extremely disabled or disfigured persons is considered 'dirty or unclean' (Lawler 1991). This means that although severely disabled people may be daily recipients of compensatory nursing care for extended periods (sometimes for all of their life), this care may be so routine as not to be humanised, and as such, lacks the authenticity required to prevent sensory deprivation.

There are many effects of sensory deprivation, some of which are contained in Box 19-5. The symptoms of sensory deprivation can easily cause nurses and doctors to believe that a client is psychologically ill and confused, is suffering from severe electrolyte imbalance or is under the influence of psychotropic drugs. Therefore, the nurse must always be aware of the client's existing sensory function and the quality of stimuli within their usual environment.

BOX 19-5 Effects of sensory deprivation

Cognitive

- Reduced capacity to learn
- Inability to think or solve problems
- Poor task performance
- Disorientation
- Bizarre thinking
- Regression
- Increased need for socialisation, altered mechanisms of attention

Affective

- Boredom
- Restlessness
- Increased anxiety
- Emotional lability
- Panic
- Increased need for physical stimulation

Perceptual

- Visual/motor coordination
- Colour perception
- Apparent movement
- Tactile accuracy
- Ability to perceive size and shape
- Spatial and time judgement

Modified from Ebersole P, Hess P, Schmidt Luggen A et al 2008 Ebersole & Hess' Toward healthy ageing: human needs and nursing response. Elsevier Health Sciences, St Louis.

Sensory overload

When a person receives multiple sensory stimuli and cannot perceptually disregard or selectively ignore some stimuli, **sensory overload** occurs. Excessive sensory stimulation prevents the brain from appropriately responding to or ignoring certain stimuli. Because of the multitude of stimuli leading to overload, the person no longer perceives the environment in a way that makes sense. Overload prevents meaningful response by the brain; the person's thoughts race, attention moves in many directions and anxiety and restlessness occur. As a result, overload causes a state similar to that produced by sensory deprivation. However, in contrast to deprivation, overload is individualised. The amount of stimuli needed for healthy function varies with each individual. People may be subject to more environmental overload at one time than at another. A person's tolerance to sensory overload may vary by level of fatigue, attitude and emotional and physical wellbeing.

The behavioural changes associated with sensory overload can easily be confused with mood swings or

simple disorientation. The nurse should look for symptoms such as racing or disordered thoughts, scattered attention, restlessness and anxiety. Clients in intensive care units sometimes resort to constantly touching tubes and dressings. It is important, therefore, to constantly reorient and control excessive stimuli as part of the client's care (Price 2004).

The lived experience of disability

We conduct daily business in our world in and through our bodies; therefore, the function of our body is highly significant to daily life (Draper 2014:2237). Disability can interrupt both expectation and experience of life, lifestyles and livelihoods, as well as cause disruption to self-identity and body image (see Chapter 20). Many studies have now been published about the experience of people living with both congenital and acquired disability.

For example, an Australian study by Kearney and Griffin (2001) has challenged the prevailing belief that having a child with a significant congenital disability is always a tragedy. In addition to experiencing anguish and sorrow, parents in this study also spoke of 'hope, love, strength and joy' (p. 582). Their lived experience included living with tensions between the confusing and conflicting emotions of joy and sorrow, at the same time as having hope and no hope, defiance and despair (p. 587).

The literature in relation to acquired disability is rich, incorporating studies of the experience of individuals across diagnostic groups, across the life span, and from around the world. Two consistent themes emerge from these studies: firstly, that negotiating life immediately following acquired disability involves work; and secondly, that the outcome of that work may be a reconstructed self. Three qualitative studies of the lived experience of persons with disability are shown in Table 19-3. Qualitative research methods allow nurses and other health professionals to access a more accurate and personalised version of the patient experience and journey.

• CRITICAL REFLECTION POINT

Look in your local library for the lived experience of disability stories, such as those listed in Box 19-6 or similar. Read a couple and note your emotional responses to the person's situation. Think about how you could facilitate the person's optimal level of functioning if you were providing them nursing care.

Rehabilitation

Rehabilitation is commonly associated with the period immediately following acquired disability. Rehabilitation is fundamentally about a person regaining control over their body and their life (Ozer 1999), and for some people this entails 'the holistic reconstruction of the "self"' (Siegert et al 2007:1609). The important point to remember is that each patient's rehabilitation journey is unique as it is informed by the significance they assign to their situation (Donnelly et al 2005). Acquiring information and learning through doing are key aspects of regaining control (Bourke et al 2015). The timing and amount of information sought can vary between individuals, so it is important to determine what information patients want, in what format, how detailed and when.

While the construction and reconstruction of self is ongoing for all of us, the process is less challenging when it is self-directed. The reconstruction of self journey following acquired disability can be slow to start as return to the usual self is commonly the preferred destination (Nanninga et al 2015). It can also take considerable time for the person to realise that life can be lived with an altered body (see Chapter 20). Once the new normal is established, however, life is not static. Like everyone, transition points are experienced.

TABLE 19-3 Examples of key aspects of the lived experience of acquired disability

Stroke	Spinal cord injury	Traumatic brain injury
Bodily recovery and functional improvement	Looking for understanding to a life that is unknown	Mind/body disconnect
Recreating and restructuring daily life	Stumbling along an unlit path	Disconnect with pre-injury identity
Biographical adjustment and transformation	Viewing self through a stained glass window	Social disconnect
	Challenging the bonds of love	Reconstruction of identity
	Being chained to the injury	Reconstruction of a place in the world
	Moving forward in a new way of life	Reconstruction of personhood
	Reaching a new normalcy	
Kirkevold (2010)	DeSanto-Madeya (2006)	Levack et al (2010)

BOX 19-6 Examples of stories of the lived experience of disability

A long season in hell: The battle to save my son by G Graham (1996, Macmillan)

Ghost boy by M Pistorius with M L Davies (2011, Simon & Schuster, London)

I hear more than you see by J Daisley (2005, Landers Publishing, Dural, NSW)

Just a head: Stories in a body by D Fassett & M R Gallagher (1998, Allen & Unwin, St Leonards, NSW)

Monster in the bedroom: The life of Jo Ann Dolan by Janine Hosking (1992, Allen & Unwin, North Sydney, NSW)

Waterlemon: husband in a coma and other setbacks by R Ritche (2006, Macmillan, Sydney)

A good example of this is a study of the transition to motherhood for women with disability (Lawler et al 2015). In addition to describing a three-phase reconstruction process, this study details interventions to facilitate each phase of that transition. The three phases are presented in Table 19-4 and while specifically related to mothers with a disability, are also applicable to the nursing care of many people with disability.

Assistive technologies

Persons with disability have one or more specific functional losses that impair, limit or restrict their normal activity to varying degrees. This functional loss can range from a situation where some individuals remain independent by using simple aids, to a situation where some are completely dependent on others for all activities. A New Zealand mixed methods study identified inaccessible environments, negative attitudes, unreliable transportation and poor access to information as the key barriers experienced by disabled people in their everyday living. However, lack of adequate and appropriate resources to overcome these barriers was the main obstacle to participation in society (Wilkinson-Meyers et al 2014:1540). The type of supportive aids an individual requires will depend on the nature of their disability and the complexity of the task or action being undertaken. Supportive aids could be considered to assist within the areas of mobility, feeding, communication, vision and hearing.

Mobility

There are many conditions that can lead to an alteration in a person's ability to mobilise. For example, people with musculoskeletal disorders and lower limb amputation, neurovascular, spinal and neuromuscular degenerative disorders, stroke and brain injury may all have varying difficulties with mobility. This can include changing and maintaining body position, carrying, moving and handling objects, walking and moving, and moving around using transport (WHO 2001). The mobility assistance device required is dependent on functional ability, the desired activity and choice of the individual.

Mobility assistance equipment comes in many forms, shapes and sizes. There is a range of assistive devices that can be used in the bedroom to help with changing and

TABLE 19-4 Interventions to facilitate the transition to motherhood of women with disability

Phase 1: Having a sense of self	Phase 2: Making meaning of self as a mother	Phase 3: Reforming the self as a mother
Disability awareness and training provided for all caregivers	Provision of appropriate information in appropriate format for women with disability	Access formal and informal supports for women with disability
Structural adaptations to improve accessibility to maternity units	Development of a mechanism of referral to formal supports relevant to women with disability	Develop a peer support network for women with disability
Conduct an assessment of needs early on	Establish peer support groups for women with disability	Develop a website specific to parents with a disability
Consider community-based models of care	Liaise with voluntary disability agencies	Devise a directory of services and resources available for women with disability
Appoint disability midwife advisor		Develop and adopt family-friendly policies in the workplace
Development of policies and guidelines for the provision of care for women with disability		Link women with disability to appropriate forums and discussion boards
Continuity of carer		Devise a range of information leaflets on parenting for parents with a disability

Lawler D, Begley C, Lalor J 2015 Re-constructing myself: the process of transition to motherhood for women with a disability. Journal of Advanced Nursing 71(7):1672–83.

maintaining body position, for example, bed ladders (used to assist the user to sit up in bed by sequentially pulling on the rungs of the ladder), bed sticks (used as an anchor point to be grabbed when turning), monkey poles, leg lifters and electric beds. Lifters and hoists may be used if the person is unable to weight-bear. Bathroom modifications, such as bath hoists, grab rails and non-slip flooring, should be considered, along with the use of aids such as raised toilet seats, shower chairs and commodes.

Many will require an assistive device for ambulation such as crutches, walking stick, forearm, wheeled or pickup walking frame, or may be dependent on a wheelchair (manual or powered) or scooter. The type of chair required is dependent on the degree of disability; for example, persons with poor upper body control will require a powered chair. People with severe sight loss may need to use a walking cane or guide dog to assist them with mobilisation.

While public transport systems are increasingly being transformed to accommodate people with disabilities, many people with disabilities still find public transport largely unreliable and inaccessible. Wilkinson-Meyers et al (2014) suggest that currently only public transport limited to place (dictated by route) and time (timetable) will be likely to assist people with disabilities and many may need to use specially customised forms of transport, such as wheelchair lift taxis or modified private vehicles.

Eating

There is a range of conditions that can impact on a person's ability to prepare meals (planning, organising, cooking and serving simple and complex meals and drinks) and coordinate the task of eating and drinking (see Chapter 31). There are now many simple assistive devices that can be used to help a person prepare their own meals or drinks. Devices such as specialist kitchen utensils with built-up handles and angled knives allow a stronger grip and put less stress on joints. Using electric appliances such as blenders, food processors and electric can openers and knives can also assist with food preparation. Specialist devices such as jug or kettle tippers, bowl tippers, clamps to stabilise jars and bottles for one-handed use can also promote independence.

Other devices that can be used to promote independence in eating are, for example, the use of weighted shaft cutlery, angled shaft cutlery and rocker knives, plate guards and non-slip matting or suction cap plates, to hold and secure the plate in place. There is also a range of adapted cups, such as two-handed cups, weighted cups and cups with lips, all designed to assist the person with decreased hand fine motor function.

Communication devices

As discussed earlier, communication may be altered in varying ways including: comprehending spoken, non-verbal and written messages; speaking, producing non-verbal and written messages; and an inability to start, sustain and end a conversation (WHO 2001). There are numerous strategies that nurses can use to provide patients with altered communication an opportunity to communicate. Some patients will use aided or unaided modes of communication. Examples of unaided communication include signing, gestures and facial expressions. Aided forms of communication include electronic devices (such as type-to-talk devices, voice synthesisers and amplifiers), communication boards and specialised communication computer software. These are known as alternative and augmentative communication (Finke et al 2008).

Some patients may simply require other more common devices to aid their communication, such as hearing aids or glasses. For those patients with more subtle communication difficulties, other strategies may be useful. Table 19-5 gives examples of strategies that could be used for communication with patients experiencing a range of communication difficulties.

Vision

As a result of the normal changes of ageing, the pupil's ability to adjust to light is diminished and older adults can be very sensitive to glare. The nurse can suggest ways to minimise glare, for example, using satin and non-gloss finishes for walls and countertops in the home and choosing sheer curtains, tinted windows or adjustable shades to reduce outdoor light. Wearing sunglasses outside can obviously reduce the glare of direct sunlight.

The ability to read is important to everyone. Patients should be facilitated to use their glasses whenever possible (e.g. during procedures and client instruction) as this will help patients remain oriented, maintain some control and retain their dignity (Larsen et al 1997). People with reduced visual acuity may need more than corrective lenses. A pocket magnifier can help a person read most printed material and mobile apps are now available for this. Telescopic lens glasses are smaller, easier to focus and have a greater range. There are also books and other publications available in large print. If patients have legal or other important documents they wish to read, most photocopiers have enlarging capabilities. People with severe sight loss may use newer technological assistive devices such as voice recognition software and screen-reading software in addition to Braille.

With ageing, a person also experiences a change in colour perception. Perception of the colours blue, violet and green usually declines. Brighter colours such as red, orange and yellow are easier to see. The nurse can suggest ways to decorate a room and paint hallways or stairwells so that differentiations can be made between surfaces, edges and objects in a room.

Hearing

One simple way to help an older adult with a hearing loss is to ensure that the problem is not related to impacted cerumen. With ageing, cerumen thickens and builds up in the ear canal. Excessive cerumen occluding the ear canal can cause a conductive hearing loss. Softening agents can be used to loosen the cerumen prior to irrigation of the canal with tepid water in a 60 mL syringe. Removal of cerumen can significantly improve the person's hearing ability; however, extreme caution is required when undertaking this procedure.

To maximise residual hearing function, the nurse can suggest ways to modify the environment. Telephones and televisions can be amplified. Alarm clocks that shake the bed or activate a flashing light are useful. An innovative way to enrich the lives of the hearing-impaired is recorded music. Music recorded in the low-frequency sound cycles can be heard by patients with severe hearing loss.

Individuals with moderate to severe hearing loss commonly use hearing aids. There are many styles of hearing aids available, and the choice of device is dependent on the cause and severity of hearing loss. Hearing aids do not restore normal hearing, but they do make sounds louder. A small microphone collects sounds from the environment, and a microchip converts the sound into digital code, which is then analysed. The aid then alters the sound wave delivered to the ear, amplifying the sounds according to the individual's needs. People who are profoundly deaf or severely hard-of-hearing may have a cochlear implant. Unlike hearing aids, which amplify sounds, the cochlear implant works by bypassing the damaged parts of the ear and directly stimulating the auditory nerve. More information about assistive devices can be found at the Independent Living Centres Australia website (see *Online resources*).

While being generally aware of the types and range of adaptive device is important, knowledge about the specific requirements of an individual needs to come directly from the individual or their immediate carer.

Key skills for person-centred care for persons with disability

A wide range of skills is required for the care of persons with disability, many of which are covered elsewhere in this text. The person with disability is first and foremost a person, so all other sections of this text are relevant. While individuals may have very specific care requirements, all will benefit from individualised and person-centred approaches to their care.

TABLE 19-5 Examples of communication strategies

Impairment	Strategy that may assist
Difficulty communicating with you	Ask the patient to try and describe using a different word
	Ask the patient simple questions, e.g. Are you hungry? Do you want to go to the bathroom? to try and determine what they need
	If the patient cannot speak, try a different option, write some words down for them to choose from, show them pictures or objects to choose from
	Ask them to try and say it again, write it down for you or draw a picture
Difficulty understanding what you are saying	Reduce your speech rate
	Use fewer words
	Use less complex words
	Write down what you have said
	Show the patient what you are talking about, e.g. if you are asking if they want to use the bathroom, point to the bathroom when you are talking about it
	Check that the patient has understood, by asking them to tell you what they have understood

Sweidel GB 1991 Management strategies in the communication of speaking persons and persons with a speech disability. Research on Language and Social Interaction 25(1-4): 195–214.

Autonomy-supportive interventions

Enablement of self-determination is a core skill for the person-centred care of persons with disability. This can be achieved through the use of **autonomy-supportive interventions** (Kayser et al 2014), which are based on understanding that the fundamental needs for psychological growth and wellbeing are autonomy, relatedness and competence (Deci & Ryan 2012). It is important to note that autonomy is more about choice than independence, and that the opposite of being autonomous is being controlled.

The core components of autonomy-supportive interventions are: providing choice, communicating a meaningful rationale, showing empathy, collaboration, and using strengths-based interactions (Kayser et al 2014). Nurses need to possess attitudes in harmony with these components and skills in strengths-based interactions.

Values-based goal setting is an asset in autonomy-supportive interventions. Values-based goals provide a foundation for a plan of care that is in harmony with what and who is important to the person. Values may relate to life domains such as work, relationships, personal growth/health and leisure. The interpersonal nursing skills required include rapid rapport building, developing trust, providing emotional support, instilling confidence, motivational interactions and providing feedback (Pryor 2014:308).

Conservation and restoration of function

Central to person-centred care in disability is the conservation and restoration of function. Conservation of function focuses on maintaining or improving existing function, and the prevention of functional decline. As such, the aim is to prevent further deconditioning and functional decline, otherwise known as disability. Deconditioning and functional decline are serious problems for the hospitalised older or disabled person. **Deconditioning** can be acute or chronic, with acute deconditioning happening within days to a few weeks of a sudden decrease in activity (Siebens et al 2000). **Functional decline** is a consequence of deconditioning. It is described as a resulting inability to perform the activities that would normally ensure a person's independence (Graf 2006:60). While chronic deconditioning is a feature of a sedentary lifestyle, acute deconditioning and functional decline have been linked to patient inactivity in acute hospitals.

The prevention of functional decline is complex, requiring care in relation to the following domains: cognition and emotional health; mobility, vigour and self-care; continence; nutrition; skin integrity; and medication management (Tropea et al 2011). More broadly, the prevention of functional decline requires nurses to see the whole person, who is the patient, within their context. This means looking beyond the presenting or immediate health problem to see the person's 'bigger picture' (Pryor 2014). **Function-promoting nursing practice** is when care includes an 'awareness of the patient's tomorrow, and the relationship between what does and does not happen today and the tomorrow that follows' (Plaisted 1978:726).

This whole-person awareness needs to achieve more than just recognise that a person has the potential or ability to undertake self-care and participate in everyday life. To make a difference, awareness needs to be enacted in strategies that facilitate **functional performance**. This refers to what an individual can do in their societal context and includes 'all aspects of their physical, social and attitudinal world' (WHO 2001:15). Person-level function is another term for this (Pryor 2014). Enriching the person's environment is emerging as a positive strategy for many aspects of nursing care.

Enriched environments

As identified in the ICF (WHO 2001), a person's environment comprises a multitude of factors that can act as enablers or barriers to human functioning. While each person's environment is unique, environmental factors generally fall into three groups: naturally occurring factors (e.g. the weather); human-made structures and processes; and interpersonal interactions.

As nurses, we can positively influence a person's functional performance. Nurses' attitudes towards persons with disability have been stressed throughout the chapter as key elements of care, but it is also important to ensure that collectively, nurses as individuals working in a particular setting, and nursing as a professional group, are mindful of this. Individually and collectively, nurses and nursing can positively influence functional performance by enriching the patient environment.

Within the context of health, enriching the environment refers to enabling the functional performance of the person who is the patient through the purposeful use of strategies that maximise the potential of the physical, social and attitudinal aspects of their inpatient environment as environmental enablers. Also known as milieu therapy (Dotterman & Bulechek 2004) and ward atmosphere (Moos 1989), this is not new thinking. Interest in ward atmosphere in inpatient mental health facilities began decades ago (e.g. Echternacht 2001, Moos 1974, 1989, Milne 1986, Smith et al 1996) with the overall purpose being to create conditions that support positive change in patients (Geanellos 2000) and a particular interest in developing patients' relationships with other

RESEARCH HIGHLIGHT

In some conditions the onset of disability is sudden, but in others the onset is much slower. The sudden onset of disability is commonly confusing and confronting. One condition commonly associated with sudden onset acquired disability that has gained a lot of attention in recent years is stroke. Understanding the experiences of persons who suffer stroke is central to best-practice person-centred care.

The findings of a recent Dutch study of 33 stroke survivors helps us to understand the experiences and needs of stroke survivors. The findings make explicit the need for personal coherence; stroke survivors' bodies and selves change, but spatially and socially their home does not. Engagement with the world outside home can be exceedingly complex and lead stroke survivors to turn inwards.

The findings of this qualitative study are presented in three phases (the clinical phase, the post-discharge phase and the reintegration phase). Central to each phase is a longing for bodily recovery and domestic places followed by a longing for pre-stroke activities and role, then a longing for recognition and a new sense of belonging.

Reference

Nanninga CS, Meijering L et al 2015 Place attachment in stroke rehabilitation: a transdisciplinary encounter between cultural geography, environmental psychology and rehabilitation medicine. Disability and Rehabilitation 37(13):1125–34.

patients and staff; the personal growth of patients; and organisational factors such as program clarity.

Nurses have been able to enrich environments in inpatient rehabilitation through the use of interventions known as rehabilitative milieu therapy. Before the ICF (WHO 2001), Pryor (2000) proposed that nursing could and should positively influence physical, social and cultural aspects of the inpatient rehabilitation environment. In a subsequent Australian study (Pryor 2010:124), nurses were found to enrich inpatient rehabilitation environments by allowing time for patients to do for themselves, keeping patients' spirits up, protecting patients from embarrassment, and making hospitalisation more homelike than typically experienced in acute care. In another Australian setting, the implementation of the rehabilitative milieu nursing intervention comprised patient education about the roles of nurses and patients in rehabilitation, and lunchtime dining-room activities (Pryor & Buzio 2010). These initiatives were found to both authorise and enable rehabilitation by positively influencing both patients and nurses.

In a New Zealand study, Tyrrell et al (2012:2466) found that the environment of rehabilitation inpatients was enriched by a 'best fit' nurse. These best fit nurses were identified by patients based on their 'nature', 'being available' and 'being attuned' to the patient's individual needs. If a 'connection' was formed, then the best fit relationship maximised the older person's motivation to participate in his or her rehabilitation therapy.

Recent developments in our understanding of the role of **enriched environments** in relation to neuroplasticity underline the significance of these findings. **Neuroplasticity** is described by Doidge (2015:xv) as a property of the brain that enables it to change its own structure and functioning in response to mental activity and mental experience. Through purposeful and directed enrichment of patient environments, nurses and other health professionals have a clear potential to make a significant contribution in this area (see *Research highlight*).

Key concepts

- We will all experience disability at some time in our life.
- The biopsychosocial model adopted in the International Classification of Functioning, Disability and Health is a valuable tool for understanding the multiple factors that contribute to disability.
- Personhood is a status bestowed upon a human being by others.
- Communication is a basic human right.
- Your attitudes and behaviours towards persons with or without disability can act as either an enabler or a barrier to that person's functional performance.
- Every nursing interaction with a person with or without disability can positively influence that person's functioning, wellbeing and quality of life.

Online resources

New Zealand

Blind Foundation, http://blindfoundation.org.nz/

Brain Injury Association New Zealand, www.brain-injury.org.nz/index.html

Deaf Aotearoa New Zealand, www.deaf.org.nz/

Disabled Persons Assembly NZ, www.dpa.org.nz/

Enable New Zealand, www.enable.co.nz/

Motor Neurone Disease Association New Zealand, www.mnda.org.nz

MS Society of New Zealand, www.msnz.org.nz

New Zealand Down Syndrome Association, www.nzdsa.org.nz/

New Zealand Spinal Trust, www.nzspinaltrust.org.nz/

Stroke Foundation New Zealand, www.stroke.org.nz/home

Australia

Able Australia, www.ableaustralia.org.au/

Brain Injury Australia, www.braininjuryaustralia.org.au/

Deaf Australia, http://deafaustralia.org.au/

Down Syndrome Australia, www.downsyndrome.org.au/

Independent Living Centres Australia, http://ilcaustralia.org.au/

Limbs 4 Life, www.limbs4life.org.au/

MND Australia, www.mndaust.asn.au/Home.aspx

MS Australia, www.msaustralia.org.au/

National Stroke Foundation Australia, https://strokefoundation.com.au

Spinal Cord Injuries Australia, https://scia.org.au/

Spinal Injuries Australia, www.spinal.com.au/

Vision Australia, www.visionaustralia.org/

United Nations Convention on the Rights of Persons with Disabilities, https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=iv-15&chapter=4&lang=en

References

Australian Bureau of Statistics 2015 Psychological Disability 2012. ABS Cat. No. 4433.0.55.004. Online. Available: www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4433.0.55.004Main+Features12012?OpenDocument; accessed 22 May 2015.

Australian Bureau of Statistics 2012 Cat. No. 4430.0 Disability, Ageing and Carers, Australia: Summary of Findings 2012. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/mf/4430.0; accessed 28 Aug 2015.

Australian Bureau of Statistics 2011 Information Paper – Disability, Ageing and Carers, Australia: User Guide 2009. ABS Cat. No. 4431.0.55.001.

Australian Institute of Health and Welfare (AIHW) 2015a Access to health services among Australians with disability 2012. Bulletin No. 129. Cat. No. AUS 191. AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2015b Technical definitions of disability. Online. Available: www.aihw.gov.au/disability/technical-definitions-of-disability/; accessed 28 July 2015.

Australian Institute of Health and Welfare (AIHW) 2013a Australia's welfare 2013. Australia's welfare series no.11. Cat. No. AUS 174. AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2013b Diabetes and disability: impairments, activity limitations, participation restrictions and comorbidities. Diabetes series no. 20. Cat. No. CVD 63. AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2011 The use of health services among Australians with disability. Bulletin no. 91. Cat. No. AUS 140. AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2010 Spinal cord injury, Australia 2007–08. Injury research and statistics series no. 52. Cat. No. INJCAT 128. AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2007 Disability in Australia: acquired brain injury. Bulletin no. 55. Cat. No. AUS 96. AIHW, Canberra.

Azhary H, Farooq MU, Bhanushali M et al 2010 Peripheral neuropathy: differential diagnosis and management. American Family Physician 81(7):887–92.

Bourke JA, Hay-Smith JC, Snell DL, DeJong G 2015 Attending to biographical disruption: the experience of rehabilitation following tetraplegia due to spinal cord injury. Disability & Rehabilitation 37(4):296–303.

Deci EL, Ryan RM 2012 Self-determination theory in health care and its relations to motivational interviewing: a few comments. International Journal of Behavioral Nutrition and Physical Activity 9:24.

De-Santo-Madeya S 2006 The meaning of living with spinal cord injury 5 to 10 years after injury. Western Journal of Nursing Research 28(3):265–89.

Doidge N 2015 The brain's way of healing. Scribe, Melbourne.

Donnelly JP, Donnelly K, Grohman KK 2005 A multi-perspective concept mapping study of problems associated with traumatic brain injury. Brain Injury 19(13):1077–85.

Dotterman J M, Bulechek GM (eds) 2004 Nursing interventions classification NIC) 4th edn. Mosby, St Louis, MO.

Draper J 2014 Embodied practice: rediscovering the 'heart' of nursing. Journal of Advanced Nursing 70(10):2235–44.

Ebersole P, Hess P, Schmidt Luggen A et al 2008 Ebersole & Hess' Toward healthy aging: human needs and nursing response. Elsevier Health Sciences, St Louis.

Echternacht MR 2001 Fluid group: Concept and clinical application in the therapeutic milieu. Journal of the American Psychiatric Nurses Association 7(2):39–44.

Finke EH, Light J, Kitko L 2008 A systematic review of the effectiveness of nurse communication with patients with complex communication needs with a focus on the use of augmentative and alternative communication. Journal of Clinical Nursing 17(16):2102–15.

Geanellos R 2000 The milieu and milieu therapy in adolescent mental health nursing. The International Journal of Psychiatric Nursing Research 5(3):638–48.

Geyh S, Peter C, Muller R et al 2011 The personal factors of the International Classification of Functioning, Disability and Health in the literature – a systematic review and content analysis. Disability and Rehabilitation 33(13–14):1089–102.

Graf C 2006 Functional decline in hospitalized older adults. American Journal of Nursing 106(1):58–67.

Hickey JV 2008 Clinical practice of neurological and neurosurgical nursing. Wolters Kluwer Health/Lippincott Williams & Wilkins, Philadelphia.

Kayser JW, Cossette S, Alderson M 2014 Autonomy-supportive intervention: an evolutionary concept analysis. Journal of Advanced Nursing 70(6):1256–66.

Kearney M, Griffin T 2001 Between joy and sorrow: being a parent of a child with developmental disability. Journal of Advanced Nursing 34(5):582–92.

Kirkevold M 2010 The role of nursing in the rehabilitation of stroke survivors. Advances in Nursing Science 33(1):E27–E40.

Kitwood T 1997 On being a person. In Kitson T (ed), Dementia reconsidered: the person comes first. Open University Press, Milton Keynes.

Kostanjsek N, Good A, Madden RH et al 2013 Counting disability: global and national estimations. Disability & Rehabilitation 35(13):1065–9.

Kristeva J 1982 Powers of horror: An essay on abjection. Columbia University Press, New York.

Larsen D et al 1997 Assessment and management of sensory loss in elderly patients. AORN J 65(2):432.

Lauver DR, Ward SE, Heidrich SM et al 2002 Patient-centred interventions. Research in Nursing and Health 25:246–55.

Lawler D, Begley C, Lalor J 2015 Re-constructing myself: the process of transition to motherhood for women with a disability. Journal of Advanced Nursing 71(7):1672–83.

Lawler J 1991 Behind the screens, nursing, somology and the problem of the body. Churchill Livingstone, Melbourne.

Levack WMM, Kayes NM, Fadyl JK 2010 Experience of recovery and outcome following traumatic brain injury: a metasynthesis of qualitative research. Disability and Rehabilitation 32(12):986–99.

Milne D 1986 Planning and evaluating innovations in nursing practice by measuring the ward atmosphere. Journal of Advanced Nursing 11:203–10.

Moos RH 1989 Ward atmosphere Scale manual, 2nd edn. Consulting Psychologists Press, Palo Alto, CA.

Moos RH 1974 Evaluating treatment environments: A social ecological approach. John Wiley & Sons, New York.

Muller R, Geyh S 2014 Lessons learned from different approaches towards classifying personal factors. Disability and Rehabilitation 37(5):430–2.

Nanninga CS, Meijering L, Schonherr MC et al 2015 Place attachment in stroke rehabilitation: a transdisciplinary encounter between cultural geography, environmental psychology and rehabilitation medicine. Disability and Rehabilitation 37(13):1125–34.

National Health and Medical Research Council 2008 Ethical guidelines for the care of people in post-coma unresponsiveness vegetative state or minimally responsive state. National Health and Medical Research Council, Canberra.

O'Halloran R, Hickson L, Worrall L 2008 Environmental factors that influence communication between people with communication disability and their healthcare providers in hospital: a review of the literature within the International Classification of Functioning, Disability and Health ICF) framework. International Journal of Language & Communication Disorders 43(6):601–32.

Ozer MN 1999 Patient participation in the management of stroke rehabilitation. Topics in Stroke Rehabilitation 6(1):43–59.

Parr S 2007 Living with severe aphasia: Tracking social exclusion. Aphasiology 21(1):98–123.

Patston P 2007 Constructive functional diversity: A new paradigm beyond disability and impairment. Disability and Rehabilitation 29(20–21):1625–33.

Pistorius M with Davies ML 2011 Ghost boy. Simon & Schuster, London.

Plaisted LM 1978 Rehabilitation nurse. In Goldenson RM (ed), Disability and Rehabilitation Handbook, pp. 291–309. McGraw-Hill, New York.

Price AM 2004 Intensive care nurses' experiences of assessing and dealing with patients' psychological needs. Nurs Crit Care 9(3):134–42.

Pryor J 2010 Nurses creating a rehabilitative milieu. Rehabilitation Nursing 35(3):123–8.

Pryor J 2000 Creating a rehabilitative milieu. Rehabilitation Nursing 25(4):141–4.

Pryor J with contributions from Royal Rehabilitation Centre Sydney nurses 2014 Rehabilitation, co-morbidity and complex care. In Johnson A, Chang E (eds), Caring for older people in Australia: Principles for nursing practice. Wiley, Chapter 9, pp 289–316.

Pryor J, Buzio A 2010 Enhancing inpatient rehabilitation through the engagement of patients and nurses. Journal of Advanced Nursing 66(5):978–87.

Scanlon A, Kevin J 2008 Stroke cerebrovascular accident. In Chang E, Johnson A (eds), Chronic illness and disability: principles for nursing practice. Churchill Livingstone, Sydney, pp. 236–50.

Scanlon A, Maffei J 2009 Carpal tunnel syndrome. J Neurosci Nurs 41(3):140–7.

Siebens H, Aronow H, Edwards D, Ghasemi, Z 2000 A randomised controlled trial of exercise to improve outcomes of acute hospitalisation in older adults. Journal of the American Geriatrics Society 48(12):1–10.

Siegert RJ, Ward T, Levack WM, McPherson KM 2007 A Good Lives Model of clinical and community rehabilitation. Disability and Rehabilitation 29(20–21):1604–15.

Smith J, Gross C, Roberts J 1996 The evolution of a therapeutic environment for patients with long-term mental illness as measured by the Ward Atmosphere Scale. Journal of Mental Health 5(4):349–60.

Souraya S, Epstein D, Miranda J 2006 Eliciting patient treatment preferences: A strategy to integrate evidence-based and patient-centred care. Worldviews on Evidence-Based Nursing 3(3):116–23.

State Services Commission 2008 Enabling Ability: Meeting the employment requirements of people with disabilities in the Public Service. New Zealand Government.

Statistics New Zealand 2014 Disability Survey: 2013. New Zealand Government. Online: Available: www.stats.govt.nz/browse_for_stats/health/disabilities/DisabilitySurvey_HOTP2013.aspx; accessed 28 Aug 2015.

Statistics New Zealand 2009 Information about the Household Disability Survey 2006. Online: Available: https://www.ssc.govt.nz/node/1671; accessed 28 July 2015.

Sweidel GB 1991 Management strategies in the communication of speaking persons and persons with a speech disability. Research on Language and Social Interaction 25(1–4):195–214.

Tropea J, Amatya B, Brand CA & The Expert Advisory Group 2011 Use of consensus methods to select clinical indicators to assess activities to minimise functional decline older hospitalised patients. Australian Health Review 35:404–11.

Tyrrell EF, Levack WM, Ritchie LH, Keeling SM 2012 Nursing contribution to the rehabilitation of older patients: Patients and family perspectives. Journal of Advanced Nursing 68(11):2466–76.

United Nations 2015 Conventions on the Rights of Persons with Disabilities. Online: Available: https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=iv-15&chapter=4&lang=en; accessed 28 Aug 2015.

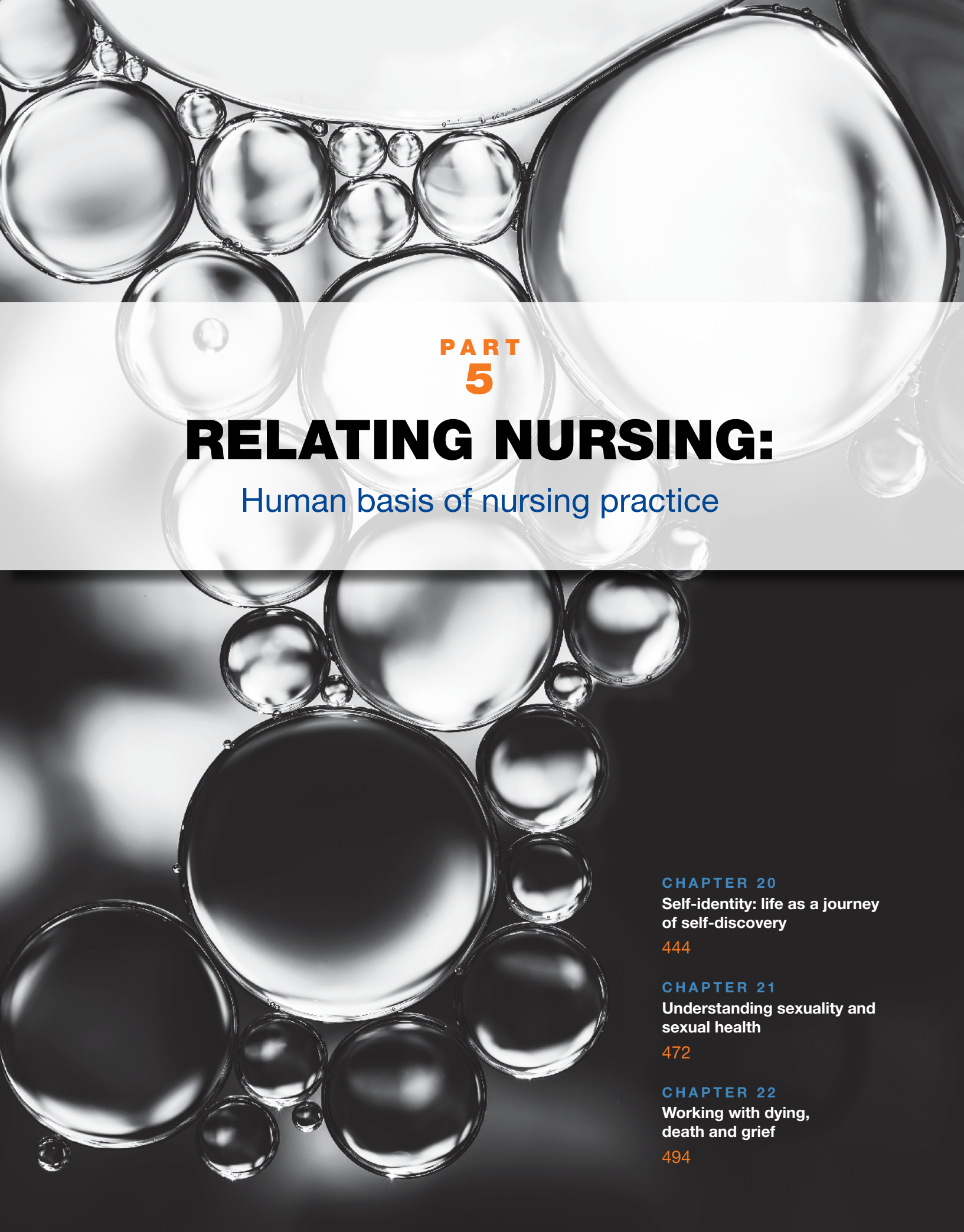
United Nations 2006 Convention on the rights of persons with disabilities. Available: www.un.org/disabilities/default.asp?id=261; accessed 28 Aug 2015.

Walsh ME, Galvin R, Loughnane C et al 2015 Factors associated with community reintegration in the first year after stroke: a qualitative meta-synthesis. Disability and Rehabilitation 37(18):1599–608.

Wilkinson-Meyers L, Brown P, Reeve J et al 2014 Reducing disablement with adequate and appropriate resources: a New Zealand perspective. Disability and Society 29(10):1540–53.

World Health Organization 2011 World Report on Disability 2011. WHO Press, World Health Organization.

World Health Organization 2001 International Classification of Functioning, Disability and Health. World Health Organization, Geneva.



PART
5

RELATING NURSING:

Human basis of nursing practice

CHAPTER 20
Self-identity: life as a journey of self-discovery
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CHAPTER

20

Self-identity: life as a journey of self-discovery

Anthony Welch

KEY TERMS

Agnostic, p. 447
Atheist, p. 447
Body image, p. 445
Faith, p. 447
Hope, p. 449
Ideal self, p. 446
Identification, p. 445
Identity, p. 445
Identity confusion, p. 453
Religion, p. 448
Role performance, p. 446
Self-concept, p. 445
Self-esteem, p. 446
Sick role, p. 455
Socialisation, p. 447
Spiritual distress, p. 456
Spirituality, p. 445

Learning outcomes

Mastery of content will enable you to:

- explain the five components of self: identity, body image, self-esteem, roles and spirituality
- define the components of what constitutes a healthy self as related to psychosocial and cognitive stages of development
- discuss the relationship of spirituality to an individual's conception of self
- describe the relationship between faith, hope, trust and spiritual wellbeing
- identify most commonly recognised spiritual needs
- describe stressors that can affect a person's perception of self
- describe behaviours indicating identity confusion, disturbed body image, low self-esteem, role conflict and spiritual distress
- identify and discuss ways in which nursing activities can affect the client's perception of self
- discuss nursing interventions designed to promote spiritual healing and spiritual health
- identify important aspects of culture that affect nursing care in support of clients' conception of self
- distinguish factors that promote a healthy self.

Relationship with oneself is the most intimate of relationships and one of the most important aspects of life experience, yet it is one of the most difficult to define. What we think and feel about ourselves affects the way in which we care for ourselves and others physically, psychologically, emotionally and spiritually. People with a poor conception of self often do not feel a sense of personal worth, which influences whether they seek physical, emotional and spiritual help as the need arises.

Dimensions of the self

The ways in which a person comes to know and understand themselves as a unique individual is primarily determined by two key elements: self-concept and a person's spirituality. **Self-concept** is an individual's awareness about the self (e.g. 'I am good at maths') (Stein-Parbury 2013), while a person's **spirituality** is concerned with a search for meaning, purpose and interconnectedness with self, others/nature and possibly an ultimate other.

A person's conception of self as a unique individual has its origins in the psychic representation of an individual, the central core of 'I' around which all perceptions and experiences are organised. Conception of self is developed through a range of processes involving five key elements – identity, body image, self-esteem, role performance and spirituality. The development of a person's conception of self is a dynamic combination formulated over years and based on the following:

- reactions of others to one's body
- ongoing perceptions of the reactions of others to the self
- relationships with self and others
- personality structure
- perceptions of stimuli that have an impact on the self
- prior and new experiences
- present feelings about the physical, emotional, social and spiritual self
- expectations about the self
- spiritual identity.

A positive conception of self offers a sense of continuity, wholeness and consistency to a person. A healthy conception of self has a high degree of stability, despite the person experiencing either positive or negative feelings towards the self. Being 'oneself' is the crux of a healthy self in all its dimensions (Edward et al 2014).

The five dimensions that constitute self – identity, body image, self-esteem, role performance and the spiritual self or a person's spirituality – form the basis of an individual's overall sense of who they are as a human being (see Figure 20-1).

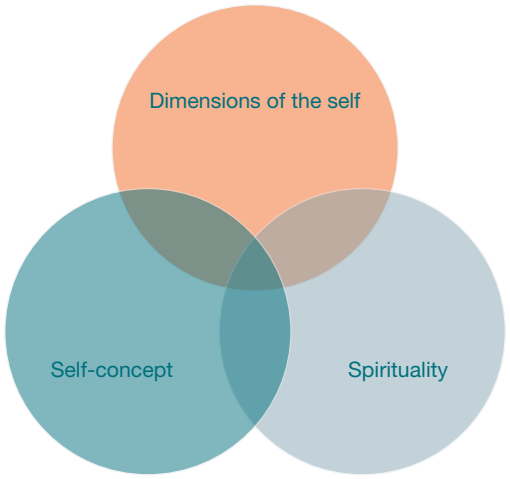

Figure 20-1 Dimensions of the self.

Identity

Identity involves a person's sense of individuality, wholeness and consistency in various life circumstances over time. The concept of identity therefore includes constancy and continuity. Identity implies being distinct and separate from others – being able to view oneself as a unique individual.

Identity develops over time. A child learns culturally accepted values, behaviours and roles through **identification**. The child first identifies with parenting figures and later with teachers, peers and heroes (see Chapter 16). To form an identity, the child must be able to bring together learned behaviours and expectations into a coherent, consistent and unique whole (Erikson 1963).

The achievement of identity is necessary for intimate relationships because one's identity is expressed in relationships with others. Sexuality is a part of one's identity. Sexual identity is a person's image of the self as male or female, and the meaning of this image. This image and its meaning are influenced by sociocultural values that are learned through socialisation (see Chapter 21).

Body image

Body image is an individual's mental picture of their physical appearance. It includes a person's feelings and attitudes towards the body. These images are not necessarily consistent with the actual body structure or appearance. Body image may change within a few hours, days, weeks or months, depending on the impact of external stimuli on the body and actual changes in appearance, structure or function. Body image is also influenced by personal views of physical characteristics and abilities and by the perceptions of others. For example, a controlling, violent husband might tell his wife that she is ugly and that no

one else would want her. Over the years of marriage, she believes this image of herself and incorporates it into her self-concept.

Body image is affected by cognitive development and physical growth. Normal developmental changes such as physical growth and ageing have a more apparent effect on body image than on other aspects of self-concept (Saucier 2004). Hormonal changes during adolescence and menopause influence body image, and changes associated with ageing (e.g. wrinkles, greying hair and decrease in visual acuity, hearing and mobility) may also affect body image.

Body image is also influenced by cultural and societal attitudes and values (Cafri et al 2005, Shilling 2012) (see *Working with diversity*). In Australia and New Zealand, youth, beauty and wholeness are emphasised and valued by society – a fact apparent in television programs, movies and advertisements. Western cultures have been socialised to accept the normal ageing process as a part of life, whereas in Eastern cultures, ageing is viewed very positively and the older adult is highly respected.

WORKING WITH DIVERSITY

Focus on cultural care

Culture influences what people tend to value in their lives. How people think about themselves, what motivates them and how they behave are all related to the culture within which people are socialised. In order to provide culturally safe care, healthcare professionals need to be aware of the significance of culture to a person's health and wellbeing. This involves becoming culturally aware and responding to the cultural needs of individuals and their families. It is important to remember that a person's cultural needs and spiritual needs are intertwined. This means that in providing culturally safe care, the spiritual needs of the person must be considered.

Body image is influenced by the person's attitude to their body, which changes over time. For some people, inevitable physical changes may or may not be incorporated into their body image (Landa & Bybee 2007). For example, people who have experienced significant weight loss may not perceive themselves as thin. Older adults often report that they do not feel different despite such changes as wrinkled skin or greying hair. However, for others, attitudes towards body image may mean that a change in one's body may have a significant impact on the way they view themselves (Cash & Smolak 2012).

Self-esteem

Self-esteem relates to an individual's sense of self-worth and is influenced both by self-evaluation and the responses of others. According to Erikson (1963), young children begin to develop a sense of usefulness or industry by learning to act on their own initiative. A child's self-esteem is related to the child's evaluation of their effectiveness at school or work and play, within the family and in other social settings. The evaluation of others is also likely to have a profound influence on the child's self-esteem. A person's family and society in general set the standards by which individuals evaluate themselves. A child who excels in school and who is liked by peers is likely to have high self-esteem, whereas a child who has difficulty in school and is not liked by peers is more likely to develop low self-esteem.

Understanding of self-esteem can be enhanced by considering the relationship between a person's self-concept and the ideal self. The **ideal self** consists of the aspirations, goals, values and standards of behaviour that a person considers ideal and strives to attain. The ideal self originates in the preschool years and develops throughout life. It is influenced by societal norms and the expectations and demands of parents and significant others. In general, a person whose self-concept comes close to matching the ideal self has high self-esteem, whereas a person whose self-concept varies widely from the ideal self has low self-esteem.

A person's perception of self is based on gender, age, perceived health status, background, family roles, occupation, social roles and external interests. Basic feelings about the self tend to be constant, even though there is normal fluctuation, with perceived good and bad days. An individual's self-perception does not necessarily match the perceptions of others. Self-evaluation is an ongoing mental process. A positive sense of self-worth, or self-esteem, is a basic human need, according to Maslow's hierarchy of needs (Maslow 1954). People's self-esteem affects their self-concept and how they function in the world.

A person's ability to contribute in a meaningful way to society often affects their self-concept and self-esteem. Individuals who are unwell may find it difficult to be actively involved with others and may feel a sense of low self-esteem, including feelings of worthlessness (Christensen et al 2014). The recognition and acceptance of a client as an individual of worth and with dignity can be vital in maintaining and improving the client's self-esteem.

Role performance

Role performance is concerned with the roles individuals assume or follow in given situations and involves expectations or standards of behaviour that they have developed over time. An individual develops role behaviour based on patterns established through their socialisation.

Socialisation begins just after birth, when an infant reacts to the responses made by parents or other adults, who in turn are responding to the infant's behaviours. The patterns of behaviour established in early life change only minimally during childhood and adulthood.

A child learns behaviours that are approved by society through the following processes (Parsons 2012):

- *Reinforcement–extinction*: certain behaviours become common or are avoided, depending on whether they are approved and reinforced or discouraged and punished.
- *Inhibition*: a child learns to refrain from behaviours, even when tempted to engage in them.
- *Substitution*: a child replaces one behaviour with another, which provides the same personal gratification.
- *Imitation*: a child acquires knowledge, skills or behaviours from members of the social or cultural group.
- *Identification*: a child internalises the beliefs, behaviour and values of role models into a personal, unique expression of self.

Through the process of socialisation, a child generally develops the skills necessary for functioning in many different roles. Unsuccessful socialisation is an inability to function according to the general norms and values of the society in which the individual lives.

Ideal societal role behaviours are often hard to realise in the context of everyday life, where individuals have multiple roles and individual needs. Successful adults learn to distinguish between ideal role expectations and realistic possibilities. To function effectively in roles, people must know the expected behaviour and values, must want to conform to them and must be able to meet the role requirements. Most individuals have more than one role. Common roles include mother or father, partner, wife or husband, daughter or son, employee or employer, sister or brother, and friend. Each role involves meeting certain expectations. Fulfilment of these expectations leads to rewards. Difficulty or failure in meeting role expectations often contributes to decreased self-esteem.

Role performance is the way people perceive their competency in carrying out significant roles (Sargent 2003). An individual's perception of competency may or may not match the evaluation of others who relate to the person.

Spirituality

The word *spirituality* derives from the Latin word *spiritus*, which refers to breath or wind. The spirit gives life to, or animates, a person. It signifies whatever is at the centre of all aspects of a person's life, including their sense of self (Elder et al 2009). The human spirit is a powerful force that defines our existence, offers a source of hope and helps us to achieve inner harmony (Edward et al 2014).

Spirituality is a concept that is unique to each individual. People's definitions of their own spirituality are influenced by their culture, development, life experiences, beliefs and ideas. A person's spirituality enables the person to love, have faith and hope, seek meaning in life and nurture relationships with others. Spirituality offers a sense of connectedness: intrapersonally (connected within oneself); interpersonally (connected with others and the environment); and transpersonally (connected with what a person may perceive as a higher power).

Elements of spirituality discussed in the literature include spiritual health, spiritual needs and spiritual awareness. Berman et al (2010) describe spiritual wellbeing as a force that provides meaning and purpose in life and a sense of harmony between self, others/nature and an 'Ultimate Other', which exists throughout and beyond time and space. There are two important characteristics of spirituality about which most authors agree: it is a unifying theme in people's lives, and it is a state of being.

There are people who either do not believe in the existence of a god (**atheist**) or who do not believe in any ultimate meaning for the way things are (**agnostic**). However, this does not mean that spirituality is not an important concept for the atheist or agnostic. Atheists often search for meaning in life through their work and their relationships with other people. They also tend to believe in a joint responsibility for others. In acting for themselves, they feel they should also act for all humankind. In the case of agnostics, it is important to discover or find meaning in what they do or how they live. Spirituality can be viewed from other perspectives, including faith, religion and hope.

Faith

The concept of **faith** has two definitions in the literature. In the first, faith is defined as a *cultural* or *institutional religion*, such as Judaism, Buddhism, Islamism or Christianity (faith as religion is described in the next section). The second deals with *faith as a relationship with a divinity, higher power, authority or spirit* that incorporates a reasoning and a trusting faith (Doucet 2008). A *reasoning faith* deals with a person's belief and confidence in something for which there is no proof. It is an acceptance of what reasoning cannot reach. However, faith is also manifest in the manner in which a person chooses to live life. Faith in this sense enables action. For

example, a person might believe that having a positive outlook on life is the best way to achieve life's goals. The belief that comes with faith involves transcendence, or an awareness of that which one cannot see or know in ordinary physical ways. Faith gives purpose and meaning to life. A *trusting faith* deals with the inner resources that allow a person to act. For example, clients with cancer who have faith in a positive outlook on life might search out more knowledge about their disease and continue to pursue daily exercise and activities rather than resign themselves to the symptoms of the disease.

Religion

Religion is a term used to describe the formal practice of a set of spiritual beliefs held by a group of people or community. Religion is a means by which individuals express a personal set of values and beliefs which are often referred to as a person's spirituality, their core or central values (Gollnick 2005). Many people hold a faith or belief in the doctrines and expressions of a specific religion or sect, such as the Anglican church within Christianity or the Orthodox Jewish faith. Religion serves different purposes in people's lives. For some, religion is a set of rules and rituals used to worship a supreme being. For others, religion is a way of living life, providing nourishment and connectedness to all life. In this latter context, religion is more directly associated with spiritual wellbeing.

Religion as a system may form the basis of and nurture spirituality. Many people are spiritual without being religious, and some people are religious without being

WORKING WITH DIVERSITY

Focus on cultural care

Spirituality is not limited to the concepts of faith, religion and hope from a religious perspective, but is also present within the context of culture. There are numerous cultural groups throughout the world whose sense of the spiritual is not aligned with religion but with their cultural heritage, identity, connection to the land and language group. Evidence of cultural alignment to a person's sense of spirituality can be found in such cultural groups as the Native Americans, Māori, and Aboriginal and Torres Strait Islander peoples. Each of these cultural groups has a rich repository of spiritual beliefs that play a significant role in daily life, illness, health and healing. Premonitions, apparitions and visitations are points of connection with the spirit world – both past and present (Eckermann et al 2006).

From the perspective of Māori culture, which embodies both a belief in a deity and a spiritual bonding with the earth, spirituality overarches both of these notions. A priest or qualified person of the community can facilitate connection with a deity and speak to the spirit of a particular god through the use of a godstick. In relation to connecting with the land, many of New Zealand's geographical features have spiritual meaning and are important anchors in defining self. Underpinning Māori culture is the belief that each human being has a spiritual essence which is connected to the person, nature, land, and objects made by humans.

Reference

Eckermann AK, Dows T, Chong E et al 2006 Binan Goonj: bridging cultures in Aboriginal health, 2nd edn. Elsevier, Sydney.

RESEARCH HIGHLIGHT

Research focus

During the last few decades a large and growing body of research has emerged examining the relationship between spirituality and health. Williams and Sternthal (2007) provide a review of the empirical evidence linking measures of spirituality or religious involvement to health, with an emphasis on recent Australian research.

Research findings

- Levels of spirituality and religious beliefs and behaviour are relatively high in Australia, although lower than those in the United States.
- There is mounting scientific evidence of a positive association between religious involvement and multiple indicators of health.
- The strongest evidence exists for the association between religious attendance and mortality, with higher levels of attendance predictive of a strong, consistent and often graded reduction in mortality risk.
- Negative effects of religion on health have also been documented for some aspects of religious beliefs and behaviour and under certain conditions.
- Health practices and social ties are important pathways by which religion can affect health. Other potential pathways include the provision of systems of meaning and feelings of strength to cope with stress and adversity.

Reference

Williams DR, Sternthal MJ 2007 Spirituality, religion and health: evidence and research directions. Med J Aust 186(10):S47–S50. © 2007 The Medical Journal of Australia – reproduced with permission.

overtly spiritual. The writings and lives of leaders such as Mahatma Gandhi (known for such quotes as 'Be the change you wish to see in the world' and 'The best way to find yourself is to lose yourself in the service of others') are rich in spiritual material that may be influential for others in their spiritual quest. In the literature, spirituality and religiosity are often referred to as being synonymous, but for an accurate assessment of clients' spiritual needs it is important for nurses to realise that they are not the same (Baldacchino & Draper 2001).

Hope

Spirituality is often identified as a key element in hope. When a person has the attitude of something to live for and look forward to, hope is present. Miller and Powers (1988) describe hope as a multidimensional concept consisting of anticipation of a continued good, an improvement or the lessening of something unpleasant. **Hope** is energising, giving people a motivation to achieve and the resources to use towards that achievement. Hope is an invaluable personal resource when people are faced with a loss (see Chapter 22) or a challenge that seems difficult to achieve. Hope has purpose and direction and gives reason for being (Berman et al 2010). Loss of hope can give way to spiritual distress in which the person feels abandoned and left without direction or sense of purpose.

Development of self-concept

The development of self-concept is a lifelong process. As we have seen in the previous chapters (16–18), each stage of development has specific tasks. The successful negotiation and completion of these tasks promotes a positive self-concept (Box 20-1). Influential theorists who have considered components of human development include Erikson (1963), Gilligan (1982), Kohlberg (1969) and Piaget (1963). We will briefly revisit the stages of human development from the perspective of developing self-identity. For additional information, consult the chapter indicated with each section.

BOX 20-1 Self-concept: developmental tasks

0–1 year
- Begins to trust
- Distinguishes self from environment

1–3 years
- Has control of some language
- Begins to be autonomous in thoughts and actions
- Likes body
- Likes self

3–6 years
- Takes initiative
- Identifies with a gender
- Increases self-awareness
- Increases language skills

6–12 years
- Is industrious
- Interacts with peers
- Increases self-esteem with new skill mastery
- Is aware of strengths and limits

12–20 years
- Accepts changed body
- Explores goals for future
- Feels positive about self
- Interacts with those whom they find sexually attractive

Mid-20s to mid-40s
- Has intimate relationships with family and significant others
- Has stable, positive feelings about self

Mid-40s to mid-60s
- Can accept changes in appearance and endurance
- Reassesses life goals
- Shows contentment with ageing

Late 60s on
- Feels positive about their life and its meaning
- Is interested in providing a legacy for the next generation

Stages of development

Infant

Infants need to establish relationships with consistent primary caregivers in order to develop a concept of self and identity. This nurturing role can be filled by a mother, a father or other responsible carers (e.g. foster parents, grandparents). When the infant has pleasant, nurturing interactions with caregivers, these are remembered and internalised into the infant's psyche. If the interactions are unsatisfying, painful or frustrating, this can result in difficulties in establishing a positive self-concept. When an infant's needs are met with reasonable consistency, the infant develops a sense of trust in the world (see Chapter 16). During this phase of development, the infant begins to differentiate between self and others.

Toddler

Toddlers (1–3 years of age) are more mobile than infants, and therefore more able to interact with others. A toddler's

major psychosocial task is the development of autonomy (see Chapter 16). Toddlers move from total dependence to a greater sense of independence and separateness of themselves from others. They also tend to view others and themselves in terms of 'all good' or 'all bad'. They gain skills in feeding themselves and in performing basic hygiene tasks. Toddlers learn to coordinate movements and imitate others. They begin to learn control of their bodies through locomotion, toilet training, speech and socialisation skills.

Preschooler

Preschoolers develop a sense of body boundaries, and a sense of self and gender due to their developing sexual curiosity and increasing awareness of differences between those of same and opposite gender. Learning about the body – where it begins and ends, what it looks like and what it can do – is basic to self-concept and body image formation.

Growing self-awareness includes the discovery of feelings. For example, preschoolers learn names for their feelings. They begin to learn how their behaviours and emotions affect others, and how others respond to them. They also learn the rudiments of control over feelings and behaviour. The concept of body is reflected in the way children talk, move, draw pictures and play. Children begin to test roles and imitate people as they identify with the same-sex parent or a family member (see Chapter 16). Appraisal by a family member becomes self-appraisal. If the family is critical of the child's budding self-concept, this negative input creates a decreased self-esteem, which the person will have to work to overcome as an adult.

School-age child

Until children attend school, their self-concept and body image are based mainly on parental attitudes. At school, a range of others begin to contribute to the child's development of self-concept. This can have a counterbalancing effect for children whose families have been extremely critical, or it can be negative if the child experiences a negative educational environment.

As the child enters the school years, growth is steady, and more motor, social and intellectual skills are acquired. The child's body changes and their sexual identity strengthens. The child's attention span increases, and reading allows expansion of the child's self-concept, through imagination, into other roles, behaviours and places. The child begins to reason in a more systematic way and is able to apply previous learning to current situations (Piaget 1963). Through games, children interact with peers, develop additional motor and intellectual skills, and thereby expand their self-concept and body image (Figure 20-2). Children express feelings through games, literature, drawing and music. The nurse can therefore use these activities to gain clues to a child's self-concept. With increased problem-solving abilities, a greater self-awareness of personal strengths and limitations develops. Because the child is changing physically, emotionally, mentally and socially, self-concept and body image can also change at this time.



Figure 20-2 A child learns to define self partly through interactions with peers.

iStockphoto/Christopher Futcher.

Adolescent

Adolescence brings rapid physical, emotional and social changes. Throughout adolescence, sexual maturation, new feelings, roles and values are being integrated into the self. Rapid growth, noticed by the adolescent and others, is an important factor in the development of body image and acceptance of transformation (see Chapter 16). Physical changes in size and appearance prompt changes in self-perception and use of the body such that adolescents are required to continuously alter their mental pictures of themselves. Adolescents may spend a great deal of time in front of the mirror for hygiene, grooming and dressing, as they seek to accept and improve their appearance. Great distress can arise from perceived body imperfections.

Development of self-concept and body image is closely related to identity formation (Erikson 1963). The ways in which adolescents consider moral situations also demonstrate differences. In Chapter 16 we introduced the work of Lawrence Kohlberg (1969), whose research involved following boys over time to observe their moral development. Kohlberg found that girls were more likely to give caring responses to moral problems whereas adolescent males appeared to have more highly developed moral reasoning concerning equality and reciprocity, and

gave more justice-oriented responses. Being aware of possible gender differences in identity and self-concept when interacting with young people may help the nurse to understand an individual's perceptions of what is important and valued.

Young adult

Although physical growth has slowed or ceased by the early 20s, cognitive, social and behavioural changes continue throughout the rest of life. Young adulthood (late teens to mid-to-late 30s) is a period of choice – a period for settling into responsibility, gaining stability in employment, and beginning intimate relationships. Self-concept and body image become relatively stable at this time, but can be challenged by pregnancy and childbirth occurring within this developmental period (see Chapter 17). Self-concept and body image are social creations with approval and acceptance given for what is regarded as normal appearance and appropriate behaviour according to societal standards. Self-concept constantly evolves and can be identified in the values, attitudes and feelings about the self.

Middle-aged adult

Between the mid-to-late 30s and the mid-60s, physical changes such as additional fat deposits, baldness, grey hair, wrinkles and varicosities confront the body image and self-concept of the middle-aged adult. People begin to realise that they look older, and they may feel older as well. Work may become stressful if middle-aged adults feel a decline in stamina, endurance and vigour to cope with the tasks at hand. This reduced energy level is often a result of lower basal metabolism and reduced muscle tone.

Illness or the death of loved ones can create concern about personal health and impending mortality. The middle-aged adult may begin to feel inferior, as their previous youthful self-image of a strong and healthy body with boundless energy is replaced with a self-image reflecting the biological, psychological and physical changes of ageing. Difficulties in accepting the loss of youth are accelerated by the effects of menopause, folklore about diminished sexual function and sexuality, and social and advertising pressures consistently extolling the virtues of youth.

Middle adulthood is often a time of self-reflection and re-evaluation (see Chapter 17). Individuals are likely to re-examine their past, considering whether they are satisfied with what they have accomplished and thinking about how they want to live the rest of their lives (Sheehy 1995). This self-reflection may be difficult for some, as they consider what has, or has not, been fulfilled in their lives. Even though this self-reflection may be difficult, it can foster growth and the development of a more integrated self-concept moving into older adulthood. This reassessment of life experiences and redefinition of the self in life roles and values is sometimes called the 'midlife crisis' and might also include a re-evaluation of career or marriage choices. Successful resolution of this developmental stage involves the integration of new qualities into the self-concept. Most people gradually adjust to their slowly changing bodies and accept these changes as part of normal maturation. Emotionally mature people realise that they cannot return to youth and acknowledge that their own pasts and experiences are valid and valuable. Acceptance of ageing and choosing to age positively is consistent with a healthy self-concept.

Older adult

The physical changes of older adulthood can be seen as gradual reductions of structure and function (see Chapter 18). Loss of muscle strength and tone occurs. Osteoporosis, which is a loss of bone density and mass, may increase the risk of fractures and create changes to physical appearance (e.g. a dowager's hump).

Loss of sensory acuity is a significant factor influencing older adults' interaction with the environment. The normal process of ageing causes decreased visual acuity and loss of hearing. Hearing loss can impact negatively on personality, such as creating suspiciousness, irritability, impatience or withdrawal as older people realise that they are less aware of what is happening around them. Many older adults view the wearing of a hearing aid as a further threat to body image and will delay hearing tests, or devise strategies to hide their hearing difficulties. However, greater discretion in the design of hearing devices is taking place with continuing advances in technology. To many older adults, glasses are more socially acceptable because they are worn by all age groups and have almost gained the status of fashion accessory whereas hearing aids are still perceived as direct evidence of old age.

Loss of skin tone with accompanying wrinkles may also affect self-esteem and cause older people to feel unattractive in a society that values youth and beauty. Western culture generally discriminates more severely against the appearance of ageing in women, portraying men as becoming more distinguished with age.

Self-concept during older adulthood is highly influenced by experiences that occur throughout life and is also influenced by people's present perceived health status. Many older adults continue to reflect on their lives – reviewing successes and disappointments and thereby creating a unified sense of meaning about themselves and

WORKING WITH DIVERSITY

Focus on older adults

Reminiscence has been found to support a positive self-concept in older adults. Suggestions for reminiscence include the following:

- Spend time reviewing old photographs and have the older adult tell their stories that relate to the pictures.
- Plan sessions where the older adult and a friend can talk about past shared experiences.
- Encourage the person to write about a positive past event.*
- Ask a person to tell you about a memorable event and record their story (asking permission before you begin), then play the recording back for the person, either at that time or at another time.*
- Encourage the person to write letters to old friends.*

Reference

*Nugent E 1995 Try to remember … reminiscence as a nursing intervention. J Psychosoc Nurs 33(11):7.

the world (see *Working with diversity*). Helping/mentoring the younger generation often helps the older adult to develop a sense of fulfilment and offers the opportunity to share experiences and gain meaning from their life by leaving a legacy (see generativity, Chapter 17).

Stressors affecting self-concept

It has long been recognised that stressors challenge a person's adaptive capacities. In 1956, Selye defined stress as the normal wear-and-tear of life, and not the specific result of any one action or typical response to any one thing. The normal human processes of maturation and development are stressors. The inevitable changes that occur in physical, spiritual, emotional, sexual, familial and sociocultural health are also stressful. A stressor to self-concept can be any real or perceived change that threatens identity, body image, self-esteem and role behaviour (Figure 20-3).

Different people react to similar situations with varying degrees of stress. Personal perceptions also influence how people respond and learn patterns of behaviour as a way of coping with or adapting to stressors. These same patterns are often repeated when a person encounters a new stressor and some of these patterns are more adaptive than others. Being able to adapt to stressors is more likely to lead to a positive sense of self, whereas failure to adapt

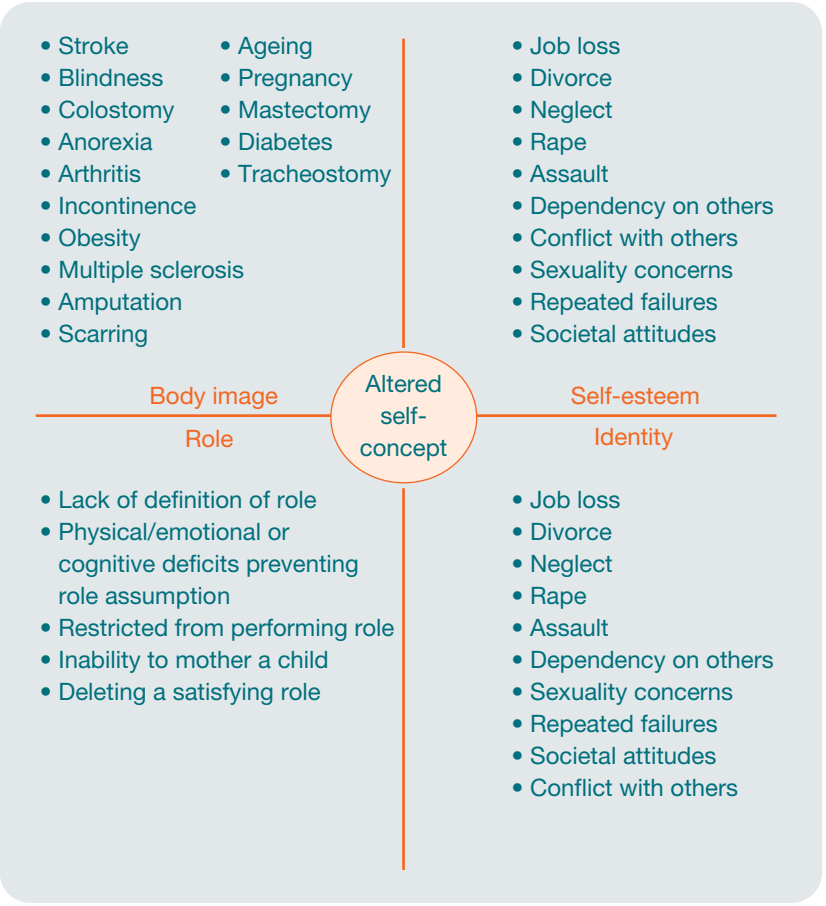

Figure 20-3 **Common stressors that can influence self-concept.**

often leads to a negative sense of self (Berge & Ranney 2005). A person's ability to adapt is related to numerous factors, including the number of stressors, duration of the stressor, and their health status.

Any change in health status can be a stressor that affects a person's self-concept. A physical change in the body can lead to an altered body image, affecting identity and self-esteem. Chronic illnesses often alter role performance, which in turn may alter one's identity and self-esteem. The *Clinical example* below illustrates the interrelationship between components of self-concept.

CLINICAL EXAMPLE

Paul, a 48-year-old man, suffers a stroke. The stroke is unexpected and sudden; he was not even aware that he had hypertension, because he had not been having annual check-ups. Paul wakes up in a hospital bed to find that he cannot even move his hand. He cannot care for himself. He cannot even turn himself for days. Finally, he is able to pull himself out of bed and into a chair with the nurse's help. He wonders what lies in store for him. Paul's body image has dramatically changed from that of a man of strength and endurance to that of a helpless individual. Paul worries about his family and what will happen. His daughter, the oldest child, is away at university, and his son is still at secondary school. Paul and his wife, Meredith, are terrified. Although Meredith works, they have not saved enough money to be able to educate their children without Paul's wages. Paul's role as chief financial provider for the family may be drastically changed if his condition does not change.

Paul's self-esteem wanes as his recovery and rehabilitation move slowly. His self-concept changes from that of a strong labourer, one who did his own plumbing and car repairs, to a man who has to tell his son what to do because he does not have the strength to do these tasks. Although he is now at home in the rehabilitation process, Paul is not able to perform tasks for the family and must wait until his wife and son get home to help him with things that require strength. Paul's adaptation capabilities are stretched to the maximum, although his neurologist tells him that he is very fortunate to be alive. His life is now changed – for how long he does not know. Paul's identity is not clear to him any more; he has no clear role within the family, his body image has been drastically altered and his self-esteem is spiralling lower and lower.

Paul continues in outpatient physical therapy. It takes much time and hard work even on simple tasks, but he begins to gain some strength. Paul continues to make gains. He is able to return to work. He has some diminished mental quickness and some muscle weakening, but he is able to perform his job. His self-esteem recovers, and his body image is enhanced. Although he still feels somewhat altered, his capabilities closely resemble his capabilities before the stroke.

A crisis situation occurs when a person fails to overcome obstacles with their usual methods of problem-solving and coping, so that any crisis has the potential to threaten the person's self-concept and uncertain self-esteem (Luxton et al 2006). Some crises, such as described in the *Clinical example*, directly affect all four components of self-concept. As with any crises, supportive resources can be invaluable in helping a person learn new ways of coping with and responding to events or situations to maintain a positive self-concept.

Identity stressors

A person's identity is challenged by stressors throughout their life. Adolescence is one example of a time of significant adjustment to the physical, emotional and mental changes of maturity. Insecurity and anxiety may arise as a result of changes in any of these areas, or as a result of conflicts among them.

An adult generally has a more stable identity and, therefore, a more firmly developed self-concept. As a result, cultural and social stressors may have more of an impact on an adult's identity than personal stressors. Developmental markers, such as the initiation of menses, puberty, pregnancy, menopause, retirement, and decreasing physical abilities associated with ageing may all affect self-identity and, like body image, identity is closely related to appearance and abilities (Figure 20-4). Retirement may mean the loss of an important measure of personal achievement and continued success (see Chapter 18). On reaching retirement age, people may begin to question their identity and past accomplishments. The loss of a significant other around this time can also lead the surviving person to re-explore aspects of their identity. **Identity confusion** results when people do not maintain a clear, consistent and continuous consciousness of who they are as a person. Identity confusion may occur at any stage of life if a person is unable to adapt to identity stressors. Under extreme stress an individual may experience *depersonalisation*, a state in which internal and external realities or the differences between the self and others cannot be determined.

Body image stressors

Any change in the appearance, structure or function of a body part requires a person to alter their body image. Changes to the appearance of the body, such as amputation, disfigurement or scarring, are obvious stressors affecting body image. Mastectomy, colostomy and ileostomy are surgical procedures that significantly alter the appearance and function of the body. While these changes may not be apparent to others when people are clothed, there is still a significant effect on the individual. Chronic illnesses



Figure 20-4 An individual's appearance influences self-concept.

iStockphoto/LifesizeImages.

such as cardiac and renal disease, and treatments such as radiotherapy or chemotherapy, impact on how the body functions and how it looks. Even body changes resulting from normal developmental processes such as pregnancy and ageing can affect body image, as can significant weight gain or loss.

An individual's perception of body changes may be affected by how the changes came about. For example, paralysis caused by war injuries may be considered more acceptable to the individual because government resources are available for rehabilitation and a veteran is praised for bravery by society as a result of injuries sustained during service. However, people who sustain significant injuries from car accidents while under the influence of alcohol or drugs may receive a very different response from society. Further, the significance of a loss of function or a change in appearance is dependent on the individual's perception of the alteration. Body image consists of ideal and real elements. For example, if a woman incorporates breasts as part of their ideal body image, the loss of a breast by mastectomy may cause a very significant alteration. The greater the importance of the body or a specific body part, the greater the threat felt by a change in body image.

Many people associate success with a specific body part or function. For example, athletes may consider their bodies, their athletic achievements and physical attributes as the focus of their personal success. If an athlete can never again participate in physical activities because of an accident, their adaptation and rehabilitation is affected by this association. To regain a positive self-concept, and to maintain good health, the athlete will need to face the challenge of revising long-standing assumptions and learn to adapt to stressors affecting their body image.

There is a trend towards positive social change with regard to perceptions of illness and altered body image. The media now frequently presents positive stories about people with serious disabilities or who have experienced major body-altering insults or surgery. These stories offer positive evidence of people regaining identity following life stressors, and model ways that families, friends and society as a whole can adjust their perceptions.

Self-esteem stressors

Positive or high self-esteem involves seeing oneself as being a good person, worthy of respect and love. A person with low self-esteem tends to feel unloved and may experience depression and/or anxiety as a consequence. The level of self-esteem may fluctuate depending on surrounding conditions, although a basic core of positive or negative self-esteem generally remains constant even with changing circumstances. Most people experience 'bad days', when they feel less worthy and competent, but these feelings pass relatively quickly for someone with a basic core of positive self-esteem.

Stressors to self-esteem occur at many different stages of the developmental life cycle. For example, a child's inability to meet parental expectations, constant harsh criticism, inconsistent punishment, sibling rivalry and repeated defeats may reduce the child's level of self-worth. In an adult, different stressors such as failure in work or relationships affect self-esteem. Illness, surgery or accidents that change life patterns and relationships may also impact on a person's feelings of self-worth (Fung et al 2006). Chronic illnesses such as diabetes, arthritis and cardiac disease require sustained changes to long-assumed and accepted behavioural patterns. The more the chronic illness interferes with the ability of the person to engage in activities contributing to feelings of worth or success, the more it affects the individual's self-esteem.

Role stressors

People undergo numerous role changes throughout life. Normal changes associated with growth and maturation result in *developmental transitions*. *Situational transitions* occur when parents, partners, spouses or close friends die or people move, marry, divorce or change employment. A *health–illness transition* is a movement from a state of health or wellbeing to one of disability, illness or vice versa. Any of these transitions may lead to role conflict, role ambiguity, role strain or role overload (role stressors). It is important to recognise that a shift along the continuum from illness to wellness can be just as stressful as the shift from wellness to illness.

Role conflict results when a person is required to simultaneously assume two or more roles that are inconsistent, contradictory or mutually exclusive. For example, when a middle-aged woman with teenage children assumes responsibility for the care of her older parents, conflicts may arise in relation to being both a parent to her own children and being the child of her parents. Negotiating the balance of time and energy spent between her children and her parents may create a role conflict. The perceived or actual importance of the role will influence the degree to which conflict is experienced.

Role ambiguity involves unclear role expectations. When there are unclear expectations, people are unsure about what to do, how to do it, or both. Such a situation is often stressful and confusing. Role ambiguity is common during the adolescent years. Adolescents are pressured by parents, peers and others to assume adult-like roles, such as dedicating time to study, yet remain in the role of a dependent child. Role ambiguity can also be present in some employment situations. In complex, rapidly changing or highly specialised organisations, employees often become unsure about what role they play and what is expected of them.

Role strain can occur as a result of role conflict and role ambiguity. Role strain may be expressed as a feeling of frustration when a person feels inadequate or unsuited to a role. Role strain is often associated with gender role stereotypes (Levant 2011). Women in positions typically held by men may be perceived by others as less competent, less objective or less knowledgeable than their male counterparts. This creates a situation where women may feel that they must work harder and be more competitive in the workplace. Men in typically female roles, such as men in nursing, also encounter gender bias.

Role overload occurs when a person has more roles or responsibilities within a role than is manageable. It is relatively common that those experiencing illness, or their significant others, find themselves in role overload.

The **sick role** is deeply entrenched in the expectations of society regarding how one should behave when sick. Role conflict may occur when general societal expectations (such as go home and take care of yourself and you'll get better) and the expectations of co-workers (such as who is going to do the work if you are not there) collide. The conflict between taking care of one's physical and emotional self, while still getting everything done, can be a major challenge for contemporary workers and families. The sick role may also involve role ambiguity. People are expected to be dependent while sick, but simultaneously actively participate so that they can leave the sick role quickly when well. While the sick role is supposed to be temporary, people with chronic illness must comply with therapies and role stressors that may persist for the remainder of their life.

The family and self-concept development

The family plays a key role in creating and maintaining the self-concepts of its members. Children develop a basic sense of who they are and how they are expected to behave from their parents, siblings and friends. Parents who are harsh, inconsistent or have low self-esteem themselves may behave in ways that foster negative self-concept in their children. Even competent, well-meaning parents are capable of cultivating negative self-concept in their children. To reverse negative self-concept in a child, it is important to assess the whole family's style of relating (see Chapter 15).

The role of the nurse

The non-judgemental acceptance of a client with an altered self-concept is a first step to promoting positive change. When a client's physical appearance has been abruptly altered due to injury or surgical intervention, it is likely that a nurse or doctor will be the first person to see this change. Both the client and family will look to nurses, observing their responses and reactions to the changed appearance. Therefore, nurses and other health professionals can have a significant impact on clients with an altered self-concept – enhancing or defeating their motivations for acceptance of changed body image and self-concept. It is therefore important for nurses to reflect on how their own thoughts, feelings and actions may impact on clients and their families and how they portray themselves to others in:

- feelings about health and illness
- reactions to stress
- non-verbal communication and actions
- personal values and expectations
- non-judgemental attitude and acceptance of diversity.

This does not mean that nurses should deny that they have feelings, ideas, values and expectations for their patients, or pretend that they do not make personal judgements. Self-awareness is critical in initially understanding and accepting others and nurses must understand themselves before they can understand their effects on others (Jack & Smith 2007). All people make decisions about themselves, the environment and other people on the basis of personal frames of reference. As professionals, nurses must be prepared to work with people who will have different frames of reference from themselves. Adults who are

secure in their own identities are more readily accepting and therefore more supportive and reinforcing of their clients' chosen identities.

Nurses can also have a significant impact on how others perceive their own body. For example, a nurse's initial reaction to a mastectomy scar can positively influence the developing body image of a woman who has had a mastectomy. On the other hand, a shocked or disgusted facial expression will likely contribute to the woman developing a negative body image. Clients closely watch the reactions of others to their wounds and scars. Statements such as 'This wound is healing nicely' or 'This scar looks good' can be very affirming for the body image of the client.

Inadvertently frowning or grimacing when performing procedures, or obviously avoiding contact, can have profound effects on the client. The nurse's non-verbal behaviours help to convey their level of care and concern (Figure 20-5). For example, the self-concept of incontinent clients can be threatened by the perception that caregivers find the situation unpleasant. Nurses can anticipate these reactions, acknowledge them and focus on the client instead of the task or situation. Putting oneself in the client's position is a productive way of finding measures to ease embarrassment, frustration, anger and denial.



Figure 20-5 **Nurses can use touch and eye contact to increase a patient's self-esteem.**

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• CRITICAL REFLECTION POINT

You are caring for a 23-year-old male who was in a car accident and sustained multiple fractures to his face and a fractured femur (which was fixated through surgery on admission 4 days ago). Prior to his accident he was in full-time employment and lives with his girlfriend and their 7-month-old daughter. You have been with him for most of the morning and found that he is in moderate pain, which has been treated with morphine. The morphine has decreased his pain rating from a 6 to a 3 (out of 10), but has left him somewhat drowsy. During the morning he voiced some of his concerns about when he will be able to return to work. You are in the room when the surgeon tells him about his upcoming surgery – a temporary tracheostomy is planned because of the extensive work needed in the nasal and throat area. After the surgeon leaves, the client tells you that he does not want the tracheostomy. He indicates that he is unclear about what it actually entails, even though the surgeon explained it in fairly simple terms. He says, 'I just want to get back to my normal self.'

How would you tackle his comment about 'getting back to normal' and his lack of understanding regarding the tracheostomy?

Altered self-concept

We have established that self-concept can be altered by stressors affecting identity, body image, self-esteem or roles. These same stressors can also affect health. If people are unable to adapt to such stressors, their health may be at risk. If the resulting identity confusion, disturbed body image, low self-esteem, role conflict, role strain, role ambiguity and family effects are not relieved, illness may result. The impact of stressors on a person is not limited to their self-concept, but extends also to the spiritual domain.

Stressors and spirituality

When illness, loss, grief or a major life change affects a person's self-concept, spiritual resources may help move the person towards recovery. **Spiritual distress** is a state in which an individual experiences a disturbance in the belief or value system that provides strength, hope and meaning to their life (Carpenito-Moyet 2010). A catastrophic illness, for example, can upset a person's spiritual wellbeing sufficiently to cause doubt and loss of faith. Spiritual distress may cause the person to feel alone or even abandoned by resources which at one time were very nurturing. People may question their spiritual values, raising further questions about their whole way of life, purpose for living and source of meaning (Gorman & Sultan 2008). Spiritual distress can also occur when there is a conflict between a person's beliefs and prescribed health regimens, the inability to practise usual rituals, or during the onset and progression of illness, leaving

the person with feelings of isolation, fragmentation and despair (Cressey & Winbolt-Lewis 2000).

Acute illness

A sudden unexpected illness that poses both an immediate and a long-term threat to a client's life, health and/or wellbeing can create significant spiritual distress. For example, the 50-year-old woman who has a myocardial infarction and the 20-year-old victim of a car accident both face crises that may threaten their spiritual health. The illness or injury creates an unanticipated scramble to integrate and cope with new realities (e.g. disability), prompting people to look for ways to remain faithful to their beliefs and value systems. They may pray, meditate, attend religious services more often or spend time reflecting on the positive aspects of their lives. Often, conflicts can develop in relation to a person's beliefs and the meaning of life. Anger is not uncommon, and clients may express anger against their god, their families, themselves or the nurse. The strength of a client's spiritual resource influences how they cope with sudden or unexpected illness, including how quickly the move to recovery is established.

Chronic illness

People with chronic illness often suffer relentless and debilitating symptoms that challenge their ability to continue their pre-illness lifestyles. A symptom is more than just a signal of a persistent health problem, or a road map for diagnosing a disease. Symptoms are meaningful to the individual, and that meaning is shaped by the person's history and the current context of their illness.

Chronic illness threatens independence, causing fear, anxiety and an overall dispiritedness. Dependence on others for routine self-care can create a feeling of powerlessness and of being a burden on others. A chronically ill person may feel the loss of a sense of purpose in their life, affecting the inner strength needed to deal with alterations in functioning. A person's spirituality can be a significant determinant of how well they adapt to changes resulting from chronic illness. Successful adaptation can strengthen a person's spirituality and lead to a re-evaluation of life and self-concept.

Ageing

Ageing is a relative state which all people experience. With advancing age there are many losses and associated grief experiences. There is often a decline in the number of social and physical resources, increasing the potential to isolate the older person physically, mentally and spiritually. With ageing there is sometimes a related fear of the process of dying, more so than the fear of death itself.

Ageing is not an illness – it is a state involving a personal journey; however, with advancing age there is an increased incidence of age-related disorders. Myths relating to those who are ageing include assumptions about the older person's loss of memory and ability to learn new things, loss of sexuality, the ability to work, and their role in society. Older people are generally not targeted for health promotion and maintenance – creating a society in which the older person seems not to belong or is given up on. This situation encourages older people to retreat from an active and healthy lifestyle, which not only reinforces stereotypes but also affects their image of themselves, and their self-esteem and confidence.

Older people, especially those who are unwell, often require spiritual care and spiritual healing in addition to their physical care. The relative incidence of suicide among older people in Australia and New Zealand has declined steadily since 1997. In New Zealand in 2012, the 65+ years age group recorded its lowest suicide rate since 1948, at 9.3 per 100,000 (Ministry of Health 2015). This is in comparison to rates of 32.3 per 100,000 for females and 13.8 per 100,000 for males in the 15–24 years age groups (Ministry of Health 2015). In Australia in 2013, males in the 85+ years age group had the highest rate of suicide (38.3 per 100,000), while young males aged 15–19 years had the lowest (14.3 per 100,000). For females in the 65+ years age group, the rate of suicide was 4.0 per 100,000, while for young women aged 15–19 years, suicide rates were 5.0 per 100,000 (Australian Bureau of Statistics 2013).

In many cultures, people define themselves through their work and their contribution to society (Price 2000). When people retire, they may experience loss of meaning and purpose in their life, as the lifestyle they have followed for many years finishes quite abruptly. Retirement can be a period of considerable stress and self-reflection, as the older person strives to establish a new role within a new social context (see Chapter 18). The movement of a person into the early stages of what is recognised as old age may be a period of extreme crisis or vulnerability. Gerontologists recognise that planning for old age is a critical component in determining happiness and fulfilment in the later years of life. It cannot be assumed that older people are beyond spiritual growth just because they are old. Spiritual growth continues throughout life and ageing needs to be recognised as part of that spiritual journey.

Advanced illness

Advanced illness is commonly associated with fear of pain, isolation, death, the unknown, and threats to integrity. Advanced illness creates an uncertainty about what

death means and can make clients susceptible to spiritual distress. There are also clients who have a spiritual sense of peace that enables them to face death without fear and view death as moving towards self-actualisation (Williams 2006).

People experiencing advanced illness will often find themselves reviewing their life and questioning its meaning. Common questions might include 'Why is this happening to me?' or 'What have I done?' Family and friends can be equally affected, with important questions about short- and long-term outcomes and how this illness will affect their relationship with the client; many questions arising from the experience are unanswerable.

Near-death experience

Nurses may encounter clients who have had a near-death experience (NDE). An NDE has been identified as a psychological phenomenon in people who have been either close to clinical death, or have recovered after being declared dead. A review of the literature by Cant et al in 2011 found that NDEs are reported in 4–9% of general community members and in up to 23% of critically ill patients, although NDEs can also occur in healthy individuals who may think they are in peril. People who experience an NDE after cardiopulmonary arrest, for example, often tell the same story of feeling themselves rising above their bodies and watching caregivers initiate lifesaving measures. Most people describe passing through a tunnel into a bright light, encountering people who have preceded them in death and feeling an inner tranquillity and peace. One explanation is that paranormal visions (seeing bright lights, a tunnel and having feelings of peace) may in fact be a stage of enlightenment as death approaches. Other explanations point to neurochemical changes in a stressed or dying brain for nearly all the elements of NDE.

Clients who have an NDE are often reluctant to discuss it, thinking family or caregivers will not understand. Isolation and depression can occur as a result. People who can discuss an NDE with family or caregivers, however, generally report positive after-effects, including a positive attitude and spiritual development (Cant et al 2011). After a client has survived cardiopulmonary arrest, it is important to give them a chance to explain and explore what happened. Effective communication and listening skills (Cant et al 2011) support the patient and their family in comprehending this experiential event.

Chronic illness and spiritual healing

Healing is commonly understood within the context of injury or damage, and is seen as a defined process in which cells and tissues are repaired and ultimately normal function is restored to the injured part. Just as the body can be injured, so can the self (what some may call the soul). Injury arising from spiritual problems leads to spiritual distress. *Spiritual healing* brings an equilibrium in which the person recovers from the pain and anguish of spiritual distress. Spiritual healing is a complex phenomenon, a journey in itself, which restores wholeness to the person.

Spiritual healing is more than remedy and cure. This special form of healing requires making sense out of the experience, finding meaning and placing the experience within one's belief system and life (Berman et al 2010). The nurse involved in spiritual healing will be connected to the client at a very basic and deep human level, which involves trust, compassion and respect for both the person and that person's dignity.

Three challenging examples of people in need of spiritual healing are people who suffer chronic pain, people who have an advanced illness and are in need of palliative care, and older people who have dementia. For these three examples, the concept of physical healing is remote. The nature of these conditions isolates people and challenges their very being. Caring for people with these conditions offers the greatest challenge to a nurse in connecting with them and their sense of the meaning of their condition. For the person with dementia there are additional and compounding losses – loss of memory, loss of cognition, loss of the ability to relate to and interpret the environment and, most importantly, loss of the ability to communicate needs and wants, and the ability to practise coping behaviours. Older people who are confused need nurses and carers who are prepared to spend the time to communicate and try to understand them. The use of prayer, ritual and symbols may help in spiritual caring, as does trying to capture moments of clarity in which the perceptive and caring nurse can communicate effectively with their client.

CLINICAL REASONING PROCESS

Critical thinking requires the synthesis of knowledge, experience and information gathered from clients and families, evidence from research and the maintenance of intellectual, professional and ethical standards. Clinical judgement requires the nurse to anticipate, gather and analyse the information necessary for making informed decisions; to set priorities and establish goals with the client; and to constantly evaluate the impacts and outcomes of the actions taken.

The dimensions of self (self-concept and spirituality) are complex and multifaceted. The integrated knowledge of all health disciplines contributes to the planning and delivery of care – including self-concept theory, spirituality theory, communication principles (see Chapter 12), and a consideration of cultural and developmental factors (see Chapter 14).

Experience in caring for clients with self-concept alterations and associated spiritual wellbeing/distress takes time to develop, but maintaining critical thinking attitudes such as integrity ensure that the client receives professional and respectful care. Nursing professional and ethical standards support the client's autonomy and right to choose. The way in which people view themselves and their relationships to others and the world profoundly influences a person's response to illness. A critical thinking approach that respects each client's uniqueness is essential to best quality care.

GATHERING RELEVANT INFORMATION AND DATA

In assessing the various dimensions of the self, the nurse should focus on each component of self (identity, body image, self-esteem, role performance and spirituality), behaviours suggestive of alterations to self-concept (Box 20-2), actual and potential stressors (see Figure 20-3), and individual coping patterns. Gathering relevant information and data requires a critical synthesis of information from multiple sources and application of clinical reasoning. Much of the data regarding self-concept and spiritual needs are effectively gathered through observation of the client's non-verbal behaviours and by paying attention to the content of the client's conversation, rather than through direct questioning. Taking note of the manner in which clients talk about the people in their lives can offer clues to both stressful and supportive relationships, and to key roles.

Using knowledge of normal human development to determine what is likely to be most important to the client at their current developmental stage is a useful frame within which to inquire about the person's life. For example, the nurse might ask a 65-year-old client about their life and, looking back, what they see as most important. We know from Chapter 18 that this is the stage in life during which people re-examine their lives and consider the impact they have had in the world. The person's response is then more likely to provide relevant and individual information relating to their role performance, identity, self-esteem, stressors and coping patterns. At times, specific questions or prompts may also be useful (Table 20-1) to explore their dimensions of self.

Coping strategies

The gathering of information should also include consideration of the client's previous coping behaviours; the nature, number and intensity of stressors; and the client's internal and external resources. Knowledge of how a client has dealt with stressors in the past can provide insight into the client's style of coping. Not all issues are faced in the same way by clients, but often one uses a familiar coping pattern for newly encountered stressors. As the nurse identifies previous coping patterns, it is useful to determine whether these patterns have contributed to healthy functioning or created further problems. For example, the use of drugs or alcohol during times of stress often creates additional stressors.

Exploring the client's resources and strengths, such as support from significant others or previous use of community resources, is also important in formulating a realistic and effective plan. Also pertinent to this assessment is determining how the client views the situation. What is perceived as a crisis by one client may be seen as less significant by another. For example, one client might express great fear and distress over needing to have a colonoscopy and biopsy, whereas another client may see the need for the diagnostic testing simply as a consequence of growing older, and take the attitude that if there is something to be concerned about, they will know about it soon enough.

Significant others

Valuable data may also evolve out of conversations with family and significant others. Significant others may have insights into the person's way of dealing with stressors and what strategies are most supportive to them. The way in which significant others talk about the client, and their non-verbal behaviours, can offer additional information about what kind of support is currently being offered or is available.

Client expectations

Individual expectations vary; therefore, asking the client how they believe interventions will make a difference to their situation can provide useful information regarding their expectations, and provides an opportunity for the client to lead their own goal-setting. For example, a nurse working with a client who is experiencing anxiety related to an upcoming diagnostic study might ask the client about their expectations of the relaxation exercise that they have been practising together. The client's response will give the nurse valuable information about the client's beliefs and attitudes regarding the efficacy of the interventions.

BOX 20-2 Behaviours suggestive of altered self-concept

Avoidance of eye contact
Overly apologetic
Hesitant speech
Overly critical
Excessive anger
Frequent or inappropriate crying
Puts self down
Excessively dependent
Hesitant to express views or opinions
Lack of interest in what is happening
Passive attitude
Difficulty in making choices
Slumped posture
Unkempt appearance
Self-harming
Disordered eating

• CRITICAL REFLECTION POINT

A 51-year-old man has been transferred to the rehabilitation unit following 2 weeks of hospitalisation resulting from an industrial accident in which his pelvis was crushed by a hydraulic press. His pelvis was stabilised with external fixation. Initially he was paralysed from T12 down.

TABLE 20-1 Assessing self-concept

Assessment questions*	Responses reflecting difficulties with self-concept
Identity	
'How would you describe yourself?'	Derogatory answers (e.g. 'I don't know; there's not much that is very exciting about me' or 'I'm not good at much of anything') should raise concern
Body image	
'What aspects of your appearance do you like?' 'Are there any aspects of your appearance that you would like to change? If yes, describe the changes you would make.'	Most people can identify something about their appearance that they like (e.g. 'People have always told me I have nice eyes'). If a person cannot identify any appreciated characteristic, this is suggestive of a negative body image and self-esteem. Most people have one or two areas that they would like to change (e.g. 'My nose is too big' or 'My hips are too big'), but a long list of problem areas should lead the nurse to consider difficulties with self-concept
Self-esteem	
'Tell me about the things you do well.'	Statements about not having any strengths or not being able to do anything well should raise concern
Role performance	
'What are your primary roles (e.g. partner, parent, friend, sister, professional role)? How do you see yourself carrying out each of these roles?'	The nurse should listen for the number of primary roles identified. A large number of primary roles will put the client at risk of role conflicts and role overload As with the questions above, if the client indicates that they do not feel that these roles are adequately covered, the person may be experiencing alterations in self-concept. Although in Western cultures most people carry out many roles and often feel as though some of them are not adequately covered, listen for the person's perception about their overall role competency

* In addition to the verbal content of the client's answer, the nurse should note the client's non-verbal behaviours. Hesitant speech, poor eye contact and hunched posture suggest alterations in self-concept.

During the 2 weeks since the accident, feeling and movement have begun to return to his lower extremities.

With the return of function, there have also been spasms that occur with movement and increase in severity if movement is continued. With the gradual return of functioning, medical staff have been hesitant to give the client a prognosis and have told him that watching and waiting will reveal his returning functioning. The client seems satisfied with this explanation at this point. His main focus is on directing his personal care to minimise risk of infection and to ensure that whoever is caring for him understands the importance of waiting for a muscle spasm to subside before continuing with care.

You are a student nurse assigned to care for the client during a 4-week rotation. How might you establish trust and assess the client's concerns about the future?

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

Appropriate judgements and decisions are driven by relevant and accurate data. Analysis of data from a range of sources assists in the identification of a client's actual or potential priority problems. The nurse uses their knowledge and experience to apply appropriate standards and attitudes and look for clusters of defining characteristics in order to make an evidence-informed clinical judgement (Box 20-3).

Making appropriate judgements and decisions in the realm of self-concept and spirituality is complex and cannot be done without partnering with the client in their care. Data may also identify the characteristics of more than one presenting problem or condition (Box 20-4). For example, a client might express feelings of regret and inadequacy. These are defining characteristics for anxiety, spiritual distress and situational low self-esteem. To make the most appropriate decisions in this situation, the nurse must be open to seeing the possibilities of different yet interrelated care plans. In fact, awareness that the client is demonstrating the defining characteristics of more than one problem can guide the nurse in gathering more specific data to validate and differentiate the underlying condition. To further assess the possibility (for instance) of anxiety as a diagnosis in the person feeling regret or inadequacy, the nurse might consider whether the person has any of the following defining characteristics: increased muscle tension, shakiness or restlessness – symptoms that suggest anxiety may be the underlying diagnosis.

Defining characteristics reflecting patterns of dispiritedness may indicate that a person is in a spiritual crisis. For example, expressing concern with the meaning of life and belief systems, anger towards a god, verbalising conflicts about personal beliefs or asking for spiritual assistance are consistent with spiritual distress. Examples of presentations where clinical judgement may indicate the need for spiritual support are given in Box 20-5.

On the other hand, if the person expresses a predominantly negative self-appraisal, including an inability to handle situations or events, and difficulty making decisions, these characteristics would suggest that the more likely problem might be situational low self-esteem. To further differentiate

BOX 20-3 Identifying priority problems

Disturbed self-concept

Assessment activities	Defining characteristics	Priority problem
Observe client's behaviour during conversation.	Client demonstrates restlessness, glancing about, facial tension, increased perspiration and focus on self.	Anxiety related to accidental injury, pain, uncertainty of outcome of upcoming surgery.
Ask client, 'How are you going?' or 'How do you feel about tomorrow's procedure?'	Client replies, 'I'm feeling really scared. You know there is a possibility they may amputate my leg tomorrow. I just don't know how I will manage if it comes to that. I just couldn't sleep last night. There was the pain, and I just kept thinking about all that is happening.'	

BOX 20-4 Example of priority problems associated with alterations in self-concept

Adjustment, impaired
Anxiety
Body image disturbance
Caregiver role strain
Coping, ineffective individual
Denial, ineffective
Fear
Hopelessness
Loneliness, risk of
Parental role conflict
Parenting, altered
Personal identity disturbance
Powerlessness
Rape-trauma syndrome
Role performance, altered
Self-esteem, chronic low
Self-esteem, situational low
Self-esteem disturbance
Self-mutilation, risk of
Spiritual distress (distress of the human spirit)
Violence, risk of: self-directed

BOX 20-5 Examples of priority problems requiring spiritual support

Spiritual wellbeing, potential for enhancement
Spiritual distress
Coping, ineffective individual
Coping, ineffective family; compromised
Coping, family; potential for growth
Family processes, altered
Dysfunctional grieving
Anxiety
Fear
Hopelessness
Powerlessness
Self-esteem disturbance

between the three diagnoses presented above (anxiety, spiritual crisis, situational low self-esteem), information regarding recent events in the person's life and how the person has viewed themselves and their life circumstances in the past would provide useful insight. Sometimes these three problems are closely related, but at other times several independent problems will be present. The client may demonstrate several defining characteristics from different diagnoses; but as additional relevant data are gathered, diagnosis of the priority problem(s) usually becomes evident and judgements and decisions about care can be made.

It is also important to have sufficient data to correctly identify the factors that have contributed to the diagnosis of the priority problem. If the information gathered is neither accurate nor relevant, diagnostic errors are likely. For example, a nurse is caring for a 62-year-old woman who was admitted because of chronic back pain. The client demonstrated signs of anxiety (inattentiveness, frequent starting, self-report of poor sleep, diminished appetite and increased muscle tension). The nurse knows that the client had undergone diagnostic testing to rule out cancer as the cause of pain. The nurse proposes that anxiety, related to the possibility of a cancer diagnosis, may be the cause. The nurse later learns that the woman was anxious because her grandson had been in a serious motor vehicle accident and was in intensive care.

The above example illustrates the danger in making a decision without sufficient data – in this case, information that could have been gained by simply engaging in conversation with the client. In order to avoid a similar situation when making a diagnosis of, for example, spiritual distress, critical thinking requires a review of more concrete data (e.g. religious rituals and sources of fellowship), as well as an assessment of previous client experiences, and appraisal of the client's spiritual wellbeing. The nurse's own spiritual wellbeing and perceptions are important to

spiritual care, and nurses should avoid imposing their personal beliefs on the client or their significant others.

It is vital to make judgements and decisions about planning care in partnership with the client and their family. Before involving the family, however, the nurse needs to consider the client's wishes for their involvement, and social and cultural norms regarding who most often makes decisions in the family. Sharing observations during conversation and asking the client to verify the nurse's perceptions is one way of validating clinical judgements. This approach often results in the client providing additional data, which further clarifies the situation. In the example above, the nurse might say to the client, 'I notice you haven't eaten much of your breakfast or lunch and that you jumped when I came up behind you. Are you feeling uneasy today?' This could allow the client to verify whether she is, in fact, anxious and to tell the nurse about her concerns. In summary, defining characteristics must be validated and clarified with the client (and their family) to establish priorities and goals that are meaningful to them before a purposeful and goal-directed plan of care is possible.

• CRITICAL REFLECTION POINT

A client with a progressive neurological disease tells you he is afraid he will soon be unable to walk. His affect is blunted and he often looks away into the distance. His wife tells you that difficulty walking and getting to the toilet in time prevent him from going out much, such as going to church. At one point both of them were very active in church activities.

What might you want to learn about the client during your assessment?

SETTING PRIORITIES AND ESTABLISHING GOALS

During goal-setting, the nurse continues to use critical thinking skills to synthesise knowledge and experience with professional standards of care. Critical thinking ensures that the plan of care integrates all that the nurse knows about the individual, their condition and the context of care. Professional standards for nursing practice are especially important to consider when developing a plan of care (Australian College of Mental Health Nurses 2010, Australian Nursing and Midwifery Accreditation Council 2015). These standards propose a professional and ethical framework for establishing the evidence base for effective nursing interventions.

Individualised plans of care are developed according to priorities and goals established through the shared decision-making process (see the following *Sample student nursing care plan* for an example). Goals should be targeted and realistic, with measurable outcomes. Consultation with significant others, mental health teams, social workers and community resources (Box 20-6) can result in a more comprehensive and workable plan. Once a goal has been formulated, it is important to consider how resolution of the problem could be measured as outcome data. For example, a client is diagnosed with situational low self-esteem related to a recent job loss. The defining characteristics that she demonstrates are complaints of 'not being able to do anything right lately' and expression of shame about losing her job. How does the client and nurse know whether the problem is reducing or, indeed, if it has been successfully managed? The nurse and client formulate a goal to achieve an improvement in the client's self-esteem within a realistic period of time. Appropriate and realistic goals to achieve the expected outcome might be that over the next week the client will find opportunities to discuss a minimum of three areas of her life where she is functioning well and voice the recognition that losing her job is not reflective of her worth as a person.

The first care plan presents an example of the goals, expected outcomes and interventions for a client with an alteration in self-concept. Interventions focus on helping the client adapt to the stressors that led to the self-concept disturbance and on supporting and reinforcing the development of coping methods. Often, a client perceives a situation as overwhelming and may feel hopeless about returning to the level of previous functioning. The client may need time to adapt to physical changes. Looking for strengths in both the individual and the family, offering community resources, client teaching and encouraging engagement with online education resources can assist with developing understanding of why certain events have happened (e.g. nature of a chronic disease, change in relationships, effect of a loss). Increasing understanding is often beneficial to reducing the sense of hopelessness and helplessness. Alterations in self-concept are not simple problems to resolve. Referral to mental health professionals and community resources may help support the client to work through and resolve complex problems over the longer term (see Box 20-6).

As is the case in developing any plan of care, a spiritual care plan must include realistic and individualised goals and individually relevant outcomes. It is important for both nurse and client to collaborate closely in setting goals and choosing related interventions. Setting realistic goals requires the nurse and client to establish respectful communication and work together. In cases where spiritual care requires helping clients

BOX 20-6 Resources in the community for supporting self-concept

Alcoholics Anonymous (AA), www.aa.org.au; www.aa.org.nz

Al-Anon, for relatives of alcoholics, www.al-anon.org/australia; www.al-anon.org.nz

Beyond Blue, www.beyondblue.org.au

Community health centres

Eating disorders support networks

Gay, lesbian, bisexual, trans, queer and/or intersex counselling services, www.qlife.org.au; www.gayline.org.nz

Grief support groups

Lifeline, www.lifeline.org.au; www.lifeline.co.nz

Rape crisis centres

Relationship advice/counselling, Relationships Australia, www.relationships.org.au; Relationships Aotearoa, www.relationshipsaotearoa.org.nz

SAMPLE STUDENT NURSING CARE PLAN

Gathering relevant information and data*

Mr Johnson is a 45-year-old man who was involved in a car accident in which he sustained a crushing blow to his femur. On admission, an open reduction and internal fixation (ORIF) of the femur was carried out. Since then, he has developed an infection, and the most current X-ray film shows misalignment of the bone fragments. The chart reveals that Mr Johnson was in essentially good health up until the time of the accident.

When Ian, the student nurse, first goes in to meet Mr Johnson, he finds that although Mr Johnson makes eye contact and answers questions, his **answers are brief** and to the point without elaboration. As Ian spends more time with Mr Johnson, his eye contact increases, but his answers to questions remain brief. He is **restless** and **shifts frequently in the bed**.

Mr Johnson tells Ian that before the accident he had a nearly ideal life. He describes his family as a source of pleasure and satisfaction. He tells him briefly about a recent trip the family took and the adventures of his two teenagers. He describes his work as okay. He states, 'I have been at the factory for 25 years. I know my job. Sometimes it gets boring, but it pays the bills, and I will be able to retire with good benefits if I can just work a few more years.'

In gathering the nursing history, Ian learns that Mr Johnson has had trouble sleeping since admission. He says that in addition to the pain, there is just **so much to think about**. Specifically, he says, 'You know, they may not be able to save my leg.'

In reviewing the progress notes since admission, Ian notes that Mr Johnson's **appetite has been recorded as poor and he usually eats only a quarter to a half of his meals**.

Priority problem(s)

Anxiety related to accidental injury, pain and uncertainty of outcome of upcoming surgery and treatment.

** Important data to cluster in setting priorities in bold.*

Making appropriate judgements and decisions

Setting priorities and establishing goals	Expected outcomes
Reduce Mr Johnson's anxiety	Mr Johnson will state that his anxiety/worry is less Mr Johnson will discuss his concerns openly with a staff person Mr Johnson will perform progressive relaxation exercises Mr Johnson's restlessness will decrease
Regain normal sleeping patterns or achieve restorative sleep	Mr Johnson will report restorative sleep
Maintain stable weight	Mr Johnson will report an increased appetite and eat at least three-quarters of his meals

Preparing for and taking actions†	Rationale
Coping enhancement	
• Help Mr Johnson to define his level of anxiety (use terminology Mr Johnson is comfortable with, e.g. worry, nervous).	Anxiety is highly individualised, and different clients manifest anxiety to varying degrees.
• Empathise with Mr Johnson that worry is a normal response to what has happened.	Anxiety is a normal response to an actual or perceived danger.
• Explore coping skills that Mr Johnson has used in the past. Encourage and support adaptive coping skills used in the past.	Most clients have developed effective coping skills during their lives. Supporting these coping skills in currently stressful situations can aid adaptation.
• Encourage Mr Johnson to express concerns verbally.	Verbalising a concern can allow the client to be more objective about what is happening.

Preparing for and taking actions†	Rationale
Calming techniques	
• Decrease the number of new stressors (e.g. answer client's call bell promptly, explain procedures, decrease unnecessary noise).	The number of stressors affects the stress experience.
Pain management	
• Treat pain before it becomes moderate to severe.	Pain is a stressor that can increase anxiety.
• Teach Mr Johnson the importance of seeking pain relief before the pain reaches a rating of 5.	Increasing the client's ability to control his experiences and environment will help to decrease anxiety.
Alterations in self-concept	
• Pain management	
– Teach Mr Johnson progressive relaxation techniques.	Relaxation is psychophysiologically in opposition to anxiety.
– Progressive muscle relaxation	Relaxation is energy conserving and nurturing.

† Intervention classification labels from McCloskey JC, Bulechek GM 2000 Nursing interventions classification (NIC), 3rd edn. Mosby, St Louis.

Evaluating impacts and outcomes

1. Explore with Mr Johnson what his current level of anxiety is.
2. Ask Mr Johnson how he slept the night before.
3. Inquire regarding Mr Johnson's appetite and monitor the amount of food eaten from meal trays.
4. Weigh Mr Johnson weekly.
5. Explore with Mr Johnson his concerns and note areas he discusses.
6. Observe non-verbal clues regarding eye contact and degree of restlessness during discussion.

Reference

Elder R, Evans K, Nizette D 2009 Psychiatric and mental health nursing, Sydney, Mosby.

to adjust to loss or stressful life situations, goals may be long term (see *Sample student nursing care plan* below). Short-term outcomes can also be established so that, progressively, the client reaches a more spiritually healthy situation.

PREPARING FOR AND TAKING ACTION

Once priorities, goals and outcome criteria have been developed, the interventions that help move the client towards their goals are agreed on. To develop effective interventions for care, the nurse and client can collectively consider the broad, evidence-based interventions relating to their diagnosis, and begin to tailor these to the individual client.

Promoting a healthy self-concept

Interventions are designed to promote a client's health and sense of wellbeing. Strategies are designed to help clients regain or restore the elements that contribute to a strong and secure sense of self and purpose in life. The approaches that are chosen will vary according to the level of care that clients require. Nurses often have the opportunity to work with clients to help them develop healthy lifestyle habits that contribute to a healthy self-concept and spiritual wellbeing. Measures that support adaptation to stress, such as balanced nutrition, regular exercise within the client's capabilities, measures that facilitate adequate sleep and rest (see Chapter 30), and stress-reducing practices, all contribute to a healthy self-concept.

Spiritual care should be a central theme in promoting an individual's overall wellbeing. Spirituality is one personal resource that affects the balance between health and illness. In settings where health-promoting activities occur, clients can be offered information, counselling and guidance to make appropriate lifestyle choices to remain physically and mentally healthy. Food and nutrition are important aspects of care, with food and patterns of eating being important components of some religious observances (Table 20-2). As with many aspects of diversity, culture or religion, food and the rituals surrounding the preparation and serving of food are important to a person's spirituality and should therefore be part of nursing knowledge and respectful care.

Nurses are often in a unique position to identify lifestyle practices that put a person's self-concept at risk or that suggest altered self-concepts. For example, a young teacher visits a clinic with complaints of being unable to sleep and having difficulty with anxiety attacks. In gathering relevant information and data, the nurse learns that the young woman has a large number of life changes occurring simultaneously, is getting too little rest and is using alcohol to relieve stress. These defining characteristics are suggestive of either self-concept disturbances or spiritual distress. Talking with the client to determine how she views the various elements of her life, to discuss how her lifestyle choices may be triggering anxiety, and making appropriate referrals or providing appropriate online or other resources are important strategies to encourage self-care (Box 20-7).

SAMPLE STUDENT NURSING CARE PLAN

Gathering relevant information and data

James is a 24-year-old who has recently been diagnosed with HIV. The clinic registered nurse (RN) has been talking to James during his last three visits. During that time James expresses a fear of dying and anger with God: 'How can God do this to me? This just can't be happening!' The RN attempts to learn more about James's faith and sources of spiritual support. James begins to cry and admits that he feels very alone. 'I just don't know what to believe in any more; this has happened so suddenly. It is as though God and everyone else has abandoned me. I am so afraid. Life isn't making sense.' In further discussion, James says he has been unable to sleep, has little desire for food and is having difficulty finding ways to talk to his friends.

Priority problem(s)

Spiritual distress related to fear and uncertainty of advanced illness.

Making appropriate judgements and decisions

Setting priorities and establishing goals	Expected outcomes
James will express a sense of purpose.	Client will discuss how the experience of having AIDS may have a positive influence in life.
James regains a sense of hope.	Client expresses a sense of confidence in treatments available for AIDS. Client begins to talk of the future.

Preparing for and taking action	Rationale
Instilling hope	
• Plan a session to discuss typical course of HIV, emphasising the typical pattern of remissions with drug therapy. Review therapies available for treatment.	Knowledge about disease will help client think as a person living with HIV rather than dying with HIV. Reality of disease course will help instil hope.
Spiritual support	
• Encourage James' expression of loneliness through establishing a caring presence.	Presence reflects being in tune with the client and displays caring. It is an effective technique that makes a topic of discussion more approachable.
• Listen to James' feelings and concerns.	
• Have James discuss his ability to cope with HIV and the meaning it has spiritually. Use spiritual resources.	People question and become open to discovering their unique spiritual meaning after a crisis that threatens health. Provide client with a resource from his community of faith to share concerns.

Evaluating impacts and outcomes

1. Ask James to discuss what meaning he has gained from experiencing HIV.
2. Have James discuss how he plans to adjust to the disease in the future (including continuing work, social activities, and so on).

Reference

Hall B 1998 Patterns of spirituality in persons with advanced HIV disease. Res Nurs Health 21: 143.

Acute care

In the acute care setting, the nurse is likely to encounter clients who are experiencing threats to their self-concept and/or spirituality because of the nature of diagnostic procedures and treatment. Threats to a person's sense of self, and the meaning attached to the experience, can result in anxiety and/or fear. Numerous stressors, including the diagnosis, fear of the unknown, the need to make changes in lifestyle, and change in functioning, may be present and need to be recognised and reduced where possible. There is often more than one stressor in the acute care setting, thereby increasing the overall stress level for the client and their family.

Clients receiving care for acute problems are often also faced with the need to adapt to an altered body image as a result

TABLE 20-2 Religious dietary practices

Religion	Dietary practices
Hinduism	Some sects are vegetarian. The belief is not to kill any living creature
Buddhism	Some are vegetarians, and many will not use alcohol or tobacco and may hesitate to use drugs Many will fast on holy days
Islam	Eating pork and consuming alcohol are prohibited Fasting occurs during the month of Ramadan
Judaism	Some observe the kosher dietary restrictions of avoiding pork and shellfish and not preparing and eating milk and meat at the same time
Christianity	Some faiths discourage the use of alcohol, caffeine and tobacco Some Roman Catholics may fast during Lent, Ash Wednesday, Good Friday and one hour before receiving Communion
Jehovah's Witnesses	Members may avoid food prepared with or containing blood
Mormonism	Members abstain from alcohol, caffeine and tobacco
Baha'i	Members abstain from alcohol, caffeine and tobacco
Russian Orthodox Church	Followers must observe fast days as well as a 'no meat' rule on Wednesdays and Fridays. During Lent all animal products, including dairy products and butter, are forbidden

BOX 20-7 Strategies for reducing anxiety

Objectives

- Client will identify physical sensations associated with anxiety.
- Client will describe the location, size and shape of physical sensations associated with uncomfortable emotional feelings.
- Client will, while maintaining awareness of the size and shape of physical sensations associated with uncomfortable emotional feelings, verbalise whether the size and shape remain constant or change in some way.
- Client's voice will become soft and slower in pacing as the experience unfolds.
- Client will voice feeling more relaxed.
- Client will explain how they could use the technique by themselves when experiencing anxiety.

Strategies

- Explain to the client that often our habitual way of coping with emotional discomfort/anxiety is to ignore it or try to get away from it in some way (e.g. eating, use of substances). Suggest other ways of working with anxiety, paying attention to physical sensations and allowing them to move and change. This way of being with physical manifestations of anxiety can allow one to experience anxiety in a more accepting way. This acceptance can allow one to notice that all experience is constantly changing and that in fact what one sees as unbearable has periods of time when it is intense but also periods when the sensations are less intense.
- To guide the client in using this technique, have the client find a comfortable position. This could be lying in bed with arms at the sides and legs uncrossed or sitting with good body alignment.
- Ask the client to take in several deep breaths and let them go, relaxing onto the chair or bed.
- Ask the client to make contact with the physical sensation experienced in touching the chair or bed.
- Ask the client to describe the location, size and shape of the sensation. Ask them to stay with the physical sensation and every 5 or 10 seconds voice whether the sensation is the same, saying 'same' or, if changing, 'changing'. If the client is quiet for 30–60 seconds, you can say 'And now?' to remind the client to stay with their sensations. If the client notes the sensation changing, ask if it is getting larger or smaller. If larger, have the client note 'expanding'; if smaller, note 'contracting'; if no change, note 'same'.
- Continue in this way for 20–60 minutes. At the end of this time, ask the person to take in a deep breath, let it go and then gently open their eyes.
- At the completion of this experience, if a person has been able to focus on their sensations, they are likely to experience a sense of relaxation and a sense of peacefulness.
- Review the steps of the process as outlined above.

continued

Evaluation

- Ask the client to describe their physical sensations at the beginning of the experience.
- Ask the client to describe the location, size and shape of a physical sensation.
- Ask the client to voice the ongoing characteristic of the physical sensation as either changing or remaining the same. If changing, describe whether it is expanding or contracting.
- Note whether the client's voice quality and speed of speaking change as the experience unfolds.
- Ask the client how they are feeling and note their response.
- Ask the client if they could use this technique when anxiety arises.
- If you have continuing contact with the client, inquire if they have used the technique since practising it with you, and how it went.

of surgery or other physical change. Receiving a visit from someone who has experienced similar changes and adapted to them (e.g. someone who has had a laryngectomy or an amputation) may be helpful. The timing of such a visit is important, being sensitive to the client's level of acceptance of the change. Forcing confrontation with the change before the client is ready could delay the person's acceptance. Signs that a person may be receptive to such a visit include the client asking questions about how to manage a particular aspect of their personal care at home, or looking at the changed or injured area. As the client expresses readiness to integrate their new body change into their self-concept as part of making life-change adjustments, the nurse can either let the client know about support groups or ask the client whether they would like the nurse to make contact for them. Another way to facilitate adjustment to a change in physical appearance and the associated psychospiritual alterations is through the nurse's response to the change. As the nurse responds with acceptance, this models acceptance for both the client and the family.

• CRITICAL REFLECTION POINT

Mrs Stills has been hospitalised with cancer of the ovaries. Her disease has progressed but she expresses a satisfaction with her life and a faith that God will guide and protect her. She asks you about meditation exercises. In the acute care environment, how might you arrange a teaching session on meditation?

Restorative care

Nurses in long-term nurse–client relationships such as in home health, community and primary healthcare or restorative-care environments, have greater opportunity to work with clients to reach their identified health goals over time. Interventions designed to help a client reach the goal of adapting to life changes are based on the premise that the client first develops insight or self-awareness concerning problems and stressors and then acts to solve the problems and associated stressors. The approach (Table 20-3), outlined by Stuart and Laraia (2001), involves the following levels of intervention: expanded self-awareness, self-exploration, self-evaluation, planning of realistic goals and commitment to action.

Increasing the client's self-awareness is achieved through establishing a trusting relationship that allows the client to openly explore feelings. Open exploration can make the situation less threatening for the client and encourages behaviours that expand a person's awareness of self. Encouraging the client's *self-exploration* is achieved by respecting the client's feelings and thoughts, by helping the client to clarify interactions with others and by being empathetic. The nurse encourages self-expression and stresses the client's self-responsibility. Helping the client to *evaluate themselves* involves working with the client to define problems clearly and to identify positive and negative coping mechanisms. The nurse works closely with the client in analysing adaptive and maladaptive responses, exploring different alternatives and discussing outcomes.

Supporting the client to establish *realistic goals* (Table 20-3) involves encouraging the client to identify appropriate alternative solutions and develop realistic goals. This facilitates real change and encourages further goal-setting behaviours. The nurse designs opportunities and plans with the client to achieve success, reinforcing the client's skills and strengths and helping the client to actively seek the assistance they need. Helping the client become *committed to decisions and actions* to achieve goals involves working with the client to support their move away from ineffective coping mechanisms and develop successful coping strategies. Supporting adaptive, flexible, health-promoting activities in addressing threats to or alterations in self-concept and a person's spirituality is critical for health and healing.

Clients who experience threats to or alterations in self-concept and spirituality often benefit from collaboration with mental health and community health resources to promote increased awareness. Knowledge of available community resources, such as counselling, allows the nurse to make appropriate referrals. Establishing a therapeutic environment and relationship (see Chapter 12) and increasing self-awareness are important to successfully intervene with clients, whether care is focused on health promotion or dealing with an acute process or restorative care.

EVALUATING IMPACTS AND OUTCOMES

Client care

Evaluating success in meeting each client's personal goals and their established expected outcomes requires critical thinking. Frequent evaluation of client progress is recommended so that changes can be instituted if necessary. Knowledge of behaviours and characteristics representative of a healthy self-concept and spiritual wellbeing are crucial to reviewing the actual behaviours clients display. Establishing measures and timelines for meeting goals also helps to determine whether outcomes have been met.

Expected positive outcomes for a client with a self-concept disturbance or alterations to spirituality might include

TABLE 20-3 Levels of nursing interventions for self-concept disturbance

Principle	Rationale	Actions
Goal: Expand client's self-awareness		
Work with resources client possesses	Some resources, such as self-control and self-perception, are needed as foundations for later nursing care	Confirm identity Provide support measures to reduce anxiety Approach client in an undemanding way Accept and attempt to clarify any verbal or non-verbal communication Prevent client isolation Help establish simple routine Help set limits on inappropriate behaviour Orient client to reality Reinforce appropriate behaviour Gradually increase activities and tasks that provide positive experiences Help with personal hygiene and grooming Encourage client to care for self
Maximise client's participation in therapeutic relationship	Mutuality is necessary for client to assume ultimate responsibility for behaviour and coping responses	Gradually increase client's participation in decisions that affect care Convey that client is a responsible individual
Goal: Encourage client's self-exploration		
Show interest in and accept client's feelings and thoughts	When nurse shows interest in and accepts client's feelings and thoughts, the nurse helps client to do so also	Attend to and encourage client's expression of emotions, beliefs, behaviour and thoughts – verbally, non-verbally, symbolically or directly Use therapeutic communication skills and empathetic responses Note use of logical and illogical thinking and reported and observed emotional responses
Help client clarify self-concept and relationships to others through self-disclosure	Self-disclosure and understanding self-perceptions are prerequisites to bringing about future change; this may in itself reduce anxiety	Elicit client's perceptions of strengths and weaknesses Help describe ideal self Identify self-criticisms Help describe how client perceives relationships to other people and events Be open to your own feelings
Be aware and have control of your own feelings	Self-awareness allows nurse to model authentic behaviour	Accept your positive and negative feelings Practise therapeutic use of self: share your feelings with client, describe how another might have felt and mirror your perception of client's feelings
Respond empathetically, not sympathetically, emphasising that power to change lies with client	Sympathy can reinforce client's self-pity; rather, nurse should communicate that client's life situation is subject to one's own control	Use empathetic responses and monitor yourself for feelings of sympathy or pity Reaffirm that client is not helpless or powerless when dealing with problems Convey verbally and behaviourally that client is responsible for behaviour, including choice of maladaptive or adaptive coping responses Discuss with client scope of choices, areas of strength and coping resources available
Goal: Assist client in self-evaluation		
Help client to clearly define problem	Only after problem is accurately defined can alternative choices be proposed	Identify relevant stressors with client and ask for appraisal of them Clarify that client's beliefs influence feelings and behaviours Mutually identify faulty beliefs, misperceptions, distortions, delusions and unrealistic goals Mutually identify areas of strength

continued

TABLE 20-3 ***continued***

Principle	Rationale	Actions
Explore client's adaptive and maladaptive coping responses to problem	Examination of client's choices made during coping will help define successful and unsuccessful responses	Place concepts of success and failure in proper perspective Explore use of coping resources Describe how coping responses are chosen and have positive and negative consequences Contrast adaptive and maladaptive responses Mutually identify disadvantages of client's maladaptive coping responses Mutually identify advantages or 'payoffs' of client's maladaptive coping responses
Goal: Assist client in forming realistic goals		
Help client identify alternative solutions	Only when all possible alternatives have been evaluated can change be effected	Help client understand that one can change only oneself, not others If client holds inconsistent perceptions, show that the following can change: beliefs or ideals to bring them closer to reality, and environment to make it consistent with beliefs. If self-concept is not consistent with behaviour, client can change the following: behaviour to conform to self-concept, beliefs underlying self-concept to include behaviour and ideal self Mutually review use of coping resources
Help client conceptualise realistic goals	Goal-setting that includes clear definition of expected change is necessary	Encourage client to form personal (not nurse's) goals Mutually discuss emotional and practical consequences of each goal Help client define concrete change to be made Encourage client to enter new experiences for growth potential Use role-modelling and role-playing when appropriate
Goal: Assist client in becoming committed to decision and in achieving goals		
Help client take necessary action to change maladaptive coping responses and maintain adaptive ones	Ultimate objective in promoting client's insight is to replace maladaptive coping responses with more adaptive ones	Provide opportunity for success Reinforce strengths, skills and healthy aspects of client's personality Help client gain assistance (e.g. vocational, financial, social services) Use family and groups to enhance client's self-esteem Allow client sufficient time to change Provide support and positive reinforcement to maintain progress
Goal: Assist client in acknowledging goals achieved and evaluating those not achieved		
Help client to purposefully review achievements and explore reasons for any problems or setbacks	Reinforcement of gains made in strengthening self-concept will motivate continued change	Mutually review progress made Affirm achievements with client and family or significant others Evaluate what contributed most to success Help client discuss feelings regarding goals not achieved
Goal: Assist client to re-form plan for achieving goals		
Support client in reviewing goals Identify alternatives not tried previously	Insight gained from attempts to change will support further progress Different approaches may be necessary to achieve desired outcomes	Review with client the need for further self-evaluation Encourage client to continue those experiences that were successful Explore how new coping resources can be applied to continued change Redefine changes in adaptive behaviours to be made Continue to reinforce strengths and successes

Modified from: Stuart GW, Laraia MT 2005 Principles and practice of psychiatric nursing, 8th edn. Mosby, St Louis.

observations of non-verbal behaviours indicating a positive sense of self, statements of self-acceptance, acceptance of change in appearance or function, and a reconfiguration and acceptance of their life purpose and meaning.

Non-verbal behaviours are key indicators of a client's self-concept. For example, a client who has had difficulty making eye contact may demonstrate a more positive self-concept by making more frequent eye contact during conversation. Social interaction, adequate self-care, acceptance of the use of prosthetic devices, and statements indicating understanding of client education, all indicate progress at both self-concept and spiritual levels. A positive attitude towards rehabilitation and increased movement towards independence facilitates a return to pre-existing roles at work or at home.

The priorities and goals of care may become inappropriate as the client's condition changes or their self-concept improves. Reflecting on successful experiences is a positive way to revise the plan. Client adaptation to major changes may take a year or longer, but the fact that this period is long does not signify maladaptation. Life changes, whether these are to self-concept or spirituality, take time. A person's sense of self, and their meaning and purpose in life, is a dynamic process formed over years – it should not be discouraging that changes in the way a person views themselves and changes their adaptive behaviours also require time.

Client expectations

If the nurse and client have developed a good rapport, they may well be able to share how things are going from their own perspective. This sharing may be facilitated by initiating a review of what has happened over time, offering an opportunity to share perceptions of outcomes, and encouraging a dialogue for clients to consider and voice their own experience.

Key concepts

- The development of a sense of self is an integrated set of conscious and unconscious feelings, attitudes and perceptions and beliefs about the self.
- Self-concept is influenced by health, family experiences, social and occupational roles and intellectual and leisure activities.
- The dimensions of self are identity, body image, self-esteem, role performance and spirituality.
- Each developmental stage involves factors that are important to the development of a healthy, positive self-concept, sense of wellbeing and meaning/purpose in life.
- Identity is particularly vulnerable during adolescence.
- Body image is the mental picture of one's body and is not necessarily consistent with a person's actual body structure or appearance.
- Body image also includes attitudes, emotions and reactions of the person towards their body.
- Body image is influenced by growth and development, cultural and societal values and attitudes and individual perceptions of the body.
- Body image stressors include changes in physical appearance, structure or functioning caused by normal developmental changes or illness.
- Self-esteem depends on a person's perception of the ideal self as it compares with the real self.
- Self-esteem stressors include developmental and relationship changes, illness (particularly chronic illness involving changes in what were normal activities), surgery, accidents and the responses of other individuals to changes resulting from these events.
- Roles are learned through socialisation, from one's family and from one's culture.
- Role stressors, including role conflict, role ambiguity and role strain, may originate in unclear or conflicting role expectations and may be aggravated by the effects of illness.
- Nursing actions can have an effect on a client's self-concept.
- Spirituality is the sense of a presence or meaning that is intrinsic to human nature and can be a deep resource for healing.
- Spiritual forms of expression can and do have effects on an individual's physical wellbeing.
- The concept of spirituality as a unifying theme in our lives demonstrates the importance of the spiritual dimension influencing a person's physical, psychological, social and developmental health.
- The spiritual needs most commonly recognised are the search for meaning and purpose in life, a sense of forgiveness, the need for love, the need for hope and the need for belief and faith in self, in others and in a god or higher being/order.
- Faith in a higher power or in one's choice of how to live life can enable a person to take action.
- Hope is a multidimensional concept that energises, is future-oriented and gives people a motivation to achieve and to face difficulties.
- Spiritual health is a balance between people's life values and goals and their relationship with themselves and others that can be threatened by illness or loss.
- Spiritual healing brings with it an equilibrium in which the person recovers from the pain and anguish of spiritual distress. Spiritual healing is a complex phenomenon, a journey in itself, which restores wholeness to the person.
- The nurse involved in spiritual healing will be connected to the client at a very basic human level, which involves trust, compassion and respect for both the person and their dignity.
- Planning and implementing nursing interventions for self-concept disturbance and/or spiritual distress involve expanding the client's self-awareness, encouraging self-exploration, aiding in self-evaluation,

helping formulate goals in regard to adaptation and helping the client achieve those goals.

Online resources

Australian College of Mental Health Nurses, www.acmhn.org

Beyond Blue, www.beyondblue.org.au

Black Dog Institute, www.blackdoginstitute.org.au/healthprofessionals

Lifeline, www.lifeline.org.au

Relationships Australia; for relationship advice/counselling, www.relationships.org.au

References

Australian Bureau of Statistics (ABS) 2013 Causes of death, Australia 2015. Cat. no. 3303.0. ABS, Canberra.

Australian College of Mental Health Nurses (ACMHN) 2010 Standards of practice for Australian mental health nurses. ACMHN, Canberra. Online. Available: www.acmhn.org/news-a-events/publications/college-publcations/standards-of-practice.html; accessed 29 May 2012.

Baldacchino D, Draper P 2001 Spiritual coping strategies: a review of the nursing literature. J Adv Nurs 34(6):833.

Berge M, Ranney M 2005 Self-esteem and stigma among persons with schizophrenia: implications for mental health. J Long Term Home Health Care 6(3):139–44.

Berman B, Snyder S, Kozier B et al 2010 Kozier and Erb's fundamentals of nursing, 1st Australian edn. Pearson, Melbourne.

Cafri G, Yamamiya Y, Brannick M et al 2005 The influence of sociocultural factors on body image: a meta-analysis. Clin Psychol Sci Pract 12(4):421–33.

Cant R, Cooper S, Chung C et al 2011 The divided self: near death experiences of resuscitated patients – a review of literature. Int Emerg Nurs 20(2):88–93.

Carpenito-Moyet LJ 2010 Handbook of nursing diagnosis, 13th edn. Lippincott, Williams & Wilkins, Philadelphia.

Cash TF, Smolak, L 2012 Body image: a handbook of science, practice, and prevention. The Guilford Press, New York.

Cressey RW, Winbolt-Lewis M 2000 The forgotten heart of care: a model of spiritual care in the National Health Service. Accid Emerg Nurs 8:170.

Christensen AJ, Martin R, Morrison Smyth J 2014 Encyclopedia of health psychology. Springer Science and Business Media, New York.

Doucet TJ 2008 Having faith: a Parse research method study. Nurs Sci Q 21:343–52.

Edward KL, Munro I, Welch A 2014 Mental health nursing: dimensions of praxis, 2nd edn. Oxford University Press, Melbourne.

Elder R, Evans K, Nizette D 2009 Psychiatric and mental health nursing. Mosby, Sydney.

Erikson E 1963 Childhood and society, 2nd edn. WW Norton, New York.

Fung LCL et al 2006 Relationship between self-esteem and the occurrence of depression following a stroke. J Clin Nurs 15(4):505–6.

Gilligan C 1982 In a different voice. Harvard University Press, Cambridge, MA.

Gollnick J 2005 Religion and spirituality in the life cycle. Peter Lang Publishing, New York.

Gorman LM, Sultan DF 2008 Psychological nursing for general patient care, 3rd edn. FA Davis Company, Philadelphia.

Hall BA 1998 Patterns of spirituality in persons with advanced HIV disease. Res Nurs Health 21:143.

Jack K, Smith A 2007 Promoting self-awareness in nurses to improve nursing practice. Nurs Stand 21(32):47–52.

Kohlberg L 1969 The cognitive–developmental approach to socialization. In Goshin D (ed), Handbook of socialization. Rand McNally, Chicago.

Landa CE, Bybee JA 2007 Adaptive elements of aging: self-image discrepancy, perfectionism, and eating problems. Dev Psychol 43(1):83–93.

Levant RF 2011 Research in the psychology of men and masculinity using the gender role strain paradigm as a framework. Am Psychol 66(8):765–76.

Luxton DD et al 2006 Uncertain self-esteem and future thinking in depression vulnerability. J Social Clin Psychol 25(8):840–54.

Maslow A 1954 Motivation and personality. Harper & Row, New York.

Miller JF, Powers MJ 1988 Development of an instrument to measure hope. Nurs Res 37(1):6.

Ministry of Health 2015 Suicide facts: deaths and intentional self-harm hospitalisations series. Suicide Facts: 2013 data. Ministry of Health, Wellington. Online. Available: www.health.govt.nz/publication/suicide-facts-2013-data; accessed 24 Feb 2016.

Nursing and Midwifery Board of Australia (NMBA) 2016 Registered nurse standards for practice. NMBA, Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards.aspx; accessed 13 June 2016.

Parsons T 2012 The social system. Quid Pro, LLC, New York.

Piaget J 1963 The child's conception of the world. Littlefield, Adams, New York.

Price CA 2000 Women and retirement: relinquishing professional identity. J Aging Stud 14(1):81.

Sargent LD 2003 Effects of a downward status transition on perceptions of career success, role performance and job identification. Aust J Psychol 55(2):114–20.

Saucier MG 2004 Midlife and beyond: issues for aging women. J Counsel Dev 82(4):420–5.

Selye H 1956 The stress of life. McGraw-Hill, New York.

Sheehy G 1995 New passages: mapping your life across time. Random House, New York.

Shilling C 2012 The body and social theory, 3rd edn. SAGE, Los Angeles.

Stein-Parbury MJ 2013 Patient and person: interpersonal skills in nursing, 5th edn. Elsevier, Sydney.

Stuart GW, Laraia MT 2001 Principles and practice of psychiatric nursing, 7th edn. Mosby, St Louis.

Williams AL 2006 Perspectives on spirituality at the end of life: a meta-summary. Palliative and Supportive 4(4):407–17.

CHAPTER

21

Understanding sexuality and sexual health

Donna Tilley and Joanne Perks

Learning outcomes

Mastery of content will enable you to:

- reflect on personal values, attitudes and beliefs about sexuality and sexual health
- discuss communication strategies for use in the sexual health context
- describe the elements of a sexual health risk assessment
- describe the impact of specific health conditions on sexuality and sexual health
- identify appropriate sexually transmissible infection and blood-borne virus screening for different population groups
- identify appropriate contraceptive options for men and women across the life span
- discuss issues impacting on pregnancy and fertility options
- reflect on the role of the nurse in promoting sexual health
- identify sexual and reproductive health referrals and resources
- use critical thinking skills to help clients address sexual health needs and concerns.

KEY TERMS

Abortion, p. 485
Bisexual, p. 474
Condom, p. 481
Emergency contraception, p. 486
Female genital mutilation, p. 486
Homophobia, p. 474
Intersex, p. 474
Intrauterine device, p. 486
Lesbian, p. 474
Men who have sex with men (MSM), p. 474
Menopause, p. 485
Same-sex attracted, p. 474
Sexual health, p. 473
Sexual health history, p. 477
Sexual orientation, p. 473
Sexually transmitted infections, p. 476
Transgender, p. 474

Introduction

A person's sexuality is unique and is central to their expression of identity and wellbeing. The expression of sexuality is impacted by social mores, cultural expectations and psychological and physical health. Definitions within legislation also have an impact. Given the importance of sexuality, it is essential that nurses have an understanding of how patients or clients are experiencing and expressing their sexuality, and any barriers that may arise. Discussion of sexuality and **sexual health** should be incorporated into all interactions with young people, patients who have a chronic illness, and people presenting for sexual or other health screening.

There are several models that can be used to help frame sexuality and guide nurses' interactions with patients. Nurses and other health professionals need to feel comfortable discussing sexuality, and to have sufficient knowledge and skills to feel confident in gaining experience in these discussions. Essential skills for providing health care relating to sexuality include having a non-judgemental attitude, being willing to discuss alternative lifestyles, providing a private space, active listening using appropriate body language, open questioning and reflection skills, willingness to discuss drug use and sexual behaviour in detail, and being open to learning from patients, who are the experts in their own unique experiences (McNulty et al 2014). Not all facets of sexuality and sexual health are able to be addressed in this chapter and further reading is recommended.

Sexuality

The expression of sexuality is as unique as each individual. The World Health Organization (2015) provides a working definition of sexuality which seeks to encompass all of the expressions and influences on an individual's sexuality:

> **… a central aspect of being human throughout life encompasses sex, gender identities and roles, sexual orientation, eroticism, pleasure, intimacy and reproduction. Sexuality is experienced and expressed in thoughts, fantasies, desires, beliefs, attitudes, values, behaviours, practices, roles and relationships. While sexuality can include all of these dimensions, not all of them are always experienced or expressed. Sexuality is influenced by the interaction of biological, psychological, social, economic, political, cultural, legal, historical, religious and spiritual factors.**

Sexuality as discussed is how we feel about ourselves. In times of crisis, particularly with disease states, we are all challenged by the impact on our sexuality. Nurses often feel that sexuality is a personal issue and not one to be discussed openly, yet patients often want to talk about their sexual health concerns and to receive advice and education in this area (Tsai et al 2013). Knowledge of sexual health concerns, and a willingness to address these issues, is an important aspect of the nursing role (Julien et al 2010). The importance of learning to feel comfortable talking to patients or clients about sex and sexuality cannot be understated.

Definitions of terms

There are many terms that are used when describing and discussing sexual health and sexuality (see Table 21-1). Although these terms are useful, it is equally important to be aware that many individuals do not want to be labelled by their sexual identity, sexual behaviour or **sexual orientation**.

Our individual expressions of sexuality are shaped by so many factors that it can be useful to look at models relating to different aspects of sexuality. The purpose of these models is to guide our thinking and deepen our understanding. As we develop our understanding we can develop greater empathy and appropriateness in responding to the wide variety of people and situations we encounter in our personal and professional lives.

The sexual trichotomy model

Sexuality is much more than what people 'do' sexually and with whom. Sexuality affects the way we think about ourselves, the choices we make and the behaviours we use to express ourselves. One model developed by researchers at the Australian Research Centre in Sex, Health and Society at La Trobe University (Ollis & Mitchell 2001) divides sexuality into three parts: sexual orientation, sexual behaviour and sexual identity (Figure 21-1). This model seeks to identify and help us understand aspects of variation and diversity in human sexuality.

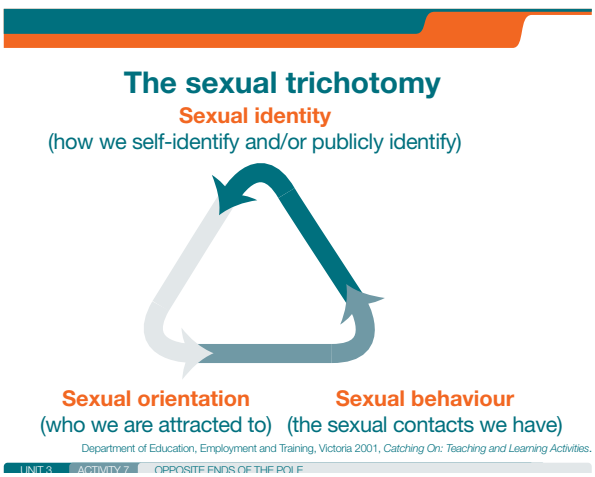

Figure 21-1 Sexual tricotomy diagram.

Catching On, Teaching & Learning Activities, 2004 © State of Victoria (Department of Education and Training).

TABLE 21-1 Definitions of sexuality

Term	Definition
Sex	Sex is the biological characteristics that define us as male or female. There are people who have both male and female sex characteristics (WHO 2015b). Sex is sometimes used to describe identity based on sex characteristics; however, some people do not have a sex identity that is exclusively male or female (Chan 2011). Sex is often used to describe 'sexual activity'.
Gender	'Gender is a cultural expression of sex identity (often but not always based on stereotypes of masculinity and femininity). Gender can be understood as a person looking, dressing or acting as male or female. Some people do not have a gender identity that is either exclusively male or female. Some people's gender identity is not linked to their sex' (Australian Human Rights Commission 2013).
Sexual activity	Sexual activity most commonly refers to sexual intercourse, which may be vaginal, oral or anal (Chan 2011). It can also include solo sexual behaviours such as masturbation.
Same-sex attracted	Refers to people who experience sexual attraction to others of their own sex.
Men who have sex with men (MSM)	This includes any **men who have sex with men**.
Women who have sex with women (WSW)	This includes any women who have sex with women who may identify as lesbian, bisexual, or heterosexual or other.
Gay	An individual whose primary emotional and sexual attraction is towards the opposite sex (see homosexual and lesbian). This term is most commonly applied to men, although some women describe themselves as gay.
Lesbian	A woman whose primary emotional and sexual attraction is towards other women may identify as **lesbian**. Some women who have sex with other women may not call themselves lesbians.
LGBTI	Refers collectively to people who are lesbian, gay, bisexual, transgender and/or intersex (National LGBTI Health Alliance 2015).
Heteronormative	A belief that heterosexuality is 'natural' and becomes the norm by which gendered relationships are framed and sexuality diversity is judged as unnatural and deviant (Robinson et al 2014).
Homophobia and Transphobia	**Homophobia** and transphobia refer to the discrimination, bullying and harassment of people who identify as gender variant and sexuality diverse (Robinson et al 2014).

TABLE 21-1 *continued*

Term	Definition
Queer	Refers to people who identify as gender and sexuality diverse (Robinson et al 2014).
Transgender	An umbrella term for people who do not conform to typically accepted gender roles for the sex they were assigned at birth. People who are **transgender** may undertake hormonal therapy and/or undergo sexual reassignment surgery (The Gender Centre 2015).
Intersex	An **intersex** person is born with sexual anatomy, reproductive organs, and/or chromosome patterns that do not fit the typical definition of male or female. This may be apparent at birth or become so later in life. An intersex person may identify as male or female or as neither. Intersex status is not about sexual orientation or gender identity: intersex people experience the same range of sexual orientations and gender identities as non-intersex people (Organisation Intersex International Australia 2013).

Sexual orientation

Sexual orientation refers to the sex of the people we are attracted to. This attraction may be to members of the opposite sex (heterosexual), members of the same sex (homosexual) or members of both sexes (**bisexual**). Sexual orientation may be fixed or it may change throughout a person's life.

Sexual behaviour

Sexual behaviour refers to the sexual contacts we have, or who we have 'sexual activity' with. The behaviour may match a person's sexual orientation, but in many cases it does not.

Sexual identity

Sexual identity refers to how people see themselves and how they present themselves to others. Sometimes a person's sexual identity can be different to their sexual orientation and sexual behaviour, which can cause a high level of personal stress. An example of this may be a man who has an identity as a heterosexual man in a married relationship; however, he is attracted to other men and may have sexual contact with other men.

The sexual response model

Models of sexuality and the sexual response have changed over the years. In the 1950s, the Kinsey report and the Masters and Johnson traditional linear model

(of excitement, plateau, orgasm and resolution) proposed models based on physical responses to sex. While these models were considered very innovative at the time, it has been suggested that this approach may have ultimately led to the myriad of sexual function disorders diagnosed today, particularly those affecting women (Wylie & Mimoun 2009).

A more recent model of sexual response proposed by Basson (2003) is based on psychosocial theory. This model recognises and incorporates emotional intimacy, sexual stimuli and relationship satisfaction. For example, female sexual functioning is thought to proceed in a more complex and circuitous manner than male sexual functioning. Female sexual function is often dramatically and significantly affected by numerous psychosocial issues including satisfaction with the relationship, self-image and previous negative sexual experiences (Basson 2003). The male sexual response, however, has traditionally been seen as a physical process of arousal (erection) and ejaculation (Russell 2011). In men, heart disease, hypertension, prostate cancer and other chronic conditions can impact on their physical ability to achieve the sexual response. This focus on physical ability to perform, rather than focusing on emotional intimacy (as suggested in Basson's model), is likely to produce a more stressful and less satisfactory response for both men and women.

• CRITICAL REFLECTION POINT

Clarification of values

Values and attitudes towards many life issues are often formed during childhood and early adolescence. Values and attitudes can be related to family or religious beliefs, or result from ignorance or lack of awareness about some of the lifestyle choices that people in our care might make. It is often through life experience that we learn to value and respect the belief systems of others.

Take some time to consider the scenarios below. How do you feel about them and what considerations would you need to make if you were nursing someone in that situation?

- **Caring for a client who has been diagnosed with a sexually transmitted infection (STI).**
- **Caring for a same-sex couple who have recently had a baby.**
- **A client tells you he has been on a sex tour of Thailand when you are taking a sexual history.**
- **Caring for a woman who has experienced female circumcision.**
- **A woman requesting information on termination of pregnancy.**
- **An HIV positive man or woman requiring long-term care for chronic disease.**
- **A man who is wanting advice on gender reassignment.**
- **A gay couple seeking advice about surrogacy.**

CLINICAL EXAMPLE: CODY

You are a registered nurse working with Cody, a 15-year-old male on your adolescent mental health unit. Cody was recently admitted after attempting suicide and has a history of deliberate self-harm. During your assessment, Cody reveals to you that the reason he attempted suicide is that he feels he might be gay. He is confused about his sexuality and feels isolated from his peer group at a private boys-only school. He is also concerned about how his family might feel about his sexual orientation. Cody says that he has not told anyone else and is uncertain whether he should tell his parents.

1. What was your reaction when Cody said he might be gay?
2. In your family of origin or cultural background, what are the values and beliefs surrounding same-sex attraction?
3. What can you do to make Cody feel comfortable about his disclosure to you?
4. What community supports might assist Cody and his family on discharge?

In the *Clinical example*, this young man has revealed information that indicates he trusts you. The first and subsequent responses and actions of the nurse are critical to how this young person might feel about telling his parents and other important people in his life. It would be appropriate to thank Cody for placing his trust in you, and affirm his decision to discuss this with you. The nurse might then suggest that perhaps the reason Cody feels this way is that he is afraid that his parents may not be supportive and encouraging of his decision to 'come out', or that he may not yet be emotionally strong enough to cope with a possible negative reaction from them. Identifying someone close to Cody who could be supportive in this situation may be helpful. Similarly, it is important to reinforce to him that he can ask for confidentiality from anyone he comes out to, and that he does not need to discuss his sexuality with anyone until he is ready. With increased population understanding of diversity, a range of age-appropriate services and excellent information sources have been developed which may also assist him (see *Research highlight*, *Online resources*).

Communication and sexual health history-taking

Health professionals recognise that sexuality is an important part of wellbeing but can often feel uncomfortable discussing sexuality and sexual health with patients (Ayaz 2013, Steinke 2013, Bates 2011). Barriers to talking about sexual health can include embarrassment, lack of

RESEARCH HIGHLIGHT

Research focus

Society's attitudes towards sexuality and sexual health are important because they influence laws and affect provision of sexual health and other health services. Key components within models of behaviour change and health promotion address attitudes. These models inform evidence-based interventions aimed at improving the health of populations and individual patients. *The Second Australian Study of Health and Relationships* was conducted to provide accurate data about current aspects of sexual health of the general Australian population; and to analyse changes in beliefs, behaviours and experiences in the decade since the first study was undertaken. The findings are presented in a special edition of the journal *Sexual Health*.

Research abstract

The purpose of the analysis of attitudes towards sex and relationships, as one aspect of the main study, was to describe attitudes towards sex, identify correlates of sexual liberalism and identify changes in attitudes since the first study conducted in 2002. A representative sample (20,094 men and women aged 16–69 years) of the Australian population was contacted by landline and mobile phone via random digit dialling. A computer assisted telephone interview was completed. Respondents were asked to express their agreement with 11 attitude statements. There was general agreement that sex was important for wellbeing (83%), premarital sex was acceptable (87%) and having an affair when in a committed relationship was unacceptable (83%). Only 17% agreed that termination of pregnancy was always wrong, only 20% believed sex between two adult men was always wrong and 15% believed sex between two adult women was always wrong. Only 24% believed sexual health education increased the likelihood of early sexual activity. More liberal attitudes were associated with being female, speaking English at home, homosexual or bisexual identity, not being religious, greater education, higher incomes and more diverse patterns of sexual experience. Since 2002 there has been a shift to less tolerance of sex outside a committed relationship, but greater acceptance of homosexual behaviour.

Evidence-based practice

- Attitudes towards sex and relationships have implications for government policy and sex education
- Locally based studies of sub-populations are often essential for developing culturally appropriate health promotion strategies and the data from a large population-based study provides a useful baseline for comparison
- The awareness of the diversity and importance of the sex lives of Australians can increase the capacity of nurses to appropriately address expressing sexuality as an activity of daily living.

Reference

De Visser RO et al 2014 Attitudes toward sex and relationships: the Second Australian Study of Health and Relationships. Sexual Health 11:397–405.

knowledge, fear of causing offence, lack of time and not regarding sexuality as a health priority (Bates 2011). Patients and clients may pick up on the reluctance of health professionals to discuss sexuality, or may be waiting for the health professional to ask first. If neither nurse nor patient initiates the discussion, opportunities for addressing concerns, providing health and preventive information or making appropriate referrals, can be missed.

It is often appropriate to begin any health assessment with more general questions and then move to more specific questions. Building rapport, trust and creating a safe and confidential environment for the person to discuss sexual health concerns may take time. Effective communication includes using active listening, asking open-ended questions, demonstrating empathy and displaying a non-judgemental attitude. Open questions invite patients to think before responding and provide the nurse with more information than a closed question (Miller & Rollnick 2013). It is also important to take note of the non-verbal cues offered by the patient (McNulty et al 2014).

Safe sex

Safe sex is defined as any sexual activity where the partners involved are protected from **sexually transmitted infections** and unintended pregnancy. Safe sex (also called safer sex) is where there is no exchange of blood or body fluids, such as semen and vaginal fluids. Safe sex can include abstinence, non-sexual contact like massage or hugging, mutual masturbation, kissing, rubbing against one another, fantasy, fingering and using a condom and lube every time sex happens (State Government of Victoria 2014). Safe sex also encompasses consenting to sexual activity and feeling emotionally safe. Consider the term 'safe sex'. What does safe sex mean to you?

Sexual risk-taking, or not practising safer sex, may happen for a wide variety of reasons. It may be a one-off episode or may be more frequent. Common themes in discussions about risk-taking include addressing knowledge deficits, exploring how safer sex is negotiated with sexual partners, exploring the impact of drug and alcohol use on decision-making and whether other factors

such as mental health, physical health or interpersonal violence might impact the ability to practise safe sex. Conversations about safe sex need to be non-judgemental and aimed at exploring knowledge, feelings and barriers. Also consider the impact of a person's beliefs and cultural norms on their decision-making, such as, 'contraception is a woman's responsibility' or 'he looked healthy so he couldn't have HIV'. It is important that the person does not feel judged or lectured about their behaviour, but rather, is provided with an opportunity to explore choices to increase safety (McNulty 2014).

Nurses are ideally placed to share preventive health messages for safer sex with all clients in their care, including those with diverse orientation, identity and behaviour. Offering written information can also support discussions and provide an opportunity for reflection after the clinical encounter. Most sexual health services have web-based fact sheets on safe sex topics.

The sexual health history

The PLISSIT model developed by Annon (Box 21-1) (Ayaz 2013, Bates 2011) is an example of a patient/provider collaboration framework that can be used to initiate a dialogue about sexuality in any setting. All beginning nurses will be able to utilise the first two or three levels of the model; however, more specific training is needed to provide intensive therapy (Ayaz 2013).

The level of detail contained within the **sexual health history** must be discussed and agreed with the patient or client. Appropriate questioning and recording will vary between services; for example, a person presenting with the signs and symptoms of a sexually transmitted disease requires a different approach to sexual history-taking than a person presenting for an annual influenza vaccination. However, a sexual health history should always include elements of the following (Brook et al 2013):

- An assessment of symptoms to guide examination and tests offered.
- History of exposures (sexual contact, sharing of injecting drug equipment) to identify sites for testing and STIs the patient may be at risk for.
- An assessment of contraception use and risk of pregnancy.
- Assessment of other sexual health concerns, allowing for a discussion of sexual function and psychosocial issues.
- Assessing risk for blood-borne viruses to guide testing and prevention.
- Assessment of risk behaviour and prevention activities (condom use, drug use, frequency of testing, previous infections, vaccination history).
- Assessment of gender-based or interpersonal violence, which can impact on sexuality, sexual health and access to care.

The *Clinical example* illustrates what type of questions may be useful to ask in a follow-up visit. Note that permission is obtained from the patient, open questions are used,

BOX 21-1 PLISSIT Model of patient–provider engagement

P – permission	The first step is to seek permission to talk about sexuality and sexual health Use open questions to start the conversation about sexual health and assessing patient needs. Be clear that you are asking the patient whether they would like to talk about their sexuality and relationships and if they have any concerns, e.g. 'Sex is an important part of life and can be affected by our health status. Would you feel comfortable to talk with me about how the operation has affected the sexual part of your life?'
LI – limited information	This is where nurses can give general information directly related to the patient's health issue The aim is to increase the patient's knowledge and provide an opportunity to correct any inaccurate information. The nurse might explain what is normal or how some medical conditions, medication or surgery affect sexual function. Written information or websites can be useful at this stage.
SS – specific suggestions	Provide specific suggestions Needs to directly relate to the issues described by patient, e.g. 'Can you tell me more about how the timing of your pain medication impacts on your sexual activity?' A thorough history will identify unique issues. It is important to check in with the patient that suggestions you offer are suitable to their individual needs and lifestyle.
IT – intensive therapy	Involves referring the patient to a relevant specialist to address any ongoing needs or for a more detailed consultation. Referrals could be to a psychologist, sexual health counsellor or sex therapist. Referrals should be made in consultation with the multidisciplinary team.

Ayaz S 2013 Sexuality and nursing process: a literature review. Sexuality and disability 31:3–12; Bates J 2011 Broaching sexual health issues with patients. Nursing Times 107(48):20–2.

CLINICAL EXAMPLE

Communicating about sexual health

All men who have sex with men are recommended to have a sexual health screen every 3–12 months (STIs in Gay Men Action Group 2013). Before undertaking the sexual health screen, I need to know a bit more about the reason the patient attended the clinic and if there might be any additional tests I need to order. My first patient for the day is a 25-year-old man; below is an example of the discussion:

Nurse: Hi Matt, can you tell me what has brought you into the clinic today? (*Open question*)

Patient: I got a reminder that I was due for my check-up.

Nurse: So there is nothing that is worrying you today and you just want to have a check-up. (*Reflection/ summarising*)

Patient: Yes.

Nurse: Is it okay if I ask you some specific questions about symptoms of sexual infections, and some detail about your recent sexual history? This will help me decide what tests to offer you today. (*Asking permission*)

Patient: That's fine.

Nurse: Have you got any symptoms at the moment, such as pain when you pee, discharge from the penis, pain in your testes, lumps or sores, or any rectal pain or bleeding? (*Closed question to elicit a specific response*)

Patient: No, nothing like that.

Nurse: In the last 3 months how many different sexual partners have you had? (*Non-judgemental approach*)

Patient: Four.

Nurse: Were they men, women or both? (*No assumptions made about gender of sexual partners*)

Patient: All of them were men.

Nurse: What percentage of the time did you use condoms in the past 3 months? (*Non-judgemental approach*)

Patient: All of the time. I am really cautious about protecting myself from infections.

Nurse: So you are aware the rates of some infections are high among men who have sex with men and you always use condoms to protect yourself. (*Reflection/ summarising*)

Patient: That's right.

Nurse: Great. Before I explain the tests for the routine sexual health check, were there any questions you wanted to ask or anything else concerning you today? (*Open question*)

language is neutral, assumptions are not made about the gender of sexual partners, and frequent opportunities are provided for the patient to add additional information.

• CRITICAL REFLECTION POINT

Reflect on the last six patients you have cared for or been involved with during clinical placements, or in your work as a nurse. Were there, or could there have been, issues related to their sexuality and sexual health that you could have explored with them? Ask an experienced registered nurse how they broach the topic to give you some strategies for your future practice.

Impact of health conditions on sexuality and sexual health

It is beyond the scope of this chapter to discuss all of the possible altered states of health that may affect sexuality; however, a few specific examples are given below. Nurses need to remain aware of the possible impacts of specific health conditions on sexual function and expression that may significantly influence the results and outcomes of treatment in clients of all ages. Altered states of health, including a range of chronic medical and surgical conditions; major trauma; disability; mental health conditions; and the medications that are part of their treatment (see Box 21-2) may temporarily or permanently affect sexual function. These considerations are an important part of the initial nursing assessment, planning for chronic disease or disability management, and also as part of ongoing discharge and community health education.

Chronic diseases

The sexuality of people living with chronic disease such as diabetes or heart disease is often neglected in

BOX 21-2 Conditions that may affect sexuality

Medical conditions

Multiple sclerosis, arthritis, cardiac disease, lung disease, diabetes, renal disease, incontinence and obesity, chronic pain

Surgical conditions

Mastectomy, hysterectomy, prostatectomy, colon surgery (from cancer, Crohn's disease or ulcerative colitis), cardiac surgery, orthopaedic surgery – particularly on the knees and hips

Mental illness

Depression, anxiety, obsessive compulsive disorder, schizophrenia, post-traumatic stress syndrome, substance abuse

Intellectual disability

Down syndrome, autism spectrum disorders, developmental disability

Trauma

Brain injury, spinal cord injury, burns

discussions of long-term care with nurses and other health professionals. While developing plans for chronic disease management in primary healthcare has become part of routine care, sexuality is rarely incorporated (Verschuren 2010). Consider also any person with a disability. Sexual wellbeing is equally important for maintaining quality of life for patients living with chronic disease or disability. The impact of chronic or long-term conditions on self-esteem; societal attitudes towards people living with disease or disability; cultural and other values of family and friends (see *Working with diversity*); the possible effects of depression or drug and alcohol use – all may intervene and all may impact on individual expressions of sexuality. There are also gender differences to consider when developing care plans; for example, a large amount of research has been dedicated to the treatment of erectile dysfunction in males, but there is limited evidence to inform strategies to address female sexual dysfunction (Verschuren 2010).

Mental health and wellbeing

Clients with a mental health problem often have both their physical health and sexual health concerns overlooked. Sexuality is not seen as an important priority in many interactions with mental health clients, yet many of the medications prescribed to the person receiving treatment for a mental illness negatively impact on sexuality and the sexual response. Sexuality is a basic human right and all people, including those with a mental illness, have the right to appropriate information, and appropriate referral and access to sexual health care (Quinn & Heppell 2011).

WORKING WITH DIVERSITY

Using interpreters

Sexuality and heart disease: planning for discharge

Sexuality issues are sensitive for many people. Men and women from diverse cultural backgrounds may find it difficult to talk about sexuality issues that are often seen as taboo topics; however, diversity exists within all cultures, and a particular patient may differ from the norms and other members of his or her culture.

In addition, people from culturally and linguistically diverse backgrounds can face barriers to accessing appropriate services. For patients who do not speak English as a first language an interpreter may be needed to ensure effective communication between the healthcare provider and the patient. The values and attitudes of an interpreter towards sensitive issues may also need to be clarified prior to the consultation going ahead.

Mr B is a 62-year-old Arabic-speaking man. Mr B has recently had a pacemaker inserted for atrial fibrillation. Mr B is about to be discharged from your ward and your role is to offer information about how he might manage his health over the next couple of months. Mr B does not have English as a first language and you are concerned that you may not be able to provide high-quality information without the use of an interpreter. Some issues to consider when you are preparing for the discussion are: What is best practice around talking to a client where English is not the first language? and, what will you do if the interpreter refuses to talk about sexuality?

Mrs B is with her husband during the discharge planning session and asks about when the couple can resume having sex as it is a vital part of their relationship together. How would you answer this question, and what other issues might you discuss before the couple go home? Answers might include: sex is fine as long as you are feeling better; avoid positions that place pressure on the arms and chest for the first 4 weeks; talk to each other about your fears; there are other ways of sexual intimacy besides penetrative sex; the risk of subsequent heart attack during sex is low (NHS Choices 2013).

Implications for practice

- The best practice around talking to a client where English is not the first language is to use an accredited interpreter who must adhere to a code of ethics that includes respecting a client's confidentiality and privacy.
- Use trained interpreters only, not relatives.
- Consider the gender of the interpreter when making the booking and what would be the most appropriate for the patient.
- An interpreter's role is to convey the words used by the healthcare provider and the patient.
- The interpreter should not decide what should or should not be conveyed.
- During the consultation speak to the patient not the interpreter.
- Consider confidentiality issues as some groups may be wary about use of interpreters due to issues such as potentially knowing the interpreter.
- Some languages may not have equivalent terms for discussing sexual identity or practices.
- Ask the interpreter if they are comfortable discussing sexuality issues and if not arrange for another interpreter (Centre for Culture, Ethnicity and Health 2011).

References

Centre for Culture, Ethnicity and Health. Online. Available: www.ceh.org.au/knowledge-hub/; accessed March 2016.

NHS choices 2013 Pacemaker implantation – recovery. Online. Available: http://www.nhs.uk/Conditions/PacemakerImplantation/Pages/afterwardspage.aspx; accessed 14 March 2016.

For various reasons, those suffering mental illness, mental disability, or periods of extreme stress, may need to live in mixed accommodation settings. Sexual safety is a common area of concern in such settings and has been raised as an issue by both men and women. Nurses often find it difficult to discuss and address the sexual concerns of their clients, and of particular concern are issues that may be raised in regard to safe sex and sexual assault.

Sexual violence and risk for both unplanned pregnancy and sexually transmitted infections (STIs) are also important issues to consider when working with those who are vulnerable, those who may have experienced short or longer periods within institutional-type care, or those experiencing family violence and abuse. Inappropriate personal boundary setting and risk-taking behaviours – particularly if associated with concurrent drug and alcohol use – place many people (young and old), and those with intellectual or cognitive disabilities or mental health problems, at greater risk for sexual assault and STIs. For gay, lesbian, bisexual, transgender and intersex clients coping with discrimination in its many forms, the invisibility of sexuality and diversity in the general community may further impact on self-esteem, self-worth and sense of security. These factors in turn may impact on mental health, such as causing depression and anxiety, as well as other disorders (Barker 2009).

Table 21-2 takes you through a clinical reasoning process for gathering relevant information and data to identify STI risk and to make appropriate decisions to plan actions to reduce this risk. This is another way you can frame your approach to planning nursing care.

Cancer

While surgical and pharmacological treatments for cancer have become increasingly more sophisticated and successful, cancer treatments and living as a survivor of cancer have known impacts on a patient's sexual identity and sexual confidence. These impacts may include feelings (such as fear, anxiety, sadness, anger and joy), the body's production of the hormones needed for sexual response, physical ability to give and receive sexual pleasure, body image and self-esteem issues, and roles and relationships affected by loss or grief (Cancer Council Australia 2013b). Talking about a cancer diagnosis and the effects of

TABLE 21-2 Clinical reasoning process: sexually transmitted infection (STI) risk in a client with a mental health issue

Patient priority problem(s)	Ivy is a 56-year-old woman with schizophrenia who lives in a boarding house in the inner city
Gather relevant information and data	Build rapport with Ivy during the consultation by active listening and displaying a non-judgemental attitude Ivy has never had a Pap test and during the course of a consultation, tells you that she has a strange smell 'down there' You ask further questions about the smell and any other symptoms she may be experiencing such as vulovaginal itch, discharge, dysuria or post-coital bleeding
Make appropriate judgements and decisions	Based on the history of symptoms given to you by Ivy you offer testing for sexually transmitted infections, despite Ivy being outside the high-risk age group for STIs You do the Pap test, take a swab for the STIs chlamydia and gonorrhoea, and do a high vaginal swab for common vaginal conditions candidiasis and bacterial vaginosis
Identify patient problem(s)	The swab result returns positive for chlamydia If untreated, chlamydia can be transmitted to sexual partners and lead to pelvic inflammatory disease in women
Set priorities and establish goals	Ivy needs treatment and management of chlamydia infection
Prepare for and take action	Ivy is treated for chlamydia infection with Azithromycin 1g po stat. She is provided with information about chlamydia and its management, including avoiding sex for one week after treatment and contact tracing recent sexual partners over the past 6 months Through the community outreach worker you arrange safe sex information, sexual health screening and advocacy work with the Boarding House Mental Health Team for Ivy's housemates, while maintaining confidentiality about Ivy's care
Evaluate impacts and outcomes	Phone Ivy in one week to see if she avoided sexual contact and if she was able to contact current and past sexual partners Offer any ongoing support required
Reflect on and process new learning	Next time would you do anything differently?

Centre for Culture, Ethnicity and Health 2011 CALD communities, sexually transmissible infections and viral hepatitis: a resource manual for health and community services. Multicultural Health and Support Service.

associated treatments like chemotherapy and radiotherapy seems to be an easier and more frequently performed task than talking about the significant emotional, physical and sexual impacts of cancer and its treatments. A cancer diagnosis and the subsequent management and long-term effects on cancer survivors will also impact on the patient's carer or significant other. Grief and loss around sexuality are part of the holistic effects of a cancer diagnosis and its management. Readily available and confidently shared information about the short- and long-term effects of cancer treatment on sexuality are infrequently and often inadequately addressed in cancer care.

Sexual health

Sexually transmitted infections and blood-borne viruses

STIs are bacterial, viral or parasitic infections that are passed from one person to another through sexual activity, including oral, vaginal and/or anal sex. Blood-borne viruses (BBVs) such as HIV and hepatitis B are included in the definition of an STI as they are also transmitted via sexual activity. STIs have different modes of transmission such as body fluid contact, blood-to-blood contact, skin-to-skin contact or vertical transmission via mother to baby. One of the key features of STIs is that they are often asymptomatic. Due to patients not having any symptoms, they will not necessarily present to a doctor or clinic for sexual health screening. Offering screening for STIs and BBVs in high-risk populations is therefore an essential public health activity. If patients do have symptoms, these can vary in severity, duration and presentation, depending on the type of infection. In some situations, diagnosis of an STI is made on the basis of a syndromic presentation; for example, pelvic inflammatory disease (PID) is characterised by mild to severe pelvic pain in women, or proctitis, characterised by anal discharge and pain in men who have sex with men (Australasian Sexual Health Alliance n.d). In these cases, STI testing is performed on the basis of presenting symptoms; however, the specific pathogen is not always found.

Table 21-3 provides a summary of clinical presentations and transmission of the most common STIs and BBVs. The table is adapted from the Australian STI Management Guidelines for use in Primary Care (Australasian Sexual Health Alliance nd) and the New Zealand Sexual Health Society Best Practice Guidelines (The New Zealand Sexual Health Society 2015). Detailed information about the treatment and management of STIs is located in both of these up-to-date, evidence-based online resources (see *Online resources*).

Prevalence of STIs

In Australia, data on the rates of STIs that are of public health significance are notifiable to public health authorities in each state or territory. In Australia, The Kirby Institute publishes annual surveillance reports about HIV, viral hepatitis and STIs (The Kirby Institute 2015). In New Zealand, STIs (with the exception of HIV) are not notifiable and data is derived from sexual health clinics, family planning clinics and laboratories; therefore, the quality and quantity of data is variable (Institute of Environmental Science and Research 2015). In addition to public health surveillance, research on STIs and HIV continually adds to new information on prevalence, testing and behaviours in specific population groups.

Chlamydia is the most common notifiable STI. Rates of chlamydia infection have been increasing over the past decade, particularly among people under 29 years of age, and in 2013, more than 82,000 Australians were notified with chlamydia infection (The Kirby Institute 2015).

Gonorrhoea, *syphilis* and *human immunodeficiency virus* (HIV) predominantly affect men who have sex with men in Australia and New Zealand.

Several common STIs (herpes simplex virus, human papilloma virus, trichomonas vaginalis, molluscum contagiosum virus) are not notifiable and contact tracing is not recommended due to limited public health benefit.

Populations mostly affected by chronic hepatitis B are those who have migrated from countries of high prevalence (Australasian Society for HIV Medicine 2014). Universal infant vaccination programs for hepatitis B, and vaccination for at-risk groups contribute to low rates of newly acquired infections (The Kirby Institute 2015, Australasian Society for HIV Medicine 2014); however, Indigenous peoples are at risk of poorer health outcomes, including in relation to STIs. This is due in part to barriers to accessing health care and additional programs that may be needed to appropriately support STI and BBV prevention, testing and treatment efforts.

Testing for STIs and BBVs

Screening and testing recommendations for STIs and BBVs are based on population prevalence data and the health impact of the infection. The NSW Sexually Transmissible Infections Programs Unit in Australia (2015) has developed an STI testing tool (see Figure 21-2) to be used as a guide for identifying which populations to test, which tests to perform and how often, normalising sexual health screening and contact tracing.

STI and BBV prevention

In addition to safer sex and the use of a **condom** to prevent blood and body fluid transmission there are some

TABLE 21-3 Clinical presentation of common STIs and BBVs

STI/BBV	Transmission	Clinical presentation
Chlamydia trachomatis	Bacteria transmitted by body fluids	**Women**: 50% have no symptoms Symptoms when present may include vaginal discharge, dysuria, pelvic pain, intermenstrual bleeding, post-coital bleeding **Men**: 75% have no symptoms Symptoms when present may include dysuria, urethral discharge, testicular pain, ano-rectal symptoms
Neisseria gonorrhoea	Bacteria transmitted by body fluids	May be asymptomatic **Women**: Vaginal discharge, dyspareunia, irregular bleeding **Men**: Urethral discharge, dysuria Ano-rectal symptoms: discharge, irritation, painful defecation, disturbed bowel function
Treponema pallidum (Syphilis)	Bacteria transmitted by skin-to-skin contact or vertical transmission	Clinically the disease has three stages; however, about 50% of people will have no symptoms **Primary syphilis**: painless genital ulcer or chancre(s) with well-defined indurated base often occurring at transmission site, enlarged inguinal lymph nodes. Spontaneously resolves within a few weeks **Secondary syphilis**: rash typically on palms, soles and trunk; constitutional symptoms such as fever, malaise, headache and lymphadenopathy; alopecia, condlylomata lata. If untreated, symptoms resolve in a few weeks, but may recur **Latent and tertiary**: reactive serology but no clinical symptoms **Tertiary**: symptoms including skin lesions (gummas), cardiovascular or neurological disease, may develop months or years later if not treated
Human papilloma virus (HPV)	Virus transmitted by skin-to-skin contact	More than 40 types of HPV virus. Warty growths, commonly caused by types 6 and 11, in and around ano-genital skin with minimal discomfort. Sometimes itchy. Psychological distress may be present **Women**: Sub-clinical cervical infection
Herpes simplex virus (HSV)	Virus transmitted by skin-to-skin contact	Recurrent ano-genital ulcers or blisters with itching/tingling and erythema Initial episodes may be severe with extensive ulceration and systemic features Significant psychological distress may be present
Hepatitis B virus (HBV)	Virus transmitted by blood and body fluid contact; and vertical transmission	Commonly asymptomatic **Acute hepatitis**: lethargy, nausea, fever, anorexia for a few days then jaundice, pale stools and dark urine Chronic hepatitis defines as infection lasting over 6 months, can be lifelong Complications of chronic infection include cirrhosis and hepatocellular carcinoma
Human immunodeficiency virus (HIV)	Virus transmitted by blood and body fluid contact; and vertical transmission	May experience seroconversion illness approximately 2 weeks after exposure, fever, rash, lymphadenopathy, pharyngitis, myalgia, diarrhoea, then usually asymptomatic for several years Treatment with antiretroviral medication will delay or prevent onset of symptoms of immune deficiency: oral thrush, diarrhoea, weight loss, skin infections, herpes zoster Infection with HIV causes chronic immune deficiency, which, if untreated, leads to acquired immunodeficiency syndrome (AIDS) after a variable period, although on average 10 years after infection.

STI Testing Tool

Who? is the patient?	Why? would you do an STI test?	Which? STI	How? WHAT specimen do you need?	How? WHAT test do you order?
A sexually active young person under 29 years	This population is at higher risk for Chlamydia	Chlamydia	First pass urine **OR** Self-collected vaginal swab **OR** Endocervical swab	NAAT
		HBV	**Consider vaccination for HBV & HPV**	
A sexually active Aboriginal young person under 29 years	This population is at higher risk for Chlamydia * Can also be conducted as part of the Aboriginal health check - Medicare item 715	Chlamydia Gonorrhoea	First pass urine **OR** Self-collected vaginal swab **OR** Endocervical swab	NAAT
		HBV	Blood **Consider vaccination for HBV & HPV**	HBcAb
An (asymptomatic) person of any age requesting "a STI checkup"	The patient has requested it, so may be at risk. Ideally, take a sexual history to ascertain: a) if they fall into one of the groups below b) help you decide on sites for specimen collection	Chlamydia	First pass urine **OR** Self-collected vaginal swab **OR** Endocervical swab	NAAT
		HIV Syphilis HBV	Blood **Consider vaccination for HBV**	HIV Ab Syphilis EIA HBcAb
A man who has sex with men (MSM)	This population group is at higher risk for Chlamydia, Gonorrhoea, Syphilis, HIV, HAV, HBV	Chlamydia	First pass urine & anal swab	NAAT
		Gonorrhoea	Throat swab Anal swab	Gonorrhoea culture NAAT
		HIV Syphilis HAV HBV	Blood **Vaccinate for HAV & HBV**	HIV Ab Syphilis EIA HAV Ab (total) HBcAb
A sex worker	This population group is at higher risk for Chlamydia, Gonorrhoea, Syphilis, HIV, HBV See above for MSM sex workers	Chlamydia Gonorrhoea	First pass urine **OR** Self-collected vaginal swab **OR** Endocervical swab	NAAT
		HIV Syphilis HBV	Blood **Vaccinate for HBV**	HIV Ab Syphilis EIA HBcAb
A person who injects drugs	This population group is at higher risk for Chlamydia, Gonorrhoea, Syphilis, HIV, HBV and HCV* * HCV is not an STI but is included due to risks associated with injecting drugs	Chlamydia Gonorrhoea	First pass urine **OR** Self-collected vaginal swab **OR** Endocervical swab	NAAT
		HIV Syphilis HBV HCV	Blood **Vaccinate for HBV**	HIV Ab Syphilis EIA HBcAb HCVAb

HAV = Hepatitis A
HBV = Hepatitis B
HCV = Hepatitis C

HPV = Human Papilloma Virus

NAAT= Nucleic Acid Amplification Test (eg: PCR)

Information on vaccination www.immunise.health.gov.au
Information on HIV Pre & post-test discussion www.ashm.org.au/uploads/HIV_viral_hep_Chapter_9.pdf

Produced March 2012

Getting started with an STI discussion

Bringing the subject up opportunistically

"We are offering Chlamydia testing to all sexually active people under the age of 25, would you like to have a test while you're here or find out more about Chlamydia?"

Using a 'hook'

"Have you heard about HBV or HPV vaccination? They protect against infections that can be sexually transmitted, perhaps we could discuss these while you're here?"

As part of a reproductive health consultation

" Since you're here today for a pap smear/to discuss about contraception could we also talk about some other aspects of sexual health, such as an STI check up?"

Because the patient requests a "checkup" for STIs

"I'd like to ask you some questions about your sexual activity so that we can decide what tests to do, is that OK?"(See Brief Sexual History ☑)

Brief Sexual History ☑

"I'd like to ask you some questions about your sexual activity so we can decide what tests to do, is that OK?"

- ☐ Are you currently in a relationship?
- ☐ In the last 3 months, how many sexual partners have you had? How many partners have you had in the past 12 months?
- ☐ Were these casual or regular partners?
- ☐ Were your sexual partners male, female or both?
- ☐ When was the last time you had vaginal sex/oral sex/anal sex without a condom?
- ☐ In the past year were you ever paid for sex?
- ☐ Have you previously been diagnosed with an STI?
- ☐ Is there anything else that is concerning you?

Other risk behaviours

"I'd now like to ask about some other activities that could increase a person's risk of certain infections, is that OK?"

- ☐ Have you had any tattoos? If yes, was that here in Australia or overseas?
- ☐ Have you ever injected drugs?
- ☐ Have you ever shared needles or injecting equipment?
- ☐ Have you ever been in gaol?

Consent

"I suggest that we test for..." eg: Chlamydia

- ☐ This will involve a urine test. Can you tell me what you understand about Chlamydia?
- ☐ If the result is positive, we can also talk about recent partners you've had being tested as well."

Contact tracing

Contact tracing aims to reduce the transmission of infections through early detection and treatment of STIs. It is the diagnosing clinicans responsibility to initiate a discussion about contact tracing.

From what you have told me today there are a few people who need to be informed. Would you like some tips about how to do this?

Explain different methods and offer choice: Different methods might be needed for each partner. (in person, phone, SMS, email or letter)

Theses sites can support your patients to tell their partners:

www.letthemknow.org.au www.thedramadownunder.info (MSM)
www.bettertoknow.org.au (Aboriginal People)

Contact Tracing resources

Tool www.stipu.nsw.gov.au/pdf/May_2011_Contact_tracing_final_version.pdf
Manual ctm.ashm.org.au/
Letters www.gpnsw.com.au/programs/sexually-transmitted-infections-sti/contact-tracing

Support

General Practitioners, Health Care Workers and patients can ask for support from their local Sexual Health Clinic www.health.nsw.gov.au/PublicHealth/sexualhealth/sexual_phus.asp OR call

NSW Sexual Health Infoline – 1800 451 624

Red Book www.racgp.org.au/Content/NavigationMenu/ClinicalResources/RACGPGuidelines/TheRedBook/redbook_7th_edition_May_2009.pdf

WANT2 TALK ABOUT SEXUAL HEALTH? NSW SEXUAL HEALTH INFOLINE 1800 451 624 Mon - Fri 9am - 5:30pm

For more copies of this STI testing tool: www.stipu.nsw.gov.au

Ref: Clinical Guidelines for the management of STIs among Priority populations

Figure 21-2 STI testing tool.

For the latest version of the STI Testing and Screening Tool and for other clinical management resources go to: www.stipu.nsw.gov.au/general-practice-resources/sti-clinical-management. Developed by the NSW STI Programs Unit and reproduced with permission, 2016. www.stipu.nsw.gov.au.

other key prevention activities for STIs and BBVs. These include testing, treatment, and contact tracing/partner notification.

As most STIs and BBVs can be asymptomatic, testing can detect infection in people who otherwise might not be aware and could potentially pass on the infection to others. Treatment shortens the duration of an infection, reducing the amount of time a person is infectious. This is particularly relevant for bacterial infections that can be cured with antibiotics.

Contact tracing, also known as partner notification, is an important part of the management of people diagnosed with an STI or BBV. The aims of contact tracing are to interrupt the ongoing transmission of infection, identify people who may benefit from treatment, and prevent reinfection (Australasian Society for HIV Medicine 2010). In practice, this means working with the patient or client who has been diagnosed with an infection to identify contacts, and developing a plan about how to inform the contacts of the infection. The timing of discussing and instigating contact tracing depends on several factors, including the patient's emotional state and the risk to the public. The role of the nurse in contact tracing is to provide clear information about the course of the infection and how far back to trace, explore concerns with the patient/client and discuss options about how to contact trace. Clients can be reluctant to trace contacts due to concerns about loss of confidentiality or negative repercussions and may need additional support, including using anonymous contact tracing websites or provider-assisted contact tracing.

A combination of strategies (behavioural, bio-medical, pharmacological and structural/socio-legal) is needed to prevent STIs and BBVs. Pharmacological prevention is particularly relevant to HIV. Treatment with antiretroviral medication can reduce a person's viral load and reduce the risk of HIV transmission by up to 96% (AVERT 2015). Non-occupational post-exposure prophylaxis (nPEP) is a 28-day course of HIV antiretroviral medication taken within 72 hours of a potential exposure and reduces the risk of transmission by approximately 80% (Australasian Society for HIV Medicine 2013). Pre-exposure prophylaxis (PrEP) is a way for people who do not have HIV to help prevent HIV by taking antiretroviral medication every day. PrEP has been shown to reduce the risk of getting HIV by up to 92% (Wilton et al 2015) for people who take the medication consistently. HIV prevention is rapidly changing and PrEP is currently available in Australia through demonstration trials, with trials planned for New Zealand in the near future.

CLINICAL EXAMPLE

STI screening

As a sexual health nurse working in a primary healthcare clinic I see a mix of patients each day. Once a week we run a travel vaccination clinic. Many of the patients I see are young people about to go on a 'gap year' overseas. We know that young people are at highest risk of chlamydia, but we weren't sure how to bring it up with our young patients and what they would think.

At a team meeting we talked through how we could implement screening and decided that we would offer chlamydia testing to all young people under 30 years old. Initially the nurses and doctors were uncomfortable with how to introduce and discuss testing within their conversation, and so we developed a script to use.

We now say to all young people: 'As part of a comprehensive travel consultation, I would also like to do a sexual health check-up with you before you go overseas, is that okay with you?' When they say 'Okay', we then tell them how easy it is to do a urine test and how if the test result comes back positive, chlamydia can be treated with a single dose tablet. It has made it much easier to test for chlamydia now that it is integrated into our usual practice. It also gives me an opportunity to find out what these young adults already know about STIs and how to prevent them. We have had some positive results and it is great to know these patients have been treated and managed before they travel overseas.

• CRITICAL REFLECTION POINT

Populations most at risk of sexually transmitted infections and blood-borne viruses (men who have sex with men, sex industry workers, injecting drug users) are often marginalised and stigmatised within the community.

1. **What were the prevailing attitudes you grew up with in relation to people with sexually transmitted infections?**
2. **Have your attitudes changed through your nursing studies, and, if so, what knowledge or experiences have influenced that change?**

Female reproductive health

Reproductive health implies that people are able to have a responsible, satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when and how often to do so. People have the right to be informed of and have access to safe, effective, affordable and acceptable (WHO 2015a) methods of birth control and access to health care throughout pregnancy and childbirth.

Reproductive health and sexual health care are closely linked and are often provided by the same healthcare service such as family planning clinics. A woman

attending a family planning clinic may have a Pap test, a chlamydia test, a pregnancy test and a discussion about contraceptive needs all in the same consultation. However, there are still significant challenges to providing effective reproductive and sexual health care in many countries and settings, especially in developing countries. There is also much variability in levels of knowledge related to reproductive and sexual health and limited recognition that reproductive health needs are very different at different stages throughout life (see Chapters 17 and 18).

Pregnancy

A full-term pregnancy is approximately 40 weeks in length and is divided into three trimesters: weeks 1–12, weeks 13–27, and weeks 28–40 (see Chapters 16 and 17). The period of pregnancy before birth is known as the antenatal period and the period of 6 weeks after the birth is known as the postnatal period. The birth itself includes labour, during which the cervix dilates up to 10 cm and uterine contractions facilitate the passage of the infant, placenta and membranes through the birth canal. Babies are also born by caesarean section for various reasons, including malposition and fetal distress. In Australia and New Zealand, registered midwives care for women throughout their pregnancy and in the postpartum period.

Choices for birthing might include hospital midwifery care, team midwifery, shared care models with a GP or care by an obstetrician. There are also women who choose to give birth at their home with a suitably qualified midwife. Many same-sex couples have chosen to become parents and, as described in Chapter 15, a non-judgemental approach to our clients or patients is paramount as loving families of many different types are formed and welcome children.

Termination of pregnancy

It is estimated that approximately 1 in 5 women will have an **abortion** in their lifetime (Sexual Health and Family Planning Australia 2012). There are two methods used to terminate a pregnancy and these are partly determined by the stage of the pregnancy. Medical abortion, for early pregnancies, involves the use of prescribed drugs to induce a termination. Surgical abortion involves a minor surgical procedure in which the fetus is removed from a woman's uterus. In Australia, there is no federal legislation concerning termination of a pregnancy and therefore, access to healthcare services may be different in each state and territory. Abortion is legal in New Zealand (New Zealand Family Planning 2015).

As outlined in a review by Sexual Health and Family Planning Australia in 2012 (Sexual Health and Family Planning Australia 2012), there is still considerable stigma attached to abortion despite the fact that most Australians support women's choice to undertake a safe and legal abortion. It is commonly expressed that women who terminate a pregnancy will experience guilt, grief and shame. Despite this, international studies consistently show that the vast majority of women feel that they have made the right decision and do not appear to suffer any subsequent psychological or emotional problems. It is important for nurses to be aware that women may choose to have an abortion for a wide variety of reasons. It is the role of the healthcare professional to support a woman's decision and to provide safe clinical and compassionate care, or refer the woman to an appropriate provider who can do so.

Menopause

Menopause is often defined as a woman's final menstrual period, but more specifically refers to when a woman has not had a menstrual period for more than 1 year. Female menopause usually occurs between the ages of 45–55 years, with an average onset age of 51 years. Changes in reproductive hormones cause the woman's ovaries to cease releasing eggs (see Chapter 18).

Perimenopause is the stage before the menopause when the menstrual cycle changes to being up to 3–12 months apart, and is often the time when women begin to experience the symptoms of menopause. In some cases menopause occurs earlier in life due to ovarian insufficiency, induced through surgery or treatment for cancer (Jean Hailes 2014).

Common symptoms of menopause include:

- hot flushes
- night sweats
- muscle and joint pain
- anxiety
- sleep disturbance
- vaginal dryness and painful intercourse
- fatigue
- crawling sensations on the skin
- low libido.

The management and treatment of menopausal symptoms depends very much on the individual. Most women presenting with symptoms have already identified the impact of menopause on their wellbeing and simply require evidence-based information about menopause and treatment options (both natural and pharmacological). While many women will not require treatment, those experiencing symptoms that significantly impact on their daily life may consider hormone replacement

therapy (HRT). Similarly, those who have experienced an early menopause would also be recommended to commence HRT with a view to reducing bone loss and cardiovascular disease risk. HRT would also be recommended to women under the age of 60 years who have osteoporosis, to reduce further bone loss. HRT is a combination of oestrogen and progesterone which can be taken daily (or oestrogen only if the woman has had a hysterectomy and does not need progesterone to protect the endometrium).

In addition to a medical history, questions to ask a patient who reports menopausal symptoms include:

- What are the symptoms and when did they start?
- When do symptoms occur?
- When and how often do symptoms occur?
- Do symptoms impair your sleep or quality of life?
- Are you experiencing any genito-urinary symptoms such as incontinence, vaginal dryness, dyspareunia or painful sex? (Patients may not volunteer these symptoms but will tell you about them if asked.)

Female genital mutilation

Female genital mutilation (FGM) involves all procedures where there is removal of part or all of the external female genitalia for non-medical reasons. The WHO states that FGM is 'recognized internationally as a violation of the human rights of girls and women. It reflects deep-rooted inequality between the sexes, and constitutes an extreme form of discrimination against women' (WHO 2014).

In Australia and New Zealand, the performance of any type of FGM is illegal and is also prohibited by the Royal Australian College of Obstetricians and Gynaecologists (Mathews 2011). FMG can result in immediate complications of severe pain, shock, haemorrhage, tetanus, sepsis, urinary retention, open wounds and injury to adjacent genital tissue. In addition to the impact on sexual pleasure, there are also long-term complications including recurrent bladder and urinary tract infections, the development of cysts, infertility, and an increased risk of complications during childbirth – often requiring additional surgery to cut open and re-suture the vaginal orifice for sexual intercourse and childbirth.

Female contraception

Contraceptive advice is most commonly provided by general practitioners, nurse practitioners or other health professionals with specialised education and training. A comprehensive assessment that takes into account the woman's general health, financial circumstances, lifestyle, cultural and spiritual health and previous experiences with contraceptive methods is integral to the selection of the most appropriate contraceptive method for her. In the tertiary or acute care setting, asking questions about contraceptive use as part of the nursing assessment is very relevant to the patient presentation. For example, a woman presenting with chest pain might have a thromboembolism due to use of the combined oral contraceptive pill.

The Australian Primary Health Care Nurses Association (APNA) recently developed a Decision Support Tool to assist health professionals in making decisions with women about their contraceptive choices. Shown in Figure 21-3, the APNA Family Planning Decision Support Tool provides an introduction to the methods of contraception available in Australia. There are some minor differences in methods available in New Zealand; however, the local family planning services in each country are a good starting point for information and fact sheets. There is no one perfect method of contraception and contraceptive needs change throughout the life span. Contraceptive effectiveness also depends on user compliance, which may be improved by sharing information, educational resources and counselling.

Some medical conditions can affect the suitability of a particular method of contraception. Table 21-4 gives a summary of contraceptive methods for women with existing health problems (Department of Reproductive Health 2010). Choice of contraception method is also important for women living with HIV and their male partners, whether HIV-positive or HIV-negative. If a woman's male partner is HIV-negative, prevention needs to include information about HIV transmission and prevention adherence to antiretroviral therapy and consistent condom use. If the woman is on treatment and has an undetectable viral load, however, the couple may choose not to use condoms. Women with HIV can use all hormonal contraceptive methods without restriction (Department of Reproductive Health 2010).

Emergency contraception

Emergency contraception is an important and underused method of contraception that can be used for contraceptive failure (e.g. ruptured or slipped condom, missed pill(s), dislodged diaphragm, non-use of contraception, and sexual assault). Emergency contraception should be introduced and included in discussions or counselling for methods of contraception, as well as be made more widely known about in the community (Calebretto 2009). Hormonal emergency contraception (EC) is the most common method (although the copper **intrauterine device** (IUD) can also be used). The principal mechanism

Contraceptive methods available in Australia

This decision support tool provides an overview of contraception, with the aim of improving accurate information on contraceptive methods, to women and men seeking contraceptive advice. A comprehensive medical assessment is required by a trained health professional prior to initiation of a contraceptive method.

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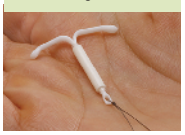
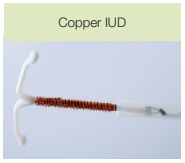
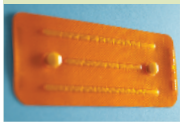
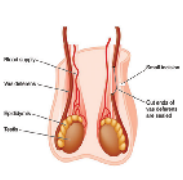
APNA Family Planning Decision Support Tool

	Name	Action	Efficacy	Advantages	Disadvantages
Long Acting Reversible Contraception (LARC)					
Levonorgestrel IUD 	**Levonorgestrel IUD (LNG-IUD)** – progesterone only (Mirena®)	Thickens mucous at the cervix, thins the lining of the uterus, inhibits sperm migration	99%	Effective for 5 years, reduces menstrual bleeding, inexpensive, alternative to sterilisation and an option for women who have contraindications to oestrogen, easily reversible.	Requires procedure for insertion and removal by trained health professional, risk of infection or perforation, may experience discomfort/pain during procedure, may experience irregular bleeding, offers no protection against STIs.
Contraceptive implant 	**Etonogestrel implant** – progesterone only (Implanon NXT®)	Prevents ovulation and thickens mucous at cervix	>99.9%	Effective for 3 years, inexpensive, option for women who have contraindications or side effects to oestrogen, minimal action required on the part of the user, easily reversible.	Requires procedure for insertion and removal by trained health professional, may cause bruising and bleeding, may cause a small scar at site of insertion, may experience irregular bleeding, provides no protection against STIs.
Copper IUD 	**Copper IUD**	Inhibits sperm migration, ovum transport and prevents implantation	99%	Effective for 5 to 10 years depending on the type used, for use when hormonal methods are contraindicated, can be used as emergency contraceptive inserted within 120 hours (5 days) after potential pregnancy risk.	Menstruation may become heavier, requires procedure for insertion with risk of infection or perforation, requires insertion by trained health professional, may experience discomfort/pain during procedure. Further disadvantages may be cost; both the initial purchase price of the device and insertion charges. Also requires removal by a trained health professional and offers no protection against STIs.
Contraceptive injection 	**Contraceptive injection** – depot medroxyprogesterone (DMPA) (Depo Provera® and Depo Ralovera®)	Prevents ovulation, thickens cervical mucous	Perfect use 97%, typical use 97%	Highly effective, lasts for 12 weeks, reduces heavy menstrual bleeding.	Injection can not be reversed once administered, requires attendance for injection every 12 weeks, may delay resumption of fertility, can cause irregular bleeding, offers no protection against STIs.
Other hormonal methods					
Combined oral contraceptive pill 	**Combined oral contraceptive pill** – contains oestrogen and progestogen	Prevents ovulation, thickens cervical mucous	Perfect use 99.7%, typical use 92%	Can predict or stop monthly bleeding, can reduce menstrual bleeding, can improve period pain, can improve acne.	Requires a pill to be taken each day, some pills can be expensive, efficacy may be affected by some medical conditions and medications, does not protect against STIs.
Progestogen-only pill 	**Progestogen-only pill (mini pill)**	Thickens mucous at the cervix to prevent sperm entering the uterus	Perfect use 99.7%, typical use 92%	Small dose of one hormone (progestogen) suitable for women who have contraindications or side effects from oestrogen and breastfeeding women.	Requires a pill to be taken each day with small margin for error, menstrual bleeding may be irregular, does not protect against STIs.
Vaginal ring 	**Vaginal ring** – plastic ring placed in the vagina, containing oestrogen and protestogen (NuvaRing®)	Prevents ovulation, thickens cervical mucous	Perfect use 99%, typical use 92%	Lower dose of hormones, remains in vagina for 3 weeks, highly effective, better cycle control than combined pill.	Expensive, requires user to remove ring after 3 weeks and reinsert after 7 day break, does not protect against STIs.
Emergency contraception 	**Emergency contraception** – Levonorgestrel (LNG), available as a single tablet containing 1.5mg LNG or 2 doses of 750mcg LNG (depending on the brand used)	Mainly works by preventing or delaying ovulation	**Key messages:** • Take as soon as possible after unprotected sexual intercourse (most effective when taken within 24 hours after intercourse, but can be taken up to 120 hours after intercourse) • Can be purchased over the counter at a pharmacy following a consultation with a pharmacist, or on prescription • A repeat dose should be taken if unprotected intercourse occurs any time more than 12 hours after emergency contraception was taken • Follow up with health professionals to discuss ongoing contraception and STI check if appropriate • Commonly but incorrectly referred to as the 'morning after pill'		

Contraceptive methods available in Australia

APNA Family Planning Decision Support Tool

	Name	Action	Efficacy	Advantages	Disadvantages
Barrier methods					
Male condom 	**Male condom** – use once only, made of latex or polyurethane (for latex sensitivity)	Collects semen containing sperm	Perfect use 98%, typical use 85%	Decreases the risk of STIs, back-up to other methods e.g. missed pill/s, inexpensive, usually easily available.	Needs high degree of motivation by user and partner, less effective than hormonal methods.
Female condom 	**Female condom** – use once only, made of polyurethane and inserted into the vagina before sexual contact	Acts as a barrier to sperm entering the cervix and uterus	Perfect use 95%, typical use 79%	Provides protection against STIs, suitable for people with latex allergy.	Needs high degree of motivation by user and partner, more expensive than male condoms.
Diaphragm 	**Diaphragm** – made of silicone	Covers the cervix and prevents sperm travelling into the uterus	Perfect use 94%, typical use 84%	No hormones, suitable for use when there are medical conditions or contraindications to other methods, back-up to other methods, can be used with the male or female condom for added protection against pregnancy and STIs.	Less effective than hormonal methods, needs high degree of motivation.
Sterilisation					
Female 	**Female**	Surgical procedure, performed to block the fallopian tubes preventing sperm fertilisation of an egg (ovum). The most common procedure is done under anaesthetic using a laparoscope. A clip or ring is place on the fallopian tube. A newer procedure is called Essure®. A micro-insert is placed inside the fallopian tube. This procedure can be performed under local anaesthetic with no incisions required.	>99%	Permanent method, does not alter sexual function or the menstrual cycle.	Requires a procedure, difficult to reverse, Essure® procedure is not effective for 3 months.
Male 	**Male**	Vasectomy is a surgical procedure which prevents sperm from entering the seminal fluid. A small incision is made in the scrotum and the tubes which carry sperm (vas deferens) are cut and blocked.	>98%	Permanent method, does not affect sexual function, procedure can be undertaken in a surgery and takes around 30 minutes, no stitches required.	Requires trained health practitioner, may be some swelling, bruising and pain immediately after the procedure lasting a few days.
Fertility awareness-based methods (FABMs) / Natural Family Planning					



Key messages:
- Based on an awareness of the menstrual cycle in order to identify the fertile phase of the cycle
- Can include observation of cervical mucous, cervical changes, basal body temperature and lactational amenorrhea
- Can be used to achieve or prevent a pregnancy
- Requires high motivation by user and her partner
- Cost effective, women gain knowledge about their menstrual cycle
- Not suitable for women with an irregular cycle
- May require long periods of abstinence
- Refer to trained health professional for education and instruction

Reference
Family Planning NSW, Family Planning Queensland, Family Planning Victoria. *Contraception: an Australian clinical practice handbook 3rd Edition.* 2011. Available at: www.contraceptionhandbook.org.au

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APNA developed this Family Planning Decision Support Tool with funding from the Australia Government Department of Health.

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Figure 21-3 APNA Family Planning Decision Support Tool.

Published August 2014. © Australian Primary Health Care Nurses Association.

TABLE 21-4 Contraceptive methods for women with existing health problems

Condition	Unsuitable methods	Suitable methods
Venous thromboembolism	COCs contraindicated No sterilisation until condition treated and resolved	Progestogen-only methods, IUDs
Ischaemic heart disease or stroke	COCs contraindicated	Progestogen-only methods when other methods are not available or acceptable
Hypertension	Moderate and severe hypertension complicated with vascular disease are contraindications for COCs Sterilisation for women increases GA risk, therefore vasectomy could be considered instead	Low-dose COCs for mild hypertension and no additional risk factors (i.e. smoking, diabetes, obesity or age > 35 years) when other methods unsuitable or unavailable POPs, IUDs, implants good choices; DMPA good second choice
Diabetes	Copper IUD with screening and treatment of pre-existing infection prior to insertion, strict asepsis Prophylactic antibiotics considered	COCs normally contraindicated except where there is no vascular disease POI (injectables), but only if other methods are not available or acceptable to the client Hormonal contraception may be used if there are no vascular complications (nephropathy, neuropathy or retinopathy) POP or Implanon can be used when there are vascular complications
Convulsive disorders	DMPA and copper or LNG IUD EC – in the absence of scientific data on how drug interaction affects efficacy, the standard regimen should be used	All methods are suitable but use of anticonvulsants – phenytoin, carbamazepine, ethosuximide, phenobarbitone and primidone – may reduce the efficacy of COCs, POPs, Implanon
Migraine	COCs contraindicated in focal migraine Onset or exacerbation of migraine with a new pattern which is recurrent, persistent or severe requires discontinuation of the COC and evaluation of the cause	For focal migraine, POPs, Implanon or non-hormonal methods POIs is last choice in the absence of hypertension Low-dose COCs for women who have simple migraine without aura
Liver disease	COCs contraindicated in active liver disease, severe cirrhosis, or liver tumour	Non-hormonal method should be first choice Progestogen-only contraceptives may be used if other methods not acceptable or not available Women who carry hepatitis viruses can use any method of contraception. Mild cirrhosis can generally use progestogen-only contraception
Breast cancer	COCs, POI contraindicated POPs and LNG IUSs should not be initiated	Copper IUD is a good choice
Anaemia	Copper IUCDs not suitable as they can increase blood flow	COCs. Progestogen-releasing IUD, POI can reduce blood loss through menstruation
Sickle-cell disease		Pregnancy can be life-threatening for women with sickle-cell anaemia, therefore effective method is needed. Long-acting progestogen-only contraceptives should be first choice COCs and copper IUDs are good second choices
Tuberculosis		Efficacy of COCs, POPs and Implanon is reduced, therefore the woman should be advised to employ a back-up method while taking rifampicin and two weeks after cessation of therapy
Psychiatric disorders	Sterilisation is not recommended for women or men with a psychiatric illness such as depression that may impair informed decision-making	Methods that do not require strict compliance are more suitable for women with an acute or severe psychiatric disorder for whom making contraceptive choices may be difficult

COC = combined oral contraceptive; DMPA = depot medroxyprogesterone acetate; EC = emergency contraception; GA = general anaesthetic; HIV = human immunodeficiency virus; IUD = intrauterine device; IUS = intrauterine system; LNG = levonorgestrel; POI = progestogen-only injectables; POP = progestogen-only pill.

Based on World Health Organization (WHO) 2015 Medical eligibility criteria for contraceptive use. Geneva, WHO. Online. Available: www.who.int/reproductivehealth/publications/family_planning/MEC-5/en/

of action of ED is to inhibit or delay ovulation, with no demonstrated effect of an implanted ovum. Efficacy is greatest the sooner a single or stat dose can be taken after unprotected sex, and is demonstrated up to 120 hours after unprotected sex (Family Planning NSW 2013). Hormonal emergency contraception is available over the counter from pharmacies, and can be obtained without cost from some sexual health and family planning clinics.

Reproductive cancer screening and prevention

Prevention or early detection of some reproductive cancers may be assisted by routine screening, human papilloma virus (HPV) vaccination and effective promotion of individual health behaviours. Primary healthcare nurses remain at the forefront of population health promotion and health education. In homes and clinics around the globe, nurses who have undertaken appropriate training conduct assessments and self-care education with people of all ages to prevent reproductive cancers such as cervical, ovarian, breast, uterine and testicular.

Breast cancer

Breast cancer is the most common invasive cancer in Australian women after non-melanoma skin cancer, and is the most common cancer in New Zealand women. Women are advised to be physically familiar with their breasts, check regularly for any non-hormonal changes and seek advice if they notice any non-normal changes. In Australia, mammograms are recommended 2-yearly for women aged 50–74 years and are available to women over 40 years (BreastScreen Australia 2015). In New Zealand, mammograms are recommended 2-yearly for women aged 45–69 years (National Screening Unit 2015a). It is important to discuss both the risks and benefits of population-based screening and to assist and encourage women to make informed treatment decisions. In some situations, the best decision may be to simply watch and wait, as screening has been linked with the over-diagnosis of some conditions. Any woman with a new breast symptom needs to be investigated regardless of their age. This may include mammography, breast ultrasound and biopsy.

Cervical cancer

Cervical cancer is the third most common gynaecological cancer (Family Planning NSW 2013). The rates of morbidity and mortality from cervical cancer have decreased dramatically over the past few decades due to organised approaches to national cervical screening using the Papanicolaou smear test, more commonly known as a 'Pap' test (National Health and Medical Research Council 2005). The Pap test involves collecting cells from the

RESEARCH HIGHLIGHT

Research focus

Intimate partner violence (IPV) is the most common form of gender-based violence and an important global health problem. In Australia, it is estimated that one in six women have experienced sexual or physical violence from a current or former partner (Australia's National Research Organisation for Women's Safety n.d.). Reproductive coercion is one form of IPV and is associated with poor reproductive health outcomes, including rapid repeat pregnancy (pregnancy within 24 months of a previous pregnancy), unintended pregnancy, pregnancy termination and incident HIV infection.

Research abstract

There is a growing literature on the associations between IPV and the reproductive health of women. This systematic review and meta-analysis synthesised evidence to estimate the impact of IPV on women's use of contraception. The reviewers searched 11 electronic databases from 1980–2013 for studies that examined longitudinal measures of either IPV or women's use of contraception. Of the articles identified in the search 179 were included in the full text review and 12 studies matched the inclusion criteria.

Evidence-based practice

- IPV is associated with a reduction in women's use of contraception
- Women who experience IPV are less likely to report using condoms with their male partners
- Family planning and HIV prevention programs should consider women's experiences of IPV
- Understanding how IPV modifies women's ability to adopt or to continue to use contraception is central to informing evidence-based FP and HIV prevention interventions

References

Australia's National Research Organisation for Women's Safety n.d. Violence against women – Key statistics. Online. Available: www.anrows.org.au/sites/default/files/Violence-Against-Australian-Women-Key-Statistics.pdf; accessed 1 March 2016.

Maxwell L et al 2015 Estimating the effect of intimate partner violence on women's use of contraception: a systematic review and meta-analysis. PLoS ONE 10(2):e0118234.

transformation zone of the cervix, located at the neck of the uterus. The cells are 'smeared' onto a glass slide and sent to the laboratory to be checked for precancerous cell changes. If abnormal changes are found at screening, the woman will be referred to specialist colposcopy for further testing and diagnosis.

In Australia, women are recommended to have Pap tests every 2 years from the age of 18 years up to the age of 70 years. Women with a history of cervical screening abnormalities may be recommended to have more frequent screening and women with HIV are recommended to have annual screening. For women who have had a hysterectomy for cancer of the cervix, vaginal vault screening is recommended. In New Zealand, the National Screening Unit advises that all women who have ever had sex should be offered a Pap test every 3 years from the age 20 to 69 years. For the first Pap test, or if it has been more than 5 years since the previous test, a follow-up test is recommended one year after the first test, then 3-yearly smears thereafter (National Screening Unit 2015b).

Cervical cell changes are almost always caused by the human papilloma virus (HPV) 'high risk' types. Cervical cell changes can be treated to prevent cervical cancer from developing. A vaccine has been developed that prevents the HPV types (deVisser et al 2014, Steinke 2013) that are most commonly linked to cervical cancer. National immunisation programs provide free vaccination to school-age females in Australia and New Zealand (Immunise Australia Program 2015, Ministry of Health 2011), and to males in Australia. Since the introduction of the HPV vaccine in 2007 there has been a dramatic decline in genital wart presentations reported in young women aged under 21 years at Australian sexual health clinics and a decrease in the detection of high grade histological abnormalities detected on the cervix of young women undergoing cervical screening (The Kirby Institute 2015).The Australian cervical cancer screening program is being revised and from 2017 will screen for HPV every 5 years in women aged 25–74 years in both vaccinated and non-vaccinated women (National Cervical Screening Program 2015).

Ovarian cancer

Ovarian cancer is the eighth most common cancer and the sixth most common cause of cancer death affecting women in Australia. There are no effective screening tests for ovarian cancer and as symptoms are relatively vague, patients will often present when the cancer is well-advanced or has spread to other organs. Symptoms may include abdominal bloating, difficulty eating or feeling full quickly, back, abdominal or pelvic pain, change in bowel habit and abnormal vaginal bleeding. If any of these symptoms are present, women should have a medical review and further investigations, which can include vaginal ultrasound and CA125 blood test (Cancer Council Australia 2015a). Women with a genetic risk for ovarian cancer (an abnormality with the breast cancer genes BRCA1 and BRCA2) require specialist health advice from early adulthood.

Prostate cancer

Prostate cancer is the most common male specific cancer. While tests are available for prostate cancer screening, these are not yet suitable (sufficiently sensitive or specific) for whole of population screening. Therefore, the acceptance of screening for prostate cancer is a matter of individual choice (Cancer Council Australia 2015b). One of the more common screening tests is measurement of the serum prostate-specific antigen (PSA). Men considering a screening test should discuss the benefits and risks of testing and treatment with their healthcare provider (Cancer Council Australia 2010).

Testicular cancer

Testicular cancer is one of the more rare forms of cancer. There is no routine screening test for testicular cancer and, therefore, population-based screening is not recommended (Cancer Council Australia 2013a). What is recommended is that men become familiar with the usual shape, size and feeling of their testicles, such that any deviation from their own 'normal' such as a lump, or swelling on the surface of the testicles, any heaviness, aching or other changes becomes an indicator to seek medical advice (Cancer Council Australia 2013a). Males with a family history (in father or brother) of testicular cancer, or a personal history of undescended testes should discuss the increased risk of testicular cancer with their healthcare provider.

Sexuality and sexual health are key activities of daily living throughout the life span. Being aware of our own values and beliefs ensures that a non-judgemental attitude underpins all professional conversations about sexuality and sexual health. Expressions of sexuality and factors that impact on sexual health are extremely diverse. The role of the nurse includes discussing safe sex and risk-taking behaviour, testing for sexually transmitted infections, advising about contraceptive options, providing education about the impact of health conditions on sexuality and sexual functioning, undertaking preventive screening and vaccination and providing opportunities for patients to raise issues of concern to them. There are many excellent evidence-based resources to further develop knowledge

CLINICAL EXAMPLE

Sexuality and illness

Prior to surgery for bowel cancer, which will result in a permanent colostomy, a patient may not be thinking about the impact of the surgery on future sexuality; however, it is essential to discuss sexuality prior to surgery. Sexuality issues also need to be addressed after surgery, prior to discharge. Below is an example of some conversation starters to initiate discussion about their sexual concerns.

- 'Hello … when I admitted you last Monday, you mentioned to me that you have a partner. Can you tell me if you are sexually active?'
- 'Now that you are recovering from your surgery, I was wondering how you are feeling about your colostomy and cancer treatment and how this might affect your relationship with your partner?'
- 'It is common to have concerns about sexual intimacy, and how your partner might react to being sexually intimate with you after surgery.'
- 'The stomal therapy nurse will be coming today to discuss the management of your stoma when you get home. Would you like your partner to be involved as well?'

In reading the clinical example, did you consider the possibility that the client could be gay? If he normally engages in anal sex and has had his rectum removed, his current form of sexual behaviour will no longer be possible; and in addition to his further treatment for cancer, this could have a significant impact on his sexuality and quality of life. Nurses must always be aware that by not discussing particular issues they give a message that the issue is not important. Nurses are conscientious about providing information about medication management, wound management and dietary advice. Sexuality should be given the same consideration.

that will support the development of skills and confidence to address sexuality and sexual health.

Key concepts

- Sexuality is a unique experience for each person and is influenced by many factors.
- The nurse's role includes addressing sexuality and sexual functioning as part of holistic nursing care.
- Awareness of the diversity and importance of the sex lives of Australians and New Zealanders can increase the capacity of nurses to appropriately promote the expression of sexuality as an activity of daily living.
- Addressing sexuality and sexual health within the nursing assessment requires the nurse to develop skills in active listening and reflection and have a willingness to learn about different lifestyles.
- Nurses can provide confidential sexual health screening and non-judgemental care for sexually transmitted infections.
- Reproductive health choices and contraceptive needs vary across the life span.
- Nursing interventions include providing information about screening, prevention, immunisation, and impacts of health conditions on sexuality and sexual health that are targeted and relevant to the patient.
- Referral to appropriate services is an integral component of sexual and reproductive health care.

Online resources

Sexual health, HIV and family planning organisations have a wide range of information and resources for health professionals and many also offer clinical services for patients.

Australia and New Zealand

Australasian Society for HIV Medicine (ASHM), www.ashm.org.au

Australian STI Management Guidelines for use in Primary Care, including links to GP, nursing and patient resources for sexual health and HIV care, www.sti.guidelines.org.au

Better Health Channel, www.betterhealth.vic.gov.au

Centre for Culture, Ethnicity and Health, www.ceh.org.au/

Jean Hailes – for women's health, https://jeanhailes.org.au

New Zealand Sexual Health Society, http://www.nzshs.org

NSW Sexual Health Infolink Referral Manual, www.shil.nsw.gov.au/shilEE/index.php/site/searchpage/

NSW STI Programs Unit, www.stipu.nsw.gov.au

Sexual Health & Family Planning Australia, www.shfpa.org.au

The Kirby Institute for Infection and Immunity in Society, www.kirby.unsw.edu.au

International

British Association for Sexual Health and HIV, www.bashh.org

Faculty of Sexual and Reproductive Healthcare, Royal College of Obstetricians and Gynaecologists, www.fsrh.org

United States Centers for Disease Control and Prevention, www.cdc.gov

Family planning organisations

Family Planning NSW, www.fpnsw.org.au

Family Planning Welfare Association of NT Inc, www.fpwnt.com.au

Family Planning Queensland, www.fpq.com.au

Family Planning Tasmania, www.fpt.asn.au

Family Planning Victoria, www.fpv.org.au

FPWA Sexual Health Services, www.fpwa.org.au

Family Planning New Zealand, www.familyplanning.org.nz

Sexual Health and Family Planning ACT, www.shfpact.org.au

SHine SA (Sexual Health information networking and education SA), www.shinesa.org.au

Associations

Australasian Sexual Health & HIV Nurses Association Inc (ASHHNA), ashhna.org.au

Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine (ASHM), www.ashm.org.au

Royal Australian and New Zealand College of Obstetricians and Gynaecologists, www.ranzcog.edu.au

Association of Reproductive Health Professionals (USA), www.arhp.org

Association of Nurses in AIDS Care (USA), www.nursesinaidscare.org

References

Australian Human Rights Commission 2013 Lesbian, Gay, Bisexual, Trans and Intersex Equality. Online. Available: www.humanrights.gov.au/our-work/sexual-orientation-sex-gender-identity/projects/lesbian-gay-bisexual-trans-and-intersex-bsexandgenderidentity; accessed 1 March 2016.

Australasian Sexual Health Alliance n.d. Australian STI Management Guidelines for use in Primary Care. Online. Available: http://www.sti.guidelines.org.au/; accessed May 2015.

Australasian Society for HIV Medicine 2014 B positive: all you wanted to know about hepatitis B a guide for primary care providers. Australasian Society for HIV Medicine, Sydney.

Australasian Society for HIV Medicine 2013 Post-exposure prophylaxis after non-occupational and occupational exposure to HIV: National Guidelines. Online. Available: www.ashm.org.au/Documents/Guide for the Management of Occupational and Non-Occupational Post-Exposure Prophylaxis.pdf; accessed May 2015.

Australasian Society for HIV Medicine 2010 Australasian contact tracing manual, 4th edn. Australasian Society for HIV Medicine, Sydney.

Australia's National Research Organisation for Women's Safety n.d. Violence against women – Key statistics. Online. Available: www.anrows.org.au/sites/default/files/Violence-Against-Australian-Women-Key-Statistics.pdf; accessed 1 March 2016.

AVERT 2015 HIV treatment as prevention. Online. Available: www.avert.org/hiv-treatment-as-prevention.htm; accessed 31 May 2015.

Ayaz S 2013 Sexuality and nursing process: A literature review. Sexuality and Disability 31:3–12.

Barker P 2009 Psychiatric and mental health nursing: the craft of caring, 2nd edn. Hodder Arnold, London.

Basson R 2003 Biosychosocial models of women's sexual response: applications to management of desire disorders. Sexual and Relationship Therapy 18(1):107–15.

Bates J 2011 Broaching sexual health issues with patients. Nursing Times 107(48):20–2.

BreastScreen Australia 2015 About breast screening. Online. Available: http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/breast-screening-1; accessed 31 May 2015.

Brook G, Bacon L, Evans C et al 2013 UK national guideline for consultations requiring sexual history taking. Online. Available: www.bashh.org/documents/Sexual History Guidelines 2013 final.pdf; accessed 31 May 2015.

Calabretto H 2009 Emergency contraception – knowledge and attitudes in a group of Australian university students. Australia and New Zealand Journal of Public Health 33(3):234–9.

Cancer Council Australia 2015a Ovarian cancer. Online. Available: www.cancer.org.au/about-cancer/types-of-cancer/ovarian-cancer.html; accessed 31 May 2015.

Cancer Council Australia 2015b Prostate cancer. Online. Available: /www.cancer.org.au/policy-and-advocacy/position-statements/prostate-cancer.html; accessed 31 May 2015.

Cancer Council Australia 2013a Position statement – Testicular cancer. Online. Available: http://wiki.cancer.org.au/policy/Position_statement_-_Testicular_cancer; accessed 31 May 2015.

Cancer Council Australia 2013b Sexuality, Intimacy and Cancer: A guide for people with cancer, their families and friends. Online. Available: http://www.cancercouncil.com.au/wp-content/uploads/2013/07/CAN753-Sexuality-Intimacy-Cancer-NSW-LR.pdf; accessed 31 May 2015.

Cancer Council Australia 2010 Position statement: Prostate cancer screening: joint key messages. Online. Available: www.cancer.org.au/content/pdf/CancerControlPolicy/PositionStatements/PS-Prostate_Cancer_Screening_Joint_key_messages_%20published_May2010.pdf; accessed 1 March 2016.

Centre for Culture, Ethnicity and Health 2011 CALD communities, sexually transmissible infections and viral hepatitis: a resource manual for health and community services. Multicultural Health and Support Service. Available: www.ceh.org.au/downloads/mhss-resource-manual_2011_web.pdf; accessed 14 November 2015.

Chan R 2011 Taking a sexual health history, and the sexual health examination. In Russell D, Bradford D, Fairley C (eds), Sexual Health Medicine. IP Communications, Melbourne.

de Visser RO, Badcock P, Simpson JM et al 2014 Attitudes toward sex and relationships: the Second Australian Study of Health and Relationships. Sexual Health 11:397–405.

Department of Reproductive Health World Health Organization 2010 Medical eligibility criteria for contraceptive use, 4th edn. Online. Available: www.who.int/reproductivehealth/publications/family_planning/9789241563888/en/; accessed 31 May 2015.

Family Planning NSW 2013 Reproductive and Sexual Health in Australia. Family Planning NSW, Sydney.

Immunise Australia Program 2015 Human Papillomavirus (HPV). Online. Available: http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/immunise-hpv; accessed 31 May 2015.

Institute of Environmental Science and Research 2015 Public Health Surveillance. Online. Available: https://surv.esr.cri.nz/index.php; accessed 31 May 2015.

Jean Hailes 2014 Menopause management GP tool. Online. Available: https://jeanhailes.org.au/contents/documents/Resources/Tools/Menopause_management_GP_Tool_2014.pdf; accessed 31 May 2015.

Julien J, Thom B, Kline N 2010 Identification of barriers to sexual health assessment in oncology nursing practice. Oncology Nursing Forum 37(3):E186–90.

Mathews B 2011 Female genital mutilation: Australian law, policy and practical challenges for doctors. Medical Journal of Australia 194(3):139–41.

Maxwell L, Devries K, Zionts D et al 2015 Estimating the effect of intimate partner violence on women's use of contraception: a systematic review and meta-analysis. Plos One 10(2):E0118234.

McNulty A, Wallace J, Haber P 2014 Talking with the patient: risk assessment and history-taking. In HIV, viral hepatitis and STIs: a guide for primary health care. Australasian Society for HIV Medicine Inc, Sydney, pp. 37–47.

Miller W, Rollnick S 2013 Motivational interviewing: helping people change, 3rd edn. The Guildford Press, New York.

Ministry of Health 2014 HPV immunisation programme. Online. Available: www.health.govt.nz/our-work/preventative-health-

wellness/immunisation/hpv-immunisation-programme; accessed 31 May 2015.

National Cervical Screening Program 2015 Future changes to cervical screening. Online. Available: www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/future-changes-cervical; accessed 31 May 2015.

National Health and Medical Research Council 2005 Screening to prevent cervical cancer: guidelines for the management of asymptomatic women with screen detected abnormalities. Online. Available: www.nhmrc.gov.au/guidelines-publications/wh39; accessed 31 May 2015.

National LGBTI Health Alliance 2015 About 'LGBTI'. Online. Available: http://lgbtihealth.org.au/lgbti/; accessed 31 May 2015.

National Screening Unit 2015a BreastScreen Aotearoa. Online. Available: www.nsu.govt.nz/breastscreen-aotearoa; accessed 31 May 2015.

National Screening Unit 2015b National Cervical Screening Programme. Online. Available: www.nsu.govt.nz/national-cervical-screening-programme; accessed 31 May 2015.

New Zealand Family Planning 2015 The law around abortion. Online. Available: www.familyplanning.org.nz/advice/abortion/the-law-around-abortion; accessed 31 May 2015.

NHS choices 2013 Pacemaker implantation – recovery. Online. Available: www.nhs.uk/Conditions/PacemakerImplantation/Pages/afterwardspage.aspx - sex; accessed 31 May 2015.

NSW Sexually Transmissible Infections Program Unit 2015 STI/HV Testing Tool. Online. Available: http://stipu.nsw.gov.au/wp-content/uploads/147045_GP_STI_Testing_Tool_2012.pdf; accessed 31 May 2015.

Ollis D, Mitchell L 2001 Talking sexual health: a teaching and learning resource for secondary schools. Online. Available: www.latrobe.edu.au/arcshs/downloads/arcshs-research-publications/TSH_full_teacher_resource.pdf; accessed 1 March 2016.

Organisation Intersex International Australia Limited 2013 What is intersex? Defining intersex. Online. Available: https://oii.org.au/18106/what-is-intersex/; accessed 31 May 2015.

Quinn C, Heppell B 2011 Talking or avoiding? Mental health nurses' views about discussing sexual health with consumers. Int J Mental Health Nurs 20(1):21–8.

Robinson K, Bansel P, Denson N et al 2014 Growing up queer: issues facing young Australians who are gender variant and sexuality diverse. Young and Well Cooperative Research Centre, Melbourne.

Russell D. The sexual response 2011 In Russell D, Bradford D, Fairley C (eds), Sexual Health Medicine. IP Communications, Melbourne.

Sexual Health and Family Planning Australia 2012 Access to safe and legal abortion services: issues paper. Online. Available: http://www.shfpa.org.au/sites/g/files/g1006491/f/201304/abortion issues paper.pdf; accessed 31 May 2015.

State Government of Victoria Better Health Channel 2014 Safe Sex. Online. Available: www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Safe_sex; accessed 31 May 2015.

Steinke E 2013 Sexuality and chronic illness. Journal of Gerontological Nursing 39(11):18–27.

STIs in Gay Men Action Group 2014 Australian sexually transmitted infection & testing guidelines 2014. Online. Available: http://stipu.nsw.gov.au/wp-content/uploads/STIGMA_Testing_Guidelines_Final_v5.pdf; accessed 16 June 2016.

The Gender Centre n.d. Transsexualism. Online. Available: www.gendercentre.org.au/documents/fact-sheets/transsexualism.pdf; accessed 31 May 2015.

The Kirby Institute 2015 HIV, viral hepatitis and sexually transmissible infections in Australia. Annual Surveillance Report 2015. The Kirby Institute, Sydney.

The New Zealand Sexual Health Society n.d. New Zealand Sexual Health Society Best Practice Guidelines. Online. Available: www.nzshs.org/guidelines; accessed 31 May 2015.

Tsai L, Huang C, Tseng T, Lai T 2013 Assessing student nurses' learning needs for addressing patients' sexual health concerns in Taiwan. Nurse Education Today 33(2):152–9.

Verschuren J, Enzlin P, Dijkstra P et al 2010 Chronic disease and sexuality: a generic conceptual framework. Journal of Sex Research 47(2):1–18.

Wilton J, Senn H, Sharma M, Tan DHS 2015 Pre-exposure prophylaxis for sexually-acquired HIV risk management: a review. HIV/AIDS Research and Palliative Care 7:125–36.

World Health Organization 2015a Reproductive Health. Online. Available: http://www.who.int/topics/reproductive_health/en/; accessed 31 May 2015.

World Health Organization 2015b Sexual and reproductive health. Online. Available: www.who.int/reproductivehealth/topics/sexual_health/sh_definitions/en/; accessed 31 May 2015.

World Health Organization 2014 Female genital mutilation. Online. Available: www.who.int/mediacentre/factsheets/fs241/en/; accessed 31 May 2015.

Wylie K, Mimoun S 2009 Sexual response models in women. Maturitas. 63:112–15.

CHAPTER

22

Working with dying, death and grief

John P Rosenberg

KEY TERMS

Advance care planning, p. 499
Bereavement, p. 514
Death, p. 495
Dying, p. 495
Grief, p. 514
Hospice, p. 497
Loss, p. 512
Mourning, p. 514
Palliative approach, p. 497
Palliative care, p. 496
Reflective practice, p. 526
Respite care, p. 498
Self-care, p. 495
Suicide, p. 520

Learning outcomes

Mastery of content will enable you to:

- explain the physiological, social and psychological aspects of dying
- describe key approaches to care and support for the dying person
- discuss the care of the body following death
- define loss, grief, bereavement and mourning
- discuss the categories of loss
- describe normal grief patterns for adults
- describe normal grief patterns for children
- identify the ways nurses can address self-care in providing end-of-life care.

From the hour you're born you begin to die. But between birth and death, there's life.

Simone de Beauvoir (1908–1986)

Birth, living, dying and death – this is the inevitable cycle of the human condition. Life brings with it the unavoidable experiences of change, with gain and loss in a dynamic relationship with each other. Some losses are seemingly innocuous – a change of school, the loss of visual acuity with age, the gradual distancing of friends over time; while others, such as the unexpected loss of employment, the destruction of a home in a natural disaster or the death of a family member, are clear, tangible and sometimes traumatic events. Yet each loss, regardless of its apparent magnitude, brings with it a constellation of reactions that are both normal and laden with risk for those experiencing it.

Understanding the language and nature of loss and grief is an essential foundation to working with death and grief. Providing therapeutic benefits to those receiving nursing care requires us to confront the concept and reality of human mortality – that each of us will die. This can enable us to appropriately support those in our care who are nearing the end of their lives. It is not just the remit of palliative care services or aged care facilities to care for dying people; it is difficult to identify an area of practice where nurses will not have to provide care for people near the end of their lives. Learning and practising excellence in the clinical care of those dying and grieving can produce optimal outcomes for the most vulnerable in our communities.

Acknowledging our own reactions to the losses we observe in others during the course of our nursing practice can empower us to ensure our **self-care** is effective. Compassionate and skilful nursing practice when working with dying, death and grief provides an opportunity to promote the living to be done between birth and death and this is the focus of this chapter.

The physiological, psychological, existential and social aspects of dying

Palliative care services and aged care facilities are not the only settings of care where dying people are supported. Whether practising in midwifery, neonatal care, paediatrics, acute medical or surgical care, mental health, intensive care or accident and emergency, nurses will encounter dying people. The knowledge and skills required, therefore, are wide-ranging.

To understand the holistic nature of **dying**, it is essential to remember:

> **The experiences of serious illness, dying, caregiving, grieving and death cannot be completely understood within a medical framework alone. These events are personal, but also fundamentally communal. Medical care and health services constitute essential components of a community's response, but not its entirety (Byock 2001:760).**

In other words, your work as a nurse with a dying person and their family represents just one component of the whole experience of dying taking place. There are many changes that occur leading up to death. Sudnow (1967) made the influential suggestion that a dying person might move through four types of **death**: social, psychological, biological and physiological death (Box 22-1). This suggestion has endured and continues to underpin observations of withdrawal (Kellehear 2007). Of course, these components are artificially separated for the sake of learning about them – in reality, all are experienced to varying degrees at the same time.

The physiological changes experienced as a person nears death depend largely on the disease processes taking place. Historically, palliative care services emerged from cancer care; however, in the past decade

BOX 22-1 Four types of death

- Social death refers to gradual social withdrawal and represents the symbolic death of the person in relation to the world they have known. Both the individual and those who know them gradually drift away from one another.
- Psychological death refers to the death of aspects of the dying person's personality. Regression and varying degrees of dependency may occur as the illness progresses. Grief over losses, both physical and symbolic, leads to psychological death. Medications and illness bring on biochemical changes within the body, sometimes leading to a personality change, changes in relationships, isolation and invalidation. Rando (1984) suggests that 'In essence, the individual, as others know that person, dies.'
- Biological death is determined by medical criteria and refers to death in which the organism as a human entity no longer exists.
- Physiological death is the complete cessation of all functioning in the vital organs. Death is recognised when respiration and cardiac action cease. The pupils of the eyes become fixed and dilated and the skin on the face and extremities becomes cool to the touch. The time of death should be noted and documented and the attending doctor or medical officer informed. However, physiological death is not clear-cut; it is debated whether a person is actually dead when, for example, they are on a life-support system with biological function but are considered 'brain dead'.

Sudnow D 1967 Passing on: the social organization of dying. Englewood Cliffs, NJ, Prentice Hall.

or so, an acknowledgement of the application of palliative care principles and practices to end-of-life care for people without malignancy has become more evident (Addington-Hall & Higginson 2001). For example, if you consider the most recently compiled primary causes of death in Australia, you will see that most people do not die of cancer. The Australian Bureau of Statistics (2012) reported that, in 2010, the leading causes of death in Australia were cardiovascular and cerebrovascular disease (see Table 22-1). It is clear from this information that many of the leading causes of death were preventable, but it is important to note that a large proportion of Australian deaths are also predictable. That is to say, many of the people who died in 2010 were known to have had a disease or diseases that would inevitably lead to their death: cancer, chronic heart, lung, kidney or liver disease, dementia, and even stroke can have a trajectory where the death of the person can be predicted.

Key approaches to care and support for the dying person

Palliative care

The area of health care and nursing practice that specialises in the care and support of dying people and their families is called **palliative care**. The language and definitions of palliative care are continually evolving according to the cultural and social influences of the time – for example, there is reluctance in some settings to use the term 'dying'; to this end, you might read terms like 'people with life-limiting illness' instead. Nevertheless, there are some core definitions and themes of palliative care that have endured since the emergence of the modern hospice movement in the 1960s. The central goal of palliative care is to promote quality of life, even when cure is unlikely or impossible.

TABLE 22-1 Leading causes of death in Australia 2010

Cause of death	Number of deaths	Rank
Ischaemic heart diseases	21 708	1
Cerebrovascular disease	11 204	2
Dementia and Alzheimer's disease	9 003	3
Trachea and lung cancer	8 099	4
Chronic lower respiratory diseases	6 122	5
Colon and rectal cancer	4 056	6
Diabetes	3 945	7
Blood and lymph cancer (including leukaemia)	3 933	8
Heart failure	3 468	9
Diseases of the kidney and urinary system	3 315	10
Prostate cancer	3 235	11
Breast cancer	2 864	12
Pancreatic cancer	2 434	13
Influenza and pneumonia	2 364	14
Suicide	2 359	15
Skin cancers	1 897	16
Hypertensive diseases	1 734	17
Accidental falls	1 648	18
Cirrhosis and other diseases of liver	1 592	19
Cardiac arrhythmias	1 535	20

Data from Australian Bureau of Statistics (ABS) 2012 Causes of death, Australia 2010. Cat. no. 3303.0. Melbourne, ABS. Online. Available at www.abs.gov.au/ausstats/abs@.nsf/mf/3303.0; accessed 14 May 2016.

This is now a global message, articulated by the World Health Organization (WHO 2011) in this way:

> **Palliative care is an approach that improves quality of life of clients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychological and spiritual.**

The World Health Organization (2011) also states that palliative care:

- provides relief from pain and other distressing symptoms
- affirms life and regards dying as a normal process
- intends neither to hasten nor to postpone death
- integrates psychological and spiritual aspects of client care
- offers a support system to help clients live as actively as possible until death
- offers a support system to help the family cope during the client's illness and in bereavement
- uses a team approach to address the needs of clients and their families, including bereavement counselling if indicated
- will enhance quality of life, and may also positively influence the course of illness, and
- is applicable early in the course of illness, in conjunction with other therapies that are intended to prolong life, such as chemotherapy or radiation therapy, and includes those investigations needed to better understand and manage distressing clinical complications.

Palliative approach

In some settings where end-of-life care is provided by non-specialists, this care is referred to as the 'palliative approach'. A **palliative approach** aims to improve the quality of life for individuals with a life-limiting illness and their families, by reducing their suffering through early identification, assessment and treatment of pain, physical, cultural, psychological, social and spiritual needs (Kristjanson et al 2003). This can take place in a number of settings of care, including residential aged care (McVey et al 2014) and in the community (Holloway et al 2015).

In Australia, Palliative Care Australia is the peak national organisation representing the interests and aspirations of all who share the ideal of high-quality care at the end of life for all. The equivalent organisation in New Zealand is Hospice New Zealand (see *Online resources* for details of both organisations). Hospice New Zealand (2015:5) states its core values as follows:

- Clients come first: every decision we make is based on this belief.
- Caring: we genuinely care about our people, clients and their families' needs.
- Respect: we demonstrate respect in all our dealings with clients and families, recognising diversity.
- Professional: in all instances we will act professionally and with compassion.
- Determination: we are driven to work in partnership with our members and communities as guardians of the hospice philosophy.

These peak bodies inform the health services and communities of their respective nations about dying, death and grief and the role of palliative care. In Australia, Palliative Care Australia has developed *National Standards for providing quality palliative care for all Australians* and Hospice New Zealand has developed a similar set of standards, available on their website (see *Online resources*).

What does 'quality of life' mean?

Whatever the approach or setting of care, the goal during palliative and end-of-life care is to improve the quality of life for clients, their families and carers by providing care that addresses their many needs, including physical (including treatment of pain and other symptoms), psychological, social and spiritual care. The aim is to help the person live as well as possible, even in the presence of advanced illness and expected death. Support is also offered to help family and carers manage during the client's illness and in bereavement. What 'quality' means in this context is typically defined by the client and their family or carers.

Settings of care

In the same way that nurses will care for dying people in all sorts of specialties and fields, so too will dying people be found in many settings of care. The majority of people in Australia and New Zealand die in hospital. For many, this is an expected death in the course of treatment of chronic and progressive disease. For others, death is the outcome of severe trauma or another lethal health event. In some hospital settings, non-palliative care clinicians are able to competently provide end-of-life care; however, many larger hospitals include a consultative specialist palliative care service or even a sub-acute palliative care unit, both of which provide specialist-level knowledge and care to hospital clients at the end of life.

A longstanding feature of modern palliative care is the presence of the **hospice** as a setting of care. Encapsulating

the philosophy of palliative care, a hospice is not simply a building but a program of support that may include medical and nursing care, respite care and end-of-life care for those unable to be supported at home to die (Palliative Care Australia 2008). Hospices are an alternative approach to traditional care. They are places where specially trained healthcare personnel care for people who are dying (Phillips et al 2014). The main reason for developing hospice-based services is a philosophy of care for the dying person that emphasises spiritual care, pain relief and control, and open communication between the dying person and carers. Physical, psychological, social and spiritual support underlies the philosophy. Although the guidelines may vary between jurisdictions, it is generally accepted that a hospice will accept clients with a life expectancy of less than 6 months.

Home is, of course, a place of care for people nearing the end of life and is a preferred place of death for most (Gomes et al 2013). In fact, most people in the final year of their lives will spend most of their time at home, not in hospital (Murray et al 2013). Community-based palliative care services, or the provision of a palliative approach (by primary care providers such as general community nurses and general practitioners), is a key strategy in supporting dying people and their families at home. It is clear that appropriate and effective home-based palliative care substantially increases the likelihood of a home death (Gomes et al 2014). Nurses can play a vital role in helping the dying person and their family assess their situation, arrange supportive infrastructure, and determine the adequacy of coping resources (Box 22-2). Deteriorating health, anxiety and uncertainty about the future pose difficulties for the client and family, and they will benefit from support in the form of domiciliary nursing services, or a home care/outreach program or respite care. **Respite care** is a form of care that provides time-out for the family while the client is cared for by a temporary caregiver. When the client dies, workers from the hospice team often visit the family. This is important for the survivor/s in grief work and eventually in making the transition to life without the deceased.

Home care can be a challenging practice setting for nurses, who need to be able to work largely autonomously and comprehend the social nature of health and illness in a multidisciplinary team, without the immediacy of the hospital infrastructure. Entering the home of another person, regardless of the intention to provide palliative care, places the nurse on another's 'turf'; the nurse is, in many ways, a visitor (Rosenberg 2011). How visitors to the home are viewed is also subject to cultural variations; some ethnic groups in Australia and New Zealand have strong cultural practices regarding welcoming visitors, while others may consider privacy to be paramount. Of course, these differences can occur between households and are not solely cultural in nature. Remember that the home is not always a place of loving kindness, supportive families and skilled family caregivers. Longstanding family conflicts, domestic violence, illicit drug use and other social problems can all be encountered by nurses practising in the home setting. Moreover, a small proportion of people dying at home have no family caregiver, or have an aged, perhaps frail spouse unable to cope with the physical demands of the caregiving role.

BOX 22-2 Suggestions for involving family in the care of a dying client

- Help plan a visit schedule for family members to prevent the client and family from becoming tired.
- Allow young children to visit a dying parent when the client is able to communicate.
- Be willing to listen to family complaints about the client's care and feelings about the client.
- Help family members learn to interact with the dying person (e.g. using attentive listening, avoiding false assurances, conducting conversations about normal family activities or problems).
- Allow family members to help with simple care measures such as feeding, bathing and straightening bed linen. Recognise that family members are often more successful than nursing staff in persuading the client to eat.
- When the family becomes tired with care activities, relieve them from their duties so that they can get needed rest and support. Refer them to resources for meals and lodging.
- Support the mutual act of grieving by the client and family. Provide privacy when preferred. Do not discourage open expression of grief by the family and client.
- Provide information daily with regard to the client's condition. Prepare the family for sudden changes in the client's appearance and behaviour.
- Communicate news of impending death when the family is together, if possible. Remember that members can provide support for one another. Convey the news in a private area and be willing to stay with the family.
- As death nears, help the family stay in communication with the dying person through short visits, caring silence, touch, and telling the client of their love.
- After death, help the family with decision-making, such as selection of an undertaker, transport of family members and collection of the client's belongings.

An increasing number of older persons spend the end of their lives in residential aged care facilities, or nursing homes. The Australian Department of Health and Ageing has provided *Guidelines for a palliative approach in residential aged care* (Department of Health and Ageing 2006). These guidelines provide comprehensive information regarding the application of a palliative approach to support the dying older person in a residential aged care facility, incorporating:

- dignity and quality of life
- advance care planning
- advanced dementia support
- physical symptom assessment and management
- psychological support
- family support
- social support, intimacy and sexuality
- Aboriginal and Torres Strait Islander issues
- other cultural issues
- spiritual support
- volunteer support
- end-of-life (terminal) support
- bereavement support.

It is important to remember that not everyone who is dying lives in these various care settings. People also do their dying in prisons, in shelters and public spaces, and in boarding houses and hotel rooms.

Advance care directives

As the person receiving care, the client is the most important partner in planning their care and managing their condition. Family and carers also have an important role in this area. When people are well informed, participate in treatment decisions and communicate openly with their doctors and other healthcare professionals, they help make their care as effective as possible. Care planning is an important process in ensuring the client's wishes in relation to care are met. Clients can anticipate their changing needs and specify their wishes for end-of-life care through **advance care planning**. This can be defined as a collaborative process between patients, families and healthcare providers during which preferences for future care are decided upon for when the patient is no longer able to articulate such wishes (see *Online resources*).

Advance care planning provides a mechanism to improve the quality of end-of-life care for people. It enables the coordination of their desired access to resources and services, to match their anticipated care needs. An *advance care directive* is the formal written documentation of this process. As with all aspects of palliative care, such approaches need to be tailored to the needs of the individual patient (Lovell & Yates 2014). Discussions about appointing a substitute decision-maker may also be important. This proxy decision-maker can be legally appointed with *power of attorney* for health matters if the patient is no longer considered legally competent.

Nursing priorities and goals for care

Assessment

Impeccable assessment is a fundamental component of nursing practice in the care of dying people and there are many ways in which the clinical assessment of palliative care clients can be documented. Regardless of what is in use in each setting of care, a good-quality palliative care assessment tool will address the physiological, psychological, social and spiritual complexities being experienced.

One example of such an assessment tool is the 10-page palliative care client information form from Queensland Health (Figure 22-1) (see *Online resources*). This is a standardised electronic and hard-copy document that represents consensus best practice regarding admission data required for palliative clients managed across inpatient and community settings by public, non-government and private service providers.

The form has been developed with the aims of:

- decreasing the need for unnecessary client reassessment
- decreasing duplication of clinician effort
- facilitating seamless transition of care
- improving communication between organisations
- supporting appropriate and timely referral patterns.

The palliative care client information form is used to record and confirm client information on admission to a palliative care service. The form can also be used to transfer information during discharge and referral to other service providers as a means of facilitating the admission process for those services, and for the provision of feedback to service providers. This enhances communication regarding a client across the care continuum.

The likely benefits of utilising such a form include:

- smooth and timely transitions of client care across and within services
- standardisation of information collection and presentation across and within services
- improved clinical time efficiency
- its contribution to a basis for palliative care data collection.

Queensland Government
Queensland Health

Southern Area Health Service
Palliative Care Admission Patient Information Tool

COVER SHEET

Date:	
To:	
Organisation:	
Fax number:	
From:	
Organisation:	
Fax number:	
Number of pages:	10
Purpose:	☐ Referral ☐ Discharge summary ☐ Transfer ☐ Feedback ☐ Other (please state):
Urgent?	☐ Yes ☐ No
Comments:	

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Figure 22-1 Assessment form.

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Queensland Government
Queensland Health

PALLIATIVE CARE PATIENT INFORMATION FORM

Service:

(Affix client identification label here)

URN / Client ID:

Family name:

Given names:

Date of birth: Sex ☐ Male ☐ Female

Client Details

Preferred name: **Title:**

Marital status:

☐ Married ☐ Divorced ☐ Widowed ☐ Single

☐ Other:

Street address *(usual place of residence)*:

Suburb: State: Postcode:

Current address *(if different from above)*:

Suburb: State: Postcode:

Phone numbers Tick preferred number

Home:

Mobile:

Work:

Does the client live alone? ☐ Yes ☐ No *(detail below)*:

Lives with *(name)*:

(relationship):

Religious affiliation? ☐ Yes ☐ No

If yes, specify:

Indigenous status:

☐ Aboriginal ☐ Torres Strait Islander ☐ Both
☐ Neither ☐ Not stated or inadequately described
☐ Australian South Sea Islander

Country of birth: ☐ Australia ☐ Other *(specify)*:

Preferred language: ☐ English ☐ Other *(specify)*:

Interpreter required ☐ Yes *(specify language)*: ☐ No

Referral Details

Date referral received:

☐ **Urgent** *(within 24 hours)*
☐ **Priority** *(within 3 days)*
☐ **Routine** *(within 1 week)*

Referral source:

Referrer contact details *(referrer name)*:

(organisation):

(address):

(phone): *(fax)*:

Reason for referral / Presenting problems:

Principal Diagnosis

(include metastatic sites and/or related co-morbidities)

Service Provider Alert *(eg. client has a vicious dog)*

Allergies / Drug sensitivities / Other alerts

v2.00

Page 1 of 9

Figure 22-1 ***continued***

continued

Queensland Government
Queensland Health

PALLIATIVE CARE PATIENT INFORMATION FORM

Service:

(Affix client identification label here)

URN / Client ID:

Family name:

Given names:

Date of birth: Sex ☐ Male ☐ Female

Contact Information

Contact person 1

Name: Relationship to client:

☐ Next of kin ☐ EPOA (Health) ☐ EPOA (Finance) ☐ Primary carer ☐ Statutory Health Attorney

Address: Phone number:

Fax number:

Suburb: Postcode: Mobile number:

Contact person 2

Name: Relationship to client:

☐ Next of kin ☐ EPOA (Health) ☐ EPOA (Finance) ☐ Primary carer ☐ Statutory Health Attorney

Address: Phone number:

Fax number:

Suburb: Postcode: Mobile number:

Is the client a carer for another person? ☐ Yes ☐ No

Family/Carer Score *(see PCOC - Problem Severity)*: ☐ **0** Absent ☐ **1** Mild ☐ **2** Moderate ☐ **3** Severe

Carer information:

Enduring Power of Attorney? ☐ Yes ☐ No ☐ Information given ☐ Document sighted

If *Yes*, and if the EPOA is not listed as a contact person above, please enter their details below:

Name	Relationship	Contact number	Health ✓	Finance ✓
			☐	☐

Advance Health Directive? ☐ Yes ☐ No ☐ Information given ☐ Document sighted

Does the client have a Will? ☐ Yes ☐ No ☐ Information given ☐ Document sighted

General Practitioner

Name: Practice:

Address:

Suburb: Postcode:

Phone: Mobile:

Fax: Email:

	Yes	No	Don't know
Are they aware of this referral?	☐	☐	☐
Do they do home visits?	☐	☐	☐
If yes, after hours visits?	☐	☐	☐

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Figure 22-1 ***continued***

continued

Queensland Government
Queensland Health

PALLIATIVE CARE PATIENT INFORMATION FORM

Service:

(Affix client identification label here)

URN / Client ID:

Family name:

Given names:

Date of birth: Sex ☐ Male ☐ Female

Treating Consultant 1

Name: Speciality:

Telephone: Fax: Email:

Treating Consultant 2

Name: Speciality:

Telephone: Fax: Email:

Treating Consultant 3

Name: Speciality:

Telephone: Fax: Email:

Current place of care: ☐ Private residence ☐ RACF ☐ Hospital ☐ Hospice ☐ Other

If RACF, Hospital, Hospice or Other; specify facility:

Current Services

Service / Health Care Professional	Record contact details or other information as appropriate

Pharmacy *(name)*: *(phone)*: *(fax)*:

(address):

Private pathology provider:

☐ QML ☐ SNP ☐ Mater ☐ Pathology Partners ☐ Other:

ACAT assessment done? ☐ Yes *(give details)* ☐ No ☐ Pending

Date:

Outcome:

Medicare Card number: Expiry date: Card ID: **PBS Safety Net Card number:**

Health Care / Pension Card number: Expiry date: **Private health fund:** Membership number:

Department of Veteran Affairs Card number: Card colour:

☐ Gold ☐ White ☐ Orange

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Figure 22-1 ***continued***

continued

Queensland Government
Queensland Health

PALLIATIVE CARE PATIENT INFORMATION FORM

Service:

(Affix client identification label here)

URN / Client ID:

Family name:

Given names:

Date of birth: Sex ☐ Male ☐ Female

Clinical Details

Principal diagnosis *(include metastatic sites and/or related co-morbidities)*:

Date of diagnosis *(if known)*:

Principal diagnosis known to the client? ☐ Yes ☐ No Comments:

Co-morbidities *(other)*:

Significant medical history *(include relevant treatment, surgery, radiotherapy, chemotherapy)*:

Presenting problems:

Doctor's letter attached? ☐ Yes ☐ No Comments:

Palliative Care Phase *(see PCOC - 5 phases)*:

☐ **1** Stable ☐ **2** Unstable ☐ **3** Deteriorating ☐ **4** Terminal ☐ **5** Bereaved

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Figure 22-1 ***continued***

continued

Queensland Government
Queensland Health

PALLIATIVE CARE PATIENT INFORMATION FORM

Service:

(Affix client identification label here)

URN / Client ID:

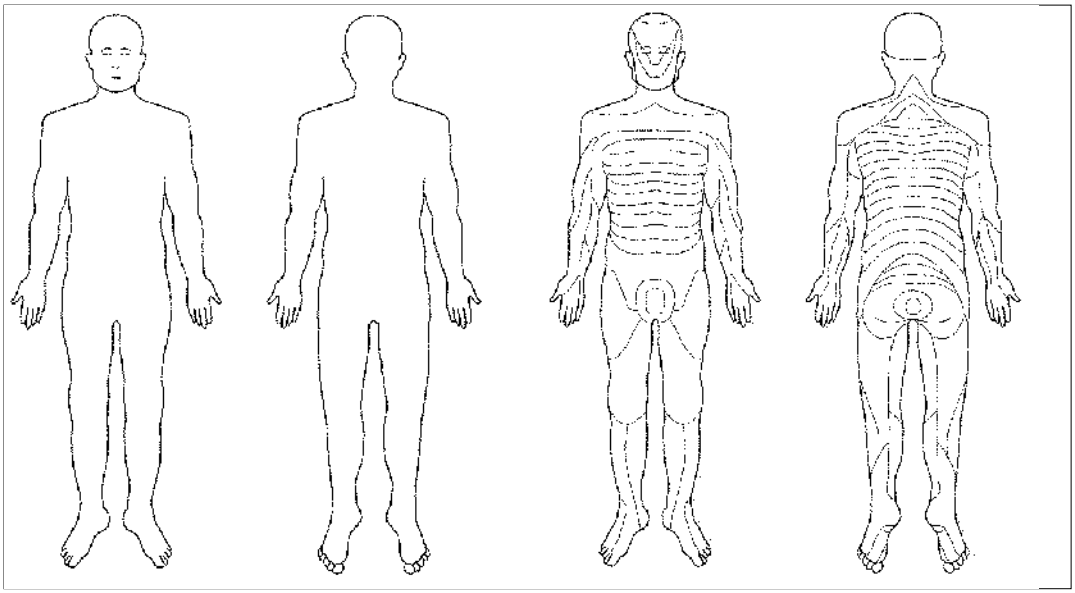
Family name:

Given names:

Date of birth: Sex ☐ Male ☐ Female

Pain / Symptoms:

Diagram:



Pain / symptom management:

☐ Oral opioids

☐ Parenteral medications:

☐ Medication infusion device _____ Owned by _____

☐ Subcut. needle Site _____ Date inserted _____

☐ Cannula Site _____ Date inserted _____

☐ Transdermal patch Site _____ Date applied _____ ☐ AM ☐ PM

☐ Other: _____

Comments _____

DO NOT WRITE IN THIS BINDING MARGIN

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Figure 22-1 ***continued***

continued

Queensland Government
Queensland Health

PALLIATIVE CARE PATIENT INFORMATION FORM

Service:

(Affix client identification label here)

URN / Client ID:

Family name:

Given names:

Date of birth: Sex ☐ Male ☐ Female

Allergies / Drug Sensitivities / Other Alerts:

Current Medication List *(include prescription, non-prescription and complementary therapies / vitamins)*:

Drug name	Dose	Freq.	Route	Indication

DO NOT WRITE IN THIS BINDING MARGIN

Figure 22-1 ***continued***

continued

Queensland Government
Queensland Health

PALLIATIVE CARE PATIENT INFORMATION FORM

Service:

(Affix client identification label here)

URN / Client ID:

Family name:

Given names:

Date of birth: Sex ☐ Male ☐ Female

DO NOT WRITE IN THIS BINDING MARGIN

Respiratory status:

☐ O_2 Concentrator ☐ O_2 Cylinder Funded by:

Oral care:

Nutritional status:

☐ Nausea ☐ Vomiting ☐ Dysphagia ☐ NG Tube ☐ PEG Tube

Weight (kg): ☐ Actual ☐ Estimated Date weighed:

Elimination:

☐ IDC ☐ SPC Date inserted: Last bowel motion:

Appliances: ☐ Colostomy ☐ Ileostomy ☐ Urostomy ☐ Other:

Skin integrity:

Symptom Assessment Score (client scored) Score 0-10 from *0=none at all* to *10=worst possible*:

Item	Score	Not assessed
1 Insomnia		☐
2 Appetite problems		☐
3 Nausea		☐
4 Bowels		☐
5 Breathing		☐
6 Fatigue		☐
7 Pain		☐

Comments:

Communi-cation *(including hearing and vision)*:

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Figure 22-1 ***continued***

continued

Queensland Government
Queensland Health

(Affix client identification label here)

URN / Client ID:

Family name:

Given names:

Date of birth: Sex ☐ Male ☐ Female

PALLIATIVE CARE PATIENT INFORMATION FORM

Service:

Cognitive State:

Psycho-logical:

Spiritual:

Psychological/Spiritual Score *(see PCOC - Problem Severity)*: ☐ **0** Absent ☐ **1** Mild ☐ **2** Moderate ☐ **3** Severe

Cultural needs:

Social:

Genogram

KEY

Male □
Female ○
Unknown △
Married ——
Defacto ·····
Separated —/—
Divorced —//—
Adopted —>
Death X

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Figure 22-1 ***continued***

continued

Queensland Government
Queensland Health

PALLIATIVE CARE PATIENT INFORMATION FORM

Service:

(Affix client identification label here)

URN / Client ID:

Family name:

Given names:

Date of birth: Sex ☐ Male ☐ Female

Home environment / Falls risk *(inlcude equipment/aids and provider)*:

Allied health report attached? ☐ Yes ☐ No Comments:

RUG-ADL score:

	1 Independent or supervision only	**2** Limited assistance	**3** Extensive assistance / total dependence	
Eating	☐	☐	☐	
	1 Independent or supervision only	**3** Limited physical assistance	**4** Other than two person physical assist	**5** Two person physical assist
Bed mobility	☐	☐	☐	☐
Toileting	☐	☐	☐	☐
Transfer	☐	☐	☐	☐

Total RUG-ADL score Comments

Australian Modified Karnofsky Performance Scale (AKPS):

Current management plan & Patient / Family goals:

Additional information / Comments:

Consent to release of health information?
I have discussed the proposed referral/s and use/s of their personal information with the client/carer. I am satisfied that the client/carer understands the proposed uses and disclosures of the information that has been provided, and has provided their informed consent to these.

☐ Yes ☐ No

Details of person completing this form

Print name: Designation: Agency:

Contact number: Email address: Signature: Date:

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DO NOT WRITE IN THIS BINDING MARGIN

Figure 22-1 ***continued***

This form makes it obvious that the complex needs of many palliative care clients require sound nursing interventions. These are the subject of detailed discussion throughout this textbook and specialised palliative care nursing textbooks. A brief summary of the main points is given in Table 22-2.

Care of the body following death

Nurses have a unique role in the care of the body following death, and that is to maintain the dignity and respect of the person who has died (Martin & Bristowe 2015). A number of procedures are carried out within physiological, legal or cultural parameters. In many cultures, deaths are acknowledged by viewing the body. When this is carried out formally, it is psychologically important for the next-of-kin that the deceased appears clean and comfortable. This lessens anxiety and distress and epitomises respect for the dead (Howarth 2007, Mooney 2003). Once circulation of the blood stops, the body begins to cool. As the skin cools it loses its elasticity, and therefore tapes, dressings and medical appliances are removed with caution to prevent tearing of the skin or bruising occurring.

TABLE 22-2 Promoting comfort in the seriously ill client

Characteristics or causes	Nursing implications	Special considerations
Pain		
Pain can be acute or chronic (with acute exacerbations)	Administer narcotic and adjuvant analgesics on a regular schedule (see Chapter 36) Administer prn medications as indicated	Not every person with advanced disease experiences pain Impeccable pain assessment is essential to high-quality nursing practice
Pain from advanced disease is often chronic	Use combinations of analgesics or other therapies as client's needs change Use relaxation, guided imagery, distraction and peripheral nerve stimulators to provide relief Administer narcotics as ordered (oral route for narcotics is preferred, but other routes including transdermal patches and continuous intravenous infusions are available)	A person with advanced disease may have more than one kind of pain, requiring multiple strategies to obtain relief Refer to the World Health Organization's three-step pain ladder (WHO 2016)
Any source of physical irritation may worsen pain	Minimise irritants through skin care, including daily baths, lubrication of skin, frequent repositioning and dry, clean bed linen	If pressure area care causes pain, consider use of breakthrough analgesic prior to procedure Unattended skin lesions can be a source of preventable pain
As client approaches death, mouth remains open, tongue and lips become dry and cracked	Provide frequent oral care every 2–4 hours. Use soft toothbrushes or foam swabs for frequent mouth care. Use plain water sprays or atomisers as desired. Artificial saliva products can be used. Apply light film of petroleum jelly to lips (see Chapter 29)	Mouth swabs containing lemon and glycerine exacerbate oral dehydration and are not recommended for use
Blinking reflexes diminish near death, causing drying of cornea	Remove crusts from eyelid margins and provide eye care. Reduce corneal drying with artificial tears	
Fatigue		
Metabolic demands of advanced disease cause weakness and fatigue	Set mutual goals with client after identifying valued or desired tasks, and conserve client's energy for only those tasks Time and pace nursing activities to conserve client's energy Provide frequent rest periods in quiet environment	Fatigue is one of the most common symptoms in people with advanced disease, including cancer and neurodegenerative disorders such as motor neuron disease and multiple sclerosis

continued

TABLE 22-2 ***continued***

Characteristics or causes	Nursing implications	Special considerations
Ineffective breathing patterns		
Causes include disease progression involving lung tissue capacity, pneumonia, pulmonary oedema or anaemia	Position client upright to improve breathing capacity Administer supplemental oxygen as ordered Administer bronchodilator as ordered Administer narcotics as ordered to suppress cough and ease breathing and apprehension Administer anticholinergic agents as ordered	Where dyspnoea is reversible, there can be a strong case for intervention given the degree of distress caused Suctioning can cause distress and is generally avoided; oral suction may be tolerated Anticholinergic agents (such as hyoscine) can dry oral secretions
Dehydration		
As disease progresses, client is less willing or able to maintain oral fluid intake	Provide relief of thirst by using ice chips, sips of fluids or moist cloth to lips	
Inadequate nutrition		
Nausea and vomiting can decrease appetite	Suggest that smaller portions and bland foods may be more palatable Suggest home-cooked meals, which may be preferred by client and gives family chance to participate	Meals often have strong symbolic value in family – loss of appetite can cause distress as it represents the person's inevitable deterioration
Nausea and vomiting		
Nausea and vomiting may result from disease process (e.g. gastric cancer), complications (e.g. bowel obstruction) or treatment, including medications	Confer with doctor about changing medications when possible Administer antiemetic before meals Consider providing relief from obstruction with bowel decompression with insertion of nasogastric tube Provide mouth care and promptly clean up emesis	Nausea and vomiting are common side effects of narcotic analgesics
Constipation		
Narcotic medications and immobility slow peristalsis Lack of bulk in diet or reduced fluid intake may occur with appetite changes	Provide preventive care, including increasing fluid intake (e.g. bran, whole-grain products and fresh vegetables in diet) and encouraging exercise Assess and monitor bowel function closely	Impeccable assessment of bowel function underpins improved outcomes for patients: a complete bowel history, with auscultation, palpation and digital rectal examination, are essential components of nursing assessment
Diarrhoea		
Diarrhoea may result from disease process (e.g. colon cancer) and complications of treatment or medications	Assess for faecal impaction with overflow Confer with doctor to change medication if indicated Provide low-residue diet Assist with personal hygiene as required	Compromised mobility may exacerbate anal excoriation from diarrhoea
Urinary incontinence		
Urinary incontinence may result from advanced disease (e.g. involvement of spinal cord or reduced level of consciousness)	Protect skin from irritation or breakdown using absorbent pads and clean linen Prepare for possible use of indwelling urinary or condom catheter	

prn = 'as needed' (Latin: pro re nata*).*

World Health Organization (WHO) 2016 WHO's pain ladder. WHO, Geneva. Online. Available: www.who.int/cancer/palliative/painladder/en/; accessed 11 Feb 2016.

If the deceased is not the subject of a coronial inquiry, care of the body involves the nurse removing indwelling catheters and other medical appliances from the body. Jewellery or other personal adornments are also removed if requested by the next-of-kin. At the time of death, the muscles relax and the contents of the stomach, bladder and bowel may be released; this necessitates washing the body. This is a sensitive area of nursing practice as the next-of-kin may complain if the body, when it is viewed, looks or smells as if it has been neglected during the last moments of life. If the body is to be viewed by family or others, the body must be positioned before rigor mortis begins.

The procedure recommended by Docherty (2000) is that the eyes are closed and gentle pressure is applied to the eyelids for about 30 seconds. Wounds, open sores or pressure areas are covered by simple dressings. McNamara (2001) has noted that although bodily orifices are sometimes packed with cotton wool or gauze ribbon to prevent leakage of fluids, this is not the case in all organisations. The teeth or dentures are cleaned and the dentures replaced in the mouth to retain the shape of the face. The hair is groomed, fingernails are cleaned and men are shaved. The lower jaw may be supported with a bandage that wraps around the head to keep the mouth closed. Limbs are positioned, tied in place and identification tags are attached. The body is swathed in a shroud, placed in a body bag and delivered to the mortuary (Quested & Rudge 2001).

Washing, laying out and dressing the body for burial has always been recognised as the final service the living can perform for the dead before burial or cremation. This procedure is considered a mark of respect to the deceased, and it is important to remember that modesty and privacy must be maintained throughout the procedure. Religious and/or cultural preferences may demand specific steps in the care of the body after death. Sometimes this involves specific people caring for the body after death, or parents or families may wish to dress the deceased in special clothes, or may wish special toys to accompany the body of a child. It is, therefore, vital to discuss these requirements with family members, preferably before the death if possible (Mooney 2003).

Loss, grief, bereavement and mourning

No one is immune to the effects of loss at some time during the course of a lifetime. When nurses care for those who are experiencing reactions to loss, they will find wide-ranging behaviours and, perhaps, confronting encounters with people in distress. For many nurses these reactions are the source of concern, either through empathy for the suffering of others, or from a sense of inadequacy in dealing appropriately with the situation. For nurses who are new to their practice, it can be tempting to rely on standard problem-solving techniques and responses learned by rote, but these may not always be possible or desirable in times of crisis. Frequent encounters with death have been found to be the most challenging and intensely personal experiences of those working in the healthcare environment (Currow 2004, Kearney et al 2009).

Clearly, it is important for nurses to have an accurate understanding of the key terms in this field: *loss*, *grief*, *bereavement* and *mourning*. Sometimes these terms are colloquially used interchangeably, and certainly can be used in varying cultures and communities in different ways. However, the foundations for understanding rest in these definitions.

Loss refers to that state that exists when something to which one has an attachment is now gone. While commonly used to describe the experiences of people following the death of another person to whom they are emotionally or socially attached, it also applies to any loss experienced following detachment: for example, burglary with theft of personal possessions; miscarriage; divorce; the loss of functional independence with chronic illness or injury; the loss of dignity, privacy and confidence that may accompany relocation into a residential care facility. Types of losses are explored in more detail below.

RESEARCH HIGHLIGHT

Research focus

Constipation is a frequent and distressing symptom for people with advanced and incurable disease. As it is a highly subjective experience, constipation requires diligent nursing assessment and individualised intervention. The application of best available evidence and expert opinion to the clinical practice of nursing for the management of constipation can reduce discomfort and distress in palliative care patients.

Research abstract

Constipation is best defined in two ways. First, defecation at a frequency of less than three times a week can be diagnostically significant (Heidrich 2007, Larkin

continued

et al 2008). In the same way, the characteristics of stool (such as consistency) can also be measured (e.g. using the Bristol Stool Form Chart; see Chapter 32). However, this definition cannot be applied to all people, as there are such wide variations in what can be considered 'normal' patterns of bowel function. Second, defining constipation requires an individualised assessment of frequency, consistency and effort required. A more helpful definition of constipation is 'the passage of small, hard faeces infrequently and with difficulty. Individuals vary in the weight they give to the different components of this definition when assessing their own constipation and may introduce other factors, such as pain and discomfort when defecating, flatulence, bloating or a sensation of incomplete evacuation' (Larkin et al 2008:798).

A principle-based approach to symptom management in palliative care is recommended (Connor & Muir 2007, Larkin et al 2008, Palliative Care Expert Group 2010). This offers an effective approach to nursing assessment and intervention for the constipated patient:

- A detailed history of the patient's bowel patterns to identify possible causative factors should be taken (Joanna Briggs Institute 2008, Larkin et al 2008).
- A physical, clinical examination of the patient is essential, examining the oral cavity; observing, palpating and auscultating the abdomen; examining the anus and performing a digital rectal examination (Terelinck 2005).
- Preventive strategies should be introduced in this at-risk group as early as possible (Larkin et al 2008); certainly as soon as narcotic analgesics are introduced. Close monitoring of bowel patterns and early intervention in constipation is optimal. Increasing dietary fibre and oral hydration can be difficult in palliative care patients, as a reduction in fluid and fibre intake is commonplace; intravenous rehydration alone is typically not enough to resolve constipation without the use of laxatives (Larkin et al 2008, Sykes 2006). Similarly, even gentle exercise to manage constipation may be problematic for palliative care patients as mobility decreases. The patient can be encouraged to mobilise within their limits of safety and tolerance; range-of-motion exercises may be beneficial to the immobile patient (Heidrich 2007).
- Oral laxatives are divided into four groups – stool softeners, peristaltic stimulants, osmotic agents and bulking agents. While the clinical evidence is not strong, a combination of laxatives is most effective in palliative care (Joanna Briggs Institute 2008, Palliative Care Expert Group 2010); there appears to be no apparent relationship between opioid dose and laxative regimen (Droney et al 2008), which again underscores the importance of individualised assessment.
- Rectal treatments – it is again important to link the treatment to the information obtained at assessment. A microenema, or simple lubricating suppositories (such as glycerol) or those containing stimulants to effect rectal peristalsis (such as bisacodyl suppositories or microlax enemas), may be effective. Regardless of the type of rectal treatment, adequate lubrication, caution in insertion, and ensuring fluid is at body temperature are essential considerations; similarly, the acceptability of rectal treatments may vary from person to person (Larkin et al 2008). Where rectal disease is present, high enemas should not be used as they pose the risk of perforation of the bowel.

Evidence-based practice

- Constipation is a highly individualised experience, best defined by the patient describing the variation from their normal patterns of bowel function.
- Comprehensive nursing assessment is essential to effective intervention.
- Nursing management of constipation must be linked to assessment findings; while preventive measures may have some effect, oral laxatives such as those that combine a stool softener and peristaltic stimulant are often an appropriate intervention. Rectal treatments are invasive and uncomfortable and should only be implemented when other interventions are ineffective.

References

Connor A, Muir M 2007 Managing symptoms: what can nurses do? A principle-based approach. In Kinghorn S, Gaines S (eds), Palliative nursing: improving end-of-life care, 2nd edn. Baillière Tindall, Edinburgh.

Doka KJ 1993 Living with a life-threatening illness: a guide for clients, their families, and caregivers. Jossey-Bass, San Francisco, CA.

Droney J, Ross J, Gretton S et al 2008 Constipation in cancer patients on morphine. Supportive Care Cancer Care 16:453–9.

Heidrich DE 2007 Constipation. In Kuebler KK, Heidrich DE, Esper P (eds), Palliative and end-of-life care, 2nd edn. Saunders, St Louis, pp. 287–300.

Joanna Briggs Institute 2008 Management of constipation in older adults. Best Pract 12(7):1–4.

Larkin PJ, Sykes NP, Centeno C et al 2008 The management of constipation in palliative care: clinical practice recommendations. Palliat Med 22:796–807.

Palliative Care Expert Group 2010 Therapeutic guidelines: palliative care, 3rd edn. Melbourne, Therapeutic Guidelines Limited.

Sykes NP 2006 The pathogenesis of constipation. Support Oncol 4:213–18.

Terelinck D 2005 Assessment of digestive and gastrointestinal function. In Farrell M (ed), Smeltzer & Bare's Textbook of medical–surgical nursing (Australian and New Zealand edition). Lippincott, Williams & Wilkins, Sydney.

The multifaceted assortment of reactions to the experience of loss is called **grief**. Grief reactions are complex, and experienced with interrelated physical, emotional, behavioural and cognitive aspects. Raphael (1999:22) once described grief as 'an inevitable consequence of the intensity of human attachments'. Grief has been described as the price we pay for love and investing ourselves in others. Grief has the power to upset the body's stability, which is vital to our sense of self (Freeman 2005) and may manifest itself in ways that are disruptive and disturbing to the person experiencing it. Grief is both unique to each person and a highly complex sociological phenomenon. Grief varies enormously from one person to another and sometimes between men and women, and may be hindered or helped by the support offered.

Bereavement is a term referring to the objective state of having lost attachment to something of value and is *situational* and *tangible*. In Australia and New Zealand, the word bereavement is largely used to apply specifically to a person who has a relative or friend who has died, although this usage varies. Therefore, it is possible to refer to someone as 'bereaved' – such as a widow or widower – who may not be actually 'grieving' if their adjustment to their changed circumstances has resolved.

The cultural and social practices around the expression of grief and bereavement are collectively known as **mourning**. These are influenced by culture, religious affiliation, family expectations, personality and other factors. Mourning typically possesses a ritualistic quality. Martin and Doka (2000:151) indicate that ritual is best defined as 'special acts that offer sacred meaning to events'. Funerals are rituals; they provide visual confrontation of the death, social support, a safe haven for the bereaved, rites of passage for the deceased and a way of disposing of the body. For thousands of years people have relied on some form of ritual to mark human death and fulfil the vital psychological, spiritual and social needs of the bereaved. Ceremonies have formed part of mourning and burial rituals for tens of thousands of years of human history (Howarth 2007, Kellehear 2007).

In recent decades traditional forms of mourning have become less prevalent, with more informal and secular practices increasing in popularity. For example, in Australia and New Zealand, fewer people are opting for traditional funerals in churches. Instead, secular events facilitated by a civil funeral celebrant in non-consecrated settings are seen more often. While predominantly secular in nature, these ceremonies can still have ritual power. Recent incidents of mass death of younger persons, such as in the 2003 Bali bombings, saw secular mourning rituals played out on football fields and in 'surf circles' (Figure 22-2) throughout the region (Rosenberg 2009).



Figure 22-2 'Surf circle'.

Getty Images/Ricardo DeAratanha/Contributor.

Categories of loss

It can be helpful to think about different categories of loss. Loss may take many forms and does not simply describe the loss of a person through their death. Understanding the categories of loss (below) enables the nurse to anticipate the likely lived experience of the client. This in turn can enable the nurse to respond appropriately and sensitively to the client's reaction to their loss.

- *Actual loss* describes the change to a person's situation that follows when something to which one has an attachment is now gone. For example, bereavement is usually a description of the actual loss of a person through death, such as a spouse, partner, family member or friend.
- *Perceived loss* is more difficult to identify, as it is less obvious to the observer. The loss of dignity, modesty, freedom, confidence, prestige or self-esteem are all examples of perceived losses. It is easy to see how a client in an unfamiliar hospital setting might react to these perceived losses and their subsequent vulnerability.
- *Maturational loss* occurs as a result of normal life transitions; for instance, when a child goes to school for the first time or leaves the family home. The sense of loss may be profound for both child and parents. The loss experienced upon retirement may weigh heavily on the person whose sense of identity has rested on their role as primary wage earner.
- *Situational loss* occurs in response to sudden, unpredicted and specific events that have the capacity to threaten and immobilise a person's physiological, psychological and social equilibrium. Some frequently documented and commonly encountered situational losses include divorce, separation from the family, childbirth, life-threatening or chronic illness, and death. Situational loss also includes the multiple losses caused by man-made or natural disasters – such as terrorism, flooding and fire – where survivors must

deal with losses that are enough to overwhelm them and render them, their families and communities helpless.

Normal grief patterns for adults

People's reactions to loss are varied and highly individual; however, a number of patterns can be identified that are considered 'normal'. Sadness, anger, fear, anxiety and denial are common reactions to loss and can sometimes represent adaptive responses to stress. It is, however, important to note that the grieving person does not necessarily experience all of them. Freeman (2005) and Corr et al (2003) suggest that responses from physical, behavioural, cognitive, emotional and spiritual domains may be manifested during the grief experience (Box 22-3).

Theories of grief and loss

There have been some ground-breaking grief theories that have helped us gain better insights into people's experiences of loss. The early work of Sigmund Freud (1856–1939) introduced three significant concepts that influenced 20th-century thinking about grief:

- a *developmental perspective* – that as children develop, they change in their reactions to loss
- the idea of *grief work* – the process of withdrawing emotional attachment to the object of loss, and
- that grief and depression are *distinct phenomena*.

Freud's work was influential in subsequent attempts to describe the experience of grief. An important contribution was made by John Bowlby (1907–1990), who proposed that a person's reaction to loss is underpinned by a sense of violation of their attachment to the lost object. Bowlby went on to describe four phases experienced following loss: *numbing*, *yearning*, *disorganisation* and *reorganisation*. Importantly, Bowlby noted that these phases do not happen in a set order, and this is an important concept to grasp in understanding grief (Cobb 2008). Similarly, Colin Murray Parkes (b.1928) explored grief as a transition between a world that is assumed to be known and stable, and one in which control is lost as the bereaved person adjusts to a new reality. Parkes also described phases, using the terms numbness, pining, depression and recovery, to describe normal patterns of grieving. Again, Parkes notes that these phases do not necessarily occur as a linear process (Cobb 2008).

Perhaps one of the best-known grief theories has emerged from the work of Elisabeth Kübler-Ross (1926–2004), a Swiss-American psychiatrist who interviewed dying people to better understand their experiences as their lives came to an end (Kübler-Ross 1969). In its application to bereavement, Kübler-Ross's theory proposes that people move through stages of grief not unlike the phases suggested by Bowlby. This theory has gained tremendous traction both with healthcare professionals and with the general public, and is often assumed to be the most accurate description of 'normal grieving'. However, all theories are subject to criticism and this bereavement theory has been strongly criticised for assuming that stages of grief take place sequentially. Payne et al (1999) have provided a comprehensive critique of this model.

In his pioneering work in the area of grief and loss, William Worden (b.1932) proposed that the grieving person faces four 'tasks of mourning' that contribute to their adjustment to their loss:

1. To face the reality of the loss.
2. To experience the pain of grief.
3. To adjust to a world without the deceased.
4. To emotionally relocate the deceased and move on with life in a new reality (Worden 2009).

Over time, Worden has amended this fourth task to reflect the important and ongoing nature of remembrance,

BOX 22-3 Manifestations of the grieving experience

Physical

Hollowness in the pit of the stomach, tightness in the chest or throat, muscular weakness, lack of energy, dry mouth, insomnia, depression, generalised anxiety, loss of appetite, anhedonia (absence of pleasurable experience), sense of depersonalisation ('Nothing seems to be real, including me').

Behavioural

Withdrawal from others, dreams of the deceased, searching and calling out, sighing, loss of interest in normal events, increased consumption of tobacco and alcoholic beverages, startled reactions, crying and difficulties sleeping, a wish for isolation, suspiciousness.

Cognitive

Preoccupation with the deceased, intrusive thoughts, disbelief, calculation difficulties, confusion, images about death, nightmares, decreased attention span, sense of presence and hallucinations, or decreased interest, motivation, initiative or direction.

Emotional

Anger, guilt, depression, anxiety, loss of confidence, sadness, fear, numbness, remorse, loneliness, relief, frustration, fear of going crazy, self-reproach, panic.

Spiritual

Search for meaning, doubt about the importance of anything, hostility towards God or experiencing a crisis in faith.

recognising that 'moving on' or 'getting over it' is no longer the goal of mourning, but rather that the adjustment to changed reality is an ongoing process. Worden's fourth task of mourning has been rephrased as 'to reinvest energy in life, loosen ties to the deceased and forge a new type of relationship with them based on memory, spirit and love'. It is essential to remember that there is no 'magic' period of recovery from loss and most people will experience an enduring relationship with the deceased.

• CRITICAL REFLECTION POINT

Think about an experience of bereavement in your life, and consider Worden's 'tasks of mourning'. Ask yourself the following questions; you may like to write down your answers for your own reflection.

To accept the reality of the loss:

1. **How do you remind yourself that the loss you have experienced is real?**
2. **What reminders are there in daily life that your loss is real?**

To experience the pain of grief:

3. **What feelings, thoughts and sensations have you experienced since your loss?**
4. **How have they affected your ability to go about your life?**

To adjust to the new environment where the deceased is missing:

5. **In what ways has your life changed since the loss?**
6. **Will these changes be temporary or permanent?**

To reinvest energy in life, loosen ties to the deceased and forge a new type of relationship with them based on memory, spirit and love:

7. **What would you say to the person you have lost if you were writing them a letter?**
8. **How did you (or could you) honour their memory?**

Each of these attempts to describe the nature of grieving may be helpful, but should be embraced with caution by nurses and others. Indeed, some argue that applying standardised models of bereavement can be the source of depersonalised care that devalues the experience of the griever (Cobb 2008). Grieving is a highly individual phenomenon, influenced by personality, culture, family and other contextual issues, and any model must not be considered prescriptive of the process. Models are useful to provide frameworks for understanding the experiences of loss and grief, but are never a checklist or 'recipe' for caring for people who are bereaved.

Grief and gender

Some discussion has taken place regarding gendered differences in grieving patterns (Doka & Martin 2010, Millan 2010, Rosenberg 2009). Most cultures provide social sanctions for the expression of emotions such as sorrow and anger, which often differ between men and women. Emotions expressed by people of one culture may not necessarily be sanctioned in another; for example, in many Western cultures men have been socialised not to cry and society discourages men from the public expression of tears (Golden 1996). A notable exception to these gendered expectations in Australia and New Zealand can be found in the sanctioned grieving and memorialisation on ANZAC Day, where fallen soldiers are commemorated and returned soldiers honoured. In this setting, the public expression of emotion by men in the context of grieving is considered acceptable (Rosenberg 2009), although we often still hear men apologise for their displays of sadness. In Australia and New Zealand, then, certain assumptions about gender are popular. We have a stereotypical picture, for example, of the stoic, controlled man whose grieving is intensely private. We have an impression, perhaps, of the grieving woman who shares her feelings readily and finds great solace in the connections she makes in a grief support group. Are there ways of grieving that are more 'masculine' or more 'feminine'? Are gendered boundaries of grieving changing? Consider the assumptions listed in the *Critical reflection point* below.

• CRITICAL REFLECTION POINT

In your experience, do these assumptions about gender and grieving hold true?

Women talk readily about feelings.	**Men are stoic and appear to lack feelings.**
Women tell and retell their stories to make sense of it.	**Men know the story is etched in their mind; no need to be reminded.**
Women seem to *feel* their way through grief – emotions are the pilot.	**Men tend to *think* their way through grief – intellect is the guide.**
Feminine language is often described as intuitive, earthy, fluid.	**Masculine language is thought to be orderly, concise, controlled and goal-orientated.**
Women focus on connection, intimacy and interdependence.	**Men focus on independence, self-reliance, less self-disclosing, less expressiveness.**
Women seek companionship, including groups.	**Men appreciate time alone to think it through.**
Women are more amenable to demonstrative expression of feelings in group work.	**Men are more likely to benefit from being left alone to work through their grief.**

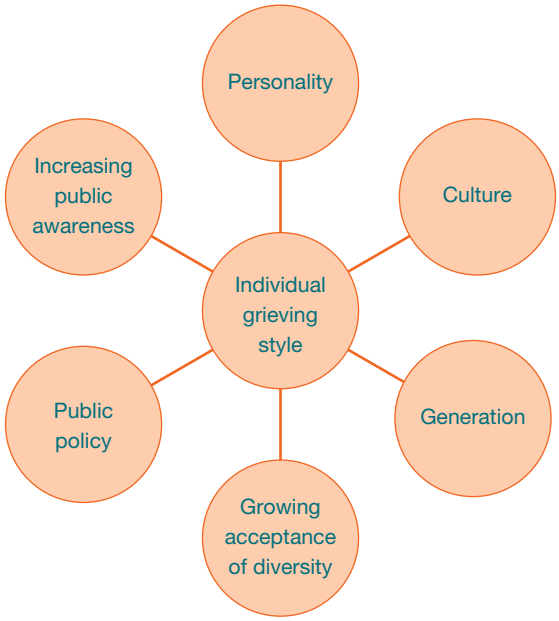

Figure 22-3 **Factors in gender and grieving.**

In reflecting on these assumptions, it would be fairly easy to identify a number of people for whom they simply do not apply, for example, a woman who is intensely private in her grieving, or a man who is demonstrative and open about his feelings of sadness. Most grieving people will sit, and sometimes move, between these two extremes and it can be helpful to conceptualise grief patterns and gender along a continuum, rather than as two mutually exclusive boxes.

Yet this continuum is not 'female ↔ male' or even 'feminine ↔ masculine'. Grieving is not really about gender, but about individual styles, and is in a constant state of change. Figure 22-3 illustrates a number of factors that influence how an individual might grieve. Importantly, these factors themselves are dynamic and changing; for example, cultural norms for mourning behaviour in a second-generation Australian may have been modified by assimilation.

Individual grieving styles

Another way of understanding individual grieving styles comes from considering differing styles on a continuum 'intuitive ↔ instrumental' (Figure 22-4) (Doka & Martin 2010). The characteristics of each end of this continuum are described below.

The intuitive griever

An intuitive griever's adaptation to loss is shown through their lived experience of grief and their expression of feelings. Individuals typically benefit from connection with others, sometimes in groups. As many of these characteristics have been assumed to be 'feminine', some male intuitive grievers may seek validation that their grief reaction is 'normal for a man'. The *intuitive griever*:

- experiences intense feelings of loss
- will talk to process feelings
- demonstrates outward expressions such as crying and lamenting, which mirror their inner experience ('wear your heart on your sleeve')
- may experience prolonged periods of confusion, inability to concentrate, disorganisation and disorientation
- often feels physically exhausted and/or highly anxious.

Intuitive grievers are at risk of slowing their own progress towards adjustment, as their empathy for others can distract them from their own needs. Moreover, as intuitive grievers rely on relationships and interconnection to navigate their grief, they can focus fully on this process at the cost of their health and usual activities.



Figure 22-4 **The continuum of gendered grieving.**

The instrumental griever

At the other end of the continuum is the *instrumental griever*. Instrumental grievers typically use problem-solving as a strategy to enable mastery of their feelings and control of the environment in creating their 'new normal'. Not always isolated, their connections with others can be made by 'doing with' rather than 'sharing with'. Female instrumental grievers can be judged as 'cold' or 'uncaring' because their grieving doesn't necessarily include crying. The *instrumental griever*:

- experiences feelings, but these are less intense and less obvious
- tends not to cry, although may feel pressure to do so
- considers mastery of their feelings and recovery as important; controlling their behaviour is valued
- talks to process issues, not feelings
- commonly experiences brief periods of cognitive dysfunction – confusion, forgetfulness, obsessiveness
- often has enhanced energy levels; 'doing stuff' is an outlet.

The risk for instrumental grievers is that because their grieving style is less obvious, they can in fact be leaving their grief unattended to, and poor health outcomes can eventuate as a result. Significantly, both intuitive and instrumental grievers can experience prolonged periods of confusion, inability to concentrate, disorganisation and disorientation as a normal reaction to grief. It is important to remember that while people will usually

demonstrate predominantly one or the other tendency on this continuum, most sit somewhere in between, in a 'blended' mix of the two.

Normal grief patterns for children

Understanding of death and responses to loss and death vary according to age. Like adults, children are not immune from grief reactions to loss and bereavement. Understanding the psychological and emotional development of a child is essential to the provision of support that is appropriate to each child's developmental stage (see Chapters 16 and 17). Children experience age-related constraints on their ability to comprehend and deal with loss (Piaget 1970). All children move through cognitive developmental stages in a set sequence; however, the rate of cognitive development varies among children. Although children may not totally comprehend the concept of death at an early age, it has been argued that they do experience separation anxiety and a perception of what it is to lose something or someone. As the child grows, an understanding of what it means to die develops (Table 22-3), and this conceptual understanding continues through middle to old age where the loss effect is diminished.

There are certain patterns in the sequence of stages in children's responses to death:

- children do not advance from one stage to another simply because it is their birthday
- children advance through each stage in the prescribed order
- children never skip a stage
- children may exhibit cognitive aspects of both stages as they exit one stage and enter another
- adolescent children (and, on odd occasions, adults) may rely on lower levels of thinking, even though they are capable of advanced reasoning
- the stages are universal, irrespective of culture.

Personal experience is also an important component of human development. It is crucial to shaping an individual's attitudes and behaviours, and this is particularly relevant in terms of each person's experience with death, dying, grief and bereavement. Coming to terms with loss entails a personal quest by the survivor to make sense and meaning of the loss experience – consider Worden's tasks of mourning discussed above. It is also a time for putting the loss experience into perspective, re-evaluating previously held knowledge, beliefs and attitudes, and moving on. This is largely influenced by

TABLE 22-3 Children's responses to death

Birth to 2 years	2–5 years	5–8 years	8–12 years
Lacks a conceptualisation of death.	Has a basic understanding of 'dead'.	The child's notion of causality has developed and evolved.	The child's understanding of death has become equivalent to that of the adult.
Loss and grief may be evident in the form of separation anxiety.	Denies death as a normal process.	The child begins to understand that death is final and irreversible.	Understands that death is universal, irreversible and inevitable.
Infants between the ages of 6 months and 2 years demonstrate the beginnings of grief and mourning.	The child has difficulty in grasping the permanency of death.	The child understands that death is a natural process and that it happens to everyone.	Fears and defences towards death are developed.
	There is a matter-of-fact curiosity about death.	There is a development of the child's sense of guilt at having in some way caused the death.	Difficulty accepting their own future death.
	Magical thinking about death predominates.	The child uses words or drawings to communicate their understanding of death.	Reverts to egocentric and magical thinking during the stress of the crisis.
	Displaced anger and angry protests may be observed following the death.	The child may resort to denial as a defence when experiencing the trauma of loss.	Becomes aware of the implications that loss will have in the future.
	Sees death as reversible.	May take on a 'caregiving role' and become more 'self-reliant'.	May invent a fantasy relationship to help deal with the trauma of the loss.
	May respond in a similar manner to that of the parents.	The child feels the vulnerability that accompanies death.	May resort to telling stories and jokes about death to hide fear and anxiety.
			Grief and mourning are often disenfranchised, causing a change in behaviour.

how people perceive their social world and their place in it. During bereavement, four factors which develop throughout childhood, adolescence and young adulthood help condition emotional responses: personality, social roles, personal values and perception of the importance of the deceased.

Personality

Put simply, behaviour is the way one conducts oneself. The personalities of individual human beings are often consistent, and reveal qualities in their behaviour, which in many respects can be predicted. For example, some people will shy away in some circumstances while others will, perhaps, be aggressive, warm or outgoing. People have learned to count on certain behaviours in those they know, for example, family members and close friends.

By assuming that a person will react in a certain way, the implication is that we have certain knowledge about that person's personality. A working definition of personality is proposed by Clarke (1995) as 'a dynamic compilation of instinctual emotional predispositions and psychological factors which, when combined, determine our unique adjustment to the environment'. Personality is unique to the person, yet relatively stable across a lifetime. It is a concept referring to the person as a unified whole and not just a part of the person (Peterson 2004). If a person has consistently run away during crises over the course of their lifetime, then it is highly likely that person will behave in the same manner during a time of grief. Alternatively, a person with high self-esteem and self-concept and a positive approach is well placed for a healthy resolution in a grieving situation.

Social roles

Everyone has social roles they fulfil. In a family, everyone has interdependent roles, and members depend on one another for support, nurturance, guidance and social interaction (see Chapter 15). Following the death of a family member, losses resulting from the unoccupied role become apparent and are grieved for. Adaptation to the loss may become increasingly difficult as new roles are assigned and extra demands and new responsibilities are absorbed. Death of any close friend or relative is a time for struggling with loss, and it is seldom clear at the time exactly what is lost. This can be particularly apparent if a person has lost a parent.

Personal values

A person's value system represents personal beliefs and attitudes about the worth of different experiences and possible outcomes. Values are shared ideas about what is good, right and desirable, and are learnt in a number of ways. For example, moralising (a direct but subtle way of inculcating preferred values in someone else); *laissez faire* (values are determined on an individual basis); modelling (the actions of someone else are copied); and value clarification (learners are taught the process of valuing). Everyday life situations that call for opinions, thought, decision-making and action challenge each person. Each time a decision is called for, a choice has to be made based on the values that are held. A person's values will have an enormous impact on that person's experience of the death of another, as well as on their own death. Children will often mimic the apparent values of their parents, although as they move into adolescence they are more likely to adhere to peer-group values.

Perception of the deceased person's importance

A further factor in the grief response is the importance of the deceased person, or the place the deceased person held in the survivor's life. For adults, the loss of a spouse or partner (for example) may or may not mean the loss of a best friend, sexual partner, companion, accountant, gardener, baby-minder, audience, breadwinner, and so on, depending on the particular roles normally performed by this partner. In addition, relationships as complex as marriages vary in terms of the levels of loving or caring shared between the partners. For children, however, the loss of a parent can violate the child's sense of safety, or remove a source of affection and direction; equally, the loss of a peer can confront a child's sense of their own mortality and expedite their movement through elements of the developmental stages. Generally speaking, the closer the perceived relationship, the stronger the grief response.

Complicated or high-risk grief

There is some expectation in society that those who are grieving will eventually 'get over it' and return to their previous state of functioning. Some people who are grieving become distressed when they don't 'feel better' 12 months after the loss. However, rather than framing the outcome of grieving as 'resolution', it can be helpful to understand it, in the terms put forward by Worden, as *the process of readjustment to a changed reality*. For many people, however, this readjustment can be compromised by a number of factors that place them at high risk of ongoing emotional instability or withdrawal from usual tasks or activities that were once viewed as meaningful.

It has been proposed (Payne 2008) that the risk factors for complicated grief are influenced by a range of factors that are considered below:

- the circumstances of the death
- the meaning of the relationship with the deceased
- the internal resources of the bereaved, and
- the quality of social support and other external resources.

Many people in our society expect to live a long life with a peaceful death at its conclusion and the *circumstances of the death* may indeed follow this pattern. While this is the experience of some, a number of people find themselves expecting the death of a family member or friend. In this case, anticipated death can provide opportunities to begin to adjust to the impending loss. Such deaths maximise the chances of uncomplicated grieving on the part of the survivors, although other factors interact with the nature of the death and this may not always be the case. For example, the nature of the relationship between the deceased person and the survivor may place a person at risk of complicated grieving.

The *relationship between deceased and survivor* can represent a risk factor for complicated grief. As noted above, the closer the perceived relationship, the stronger the grief response. The death of a spouse/partner disrupts all aspects of the survivor's life – from the moment of rising to going to sleep in an empty bed. Habits of action (setting the table for two) and thoughts ('I must ask my wife about that') are confronted, sometimes daily. Grief following death is aggravated if the person lost is the person to whom one would turn in times of trouble. A bereaved person may find themselves repeatedly turning towards a person who is not there or feel isolated and alone in their grief. There is a feeling of being dismembered, of being acutely aware of the scope and dimension of the loss and that everything has changed. Further, there is painful self-examination and the tendency for physical and psychological health decline.

The death of a child is particularly difficult, as it ends plans, hopes and dreams for the child's life. The death is regarded as being out of sequence and against the natural order of things. The death of a child, irrespective of age, gives rise to intense emotional and physical reactions and is identified in the literature as a 'high-grief' death. On the other hand, the death of a parent represents the loss of a potential or actual long-term relationship. During the developmental years, children receive nurturing, support, care and protection, security, regulation of behaviour and socialisation from their parents. The loss of a parent signals a critical point in the life of the surviving children. It is a time for reflecting on the developing years and for reviewing the importance of relationships. It is also a time when grown children may become acutely aware of how old they are and that they are indeed adults. Perceptions about life and what it means may drastically change.

Disenfranchised grief occurs when people experience a loss that, for whatever reason, is not or cannot be socially sanctioned, publicly mourned or openly acknowledged (Corr 1999). Such a concept recognises the notion of *social control*. All societies have systems of social control, whereby behaviours are socially and culturally defined. Mourning 'rules' exist in societies to ensure that their members generally behave in appropriate, expected and approved ways (DeSpelder & Strickland 2005). There are four reasons the grief of survivors may be disenfranchised. Also consider the examples in Box 22-4:

- the relationship is not recognised
- the loss is not recognised
- the griever is not recognised, and
- the death is clearly affected by specific social values and attitudes (Bruce 2000, Corr 1999, Doka 1989).

When *multiple losses* occur, intense grief is experienced. Multiple deaths may be associated with the loss of two or more members of the same family at the same time in the same event, such as a multiple-fatality car accident, plane crash or bombing attack. Alternatively, intense grief may be associated with many deaths occurring within a relatively short period of time, such as the Black Saturday bushfires and the Lockyer Valley flood disaster in Australia or the Christchurch earthquakes in New Zealand. Multiple deaths cause multiple losses and have an immense impact, not only on the survivors, but also on family and the wider community.

Sudden and unnatural death

In stark contrast to an anticipated death at the end of a 'normal' life span is *sudden and unnatural death*. Unexpected death by suicide, homicide, accident, injury or disaster is difficult to accept and has been found to be a precursor to poor psychological adjustment (Updegraff & Taylor 2000). Surviving a disaster in which others have gone missing, are injured, or have died, presents unique grief responses for people. They survive not only the overwhelming, frightening and often sudden experience of the disaster and its aftermath, but also the death of others. 'Survivor guilt' is a term sometimes used in this situation to describe the feelings of those who, in all probability, would have also been victims.

Suicide, or the taking of one's own life, remains a confronting experience in our communities. It is typically unexpected and seldom makes sense to those left behind. Suicide poses many difficult problems when it comes to healthy grieving by the victim's significant others. Difficulty

BOX 22-4 Disenfranchised grief – examples

- When others see the relationship between the bereaved and the deceased as relatively superficial or undeveloped, e.g. relationships between friends, a stillborn infant, colleagues, ex-spouses and caregivers, or non-traditional relationships such as same-sex partnerships and those involved in extramarital affairs. Fathers of stillborn infants have been identified as a particularly disenfranchised group (Bonnette & Broom 2011).
- When the loss is one that falls outside everyday notions of loss, e.g. loss of a body part, the death of a pet, an elective abortion, or a miscarriage.
- When 'psychological death' occurs, e.g. if an individual's personality drastically changes as a result of a chronic, debilitating mental illness such as Alzheimer's disease.
- When, as Doka (1993) notes, those 'individuals to whom the socially recognised status of griever is not attached' experience loss, e.g. very young children, the elderly, people with intellectual disability or professionals who care for dying and distressed clients.
- When the death itself falls within areas of societal sexual taboos, e.g. death through human immunodeficiency virus (HIV) or acquired immunodeficiency syndrome (AIDS). The grief associated with this is complicated in many ways, both for the person infected by the disease and for significant others. First, every society carefully regulates the sexual behaviour of its members, and Benton (1999) makes it clear that HIV/AIDS has forced us to examine those aspects of life that are often taboo: sex, sexuality, blood, drugs and other lifestyles and behaviours viewed by many as non-conforming. People whose relationships do not conform to society's expectations, who live with and love those infected with the disease or who deviate from expected lifestyles and behaviours are forced to endure disenfranchisement, discrimination and stigma imposed by communities (Klein 1999). Stigmatisation in itself creates multiple problems when it deprives the survivor of the opportunity to grieve the loss, and of support and religious rituals required for healthy confirmation of the death and subsequent mourning (Mooney 1998).
- When the death comes about through suicide. Suicide is considered one of the most difficult deaths that a mourner must contend with, and is considered traumatic by its survivors. Suicide poses many difficulties in relation to grief resolution by significant others, as a sense of moral repugnance on the part of others may lead to the withdrawal of support for survivors (Noonan 1999). Some proposed reasons for this reaction are the fear of death, fear of mental illness and fear of contamination by suicide. The survivors in turn may withdraw into themselves and become further isolated and choked by guilt (Corr et al 2003).

Benton K 1999 Grief and HIV/AIDS: an Australian story. Grief Matters 2:3; Bonnette S, Broom A 2011 On grief, fathering and the male role in men's accounts of stillbirth. Journal of Sociology; Corr CA et al 2003 Death and dying; life and living, 4th edn. Thomson Wadsworth, Belmont, CA; Klein SJ 1999 HIV/AIDS grief and mourning: unique and ongoing in spite of advanced treatments. Grief Matters 2:8; Mooney DC 1998 Disenfranchised grief: in the wake of suicide. Oral conference paper presented at Suicide – an enigmatic stigma: a journey through grief, Brisbane, Qld 24 October 1998; Noonan K 1999 The truth hurts: the dilemmas of supporting children bereaved by suicide. Grief Matters 2:47.

in coming to terms with the sudden death is considered by many researchers as the trigger for extreme difficulties with the bereavement experience and a disturbed kind of mourning by those left behind (Corr et al 2003). This places survivors at high risk of physical and psychological health problems.

Following a death by suicide, significant others are often left feeling like victims themselves. Anger, shame, guilt, rejection and abandonment serve to strengthen negative grief responses (Mooney 1998). Survivors are often left with a numbing feeling and ask themselves questions like 'Why did he do this to me?' Such questions and personal torment increase the impact of emotions. Suicide is often described as the ultimate affront, the final insult – one that, because questions cannot be answered, compounds the survivor's frustration and anger (DeSpelder & Strickland 2005).

Currier and colleagues (2015) suggest that following a homicide the survivors are at a high risk of complicated mourning and developing post-traumatic stress disorder. Not only is the death unexpected, senseless and random, but it is also brutal. Body mutilation and difficulties associated with retrieving the body following death tragically alter and further complicate mourning processes (Corr et al 2003). For the survivor, anger and fear seem to predominate and can be exacerbated during a coronial inquiry into the death. Not only is the death difficult to comprehend, but also the grief is re-stimulated and compounded by events such as facing and identifying the accused, recollecting the event, court hearings, appeals, coronial proceedings and the intrusion of media into the event, as well as anniversaries and other significant events pertaining to family life. This can be particularly problematic following intrafamilial homicide, such as the murder of eight children in Cairns, Australia, in 2014.

How can we know when grief has moved from 'normal' to 'complicated'? The Australian Centre for Grief and Bereavement (2012) describes some of the possible features of complicated grieving. They suggest that further help may be required if the grieving person:

- does not have people who can listen to them and care for them
- finds it difficult to manage the tasks of daily life, such as going to work or childcare
- finds their personal relationships are being seriously affected
- has persistent thoughts of self-harm or harming others
- persistently over-uses alcohol or other drugs
- experiences panic attacks or other serious anxiety or depression
- remains preoccupied and acutely distressed by grief over time
- feels that, for whatever reason, they need help to get through this experience.

Nursing practice and grief

We have shown above that everyone grieves in their own way. Imposing inflexible or unfounded expectations on people experiencing grief can be inappropriate at best, and harmful at worst. Most importantly, imposing time limits on the resolution of grief is unhelpful and, as Anstey and Lewis (2001) remind us, cannot be considered as a valid outcome measure in determining successful adjustment. Mourning is a way of coping. Mourning is considered labour-intensive and unique, and is regarded as a private and personal journey that no two people experience in the same way. Nurses have a responsibility to assess each grief and mourning situation as it arises, taking into account the many factors described above that lead a person to respond to loss in a particular manner. Nurses who understand the importance of grief and bereavement are better placed to facilitate grief work and help their clients and family survivors cope with their loss.

Supporting the grieving person

Most people's grief reactions, while possibly uncomfortable to witness, can usually be considered a normal reaction to loss. Clearly, not every nurse is going to be trained in grief and bereavement support; however, there are some fundamental attitudes and skills that promote optimal practice in the support of the grieving person.

Understand the therapeutic relationship

The primacy of the therapeutic relationship in palliative care nursing was identified by Canning et al (2007). While nursing practice is a set of activities requiring scientific knowledge and expert clinical skills, it is fundamentally also an interpersonal engagement with a therapeutic intent. Whether a death is sudden or anticipated, takes place in the home or the hospital, involves a baby, a child, an adolescent, youth or a middle-aged or elderly person, it is nearly always the nurse who provides the final care along with the family and supports those most deeply affected by the loss. Empathy, compassion and involvement have long been recognised as essential attributes of nursing care. A truly compassionate approach involves willingness to learn from others, viewing each situation as unique, responding to situations in an honest, sensitive and caring manner and taking the time to intervene sensitively and appropriately when caring for those who have experienced a loss.

Avoid judgement

Clearly, each person has their own approach to dealing with loss. The interpretation of loss is diverse and, as noted above, depends on such factors as cultural and ethnic heritage, socioeconomic status, gender, and religious and racial perspectives. The concept of culture encapsulates those complex learned behavioural patterns that enable the individual or group to adopt specific habits based on a prescribed set of norms related to their daily conduct (see Chapter 14). In the Western world, grieving is often viewed as a very personal and private process. In many other parts of the world, such as India and the Middle East, public expression of grief is commonplace. The values and beliefs evident within a culture shape and direct an individual's pathway through life, including religious, social and cultural sympathies. Although values and beliefs are not easily assessed, it is essential for nurses to understand the ways in which they are manifested through behaviour.

Maintain open communication

It is not uncommon for anger to be expressed as an immediate response to grief. Remember that the witnessing of grief behaviours does not mean they are personally directed at the witness. Approaching each situation in a non-judgemental way and being open and sensitive in communication with families, the skilled nurse conveys acceptance and represents commitment to the grieving person at a time when their sense of control may be compromised.

Stay informed of resources and support

It is not within the scope of practice of every nurse to be an expert bereavement counsellor. But staying informed of the resources and other forms of support available within the workplace and in the wider community is a reasonable expectation. The nurse should be able to facilitate access to hard-copy materials or online resources that may assist

the griever. A list of local psychologists or counsellors who are skilled in bereavement support can be an invaluable resource, as can an after-hours telephone support number or liaison persons in the griever's community.



CLINICAL REASONING PROCESS

Grieving is a natural response to a loss and is considered to be a beneficial coping process. It is also a reactive process and has therapeutic value. Grieving is healthy and enables the bereaved to reflect on and accept the reality of the loss. The nurse must feel confident to assess the situation critically and make an initial needs analysis. The overall goal of nursing assessment is to gather relevant information and data in order to gain a total view of the client's health and psychosocial status. By carefully exploring information gained from interaction and collating the data in a precise and methodical way, appropriate judgements and decisions can be made to work with the client in their grieving process. Assessment provides an opportunity for the nurse to explore with the client information relating to perceived and actual priority problems (mental and physical).

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

Verbal and non-verbal communication techniques can encourage free flow of information and provide meaningful data for evaluation (see Chapter 12). These include listening, reflecting, clarifying, using non-verbal cues, appropriate use of silence, sharing perceptions, confronting contradictions and reviewing the discussions.

Culture and developmental considerations are two factors that influence communication. Culture has a profound effect on the way people communicate and behave. It is therefore important to keep in mind that cultural differences may influence how verbal and non-verbal messages are interpreted. For example, in many South-East Asian cultures – of which there are significant immigrant populations in both Australia and New Zealand – many women avoid eye contact with men. Conversely, many Western women look directly at the person to whom they are talking. *Age or developmental level* can also affect the way the assessment is handled, especially if the client is very young or very old. In the young, communication depends on the child's cognitive maturity, as noted above. In the elderly, consideration must be given to the extent to which the memory and sensory function may be affected by the ageing process. There are times when both the young and the elderly, in particular, are hesitant to share personal information, and developing communication skills that maximise the possibility of open communication is a priority for student nurses.

During periods of loss or anticipated loss, a client's emotions and behaviours may be in a state of flux. This makes assessment all the more challenging. Nurses should not assume they know how a client or family members will react. Continual assessment is essential if support and/or interventions are to be compatible with their current needs. Assessment of the client and family begins by exploring the meaning of the loss to the people involved. Examples of topics to be explored include the survivor's model of the world, personal characteristics such as personality, values, the nature of family relationships, support systems, nature of loss, cultural and spiritual beliefs, loss of personal life goals, hope, phase of grief, risks and nursing role perceptions.

When interviewing the client and family, it is important that an honest and empathetic approach is taken. Be mindful of setting the tone and direction of the interview, and of establishing a mutual understanding of the purpose of the exchange. In the initial phase it is important to establish rapport, ensure a comfortable and non-threatening setting and clarify the expectations or goals of the interview.

Establishing rapport

Establishing trust and rapport is a challenging process, particularly given the cultural diversity of Australian and New Zealand populations. A clear demonstration of respect for the client and an acceptance of the client's uniqueness as a person facilitate rapport. Greet the client by name and introduce yourself. It is usual practice not to use the client's first name unless invited to do so. In Australasian society, offering to shake hands is one way to demonstrate sincerity and acceptance.

Non-verbal behaviours

Non-verbal behaviours should match the verbal messages. Appropriate and sensitive eye contact and non-intimidating positioning should be used. Sincere and open eye contact (except in certain cultures/circumstances) is often vital with a vulnerable person, as normal contact with others may be disrupted by the emotions generated from circumstances surrounding the death. Position yourself so that you are facing the client. If the client is seated, sit at a slight angle opposite but facing, with an appropriate distance between. Avoid non-verbal behaviours such as frowning or yawning, or expressions of impatience or boredom, which imply a lack of interest. When beginning the interview, it may be appropriate to start with a brief but casual conversation that helps the client relax. Client-focused casual conversation may help alleviate any awkwardness the client may feel in talking to a stranger in the healthcare setting. Casual conversation can also be a source of valuable information.

Ensuring comfort

Ensure that the exchange of information takes place in a private setting free from interruptions and distractions. It is important to clarify that the client is feeling up to the interview before starting. Verbal therapeutic communication techniques involve open-ended questions that give the client a sense of control over the process – for example, 'Tell me about your family', 'How are you feeling now?' or 'What can you tell me about your relationship with X?'

Defining expectations

At the beginning of any interaction it is important to clarify what both the nurse and the client expect from the exchange. Make it clear that any information exchanged will be treated with sensitivity and respect. This is especially important in Australian Indigenous culture where the abuses of the past continue to have impacts on establishing trust in services (see Chapter 14).

During the assessment phase, it is important to focus on how the client is reacting, not on how you believe they should be reacting. Give special attention to grief-related behaviours displayed by the client, and pay careful attention to the client's experience and the tasks of grief that may be left incomplete, which may threaten the client's psychological or physical

health. When people are in crisis they expect the nurse to meet them on an equal footing, so be honest, non-judgemental, open, compassionate and willing to listen. Dignity in the face of death and grief is also expected, and the nurse should accept emotional responses and personal disclosures in a non-threatening and accepting manner.

Clients' responses to grief will vary, and depend on many factors. Remember that the bereavement models described above are only guides to help nurses and others understand the grieving pathway. For example, there may be times when a client becomes angry, does not seem happy with anything that is offered and takes their anger out on everyone, including the nurse who just walked in the door. In this situation, it would be reasonable to assume that the client is not really directing their anger towards the nurse but towards their situation. Of course, there could be any number of complex and interrelated factors contributing to the client's anger. Rather than responding in a defensive or aggressive manner, the nurse should acknowledge the client's feelings: 'You're obviously upset. I'm here to talk when you're ready.' It is important that the nurse remains available to clients, and that clients eventually understand that their outburst has not isolated them from support they may require later.

It is clearly within the scope of all nursing practice to have a grasp of the issues that influence grieving. The information above can be distilled into a guide to support therapeutic conversations with clients and families (Table 22-4).

Grief work is unique to the griever and it may take months or even years to adjust. Consideration by the nurse of the factors that influence grief reactions is necessary for planning

TABLE 22-4 Assessment factors for grieving clients

Factors	Areas/suggested questions to explore
Personal characteristics	Age, sex role, education, socioeconomic status Examples: What is a child's response to the loss? What is an older adult's life satisfaction? What spiritual beliefs do you relate to death? Does the age of the deceased make a difference? How do you expect your life to change with the loss of your leg? arm? breast? child? How does the gender of the client affect the response to death as described by society? What resources do clients have to cope with a loss (e.g. medical insurance, costs for schooling)?
Nature of relationships	Functions of family, community, society Examples: How long have you known the deceased? What role did the deceased play in your family? What is your relationship? Will it change? What contributions have been made by the deceased? How do you interpret the potential loss? How will family relationships change as a result of the loss?
Social support system	Availability of health workers, timing, family needs Examples: Who is present? absent? supportive? non-supportive? Are they always actually available or do they just say 'Call me if you need me'? Are they helpful, or do they avoid the issues offered for discussion by the grieving client? Do they use a listening ear approach rather than a judgemental approach? Is the grieving client's self-esteem built up and supported? What support do the grieving significant others have? Are these people available when needed?
Nature of loss	Death issues: personal, family or community; private or group; actual versus perceived; high risk; disenfranchised Examples: What is your belief about death? How do you define death? Define the loss in your own terms. What factors will help you grieve? What factors will interfere with grieving? What past experiences have you had? Outcomes? What has helped you cope in the past? What has not? Can you identify coping behaviours?

continued

TABLE 22-4 ***continued***

Factors	Areas/suggested questions to explore
Cultural and spiritual beliefs	Values, practices, customs, attitudes, clergy, spirituality Examples: How is the deceased valued, based on spiritual and cultural expectations? How does the loss of a limb change this valuing? How does the grieving client perceive physical death? the meaning of life? How should the body (or part) be treated when removed? What traditions are required to show value of all life? Can religious practices interfere with medical treatment? Who has the right to say 'yes' or 'no'? legally? ethically? Can the court intervene?
Loss of personal life goals	Actual or perceived individual losses affecting future decisions and options Examples: What is your goal in life? How was this changed with this loss? diagnosis? surgery? How have things changed since the accident (e.g. a car accident causing permanent quadriplegia)? How will your role change your personal goals? What planning has occurred for your own life?
Hope	Goals, worth, adaptations to future changes Examples: What do you expect now? How do you feel about yourself? Tell me what you will do now. What do you expect to help you through this?
Phases of grief	Relate to a theorist Examples: Use assessment to classify behavioural theory. Contrast the stage of the client to the stage of the significant other. Validate feelings expressed in emotions: 'You seem angry; tell me more about …', 'You seem sad; tell me…', 'What are your feelings about …?'
Family's grief for the deceased	Relationships, involvement with dying process Examples: Observation of client and family's level of grieving, patterns, rank of leadership and power person. What has helped you deal with problems in the past? What has not helped? What do you perceive as your strength? Weaknesses?
Risk factors in survivors	High risk, such as sudden death, violent death, length of processes or loss of a child Examples: Prior and subsequent variables: ambivalence, dependence, marked emotions, unresolved issues, mental health problems, mourners' perception of the lack of social support. Describe your feelings; your grieving processes. Who has helped you the most? What are your feelings? Could you really have prevented this? Are you feeling guilty because …? What did you use for early interventions with this problem, and were they helpful?
General health issues	General health check-up Nutritional evaluation Assessment of changes

and practising appropriate approaches to care. Grieving is an individual process and does not depend on a set time or sequence schedule, or follow a particular set of guidelines. It is important for clients and their families to share their concerns and talk about their experience with significant others. Continual evaluation of the impacts and outcomes of care provided to clients and families by nurses is necessary for maintaining quality of life and facilitating a forum conducive to healthy grieving.

Self-care for nurses providing end-of-life care

Nurses may care for dying clients for months before their death, and they are often present at the time of death. Nurses also deal with the emotional instability of the grieving clients and their families. As the person's body fails, nurses take on the sometimes confronting tasks associated with providing comfort and hygiene. It is usually the same nurses who cared for the client before death who will perform post-mortem care. Just how do nurses deal with such situations?

Strategies and practices that encourage nurses to evaluate their capacity and understand their personal limitations have long been recognised as fundamental to developing effective coping skills and empowerment (Martin & Bristowe 2015). Moreover, the fostering of these skills encourages the development of the therapeutic relationship as a helpful, facilitative partnership (Canning et al 2007). The reflective process and the formal and informal mechanisms of clinical debriefing help nurses, as individuals and as members of a group that share similar experiences, to gain control over issues and circumstances that shape personal dispositions and abilities to cope within the ever-changing environment of health care.

Coping strategies

Defence-oriented behaviour consists of using a set of coping strategies that are considered rational ways of reducing the impact of anxiety and other emotional responses. Various coping patterns are unconscious ways of protecting the psyche by enabling people to ignore, deny or distort stressful events by decreasing awareness and reducing emotional involvement. Conflict and trauma are reframed in a way that makes the stressor less disturbing. Denial, rationalisation, reaction–formation, humour and identification are just some of the more common defence mechanisms. Such defences are considered normal and healthy and are instrumental in helping the individual survive stressful situations. In general, the 'normal' use of defence mechanisms is appropriate and does not threaten health. Unfortunately, when people face conflict or trauma in their lives and feel unable to cope, or depend on ineffective means of coping, there is a tendency to succumb to physical and psychological distress.

Avoiding intense involvement in relationships with dying clients may be one of the most common defence mechanisms practised by nurses. Resolving the repetitive grief reactions associated with the sequential loss of close relationships with clients is extraordinarily challenging. The spectrum of defence mechanisms – denial, repression, avoidance and isolation – is available to nurses as a means of coping with the stress of working with dying clients (DeSpelder & Strickland 2005).

The nature of death also varies. Death may be sudden or anticipated, take place in the home or the hospital and involve a baby, a child, an adolescent or an adult or aged person. One thing seldom changes, however, and that is the fact that nurses are nearly always the people who provide the final care to the client and support those most deeply affected by the loss. Many nurses experience grief at the death of clients, and if this grief is not dealt with appropriately, bereavement 'overload' may develop (Kastenbaum 1967). Effective and timely support must be provided as a matter of course for the wellbeing of all those who work with death and the dying.

The experience of post-mortem care can be distressing for many nurses. Mooney (2003) found that although post-mortem care elicits a mix of emotions, sadness was the dominant emotion reported by nurses, followed in importance by fear and anxiety. The importance of death in Western culture, in which nurses in Mooney's (2003) study were socialised, presumably accounted for much of this fear and brought into sharp focus the nurses' own thoughts on mortality. The results of the study confirm that beginning nurses resort to using predominantly emotion-focused coping strategies, such as positive reappraisal, when faced with post-mortem care. However, given the multifaceted nature of grief, a multifaceted response is optimal.

Reflective practice

Beginning practitioners are well placed to take advantage of new technology, current knowledge and new insights into grief and bereavement in health care. It is important, however, not to lose track of the important role nurses play in the quest to help others face personal crises such as dying and death and the mourning that follows. To do this, nurses must look after themselves both physically and psychologically if they are to care for others. How do nurses do this? One helpful and practical strategy designed to facilitate coping is **reflective practice**. This is

an essential component of self-evaluation. Exploration of personal feelings is crucial to professional development and self-awareness.

Reflection is a process of reliving experiences and emotions in order to judge and evaluate what has occurred and why, and to learn from the experience. Therefore, reflection and reflecting on practice prompts the framing of new questions, strategies and objectives that combine to facilitate personal growth and professional development. This happens when the nurse returns to the experience to be reflected on, deals with the feelings that are associated with the experience and then assimilates these feelings and knowledge to form new understanding. Nurses should critically analyse their approach to clinical practice. Reflective practice accesses the wealth of information and knowledge available in the clinical setting, enabling choices to be made about the ways one practises and the personal costs and capacities invoked in order to do so.

The use of reflection by nurses begins with the recognition and appreciation of the individual's experience and the belief that people learn from personal experiences. Nurses learn from their experiences and continue to do so in an environment of increasing complexity and rapid and continual change. Unfortunately, not all nurses step back and take time to reflect on and seek meaning in the nature of their practice.

Reflection requires nurses to possess particular knowledge and skills and to be committed to the process. It is also necessary for the work environment to permit and encourage the process, for example, giving time off the ward or unit to attend clinical supervision or reflective debriefing. Peers and colleagues should be able to help one another recognise patterns in their practice and self-reflection, and talk about the knowledge arising from this process. The process and products of reflection involve some form of verbal expression. There must, therefore, be a climate of trust in which the confidentiality of reflective statements is guaranteed, and participants in the reflective process must not use information acquired from these exchanges when evaluating performance.

• CRITICAL REFLECTION POINT

1. **What are the three most difficult aspects of your work with the dying and the bereaved?**
2. **What are you doing (or what will you do) to help yourself cope with these? (see Box 22-5)**
3. **How do (or will) you debrief after the death or relocation of a client with whom you have had either a long-term or an emotional involvement? Does this afford you sufficient release and closure? If not, what can you do to achieve more of this?**

BOX 22-5 Self-care strategies

- Take the first crucial step by involving yourself in subjects that lend themselves to informing you about the many facets of loss and grief.
- Get in touch with yourself. Knowing who you are is just the beginning for you as a nurse. Taking care of others requires you to respect and care for yourself. Physical and psychological health and attending to personal and professional stress are crucial to preserving your personal integration and wellbeing.
- Consider your personal values. Your own perceptions of death and dying, grief and loss are shaped by your personal values and beliefs, which have been formed in part by your personal history. Consider these questions:
  - Who/what have been the major influences in your life?
  - What are the characteristics of the culture in which you grew up?
  - What values underpin this culture?
  - What is regarded as a 'normal' life for people in your own culture? How do death and dying, grief and loss fit into these perceptions of 'normal'?
- Reduce stress and burnout. First identify the stresses in your professional and personal life. The next step is to develop coping mechanisms to either eliminate or deal with the stresses effectively. The mechanisms you choose depend on your particular lifestyle and outlook on life.
  - Explore various solutions
  - Choose adaptive coping mechanisms
  - Keep trying
  - Don't be afraid to change direction
  - Proceed slowly
  - Reward yourself
- In your professional life:
  - Maintain realistic expectations of yourself and the relationships on the job
  - Set realistic job goals
  - Ask for help from management
  - Continue your education
  - Learn to say no
  - Look for new challenges
  - Cultivate a supportive friendship or join a support group
  - Establish a decompression routine
  - Take a holiday or leave of absence
  - Change your job.
- In your personal life:
  - Eat well
  - Exercise regularly
  - Relax
  - Play
  - Practise structured reflection.

4. **In your work setting, do you have access to appropriate psychological counselling? If so, do you consider it important to take advantage of this support system?**
5. **Do you have a personal action plan in place following the process of reflection?**

Reflection is difficult because it may result in altered beliefs or behaviours that challenge the status quo or long-established practices. Reflection requires nurses to recall what they did and identify the consequences. It is also a personal and private way of ridding oneself of the excess baggage that tends to accumulate when working in highly charged environments, including care of dying people and support of the bereaved.

Key concepts

- Birth, living, dying and death are all part of the inevitable cycle of the human condition.
- The experience of illness, caregiving, dying, grieving and death are individual and cannot be understood within a medical/scientific framework alone.
- It has been suggested that a dying person moves through four types of death, which may occur simultaneously: social, psychological, biological and physiological.
- Palliative care is the area of health care that specialises in the care and support of dying people and their families.
- The goal during palliative and end-of-life care is to address the physical as well as the psychological, social and spiritual needs of clients, their families and carers, regardless of the setting.
- Advance care planning is a collaborative process during which preferences for future care are decided upon for when the dying person is no longer able to articulate their own wishes.
- All people will experience loss, grief, bereavement and mourning during their lifetime.
- Complex grief reactions, such as guilt or post-traumatic stress disorder, may occur following the sudden or unnatural death of a loved one by suicide, homicide, accident, injury or disaster.
- Grieving is a natural response to loss and is considered part of a beneficial coping process.
- Nurses have a unique role in caring for the body following death, and in supporting the grieving and bereaved family or significant others.
- The development of therapeutic relationships, effective coping skills and formal or informal mechanisms for clinical debrief offer support to nurses dealing frequently with the emotions of grieving clients and their families.
- Reflective practice is a process of reliving experiences and emotions in order to evaluate what has occurred and why.
- The exploration of personal feelings and examining your response through reflective practice develops self-awareness and specialist knowledge for professional nursing practice.

Online resources

Australian Centre for Grief and Bereavement; largest provider of grief and bereavement education in Australia, www.grief.org.au

Hospice New Zealand; national organisation whose primary goal is to give voice to the interests, view and concerns of member hospices, www.hospice.org.nz

Palliative Care Australia; peak national organisation representing the interests and aspirations of all who share the ideal of high-quality care at the end of life for all, www.palliativecare.org.au

Queensland Department of Health, Palliative care client information form. www.health.qld.gov.au/cpcre/pdf/bspcc/bspc_pif_paper.pdf

Respecting patient choices; details an Australian model of advance care planning, www.respectingpatientchoices.org.au

References

Addington-Hall JM, Higginson IJ 2001 Palliative care for non-cancer patients. Oxford University Press, Oxford.

Anstey S, Lewis M 2001 Bereavement, grief and mourning. Baillière Tindall, Edinburgh.

Australian Bureau of Statistics (ABS) 2012 Causes of death, Australia 2010. Cat. no. 3303.0. ABS, Melbourne. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/mf/3303.0; accessed 29 May 2012.

Australian Centre for Grief and Bereavement 2012 About grief. Australian Centre for Grief and Bereavement, Melbourne. Online. Available: www.grief.org.au/grief_and_bereavement_support/understanding_grief/about_grief; accessed 27 Feb 2012.

Bruce EJ 2000 Grief, trauma and parenting children with disability cycles of disenfranchisement. Grief Matters 3:27.

Byock I 2001 End-of-life-care: a public health crisis and an opportunity for managed care. Am J Managed Care 7(12):1162–4.

Canning D, Rosenberg JP, Yates P 2007 Therapeutic relationships in specialist palliative care nursing practice. Int J Palliative Nurs 13(5):222–9.

Clarke J 1995 Advanced professional counselling. Garett, Milton.

Cobb M 2008 The care and support of bereaved people. In Payne S, Seymour J, Ingleton C (eds), Palliative care nursing: principles and evidence for practice, 2nd edn. McGraw Hill/Open University Press, Maidenhead, UK.

Corr CA 1999 Enhancing the concept of disenfranchised grief. Omega 38:1.

Corr CA et al 2003 Death and dying; life and living, 4th edn. Thomson Wadsworth, Belmont, CA.

Currier JM, Irish JE, Neimeyer RA, Foster JD 2015 Attachment, continuing bonds, and complicated grief following violent loss: testing a moderated model. Death Studies 39(4):201–10.

Currow DC 2004 Grief and loss: the needs of the whole population. Grief Matters 7(3):63.

Department of Health and Ageing (DoHA) 2006 Guidelines for a palliative approach in residential aged care. DoHA, Canberra. Online. Available: www.health.gov.au/internet/main/publishing.nsf/Content/palliativecare-pubs-workf-guide.htm; accessed 29 May 2012.

DeSpelder LA, Strickland AL 2005 The last dance: encountering death and dying, 7th edn. Mayfield Publishing, Palo Alto, CA.

Docherty B 2000 Care of the dying client. Prof Nurse 15:752.

Doka K 1989 Disenfranchised grief: recognizing hidden sorrow. Lexington Books, Lexington.

Doka K, Martin T 2010 Grieving beyond gender. Routledge, New York, NY.

Freeman SJ 2005 Grief and loss: understanding the journey. Brooks/Cole, Belmont, CA.

Golden TR 1996 Swallowed by a snake: the gift of the masculine side of healing. Golden Healing Publishing, Gaithersburg, MD.

Gomes B, Calanzani N, Gysels M et al 2013 Heterogeneity and changes in preferences for dying at home. BMC Palliat Care 12(1):7.

Gomes B, Calanzani N, Higginson IJ 2014 Benefits and costs of home palliative care compared with usual care for patients with advanced illness and their family caregivers. JAMA 311(10): 1060–1.

Holloway K, Toye C, McConigley R et al 2015 National consultation informing development of guidelines for a palliative approach for aged care in the community setting. Australasian Journal on Ageing 34:21–26. doi: 10.1111/ajag.12083.

Hospice New Zealand 2012 Standards for palliative care. Online. Available: http://www.hospice.org.nz/cms_show_download.php?id=647; accessed 24 Feb 2016.

Howarth G 2007 Death and dying: a sociological introduction. Polity Press, Cambridge.

Kastenbaum R 1967 Multiple perspectives on a geriatric 'death valley'. Comm Mental Health J 3:21.

Kearney MK, Weininger RB, Vachon ML et al 2009 Self-care of physicians caring for patients at the end of life: 'Being connected… a key to my survival'. JAMA 301(11):1155–64.

Kellehear A 2007 A social history of dying. Cambridge University Press, Cambridge.

Kristjanson LJ, Toye CT, Dawson S 2003 New dimensions in palliative care: a palliative approach to neurodegenerative diseases and final illness in older people. Med J Aust 179(Suppl. 6):S42–4.

Kübler-Ross E 1969 On death and dying. Touchstone, New York.

Lovell A, Yates P 2014 Advance care planning in palliative care: a systematic literature review of the contextual factors influencing its uptake 2008–2012. Palliative Medicine 28(8):1026–35.

McNamara B 2001 Fragile lives: death, dying and care. Allen & Unwin, Sydney.

McVey P, McKenzie H, White K 2014 A community-of-care: the integration of a palliative approach within residential aged care facilities in Australia. Health & Social Care in the Community 22:197–209.

Martin S, Bristowe K 2015 Last offices: nurses' experiences of the process and their views about involving significant others. International Journal of Palliative Nursing 21(4):173–8.

Martin TL, Doka KJ 2000 Men don't cry … women do: transcending gender stereotypes of grief. Brunner/Mazel, Philadelphia.

Millan G 2010 Men's health and wellbeing: the A-Z guide. Longueville Books, Woollahra, NSW.

Mooney DC 2003 Nurses and post-mortem care: a study of stress and the ways of coping. Unpublished doctoral thesis, Griffith University, Brisbane, Qld.

Mooney DC 1998 Disenfranchised grief: in the wake of suicide. Oral conference paper presented at Suicide – an enigmatic stigma: a journey through grief, Brisbane, Qld, 24 October 1998.

Murray SA, Kendall M, Boyd K, Sheikh A 2013 Illness trajectories and palliative care. International Perspectives on Public Health and Palliative Care 30.

Palliative Care Australia (PCA) 2008 Palliative and end of life care: glossary of terms. PCA, Canberra.

Payne S 2008 Overview – Part 3: Loss and bereavement. In Payne S, Seymour J, Ingleton C (eds), Palliative care nursing: principles and evidence for practice, 2nd edn. McGraw Hill/Open University Press, Maidenhead, UK.

Payne S, Horn S, Relf M 1999 Loss and bereavement. Open University Press, Buckingham, UK.

Peterson C 2004 Looking forward through the lifespan: developmental psychology, 4th edn. Prentice Hall, Sydney.

Phillips J, Ingham JM, Macleod R 2014 Development of palliative care in Australia and New Zealand. Textbook of Palliative Medicine and Supportive Care, 59.

Piaget J 1970 Piaget's theory. In Mussen PH (ed), Carmichael's Manual of child psychology, 3rd edn. John Wiley, New York.

Quested B, Rudge R 2001 Procedure manuals and textually mediated death. Nurs Inquiry 8:264.

Rando TA 1984 Grief, dying, and death: clinical interventions for caregivers. Research Press, Champaign.

Raphael B 1999 Trauma and grief. Grief Matters 2:22.

Rosenberg JP 2011 Whose business is dying? Death, the home and palliative care. Cultur Stud Rev 17(1):15–30.

Rosenberg JP 2009 Circles in the surf: Australian masculinity, mortality and grief. Crit Public Health 19(3–4):417–26.

Sudnow D 1967 Passing on: the social organization of dying. Prentice Hall, Englewood Cliffs.

Updegraff JA, Taylor SE 2000 From vulnerability to growth: positive and negative effects of stressful life events. In Harvey JH, Miller ED (eds), Loss and trauma: general and close relationship perspectives. Brunner-Routledge, Philadelphia.

Worden JW 2009 Grief counseling and grief therapy: a handbook for the mental health practitioner, 4th edn. Springer, New York.

World Health Organization (WHO) 2011 Definition of palliative care. WHO, Geneva. Online. Available: www.who.int/cancer/palliative/definition/en; accessed 28 May 2012.

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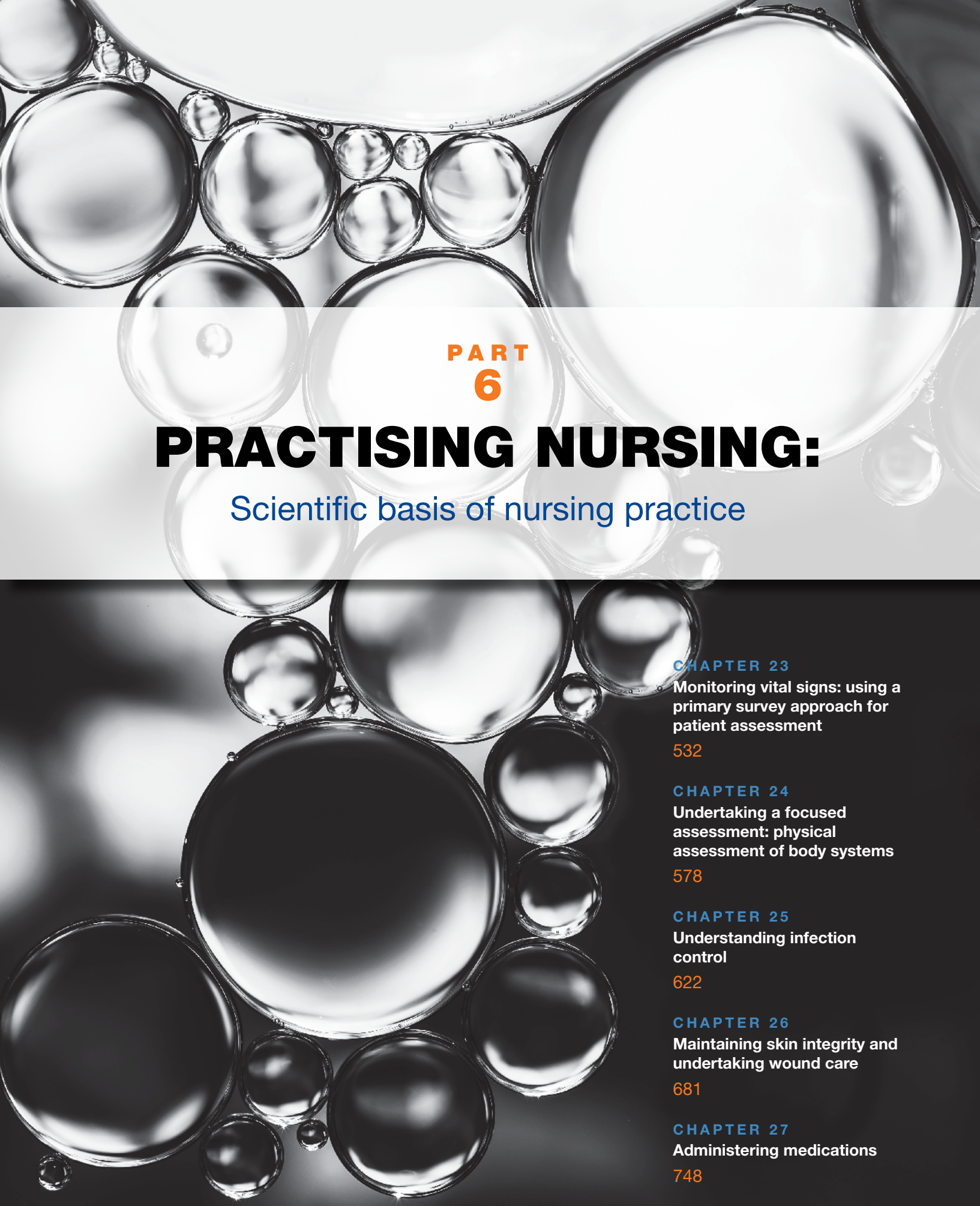

PART 6

PRACTISING NURSING:

Scientific basis of nursing practice

CHAPTER 23
Monitoring vital signs: using a primary survey approach for patient assessment
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Undertaking a focused assessment: physical assessment of body systems
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Administering medications
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CHAPTER

23

Monitoring vital signs: using a primary survey approach for patient assessment

Anthony Schoenwald and Clint Douglas

Learning outcomes

Mastery of content will enable you to:

- apply the primary survey (ABCDE approach) as the foundation of any patient assessment
- describe normal parameters for vital signs based on the physiology of respiratory and cardiovascular systems and body temperature regulation
- measure and document vital signs accurately using appropriate equipment
- begin to make clinical judgements and decisions about the meaning of assessment data, including the need to escalate care appropriately.

KEY TERMS

Airway, p. 535
Blood pressure, p. 555
Body temperature, p. 566
Breathing, p. 535
Circulation, p. 547
Disability, p. 565
Exposure, p. 565
Heart rate, p. 547
Level of consciousness, p. 565
Oxygen saturation, p. 542
Primary survey (ABCDE approach), p. 533
Pulse, p. 547
Respirations, p. 539
Vital signs, p. 533

Introduction

Assessment of airway, breathing, circulation and disability (neurological state) is the crucial first element of clinical assessment in every patient encounter (Considine & Currey 2015). A structured and systematic **primary survey (ABCDE approach)** provides essential information about patient status in the order of clinical importance, allowing you to identify and correct threats to patient safety before moving on to a focused assessment (discussed in the next chapter). This chapter is organised around the primary survey relevant to general acute care settings (Box 23-1), focusing on basic airway assessment, respirations, oxygen saturation, pulse, blood pressure, level of consciousness, and body temperature (Adam et al 2010, Clarke & Ketchell 2011, Price et al 2016). Collectively, these parameters are known as the **vital signs**, the ongoing monitoring of which is a primary nursing responsibility.

The importance of nursing assessment for patient safety

Sudden or gradual changes in vital signs can indicate life-threatening clinical states requiring urgent intervention and escalation of care (Cardona-Morrell et al 2015). Although more research is needed on the effectiveness of routine vital signs for early recognition of adverse events in general ward patients (Zeitz & McCutcheon 2006, Storm-Versloot et al 2014), the importance of vital signs to confirm serious illness and predict poor patient outcomes during hospitalisation is well established (Cardona-Morrell et al 2015).

Bleyer and colleagues' (2011) study of over 1 million vital signs collected from patients over the course of their hospitalisation is one of the largest studies available. You can see in Figure 23-1 the line graphs that show the prevalence of vital signs recorded, which peak around the normal adult ranges as expected. What is interesting here are the bar graphs, which show the proportion (%) of patients who died during hospitalisation with a vital sign recorded in that range. For example, you can see that a normal adult respiratory rate (< 20/min) was associated with a very low mortality. However, as respiratory rates increased outside of the normal range, patient mortality increased in a linear way: 10% of patients died with a respiratory rate of 28 to < 32 breaths/min, 16% with 32 to < 36 breaths/min, 20% with 36 to < 40 breaths/min, and 25% with 40 to < 44 breaths/min (Bleyer et al 2011). Respiratory rate is one of the most neglected vital signs, yet one of the earliest indicators that patients are at risk of clinical deterioration (Cretikos et al 2008).

Having two or more critically abnormal vital signs is also strongly associated with death. Bleyer and colleagues (2011:1387) used the same data set to examine patient outcomes with multiple critical vital signs defined as 'a systolic blood pressure < 85 mmHg, heart rate > 120 bpm, temperature < 35°C or > 38.9°C, oxygen saturation < 91%, respiratory rate ≤ 12 or ≥ 24, and level of consciousness recorded as anything but alert'. You can see in Table 23-1 that increased simultaneous presence of abnormal vital signs, together with increased age, was strongly associated with higher mortality. Almost 1 in 4 patients died (23.6%) with a trio of critically abnormal vital signs.

The importance of nursing assessment for patient safety cannot be overstated. The bedside RN carries the highest level of responsibility for the accurate measurement and interpretation of clinical data (Considine & Currey 2015). Using the primary survey framework discussed in this chapter can help you organise and communicate clinical findings to others. To improve the recognition of patients at risk of clinical deterioration, most acute care settings in Australia and New Zealand have adopted standardised charts for vital sign monitoring that follow

BOX 23-1 ABCDE approach to patient assessment in general wards

Airway	Assess airway patency
Breathing	Measure respiratory rate
	Evaluate work of breathing
	Measure oxygen saturation
Circulation	Palpate pulse rate and rhythm
	Measure manual blood pressure
	Assess urine output
Disability	Assess level of consciousness
	Evaluate speech
	Assess for pain
Exposure	Measure body temperature
	Inspect skin integrity
	Inspect and palpate skin for signs of pressure injury
	Observe any wounds, dressings or drains, invasive lines
	Observe ability to transfer and mobilise
	Assess bowel movements

Douglas C, Booker C, Fox R et al 2016. Nursing physical assessment for patient safety in general wards: reaching consensus on core skills. Journal of Clinical Nursing, doi: 10.1111/jocn.13201

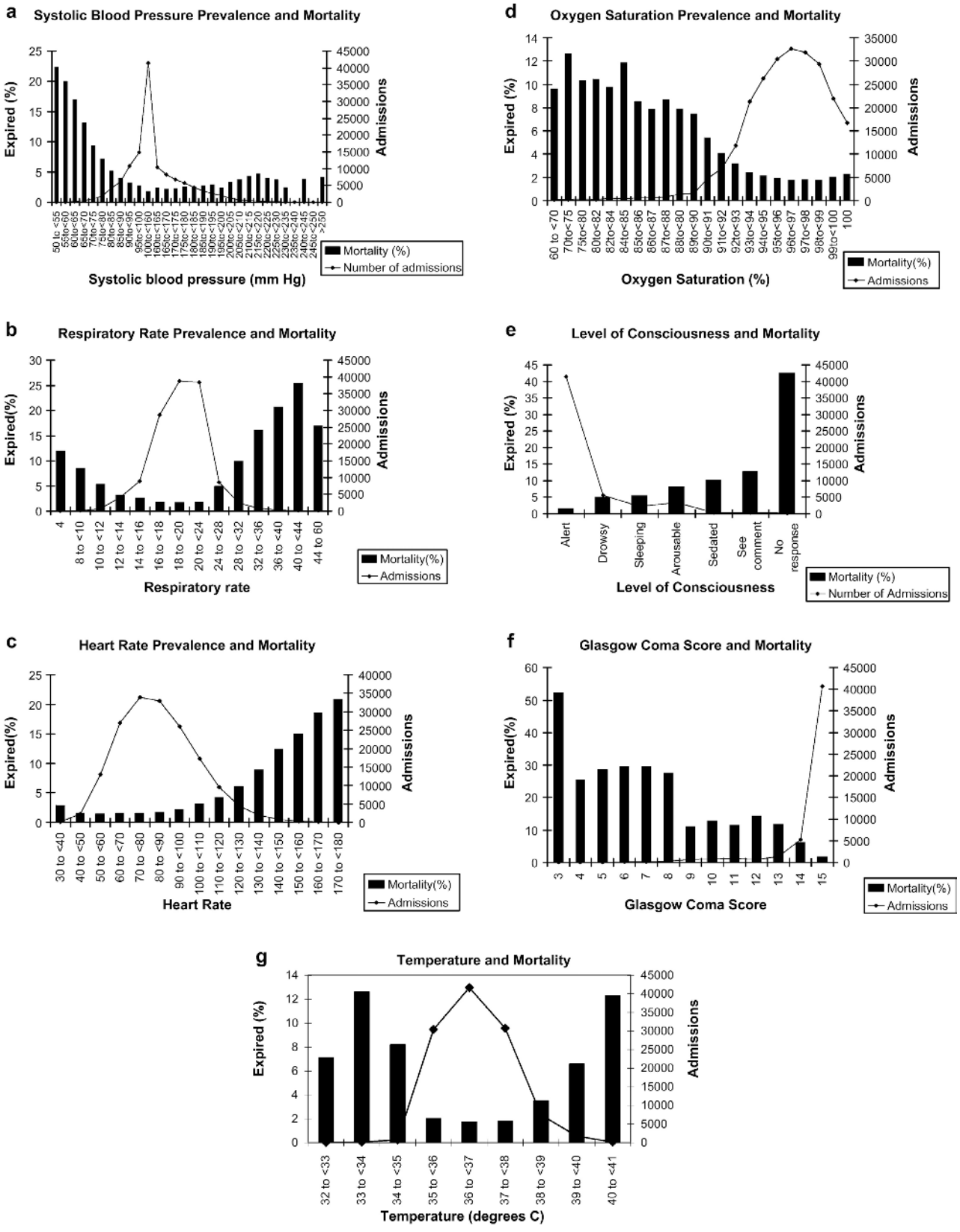

Figure 23-1 **Prevalence of admissions in which a vital sign in the given range occurred and proportion of individuals in that given vital sign range who expired (%).**

Bleyer AJ, Vidya S, Russell GB et al 2011 Longitudinal analysis of one million vital signs in patients in an academic medical center. Resuscitation 82(11):1389.

TABLE 23-1 In-hospital mortality (%) associated with the simultaneous occurrence of critical vital signs

Number of simultaneous critical vital signs	All ages	Age > 60 years	Age > 70 years	Age > 80 years
0	0.24 (44)	0.40 (32)	0.62 (26)	0.92 (15)
1	0.92 (174)	1.47 (134)	1.96 (100)	2.09 (44)
2	6.95 (295)	9.84 (213)	11.5 (148)	13.0 (80)
3	23.6 (186)	33.1 (128)	42.0 (99)	42.9 (48)
4 or more	42.4 (61)	57.7 (41)	63.0 (29)	52.4 (11)

The number of patients who expired is noted in parentheses.

Bleyer AJ, Vidya S, Russell GB et al 2011 Longitudinal analysis of one million vital signs in patients in an academic medical center. Resuscitation 82(11):1390.

an ABCDE approach (Figure 23-2). The primary survey is also aligned with rapid response systems, which vary across organisations, but also follow an ABCDE approach (Figure 23-3). Rapid response teams are called when ward staff identify patients at risk of clinical deterioration to provide timely assessment and management. However, activation of rapid response systems and rescue of deteriorating patients are primarily dependent on the patient assessment and escalation of care decisions made by ward nurses (Considine & Currey 2015).

Airway

Anatomy and physiology

The primary survey begins with a priority airway assessment. The **airway** supports free exchange of air between the external environment and the lungs. Essentially, the structures involved are the oral cavity, nasal passages, pharynx, larynx, trachea and the left and right main bronchi. Any type of obstruction to one or more of these structures will reduce the diameter of the airway leading to decreased flow of air. Examples include pathological (asthma, infection, abnormal lesions, immunological responses) and/or mechanical obstruction (secretions, airway trauma, foreign objects, aspiration of gastric contents, obstructive sleep apnoea). You may observe coughing and increased respiratory rate and effort. Inadequate compensation will lead to decreased oxygen delivery to tissues (hypoxia) and/or inadequate elimination of carbon dioxide.

Basic airway assessment

Basic airway assessment must be a priority before any other assessment because an ineffective airway can be life-threatening within minutes and should be treated immediately (Adam et al 2010). Look at your patient and observe for chest movement. If the patient can talk normally and is conscious and alert, the airway is patent (Adam et al 2010). If an oxygen mask is already in place, it is possible to observe humidification of the plastic mask by the patient's expirations. Listen closely for air entry and feel respirations with your hand.

Any noisy respirations, such as obstruction from secretions, will need immediate intervention, such as suctioning. Assess the patient's ability to cough. If warranted, look in the mouth for obvious foreign bodies that could be removed (Figure 23-4). Partial obstruction may be present if you detect snoring (occlusion of the pharynx by the tongue or palate), stridor (obstruction above the level of the larynx), wheezing (obstruction of the lower airway), gurgling sounds (liquid or semi-solid material) or a hoarse voice (Adam et al 2010, Price et al 2016). The patient with a compromised airway may be very anxious, sitting up and drooling. Look, listen and feel for signs of respiratory distress in adults and children (Figures 23-5 and 23-6). Remember, the patient will appear distressed unless a complete obstruction leads to unconsciousness and respiratory arrest (Price et al 2016).

Breathing

Physiology and regulation

Knowledge of the structure and function of the respiratory system facilitates accurate assessment of **breathing**. Human survival depends on the ability of oxygen (O_2) to reach body cells and for carbon dioxide (CO_2) to be removed from the cells. Respiration is the mechanism the body uses to exchange gases between the atmosphere and the blood and between the blood and the cells. Effective respiration requires *ventilation* (the movement of gases into and out of the lungs), *diffusion* (the movement of oxygen and carbon dioxide between the alveoli and the red blood cells) and *perfusion* (the distribution of red blood cells to and from the pulmonary capillaries).

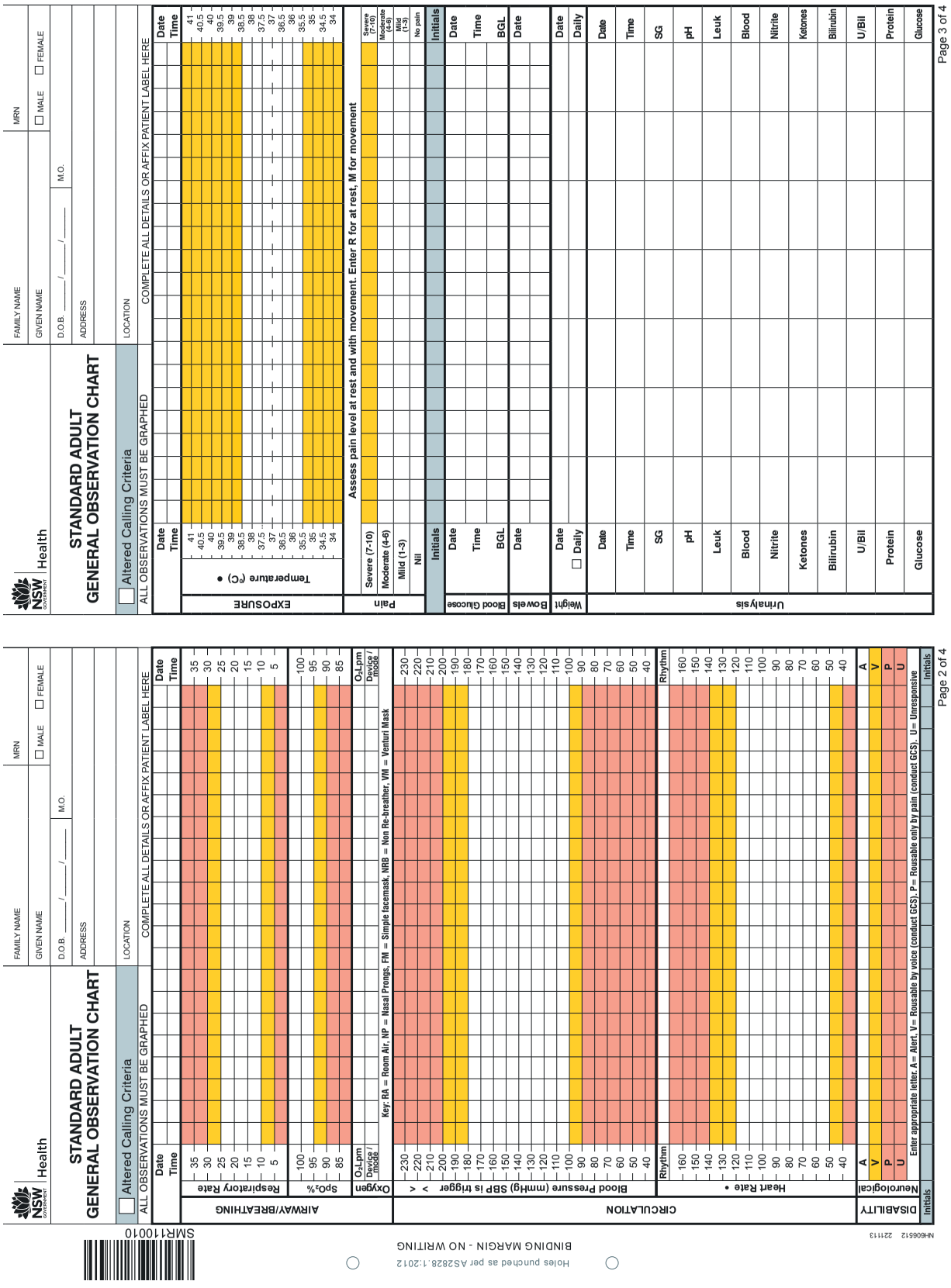

Figure 23-2 Hospital observation chart using the ABCDE approach.

Clinical Excellence Commission 2013 The NSW Health Standard Observation Charts Between the Flags: Keeping patients safe.

continued

Figure 23-2 *continued*

NSW GOVERNMENT Health

STANDARD ADULT GENERAL OBSERVATION CHART

FAMILY NAME | MRN

GIVEN NAME | ☐ MALE ☐ FEMALE

D.O.B. _____ / _____ / _____ | M.O.

ADDRESS

LOCATION

☐ Altered Calling Criteria

ALL OBSERVATIONS MUST BE GRAPHED | COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

OTHER CHARTS IN USE

☐ **Neurological Observation** ☐ **Insulin Infusion** ☐ **Alcohol Withdrawal**
☐ **Fluid Balance** ☐ **Pain / Epidural / Patient Control Analgesia** ☐ **Resuscitation Plan**
☐ **Anticoagulant** ☐ **Neurovascular** ☐ **Other** _____

PRESCRIBED FREQUENCY OF OBSERVATIONS

Observations must be performed routinely at least 8th hourly, unless advised below

DATE:	dd/MM/yy	EXAMPLE				
Time:	hh:mm					
Frequency Required	Twice daily					
Medical Officer Name (BLOCK letters)	P. SMITH					
Medical Officer Signature	P. SMITH					
Attending Medical Officer Signature	R. Bloggs					

ALTERATIONS TO CALLING CRITERIA
MUST BE REVIEWED WITHIN 72 HOURS OR EARLIER IF CLINICALLY INDICATED
Any alterations MUST be signed by a Medical Officer and confirmed by Attending Medical Officer
Document rationale for altering CALLING CRITERIA in the patient's health care record

DATE:		dd/MM/yy				
TIME:		hh:mm				
Next review due Date & Time		dd/MM/yy hh:mm				
Respiratory Rate	Yellow Zone	30-34				
	Red Zone	≥ 35				
SpO_2	Yellow Zone					
	Red Zone					
Heart Rate	Yellow Zone					
	Red Zone					
Blood Pressure	Yellow Zone					
	Red Zone					
Other	Yellow Zone					
	Red Zone					
Medical Officer Name (BLOCK letters)		P. SMITH				
Medical Officer Signature		P. SMITH				
Attending Medical Officer Signature		R. Bloggs				

INTERVENTIONS / COMMENTS / ACTIONS

	Date	Time	
1.			
2.			
3.			
4.			

STANDARD ADULT GENERAL OBSERVATION CHART SMR110.010

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REFER TO YOUR LOCAL CLINICAL EMERGENCY RESPONSE SYSTEM (CERS) PROTOCOL FOR INSTRUCTIONS ON HOW TO MAKE A CALL TO ESCALATE CARE FOR YOUR PATIENT

CHECK THE HEALTH CARE RECORD FOR AN END OF LIFE CARE PLAN WHICH MAY ALTER THE MANAGEMENT OF YOUR PATIENT

Yellow Zone Response

IF YOUR PATIENT HAS ANY YELLOW ZONE OBSERVATIONS OR ADDITIONAL CRITERIA* YOU MUST

1. Initiate appropriate clinical care
2. Repeat and increase the frequency of observations, as indicated by your patient's condition
3. Consult promptly with the **NURSE IN CHARGE** to decide whether a **CLINICAL REVIEW** (or other CERS) call should be made

Consider the following:

- What is usual for your patient and are there documented 'ALTERATIONS TO CALLING CRITERIA'?
- Does the trend in observations suggest deterioration?
- Is there more than one Yellow Zone observation or additional criterion?
- Are you concerned about your patient?

IF A CLINICAL REVIEW IS CALLED:

1. Reassess your patient and escalate according to your local CERS if the call is not attended within 30 minutes or you are becoming more concerned
2. Document an A-G assessment, reason for escalation, treatment and outcome in your patient's health care record
3. Inform the Attending Medical Officer that a call was made as soon as it is practicable

***Additional YELLOW ZONE Criteria**

- Increasing oxygen requirement
- Poor peripheral circulation
- Excess or increasing blood loss
- Decrease in Level of Consciousness or new onset of confusion
- Low urine output persistent for 4 hours (< 100mLs over 4 hours or < 0.5mL/kg/hr via an IDC)
- Polyuria, in the absence of diuretics (urine output > 200mL/hr for 2 hours)
- Greater than expected fluid loss from a drain
- New, increasing or uncontrolled pain (including chest pain)
- Blood Glucose Level < 4mmol/L or > 20mmol/L with no decrease in Level of Consciousness
- Ketonaemia > 1.5mmol/L or Ketonuria 2 + or more
- **Concern by patient or family member**
- **Concern by you or any staff member**

CONSIDER IF YOUR PATIENT'S DETERIORATION COULD BE DUE TO SEPSIS, A NEW ARRHYTHMIA, HYPOVOLAEMIA/HAEMORRHAGE, PULMONARY EMBOLUS/DVT, PNEUMONIA/ATELECTASIS, AN AMI, STROKE, OR AN OVERDOSE/OVER SEDATION

Red Zone Response

IF YOUR PATIENT HAS ANY RED ZONE OBSERVATIONS OR ADDITIONAL CRITERIA# YOU MUST CALL FOR A RAPID RESPONSE (as per local CERS) AND

1. Initiate appropriate clinical care
2. Inform the **NURSE IN CHARGE** that you have called for a **RAPID RESPONSE**
3. Repeat and increase the frequency of observations, as indicated by your patient's condition
4. Document an A-G assessment, reason for escalation, treatment and outcome in your patient's health care record
5. Inform the Attending Medical Officer that a call was made as soon as it is practicable

#Additional RED ZONE Criteria

- **Cardiac or respiratory arrest**
- **Airway obstruction or stridor**
- **Patient unresponsive**
- Deterioration not reversed within 1 hour of Clinical Review
- Increasing oxygen requirements to maintain oxygen saturation > 90%
- Arterial Blood Gas: PaO_2 < 60 or $PaCO_2$ > 60 or pH < 7.2 or BE < -5
- Venous Blood Gas: $PvCO_2$ > 65 or pH < 7.2
- Only responds to Pain (P) on the AVPU scale
- Sudden decrease in Level of Consciousness (a drop of 2 or more points on the GCS)
- Seizures
- Low urine output persistent for 8 hours (< 200mLs over 8 hours or < 0.5mL/kg/hr via an IDC)
- Blood Glucose Level < 4mmol/L or > 20mmol/L with a decreased Level of Consciousness
- Lactate ≥ 4mmol/L
- **Serious concern by any patient or family member**
- **Serious concern by you or any staff member**

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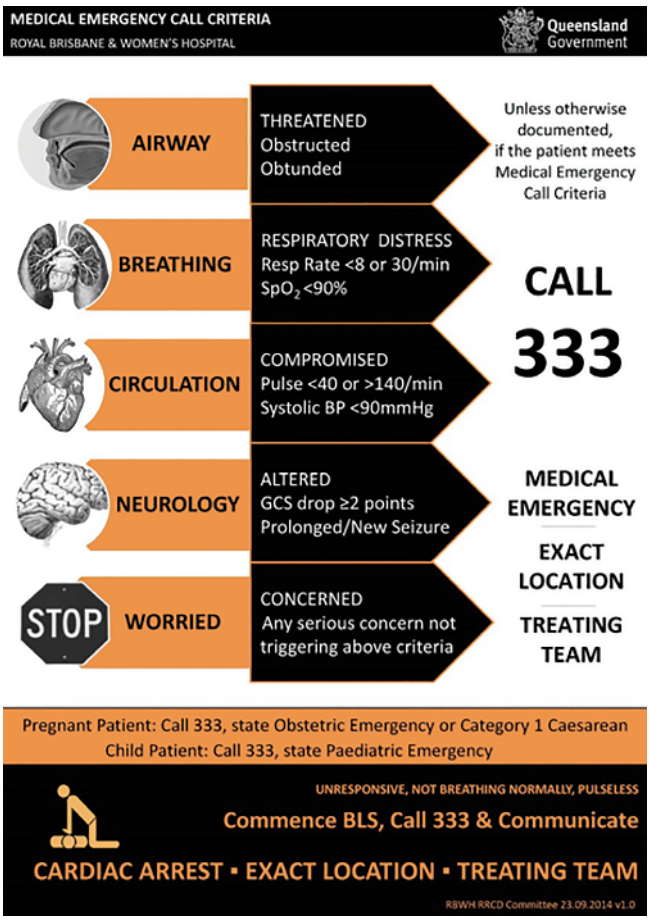


Figure 23-3 **Example of hospital rapid response system call criteria.**

Royal Brisbane and Women's Hospital ©The State of Queensland (Queensland Health) 1996–2016.



Figure 23-4 **Look inside the mouth for any obvious upper airway obstruction.**

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

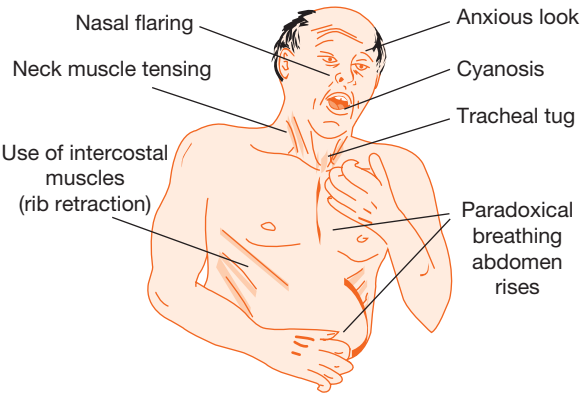


Figure 23-5 **Signs of acute respiratory distress in adult.**

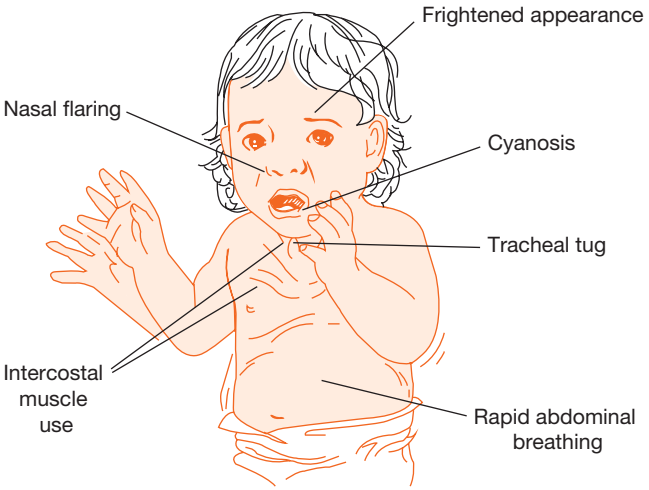


Figure 23-6 **Signs of acute respiratory distress in children.**

The respiratory centre in the brainstem regulates the involuntary control of respirations. Adults normally breathe in a smooth, uninterrupted pattern 12–20 times per minute. The respiratory drive is regulated by carbon dioxide, oxygen and hydrogen ions (pH) in the arterial blood. The most important factor in the control of ventilation is the level of CO_2 in arterial blood. An elevation in the CO_2 level (hypercapnoea) or hypoxia causes the respiratory control system in the brain to increase the rate and depth of breathing, which removes excess CO_2 by increasing exhalation. Some patients with chronic lung disease have ongoing hypercapnoea and are known as CO_2 retainers. For patients with hypoxaemia (reduced levels of arterial oxygen) in association with chronic lung disease, controlled oxygen therapy is used (see Chapter 35).

Mechanics of breathing

Although breathing is normally passive, muscular work is involved in moving the lungs and chest wall. Inspiration is an active process. During inspiration the respiratory

centre sends impulses along the phrenic nerve, causing the diaphragm to contract. Abdominal organs move downwards, increasing the volume of the chest cavity to move air into the lungs. The diaphragm moves approximately 1 cm, and the ribs retract upwards from the body's midline approximately 1.2–2.5 cm. During a normal, relaxed breath, an adult inhales approximately 500 mL of air. This amount is referred to as the tidal volume. During expiration, the diaphragm relaxes and the abdominal organs return to their original positions. The lung and chest wall return to a relaxed position (Figure 23-7). Normal breathing should be effortless.

Respirations

The accurate assessment of **respirations** depends on recognition of normal thoracic and abdominal movements (Skill 23-1). During quiet breathing, the chest wall gently rises and falls. Contraction of the intercostal muscles between the ribs or contraction of the muscles in the neck and shoulders, the accessory muscles of breathing, is not visible. During normal quiet breathing, diaphragmatic movement causes the abdominal cavity to rise and fall slowly. Prior to assessing respiratory rate, observe for difficulty breathing, accessory muscle use, asymmetrical chest movement and central cyanosis, which appears as a blue tinge to mucous membranes and lips (Clarke & Ketchell 2011).

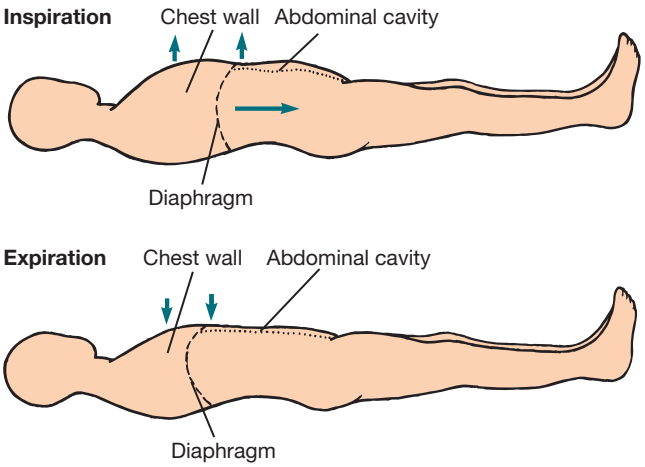


Figure 23-7 Mechanics of breathing.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Rate

Measurement of respiratory rate can best be done before assessing the pulse with your hand on the patient's wrist as it rests over the chest or abdomen. This approach allows assessment of respiratory rate, pattern and depth without drawing the patient's attention to the assessment. If the patient is aware, they may unintentionally alter their rate and depth of breathing. Observe a full inspiration and

SKILL 23-1

Assessing respirations

Delegation considerations

Respiration measurement can be delegated to enrolled nurses who are informed of:

- patient history or risk of increased or decreased respiratory rate or irregular respirations
- frequency of respirations measurement
- the reportable levels for the patient
- the need to report any abnormalities.

Equipment

- Watch with second hand or a digital display
- Pen, observation chart

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Determine the frequency of monitoring respirations:	
a. Consider previous medical conditions for respiratory alterations.	Certain conditions place patient at risk of alterations in ventilation detected by changes in respiratory rate, depth and rhythm.
b. Assess for signs and symptoms of respiratory alterations such as bluish or cyanotic appearance of nail beds, lips, mucous membranes and skin; restlessness, irritability, confusion, reduced level of consciousness; pain during inspiration; laboured or difficult breathing; adventitious breath sounds (see Chapter 24), inability to breathe spontaneously; thick, frothy, blood-tinged or copious sputum produced on coughing, use of accessory muscles to breathe, grunting sounds.	Physical signs and symptoms may indicate alterations in respiratory status related to ventilation.
c. Pulse oximetry (SpO_2). Acceptable SpO_2 > 95% on room air. 88–92% may be acceptable for patients with chronic obstructive pulmonary disease.	SpO_2 less than 90% is clinically significant and often accompanied by changes in respiratory rate, depth and rhythm.
2. Determine previous baseline respiratory rate (if available) from patient's record.	Assess for change in condition. Provides comparison with future respiratory measurements.
3. Be sure patient is in comfortable position, preferably sitting or lying with the head of the bed elevated 45–60 degrees.	Sitting erect promotes full ventilation.
4. Perform hand hygiene.	Prevents transmission of microorganisms.
5. Draw curtains or close door to the patient's room prior to exposing the patient.	To ensure privacy during assessment procedure.
6. Be sure patient's chest is visible. If necessary, move bedclothes or gown.	Ensures clear view of chest wall and abdominal movements.
7. Place patient's arm in relaxed position across the abdomen or lower chest, or place nurse's hand directly over patient's upper abdomen (see illustration).	A similar position used during pulse assessment allows respiratory rate assessment to be inconspicuous. Patient's or nurse's hand rises and falls during respiratory cycle.



Step 6 Position of hands for assessing respirations.

8. Observe complete respiratory cycle (one inspiration and one expiration).	Rate is accurately determined only after nurse has viewed respiratory cycle.

STEPS	RATIONALE
9. After cycle is observed, look at watch's second hand and begin to count rate: when second hand hits number on dial, begin timeframe, counting 1 with first full respiratory cycle.	Timing begins with count of 1. Respirations occur more slowly than pulse; thus timing does not begin with 0.
10. If rhythm is regular, count number of respirations in 30 seconds and multiply by 2. If rhythm is irregular, < 12 or > 20, count for 1 full minute.	Respiratory rate is equivalent to number of respirations per minute. Suspected irregularities require assessment for at least 1 minute.

■ **Critical decision point: Respiratory rate < 12 or > 20 requires further assessment (see Chapter 24) and may require immediate intervention.**

11. Note depth of respirations, subjectively assessed by observing degree of chest wall movement while counting rate. Can also objectively assess depth by palpating chest wall excursion or auscultating the posterior thorax after rate has been counted. Depth is described as shallow, normal or deep.	Character of chest movement may reveal specific disease state restricting volume of air from moving into and out of the lungs.
11. Note rhythm of respirations. Normal breathing is regular and uninterrupted.	Character of ventilations can reveal specific types of alterations.

■ **Critical decision point: Occasional periods of apnoea, the cessation of respiration for several seconds, are a symptom of underlying disease in the adult and should be reported. An irregular respiratory rate and short apnoeic spells are usual in a newborn.**

12. Replace bedclothes and patient's gown.	Restores comfort and promotes sense of wellbeing.
13. Perform hand hygiene.	Reduces transmission of microorganisms.
14. Discuss findings with patient as needed.	Promotes participation in care and understanding of health status.
15. If respirations are assessed for the first time, establish rate, rhythm and depth as baseline if within normal range.	Used to compare future respiratory assessment.
16. Compare respirations with patient's previous baseline and normal rate, rhythm and depth.	Allows assessment for changes in patient's condition and for presence of respiratory alterations.

RECORDING AND REPORTING

- Record respiratory rate and character in nursing notes and observation chart. Indicate type and amount of oxygen therapy if used by patient during assessment.
- Report abnormal findings to nurse in charge or medical practitioner.

expiration when counting ventilation or respiration rate. The respiratory rate varies with age (Table 23-2).

Depth

The depth of respiration is measured by observing the degree of excursion or movement in the chest wall. Respirations are described as *deep*, *normal* or *shallow*. A deep respiration involves a full expansion of the lungs with full exhalation. Respirations are shallow when only a small quantity of air passes through the lungs and this may be difficult to visualise. You may have to feel the chest rise and fall, or listen with a stethoscope over the central airways, if you observe that respirations are unusually shallow. Table 23-3 summarises types of respiratory alterations.

TABLE 23-2 Acceptable respiratory rates by age group

Age group	Rate (breaths per minute)
Newborn	30–60
Infant (6 months)	30–50
Toddler (2 years)	25–32
Child	20–30
Adolescent	16–19
Adult	12–20

TABLE 23-3 Alterations in breathing pattern

Alteration	Description
Apnoea	Respirations cease for several seconds. Persistent cessation results in respiratory arrest
Bradypnoea	Rate of breathing is regular but abnormally slow (fewer than 12 breaths per minute)
Cheyne-Stokes respiration	Respiratory rate and depth are irregular, characterised by alternating periods of apnoea and hyperventilation. Respiratory cycle begins with slow, shallow breaths that gradually increase to abnormal rate and depth. The pattern reverses, breathing slows and becomes shallow, climaxing in apnoea before respiration resumes
Hyperventilation	Rate and depth of respirations increase. Respiratory alkalosis may occur
Hypoventilation	Depth of ventilation may be shallow and depressed
Kussmaul's respirations	Respirations are abnormally deep, regular and increased in rate. Associated with metabolic acidosis
Tachypnoea	Rate of breathing is regular but abnormally rapid (more than 20 breaths per minute)

Pattern

Determine breathing pattern by observing the chest or abdomen. Diaphragmatic breathing results from the contraction and relaxation of the diaphragm and is best observed by watching abdominal movements. Men and children usually demonstrate diaphragmatic breathing. Women tend to use thoracic muscles to breathe; movements are observed in the upper chest. Laboured respirations usually involve the accessory neck muscles. When a foreign body or tracheal trauma interferes with the movement of air into the lungs, the intercostal spaces retract during inspiration. A longer expiration phase is evident when the outward flow of air is obstructed (e.g. in asthma).

With normal breathing, a regular interval occurs after each respiratory cycle. Infants tend to breathe less regularly. The young child may breathe slowly for a few seconds and then suddenly breathe more rapidly. While assessing respirations, estimate the time interval after each respiratory cycle. Respiration is *regular* or *irregular* in pattern.

Respiratory sounds

An integral part of respiratory assessment is listening to the sounds of breathing. *Snoring*, *stridor*, *wheezing* and *inspiratory grunt* are indicators of a respiratory obstruction. Snoring occurs when parts of the upper airway lose tone and partially block the airway. In some circumstances, this may result in full obstruction such as in obstructive sleep apnoea. Stridor is an inspiratory wheeze or crowing sound occurring with upper airway obstruction (e.g. croup, inhalation of foreign objects, laryngeal oedema after extubation). Wheezing is a high-pitched musical sound occurring when there is a partial obstruction in smaller airways and bronchioles (e.g. bronchiolitis and asthma). Absence of wheezing can only be confirmed by auscultation with a stethoscope (see Chapter 24).

Respiratory monitoring devices that aid your assessment include the apnoea monitor and pulse oximeter. Apnoea monitoring is used frequently with infants in the hospital and at home to observe for prolonged apnoeic events. Leads attached to the infant's chest wall sense movement; the absence of chest wall movement is interpreted by the monitor as apnoea and triggers an alarm.

Oxygen saturation

Arterial oxygenation (**oxygen saturation**) can be non-invasively measured using a pulse oximeter (Skill 23-2). Blood flows through the pulmonary capillaries where oxygen attaches to red blood cells. After oxygen diffuses from the alveoli into the pulmonary blood, most of the oxygen attaches to haemoglobin molecules in red blood

SKILL 23-2

Measuring oxygen saturation (SpO_2)

Delegation considerations

Oxygen saturation measurement can be delegated to enrolled nurses, who are informed of:

- the need to notify the registered nurse immediately of any reading lower than SpO_2 of 95%
- appropriate sensor site, probe and patient position for measurement of oxygen saturation
- frequency of oxygen saturation measurements
- factors that can falsely lower SpO_2 (see Box 23-2).

Equipment

- Oximeter
- Oximeter probe appropriate for patient and recommended by manufacturer
- Pen, observation chart

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Determine the frequency of monitoring oxygen saturation:	
a. Consider previous medical conditions for alteration of oxygen saturation.	Certain conditions place patients at risk of decreased oxygen saturation: acute or chronic compromised respiratory function, recovery from general anaesthesia or conscious sedation or traumatic injury to chest wall with or without collapse of underlying lung tissue, ventilator dependence, changes in supplemental oxygen therapy.
b. Assess for signs and symptoms of alterations in oxygen saturation such as altered respiratory rate, depth or rhythm; adventitious breath sounds (see Chapter 24); cyanotic appearance of nail beds, lips, mucous membranes and skin; restlessness, irritability, confusion; reduced level of consciousness; laboured or difficulty breathing.	Physical signs and symptoms may indicate abnormal oxygen saturation.
2. Assess for factors that normally influence measurement of SpO_2, such as oxygen therapy, haemoglobin level and temperature.	Allows for accurate assessment of oxygen saturation variations. Peripheral vasoconstriction related to hypothermia can interfere with SpO_2 determination.
3. Determine previous baseline SpO_2 (if available) from patient's record.	Baseline information provides basis for comparison and helps in assessment of current status and evaluation of interventions.
4. Explain purpose of procedure to patient and how oxygen saturation will be measured.	Promotes patient cooperation and understanding.

STEPS	RATIONALE
5. Assess site most appropriate for sensor probe placement (e.g. digit, earlobe) (see Box 23-3). Site must have adequate local circulation and be free of moisture.	Peripheral vasoconstriction can interfere with SpO_2 determination. Dark nail polish and acrylic nails impede sensor detection of emitted light and produce falsely elevated SpO_2.
6. Perform hand hygiene.	Reduces transmission of microorganisms.
7. Position patient comfortably. If finger is chosen as monitoring site, support lower arm.	Ensures probe positioning and decreases movement that interferes with SpO_2 determination.
8. If finger is to be used, remove any fingernail polish with acetone from digit to be assessed. If earlobe is to be used, remove any earrings. Wash site, swab with alcohol and air-dry.	Ensures accurate readings. Opaque coatings decrease light transmission; nail polish containing blue pigment can absorb light emissions and falsely alter saturation.
9. Attach sensor probe to monitoring site. Explain to patient that clip-on probe feels like a clothes peg on the finger but should not hurt.	Pressure of sensor probe's spring tension on a peripheral digit or earlobe may be unexpected.
10. Once the sensor probe is attached ask the patient to remain still during the assessment.	Moving the finger during the assessment can affect the sensor probe's ability to reach a constant value (pulse, SpO_2) and will affect accurate monitoring of the patient.

■ **Critical decision point: Do not attach probe to finger, ear or bridge of nose if area is oedematous or skin integrity is compromised. Do not attach probe to fingers that are hypothermic. Select ear or bridge of nose if adult patient has history of peripheral vascular disease. Earlobe and bridge of nose sensors are not used for infants and toddlers because of skin fragility. Disposable adhesive probes contain latex and should not be used if patient has latex allergy.**

11. Turn on oximeter by activating power. Observe pulse waveform/intensity display and audible beep. Correlate oximeter pulse rate with patient's radial pulse. Differences require re-evaluation of oximeter probe placement and may require reassessment of pulse rates.	Pulse waveform/intensity display enables detection of valid pulse or presence of interfering signal. Pitch of audible beep is proportional to SpO_2 value. Double-checking pulse rate ensures oximeter accuracy. Oximeter pulse rate, patient's radial pulse and apical pulse rate should be the same.
12. Leave probe in place until oximeter readout reaches constant value and pulse display reaches full strength during each cardiac cycle. Read SpO_2 on digital display. Inform patient that oximeter will sound alarm if the probe falls off or if patient moves the probe.	Reading may take 10–30 seconds, depending on site selected.
13. If continuous SpO_2 monitoring is planned, verify SpO_2 alarm limits. Limits for SpO_2 and pulse rate should be determined as indicated by patient's condition. Verify that alarms are on. Assess skin integrity under sensor probe and relocate sensor probe at least every 4 hours (every 2 hours for a spring-tension probe).	Alarms must be set at appropriate limits and volumes to avoid frightening patients and visitors. Spring tension of sensor probe or sensitivity to disposable sensor probe adhesive can cause skin irritation and lead to disruption of skin integrity.
14. Discuss findings with patient as needed.	Promotes participation in care and understanding of health status.
15. If intermittent or spot-checking SpO_2 measurements are planned, remove probe and turn oximeter power off. Clean probe following manufacturer's instructions and store in appropriate location.	Batteries can be depleted if oximeter is left on. Sensor probes are expensive and vulnerable to damage.

STEPS	RATIONALE
16. Help patient return to comfortable position.	Restores comfort and promotes sense of wellbeing.
17. Perform hand hygiene.	Reduces transmission of microorganisms.
18. Compare SpO_2 readings with patient baseline and acceptable values.	Comparison reveals presence of abnormality.
19. Correlate SpO_2 with SaO_2 obtained from arterial blood gas measurements (see Chapter 35) if available.	Documents reliability of non-invasive assessment.
20. Correlate SpO_2 reading with data obtained from respiratory rate, depth and rhythm assessment.	Measurements assessing ventilation, perfusion and diffusion are interrelated.

RECORDING AND REPORTING

- Record SpO_2 value on patient progress notes and observation chart, indicating type and amount of oxygen therapy used by patient during assessment. Also record any signs and symptoms of oxygen desaturation in progress notes. Measurement of SpO_2 after administration of specific therapies should be documented in narrative form in progress notes.
- Report abnormal findings to nurse in charge or medical practitioner.

cells. Red blood cells carry the oxygenated haemoglobin molecules through the left side of the heart and out to the peripheral capillaries, where the oxygen detaches.

The percentage of haemoglobin bound with oxygen in the arteries is the percentage of saturation of haemoglobin (or SaO_2). For a healthy adult breathing room air it is usually between 95% and 100%. SaO_2 is affected by factors that interfere with ventilation and perfusion (see Chapter 40). Always interpret the measurement in relation to the patient's oxygen requirement and record the amount of supplemental oxygen being delivered (e.g. a patient who needs supplemental oxygen to maintain oxygen saturation > 90% is hypoxaemic). The pulse oximeter (Figure 23-8) emits light wavelengths that are absorbed by the oxygenated and deoxygenated haemoglobin molecules. The light reflected from the haemoglobin molecules is processed by the oximeter, which calculates *peripheral oxygen saturation* (SpO_2). SpO_2 is a reliable estimate of SaO_2 when it is over 90%, but is less accurate at saturations below 80%. The measurement of SpO_2 is affected by factors that affect light transmission or peripheral arterial pulsations (Box 23-2). Selecting the appropriate probe is important for reducing measurement error (Box 23-3). Movement is the most common cause of inaccurate readings.



Figure 23-8 Pulse oximeter with probe.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Observing work of breathing, measurement of respiratory rate, pattern and depth, along with oxygen saturation using the pulse oximeter (SpO_2), are critical elements when assessing breathing. Each measurement provides cues in determining the nature of a patient's problem. It is important to note that pulse oximetry is not a replacement for nursing assessment of respirations

BOX 23-2 Factors affecting determination of peripheral oxygen saturation (SpO_2)

Interference with light transmission

- Outside light sources can interfere with the oximeter's ability to process reflected light.
- Carbon monoxide (caused by smoke inhalation or poisoning) artificially elevates SpO_2 by absorbing light similar to oxygen.
- Movement can interfere with the oximeter's ability to process reflected light.
- Jaundice may interfere with the oximeter's ability to process reflected light.
- Intravascular dyes (methylene blue) absorb light similar to deoxyhaemoglobin and artificially lower saturation.

Reduction of arterial pulsations

- Peripheral vascular disease (Raynaud's disease, atherosclerosis) can reduce pulse volume.
- Hypothermia at assessment site decreases peripheral blood flow.
- Pharmacological vasoconstrictors (adrenaline, phenylephrine, dopamine) will decrease peripheral pulse volume.
- Low cardiac output and hypotension decrease blood flow to peripheral arteries.
- Peripheral oedema can obscure arterial pulsation.

BOX 23-3 Characteristics of pulse oximeter sensor probes and sites

Reusable probe

- Digit probe
- Easy to apply, conforms to various sizes
- Yields strong correlation with SaO_2

Earlobe

- Clip-on is smaller and lighter though more positional than digit probe
- Greater accuracy at lower saturations
- Good when uncontrollable movements (e.g. hand tremors) are present
- Least affected by decreased blood flow

Disposable sensor pad

- Can be applied to a variety of sites: earlobe of adult, nose bridge, palm or sole of infant
- Less restrictive for continuous SpO_2 monitoring
- Expensive
- Contains latex
- Risk that skin under adhesive may become moist and harbour pathogens
- Available in variety of sizes; can be matched to infant weight

CLINICAL EXAMPLE

Mrs Winter, a 65-year-old woman, has been admitted to the ward following a stroke 5 days previously, which has left her with a mild but improving right-sided weakness, some dysarthria (disordered speech) and dysphagia (difficulty swallowing). She has also been diagnosed with a chest infection that was believed to be improving with antibiotic therapy. Mrs Winter is known to have chronic obstructive pulmonary disease (COPD) and to sometimes experience angina on exertion.

At afternoon handover, she is reported to have become confused and restless in the last 2 hours. The nurses found it difficult to record vital signs, but oxygen saturations were low and therefore oxygen therapy has been applied with a simple face mask. The ICU outreach nurse has been called to see the patient, but has not arrived yet. You are taking over the patient's care and so begin an ABCDE assessment:

AIRWAY: You see that the patient is partly sitting up, although leaning to one side. She does not answer when you speak to her, but does open her eyes when you touch her on the shoulder. You can hear and feel air entry but there is a rattling sound when she breathes. You ask her to try and cough to clear her throat, but it makes no difference to the rattling sound and she does not seem to clear anything from her airway. You try to reposition her in a more upright position and check to see if there is any material at the back of her mouth. Using a Yankeur sucker, you suction thick yellowy-green secretions, and her breathing seems to become less laboured.

BREATHING: You can see the chest moving symmetrically and the respiratory rate is 26 breaths/minute. The patient is still receiving oxygen via a face mask at 8L/min, and the pulse oximeter shows an oxygen saturation of 88% (very low given that she is receiving high-concentration oxygen). Auscultation of the chest reveals breath sounds (and therefore air entry) in both lungs. There are coarse crackles and some expiratory wheeze in the right upper zone, with reduced sounds of air entry in the right lower zone as compared with the left.

Adapted from Scenario 5.2 in Adam S, Odell M, Welch J 2010 Rapid assessment of the acutely ill patient. Wiley-Blackwell, Oxford, pp.89-94.

BOX 23-4 Respiratory rate: summary of evidence and recommendations

- Respiratory rate is the vital sign least often recorded and most frequently completely omitted from hospital documentation.
- A raised respiratory rate is a strong and specific predictor of serious adverse events such as cardiac arrest and unplanned intensive care unit admission.
- Pulse oximetry measurement is not a replacement for respiratory rate measurement.
- All staff should be educated to measure the respiratory rate as an easy and specific assessment for critical illness, and should be given guidance on appropriate action to be taken when abnormally high respiratory rates are recorded.

Cretikos MA, Bellomo R, Hillman K et al 2008 Respiratory rate: the neglected vital sign. Medical Journal of Australia 188(11):657-659. © Copyright 2008 The Medical Journal of Australia - reproduced with permission.

(Box 23-4). Pulse oximetry only gives us half the story about a patient's oxygenation and ventilation: it determines oxygen saturation and can detect hypoxaemia, but it is not an indicator of adequate ventilation (ability to exhale CO_2).

Circulation

Physiology and regulation

The pulse is the palpable bounding of blood flow noted at various points on the body. It is an indicator of the fluid wave created by ventricular contraction and therefore of the adequacy of circulatory status (**circulation**). Electrical impulses originating from the sinoatrial node travel through heart muscle to stimulate cardiac contraction. Approximately 60–70 mL of blood enters the aorta with each ventricular contraction, known as the stroke volume (SV). With each stroke volume ejection, the walls of the aorta distend, creating a pulse wave that travels rapidly towards the distal ends of the arteries. When a pulse wave reaches a peripheral artery, it can be felt by palpating the artery lightly against underlying bone or muscle. The number of pulsing sensations occurring in 1 minute is the **pulse** rate. The volume of blood pumped by the heart during 1 minute is the cardiac output (CO). The heart's ability to meet the demands of the body's tissue for nutrients is determined by palpating a peripheral pulse or by using a stethoscope to listen to heart sounds (apical heart rate).

While several arteries can be assessed for pulse rate (Skill 23-3), the radial artery is usually the most practical site at which to palpate the pulse (Figure 23-9). Other peripheral pulses, such as the brachial or femoral arteries, are assessed when surgery or treatment has impaired blood flow to a body part, there are clinical indications of impaired peripheral blood flow, or when a focused cardiovascular physical examination is conducted (Table 23-4). When CO declines significantly, peripheral pulses weaken and are difficult to palpate. The carotid site is the best in this situation because the heart will continue delivering blood through the carotid artery to the brain as long as possible.

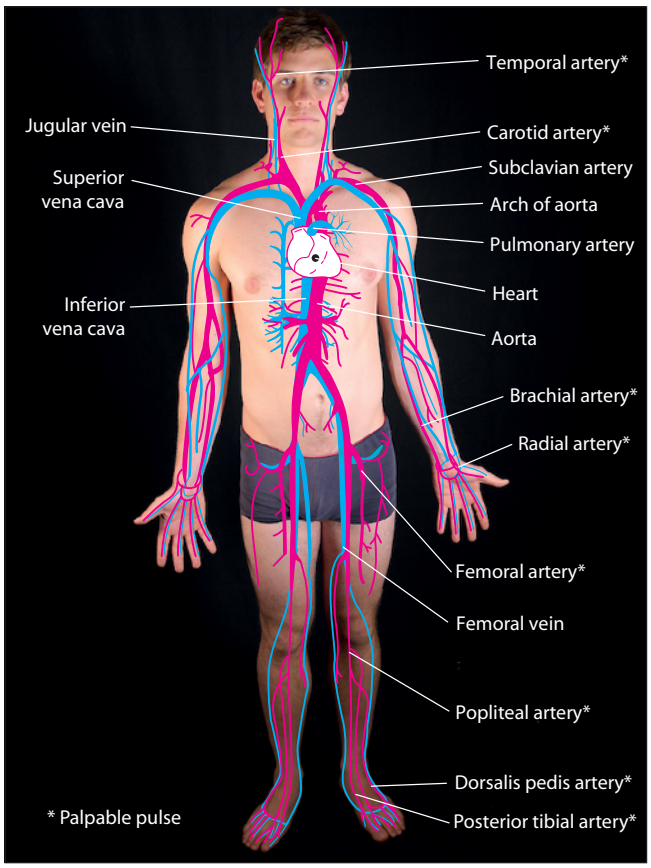


Figure 23-9 The palpable arteries (pulses) and the venous system.

Talley NJ, O'Connor S 2016 Clinical examination essentials, 4th edn. Elsevier, Chatswood, NSW.

In normal adults, **heart rates** average 60 to 100 beats per minute. *Bradycardia* is a heart rate less than 60 per minute and *tachycardia* is greater than 100 per minute (Talley & O'Connor 2014). If the radial pulse is abnormal, irregular or unattainable because of a dressing, a cast or patient-prescribed medication affecting the heartbeat, the apical pulse is assessed. The brachial or apical pulses are the best sites for assessing an infant's or young child's pulse, because other peripheral pulses are deep and difficult to palpate accurately.

TABLE 23-4 Pulse sites

Site	Location	
Apical	Fourth to fifth intercostal space at left mid clavicular line	Site used to auscultate apical heart rate
Brachial	Groove between biceps and triceps muscles at antecubital fossa	Site used to assess status of circulation to lower arm and auscultate blood pressure
Carotid	Along medial edge of sternocleidomastoid muscle in neck	Easily accessible site used during physiological shock or cardiac arrest when other sites are not palpable
Dorsalispedis	Along top of foot, between extension tendons of great and first toe	Site used to assess peripheral circulation to foot
Femoral	Below inguinal ligament, midway between symphysis pubis and anterior superior iliac spine	Site used to assess character of pulse during physiological shock or cardiac arrest when other pulses are not palpable; used to assess status of circulation to leg
Popliteal	Behind knee in popliteal fossa	Site used to assess status of circulation to lower leg
Posterior tibial	Inner side of ankle, below medial malleolus	Site used to assess peripheral circulation to foot
Radial	Radial or thumb side of forearm at wrist	Common site used to assess character of pulse peripherally and assess status of circulation to hand
Temporal	Over temporal bone of head, above and lateral to eye	Easily accessible site used to assess pulse in children
Ulnar	Ulnar side of forearm at wrist	Site used to assess status of circulation to hand; used to perform Allen's test before accessing the radial artery

SKILL 23-3

Assessing the radial and apical pulses

Delegation considerations

Pulse measurement can be delegated to enrolled nurses who are informed of:

- patient history or risk of irregular pulse
- frequency of pulse measurement
- the usual reportable levels for the patient
- the need to report any abnormalities.

Equipment

- Stethoscope (apical pulse only)
- Watch with second hand or a digital display
- Pen, observation chart
- Alcohol swab

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Determine the frequency of monitoring the radial or apical pulse: a. Consider previous medical conditions for alterations in apical pulse.	Certain conditions place patients at risk of pulse alterations. Heart rhythm can be affected by heart disease, cardiac arrhythmias, onset of sudden chest pain or acute pain from any site, invasive cardiovascular diagnostic tests, surgery, sudden infusion of large volume of intravenous fluid, internal or external haemorrhage and administration of medications that alter heart function.
b. Assess for signs and symptoms of altered cardiac output such as dyspnoea, fatigue, chest pain, orthopnoea, syncope, palpitations (person's unpleasant awareness of heartbeat), jugular venous distension, oedema of dependent body parts, cyanosis or pallor of skin.	Physical signs and symptoms may indicate alteration in cardiac function.
2. Assess for factors that normally influence apical pulse rate and rhythm:	Allows for accurate assessment of presence and significance of pulse alterations.
a. Age	Acceptable range of heart rate changes with age (see Table 23-5).
b. Exercise	Physical activity requires an increase in cardiac output that is met by an increased heart rate and stroke volume.
c. Position changes	Heart rate increases temporarily when changing from lying to sitting or standing position.
d. Medications	Anti-arrhythmics, sympathomimetics and cardiotonics affect rate and rhythm of pulse; opioid analgesics and general anaesthetics slow heart rate; central nervous system stimulants such as caffeine increase heart rate.
e. Temperature	Fever or exposure to warm environments increases heart rate; heart rate declines with hypothermia.
f. Emotional stress, anxiety, fear	Results in stimulation of the sympathetic nervous system, which increases heart rate.
3. Determine previous baseline apical rate (if available) from patient's record.	Allows nurse to assess for change in condition. Provides comparison with future apical pulse measurements.
4. Explain that pulse or heart rate is to be assessed. Encourage patient to relax and not speak.	Activity and anxiety can elevate heart rate. Patient's voice interferes with nurse's ability to hear sound when apical pulse is measured.
5. Perform hand hygiene.	Reduces transmission of microorganisms.
6. If necessary, draw curtains around bed and/or close door.	Maintains privacy.

STEPS	RATIONALE
7. Obtain pulse measurement.	
A. Radial pulse	
(1) Help patient assume a supine or sitting position.	Provides easy access to pulse sites.
(2) If supine, place patient's forearm straight alongside or across lower chest or upper abdomen with wrist extended straight (see illustration). If sitting, bend patient's elbow 90 degrees and support lower arm on chair or on nurse's arm. Slightly flex the wrist with palm down.	Relaxed position of lower arm and extension of wrist permits full exposure of artery to palpation.
(3) Place pads of first 2–3 fingers of hand over groove along radial or thumb side of patient's inner wrist (see illustration).	Fingertips are the most sensitive parts of hand to palpate arterial pulsation.
 Step 7A(2) Measuring radial pulse in supine patient.	 Step 7A(3) Position of fingertips for obtaining radial pulse.
(4) Lightly compress against radius, so pulse becomes easily palpable.	Pulse is more accurately assessed with moderate pressure. Too much pressure occludes pulse and impairs blood flow.
(5) Determine strength of pulse. Note whether thrust of vessel against fingertips is bounding, strong, weak or thready.	Strength reflects volume of blood ejected against arterial wall with each heart contraction.
(6) After pulse can be felt, look at watch's second hand and begin to count rate; when second hand hits number on dial, start counting with 0, then 1, 2 and so on.	Rate is determined accurately only after nurse is assured pulse can be palpated. Timing begins with 0. Count of 1 is first beat palpated after timing begins.
(7) If pulse is regular, count rate for 30 seconds and multiply total by 2.	A 30 second count is accurate for rapid, slow or regular pulse rates.
(8) If pulse is irregular, count rate for 60 seconds. Assess frequency and pattern of irregularity. Check the apical heart rate with stethoscope.	Inefficient contraction of heart fails to transmit pulse wave, interfering with cardiac output, resulting in irregular pulse. Longer time ensures accurate count.

STEPS	RATIONALE
Critical decision point: If pulse is irregular or rapid, assess for pulse deficit that may indicate alteration in cardiac output. Count apical pulse while palpating radial pulse. If pulse rate differs by more than 2, a pulse deficit exists and should be reported.	
B. Apical pulse	
(1) Help patient into supine or sitting position. Move aside bedclothes and gown to expose sternum and left side of chest.	Exposes portion of chest wall for selection of auscultation site.
(2) Locate anatomical landmarks to identify the point of maximal impulse (PMI), also called the apical impulse. Heart is located behind and to left of sternum with base at top and apex at bottom. Find angle of Louis just below suprasternal notch between sternal body and manubrium; can be felt as a bony prominence. Slip fingers down each side of angle to find second intercostal space (ICS). Carefully move fingers down left side of sternum to fifth ICS and laterally to the left mid-clavicular line (MCL). A light tap felt within an area 1–2 cm of the PMI is reflected from the apex of the heart.	Use of anatomical landmarks allows correct placement of stethoscope over apex of heart, enhancing ability to hear heart sounds clearly. If unable to palpate the PMI, reposition patient on left side. In the presence of serious heart disease, the PMI may be located to the left of the MCL or at the sixth ICS.
(3) Clean diaphragm of stethoscope prior to use.	Reduces transmission of microorganisms and cross-contamination with shared equipment.
(4) Place diaphragm of stethoscope in palm of hand for 5–10 seconds.	Warming of metal or plastic diaphragm prevents patient from being startled and promotes comfort.
(5) Place diaphragm of stethoscope over PMI at the fifth ICS, at left MCL, and auscultate for normal S_1 and S_2 heart sounds (heard as 'lub-dub') (see illustration).	Allow stethoscope tubing to extend straight without kinks that would distort sound transmission. Normal sounds S_1 and S_2 are high-pitched and best heard with the diaphragm.



Step 7B(4) Auscultating for heart sounds.

(6) When S_1 and S_2 are heard with regularity, use watch's second hand and begin to count rate: when second hand hits number on dial, start counting with 0, then 1, 2 and so on.	Apical rate is determined accurately only after nurse is able to auscultate sounds clearly. Timing begins with 0. Count of 1 is first sound auscultated after timing begins.
(7) If apical rate is regular, count for 30 seconds and multiply by 2.	Regular apical rate can be assessed within 30 seconds.

STEPS	RATIONALE
(8) If heart rate is irregular or patient is receiving cardiovascular medication, count for 1 minute (60 seconds).	Irregular rate is more accurately assessed when measured over longer interval.
(9) Note regularity of any dysrhythmia (S_1 and S_2 occurring early or later after previous sequence of sounds; e.g. every third or every fourth beat is skipped).	Regular occurrence of dysrhythmia within 1 minute may indicate inefficient contraction of heart and alteration in cardiac output.
(10) Replace patient's gown and bedclothes; help patient return to comfortable position.	Restores comfort and promotes sense of wellbeing.
(11) Clean earpieces and diaphragm of stethoscope with alcohol swab as needed (optional).	Controls transmission of microorganisms when nurses share stethoscope.
8. Discuss findings with patient as needed.	Promotes participation in care and understanding of health status.
9. Perform hand hygiene.	Reduces transmission of microorganisms.
10. Compare readings with previous baseline and/or acceptable range of heart rate for patient's age.	Checks for change in condition and alterations.
11. Compare peripheral pulse rate with apical rate and note discrepancy.	Differences between measurements indicate pulse deficit and may warn of cardiovascular compromise. Abnormalities may require therapy.
12. Compare radial pulse equality and note discrepancy.	Differences between radial arteries indicate compromised peripheral vascular system.
13. Correlate pulse rate with data obtained from blood pressure and related signs and symptoms (palpitations, dizziness).	Pulse rate and blood pressure are interrelated.

RECORDING AND REPORTING

- Record pulse, noting the site used, in observation chart.
- Report abnormal findings to nurse in charge or medical practitioner.

Pulse

Palpate the pulse for rate, rhythm, strength and equality (Figure 23-10). Before measuring a pulse, the patient's baseline rate is reviewed for comparison (Table 23-5). When assessing the pulse it is important to consider the variety of factors influencing the heart rate (HR) (Table 23-6). A combination of these factors may cause significant changes. Consideration needs to be given to postural changes, which cause changes in pulse rate because of alterations in blood volume and sympathetic activity. The HR temporarily increases when a person changes from a lying to a sitting or standing position. If an abnormal rate is detected while palpating a peripheral pulse, the next step is to assess the apical rate. The apical rate provides a more accurate assessment of cardiac contraction.



Figure 23-10 Palpation of arterial pulses.

A, Carotid. **B**, Brachial. **C**, Radial. **D**, Femoral. **E**, Popliteal. **F**, Dorsalis pedis. **G**, Posterior tibial.

Ball J et al 2015 Seidel's guide to physical examination, 8th edn. Elsevier, St Louis.

TABLE 23-5 Acceptable heart rates by age group

Age group	Heart rate (beats per minute)
Infants	120–160
Toddlers	90–140
Preschoolers	80–110
School-aged	75–100
Adolescents	60–90
Adults	60–100

Apical rate

Measure the apical rate by listening to heart sounds with a stethoscope (see Box 23-5). The first and second heart sounds (S_1 and S_2) are identified. At normal rates, S_1 is low-pitched and dull, sounding like '*lub*'. S_2 is higher-pitched and shorter, creating the sound '*dub*'. Each set of heart sounds is counted as one heartbeat. Using the diaphragm or bell of the stethoscope, count the number of heart sounds occurring in 1 minute. This method may be the primary option to ascertain heart rate in small children or those patients who are not well perfused in the periphery.

TABLE 23-6 Factors influencing pulse rates

Factor	Increase pulse rate	Decrease pulse rate
Drugs	Positive chronotropic drugs such as adrenaline	Negative chronotropic drugs such as digitalis
Emotions	Acute pain and anxiety increase sympathetic stimulation, affecting heart rate	Unrelieved severe pain increases parasympathetic stimulation, affecting heart rate; relaxation
Exercise	Short-term exercise	A conditioned athlete who participates in long-term exercise will have a lower heart rate at rest
Haemorrhage	Loss of blood increases sympathetic stimulation	
Postural changes	Standing or sitting	Lying down
Pulmonary conditions	Diseases causing poor oxygenation	
Temperature	Fever and heat	Hypothermia

Rhythm

Normally, a regular interval occurs between each heartbeat. An interval interrupted by an early or late beat or a missed beat indicates an abnormal rhythm or *arrhythmia*. Arrhythmia threatens the heart's ability to provide adequate cardiac output, particularly if it occurs repetitively. If an arrhythmia is present, the regularity of its occurrence should be assessed. Arrhythmias may be described as *regularly irregular* or *irregularly irregular*. To diagnose arrhythmia, an electrocardiogram (ECG) as well as other cardiac investigations may be needed. Children often have a *sinus arrhythmia*, which is an irregular heartbeat that speeds up with inspiration and slows down with expiration. This is a normal finding and can be verified by having the child hold their breath; the heart rate should then become regular.

An inefficient contraction of the heart that fails to transmit a pulse wave to the peripheral pulse site creates a *pulse deficit*. To assess a pulse deficit, assess radial and apical rates simultaneously and compare rates. The difference between the apical and radial pulse rates is the pulse deficit. For example, an apical rate of 92 with a radial rate of 78 leaves a pulse deficit of 14 beats. Pulse deficits are frequently associated with dysrhythmias.

Strength

The strength or amplitude of a pulse reflects the volume of blood ejected against the arterial wall with each heart contraction and the condition of the arterial vascular system leading to the pulse site. Normally the pulse strength remains the same with each heartbeat. Pulse strength may be graded or described as *bounding*, *strong*, *weak* or *thready*.

BOX 23-5 Using a stethoscope

- The five major parts of the stethoscope are the earpieces, binaurals, tubing, bell chestpiece and diaphragm chestpiece.
- To ensure the best reception of sound:
  - the earpieces should fit snugly and comfortably and follow the contour of the ear canal, pointing towards the face
  - the binaurals should be angled and strong enough so that the earpieces stay firmly in the ears without causing discomfort.
- As longer tubing decreases the transmission of sound waves, the polyvinyl tubing should be flexible and no longer than 30 cm in length. The tubing should be thick-walled and moderately rigid to eliminate transmission of environmental noise and to prevent the tubing from kinking, which distorts sound-wave transmission.
- Stethoscopes can have single or dual tubes. Dual tubes promote sound clarity by minimising the number of turns the sound wave makes before reaching the earpiece.
- The diaphragm is the circular, flat portion of the stethoscope chestpiece covered with a thin plastic disc. It transmits high-pitched sounds created by the high-velocity movement of air and blood.
  - Position the diaphragm to make a tight seal against the patient's skin.
  - Enough pressure is exerted to leave a temporary red ring on the patient's skin when the diaphragm is removed.
- The bell is the bowl-shaped chestpiece usually surrounded by a rubber ring. The bell transmits low-pitched sounds created by the low-velocity movement of blood. Heart and vascular sounds are auscultated using the bell.
  - To test, lightly tap to determine which side is functioning. Newer stethoscope models have one chestpiece that combines features of the bell and diaphragm. When light pressure is exerted the chestpiece is a bell, whereas exerting more pressure converts the bell into a diaphragm.
  - Apply the bell lightly, resting the chestpiece on the skin. Compressing the bell against the skin reduces low-pitched sound amplification and creates a 'diaphragm of skin'.
- The bell and diaphragm are rotated into position on the chestpiece, depending on which part you choose to use.
- The diaphragm or bell must be in proper position during use for you to hear sounds through the stethoscope.

Equality

Pulses on both sides of the peripheral vascular system can be assessed simultaneously. For example, both radial pulses are taken and the characteristics of each compared. A pulse in one extremity may be unequal in strength or absent in many disease states (e.g. peripheral arterial disease). All symmetrical pulses can be assessed simultaneously, except for the carotid pulse. Both carotid pulses should never be assessed at the same time because excessive pressure may occlude blood supply to the brain.

Blood pressure

Knowledge of the structure and function of the cardiovascular system in combination with an understanding of the patient's clinical situation facilitate accurate assessment of blood pressure (BP). **Blood pressure** is the lateral force on the walls of an artery from the blood pulsing under pressure from the heart. Systemic or arterial blood pressure, the blood pressure in the system of arteries in the body, is a good indicator of cardiovascular health. Blood flows throughout the circulatory system because of pressure changes. It moves from an area of high pressure to an area of low pressure. The heart's contraction forces blood under high pressure into the aorta. The peak of maximum pressure, when ejection occurs, is the systolic BP. When the ventricles relax, the blood remaining in the arteries exerts a minimum or diastolic BP.

Even though most sphygmomanometers are now either aneroid (using no fluid) or electronic, the standard unit for measuring blood pressure is millimetres of mercury (mmHg). The measurement indicates the height to which the blood pressure can raise a column of mercury. Blood pressure is recorded with the systolic reading before the diastolic (e.g. 120/80 mmHg). The difference between systolic and diastolic pressure is the *pulse pressure*. For a blood pressure of 120/80 mmHg, the pulse pressure is 40 mmHg. The pulse pressure varies with arterial elasticity. A decreased or narrow pulse pressure reflects reduced stroke volume or increased peripheral vascular resistance (e.g. hypovolaemic shock). A widened pulse pressure indicates increased stroke volume or decreased peripheral vascular resistance (e.g. septic shock).

Physiology of arterial blood pressure

Short-term regulation of blood pressure involves *baroreceptors* (pressure receptors) located in the aortic arch and carotid sinus which detect changes in blood pressure and inhibit or activate the sympathetic nervous system to maintain stability. For example, when a fall in blood pressure is sensed by baroreceptors, a sympathetic response is activated, including peripheral vasoconstriction, increased HR, and increased contractility of the heart, all causing an increase in blood pressure. Long-term regulation of blood pressure includes renal and hormonal processes that cause changes in blood volume and peripheral vascular resistance.

Blood pressure reflects the interrelationships of cardiac output, peripheral vascular resistance, blood volume, blood viscosity and artery elasticity. Knowledge of these haemodynamic variables helps in the assessment of blood pressure alterations.

Cardiac output

A person's cardiac output is the volume of blood pumped by the heart during 1 minute. The blood pressure (BP) depends on the cardiac output (CO) and the systemic vascular resistance (SVR):

$$BP = CO \times SVR$$

When volume increases in an enclosed space, such as a blood vessel, the pressure in that space rises. As output increases, more blood is pumped against arterial walls, causing the BP to rise. Cardiac output can increase as a result of an increase in heart rate, greater heart muscle contractility or an increase in blood volume. Changes in heart rate can occur faster than changes in muscle contractility or blood volume. An increase in heart rate may decrease diastolic filling time and end-diastolic volume. As a result, there is a decrease in blood pressure.

Peripheral resistance

The blood circulates through a network of arteries, arterioles, capillaries, venules and veins. Arteries and arterioles are surrounded by smooth muscle that contracts or relaxes to change the size of the lumen. The size of arteries and arterioles changes to adjust blood flow to the needs of local tissues. For example, when more blood is needed by a major organ, the peripheral arteries constrict, decreasing their supply of blood. More blood becomes available to the major organ because of the resistance change in the periphery. Normally, the vascular tone of arteries and arterioles remain partially constricted to maintain a constant flow of blood. *Peripheral vascular resistance* is the resistance to blood flow determined by the tone of vascular musculature and the diameter of blood vessels. The smaller the lumen of a vessel, the greater peripheral vascular resistance to blood flow. As resistance rises, arterial blood pressure rises. As vessels dilate and resistance falls, blood pressure drops.

Blood volume

The volume of blood circulating within the vascular system affects blood pressure. Most adults have a circulating blood volume of 5000 mL. Normally, the blood volume remains constant. However, if volume increases, more

pressure is exerted against arterial walls. For example, the rapid, uncontrolled infusion of intravenous fluids elevates blood pressure. When circulating blood volume falls, as in the case of haemorrhage or dehydration, blood pressure falls.

Viscosity

The viscosity of blood affects the ease with which blood flows through small vessels. The haematocrit, or percentage of red blood cells in the blood, measures blood viscosity. When the haematocrit rises and blood flow slows, arterial blood pressure increases. The heart must contract more forcefully to move the more viscous blood through the circulatory system.

Elasticity

Normally, the walls of an artery are elastic and easily distensible. As pressure within the arteries increases, the diameter of vessel walls increases to accommodate the pressure change. The ability of arteries to distend prevents wide fluctuations in blood pressure. However, in certain diseases, such as arteriosclerosis, the vessel walls lose their elasticity and are replaced by fibrous tissue that cannot stretch well. With reduced elasticity there is greater resistance to blood flow. As a result, when the left ventricle ejects its stroke volume, the vessels no longer yield to pressure. Instead, a given volume of blood is forced through the rigid arterial walls, and the systemic pressure rises. Systolic pressure is more significantly elevated than diastolic pressure as a result of reduced arterial elasticity.

Each haemodynamic factor significantly affects the others (Figure 23-11). For example, as arterial elasticity declines, peripheral vascular resistance increases. The complex control of the cardiovascular system normally prevents any single factor from permanently changing the blood pressure. For example, if the blood volume falls, the body compensates with an increased vascular resistance.

Factors influencing blood pressure

Blood pressure is not constant, but is continually influenced by many factors during the day. One measurement cannot adequately reflect a patient's blood pressure. Even under the best conditions, blood pressure changes from heartbeat to heartbeat. Blood pressure trends, not individual measurements, guide nursing interventions. Understanding these factors ensures a more accurate interpretation of blood pressure readings.

Age

Normal blood pressure levels vary and gradually increase throughout life (Table 23-7). The level of a child or adolescent's blood pressure is assessed with respect to

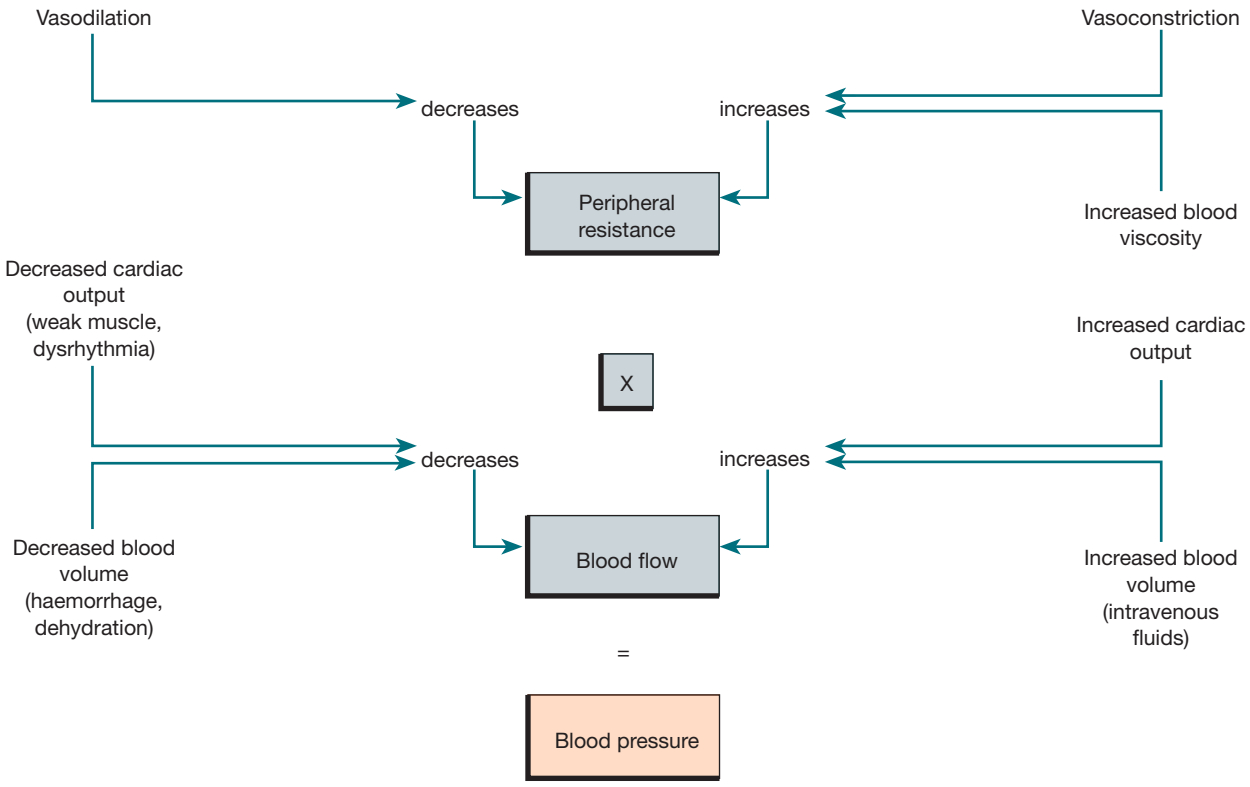


Figure 23-11 **Haemodynamic factors that affect blood pressure.**

body size and age (Hockenberry & Wilson 2011). Larger children (heavier and/or taller) have higher blood pressure than smaller children of the same age. An adult's blood pressure tends to increase with advancing age. Older adults have a rise in systolic pressure related to decreased vessel elasticity.

Stress

Anxiety, fear, pain and emotional stress result in sympathetic stimulation, which increases heart rate, cardiac output and peripheral vascular resistance and ultimately increases blood pressure.

TABLE 23-7 Average optimal blood pressure by age group

Age group	Blood pressure (mmHg)
Newborn (3000 g)	40 (mean)
1 month	85/54
1 year	95/65
6 years	105/65
10–13 years	110/65
14–17 years	120/75
Adult	< 120/80

National Institutes of Health: National Heart, Lung and Blood Institute (NHLBI) Joint National Committee 2004 The Seventh Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure, Bethesda, MD, NHLBI.

Medications

Some medications can directly or indirectly affect blood pressure. During blood pressure assessment, ask whether the patient is receiving antihypertensive or other cardiac medications, which lower blood pressure (Table 23-8). Opioid analgesics also lower blood pressure through vasodilation, especially morphine. High blood pressure (hypertension) may be caused by fluid overload or hypertensive disease. Most often, lower than normal blood pressure (hypotension) can seriously threaten life.

Blood pressure measurement

To ensure reliable results you will need to become familiar with the equipment and the principles of blood pressure measurement (Skill 23-4). The blood pressure is measured by auscultation or palpation. Auscultation is the most widely used technique. The process of taking a blood pressure reading will differ depending on your knowledge of the patient and their previous readings. You will also need to learn how to use automatic blood pressure equipment, as this is readily available in most settings. Finally, you will need to understand how to manage challenging situations by selecting the most suitable equipment and sites for measuring the blood pressure. Accurate recording and interpretation of results and knowledge of when to report changes are critical to patient safety.

Equipment

A *sphygmomanometer* comprises a pressure manometer, an occlusive cloth or vinyl cuff that encloses an inflatable rubber bladder, and a pressure bulb with a release valve that inflates the bladder. The aneroid manometer has a

TABLE 23-8 Antihypertensive medications

Medication type	Examples	Action
Angiotensin-converting enzyme (ACE) inhibitors	Captopril, enalapril, lisinopril	Lower blood pressure by blocking the conversion of angiotensin I to angiotensin II, preventing vasoconstriction; reduce aldosterone production and fluid retention, lowering circulating fluid volume
Angiotension II receptor blockers (ARBs)	Candesartan, irbesartan	Block angiotensin receptor and have similar actions to ACE inhibitors
Beta-adrenergic blockers	Atenolol, carvedilol, propranolol	Block beta-adrenergic receptors in the heart, arteries and arterioles to block response to sympathetic nerve impulses; reduce heart rate and thus cardiac output
Calcium channel blockers	Amlodipine, verapamil	Inhibit calcium influx into cells in vascular smooth muscle, myocardium and cardiac conduction system. Reduce peripheral vascular resistance by systemic vasodilation
Diuretics	Frusemide, spironolactone, hydrochlorothiazide	Lower blood pressure by reducing reabsorption of sodium and water by the kidneys, thus lowering circulating fluid volume
Vasodilators	Glyceryl trinitrate (GTN), isosorbide dinitrate	Act on vascular smooth muscle to cause relaxation and reduce peripheral vascular resistance

SKILL 23-4

Measuring blood pressure (BP)

Delegation considerations

Blood pressure measurement can be delegated to enrolled nurses who are informed of:

- patient's risk of orthostatic hypotension
- frequency of blood pressure measurement
- reportable levels for the patient
- the need to report any abnormalities.

Equipment

- Aneroid or mercury sphygmomanometer
- Cloth or disposable vinyl pressure cuff of appropriate size for patient's extremity
- Stethoscope
- Alcohol swab
- Pen, observation chart

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Determine the frequency of monitoring BP:	
a. Consider previous medical conditions for alterations in BP.	Certain conditions place patients at risk of BP alteration: history of cardiovascular disease, renal disease, diabetes, circulatory shock, acute pain, rapid intravenous infusion of fluids or blood products, increased intracranial pressure, postoperative conditions, pregnancy induced hypertension.
b. Observe for signs and symptoms of BP alterations: (1) High BP (hypertension) is often asymptomatic until pressure is very high. Assess for headache (usually occipital), flushing of face, nosebleed, and fatigue in older adults. (2) Low BP (hypotension) is associated with: dizziness; mental confusion; restlessness; pale, dusky or cyanotic skin and mucous membranes; cool, mottled skin over extremities.	Physical signs and symptoms may indicate alterations in BP. (See Table 23-7 for average optimal blood pressure for age.)
2. Determine best site for BP assessment. Avoid applying cuff to extremity when: intravenous fluids are infusing; an arteriovenous shunt or fistula is present; breast or axillary surgery has been performed on that side; extremity has been traumatised, is diseased or requires a cast or bulky bandage. The lower extremities (leg BP) may be used when the brachial arteries are inaccessible.	Inappropriate site selection may result in poor amplification of sounds, causing inaccurate readings. Application of pressure from inflated bladder temporarily impairs blood flow and can further compromise circulation in extremity that already has impaired blood flow.

STEPS	RATIONALE
3. Select appropriate cuff size.	Improper cuff size results in inaccurate readings (see Table 23-9). If cuff is too small, it tends to come loose while being inflated or results in false high readings. If the cuff is too large, false low readings may be recorded.
4. Determine previous baseline BP (if available) from patient's record.	Allows assessment for change in condition. Provides comparison with future BP measurements.
5. Have patient assume sitting or lying position. Be sure room is warm, quiet and relaxing.	Maintains patient's comfort during measurement. The patient's perception that the physical or interpersonal environment is stressful affects the BP measurement.
6. Explain to patient that BP is to be assessed and have patient rest at least 5 min before measurement. Ask patient not to speak when BP is being measured.	Reduces anxiety that can falsely elevate readings. Blood pressure readings taken at different times can be objectively compared when assessed with patient at rest. Talking to a patient when the BP is being assessed increases readings by 10–40%.
7. Perform hand hygiene.	Reduces transmission of microorganisms.
8. With patient sitting or lying, position patient's forearm or thigh, supported if needed. For arm, turn palm up; for thigh, position with knee slightly flexed.	If extremity is unsupported, patient may perform isometric exercise that can increase diastolic blood pressure.
9. Consider drawing curtains or closing door to the patient's room prior to exposing the patient.	To ensure privacy during assessment procedure.
10. Expose extremity (arm or leg) fully by removing constricting clothing.	Ensures proper cuff application.
11. Palpate brachial artery (arm) (see illustration); or popliteal artery (leg). Position cuff 2.5 cm above site of pulsation (antecubital or popliteal).	Inflating bladder directly over artery ensures proper pressure is applied during inflation.



Step 10 Position of cuff above site of pulsation of brachial artery.

12. Apply bladder of cuff above artery by centring arrows marked on cuff over artery. If there are not centre arrows on cuff, estimate the centre of the bladder and place this centre over artery. With cuff fully deflated, wrap cuff evenly and snugly around extremity.	Loose-fitting cuff causes false high readings.
13. Position manometer vertically at eye level. Observer should be no further than 1 m away.	Accurate readings are obtained by looking at the meniscus of the mercury at eye level. The meniscus is the point where the crescent-shaped top of the mercury column aligns with the manometer scale. Looking up or down at the mercury results in distorted readings.

STEPS	RATIONALE
14. If you do not know the patient's baseline BP, estimate systolic pressure by palpating the artery distal to the cuff, i.e. radial artery, with fingertips of one hand while inflating cuff rapidly to pressure 30 mmHg above point at which pulse disappears. Slowly deflate cuff and note point when pulse reappears. Deflate cuff fully and wait 30 seconds.	Estimating prevents false low readings, which may result in the presence of an auscultatory gap. Maximal inflation point for accurate reading can be determined by palpation. If unable to palpate artery because of weakened pulse, an ultrasonic stethoscope can be used. Deflating cuff prevents venous congestion and false high readings.
15. Place stethoscope earpieces in ears and be sure sounds are clear, not muffled.	Each earpiece should follow angle of ear canal to facilitate hearing.
16. Relocate brachial or popliteal artery and place bell or diaphragm chestpiece of stethoscope over it. Do not allow chestpiece to touch cuff or clothing.	Proper stethoscope placement ensures optimal sound reception. Stethoscope improperly positioned causes muffled sounds that often result in false low systolic and false high diastolic readings.
17. Close valve of pressure bulb clockwise until tight. Rapidly inflate cuff to 30 mmHg above palpated systolic pressure.	Tightening of valve prevents air leak during inflation. Inflation ensures accurate measurement of systolic pressure.
18. Slowly release pressure bulb valve and allow mercury or needle of aneroid manometer gauge to fall at rate of 2 mmHg/second.	Too rapid or slow a decline in mercury level or aneroid pressure can cause inaccurate readings.
19. Note point on manometer when first clear sound is heard. The sound will slowly increase in intensity.	First Korotkoff sound indicates systolic pressure.
20. Continue to deflate cuff, noting point at which muffled or dampened sound appears.	Fourth Korotkoff sound involves distinct muffling of sounds and is recommended as indication of diastolic pressure in children.
21. Continue to deflate cuff gradually, noting point at which sound disappears in adults. Listen for 10–20 mmHg after the last sound, and then allow remaining air to escape quickly.	Beginning of the fifth Korotkoff sound is recommended as indication of diastolic pressure in adults.
22. Remove cuff from extremity unless measurement must be repeated. If this is the first assessment of patient, it may be necessary to repeat procedure on other extremity.	Continuous cuff inflation causes arterial occlusion, resulting in numbness and tingling of patient's arm. Comparison of BP in both extremities detects circulation problems. (Normal difference of 5–10 mmHg exists between extremities.)
23. Help patient return to comfortable position and cover upper arm if previously clothed.	Restores comfort and promotes sense of wellbeing.
24. Clean BP cuff after use.	Reduces transmission of microorganisms and cross-contamination with shared equipment.
25. Discuss findings with patient as needed.	Promotes participation in care and understanding of health status.
26. Perform hand hygiene.	Reduces transmission of microorganisms.
27. Compare reading with previous baseline and/or acceptable value of BP for patient's age.	Checks for change in condition and alterations.

STEPS	RATIONALE
28. Correlate BP with data obtained from pulse assessment and related cardiovascular signs and symptoms.	Blood pressure and heart rate are interrelated.

RECORDING AND REPORTING

- Inform patient of value and need for periodic reassessment.
- Record blood pressure on observation chart and in progress notes if necessary.
- Report abnormal findings to nurse in charge or medical practitioner.

glass-enclosed circular gauge containing a needle that registers millimetre calibrations. Cloth or disposable vinyl compression cuffs contain the inflatable bladder and come in several sizes. The size selected is proportional to the circumference of the limb being assessed (Figure 23-12). Ideally, the width of the cuff should be 40% of the circumference (or 20% wider than the diameter) of the midpoint of the limb on which the cuff is to be used. The bladder, enclosed by the cuff, should encircle at least two-thirds of the arm of an adult and the entire arm of a child. In children, the lower edge of the cuff should be above the antecubital fossa, allowing room for placement of the stethoscope bell or diaphragm. Blood pressure measurements will not be accurate unless the correct size cuff is applied.

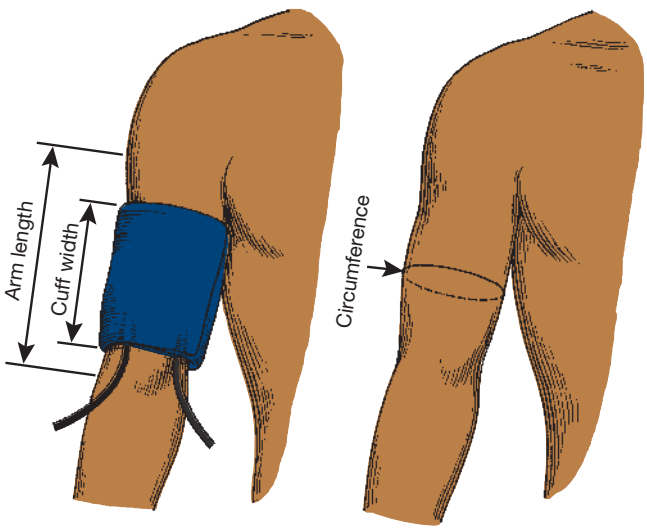


Figure 23-12 Guidelines for proper blood-pressure cuff size. Cuff width = 20% more than the upper arm diameter; or 40% of circumference and two-thirds of arm length.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Before using a sphygmomanometer, inspect the parts of the release valve and the pressure bulb. The valve should be clean and freely moveable in either direction. If it sticks or becomes too tightly closed, the deflation of the pressure cuff will be hard to regulate. The pressure bulb is made of tough rubber and should be free of leaks. Aneroid manometers have the advantage of being lightweight, portable and compact, but the tendency for metal parts to expand or contract in response to environmental temperature changes can affect their reliability. Aneroid sphygmomanometers require biomedical calibration at routine intervals to verify their accuracy. Before using the aneroid model, be sure that the needle points to zero and that the manometer is correctly calibrated.

Principles of blood pressure measurement

Measurement of arterial blood pressure works on a basic principle of pressure. Blood flows freely through an artery until an inflated cuff applies pressure to tissues and causes the artery to collapse. After the cuff pressure is released, the point at which blood flow returns and sound appears through auscultation is the systolic pressure. In 1905, Korotkoff first described the sounds heard over an artery distal to the blood pressure cuff (Figure 23-13):

1. The first Korotkoff sound (KS) is a clear rhythmical tapping corresponding to the pulse rate that gradually increases in intensity. Onset of the sound corresponds to the systolic pressure.
2. With the second KS, a murmur or swishing sound occurs as the cuff continues to deflate. As the artery distends, there is turbulence in blood flow.
3. The third KS is a crisper and more intense tapping.
4. The fourth KS becomes muffled and low-pitched as the cuff is further deflated. Cuff pressure falls below the pressure within the vessel walls; this sound is the diastolic pressure in infants and children.

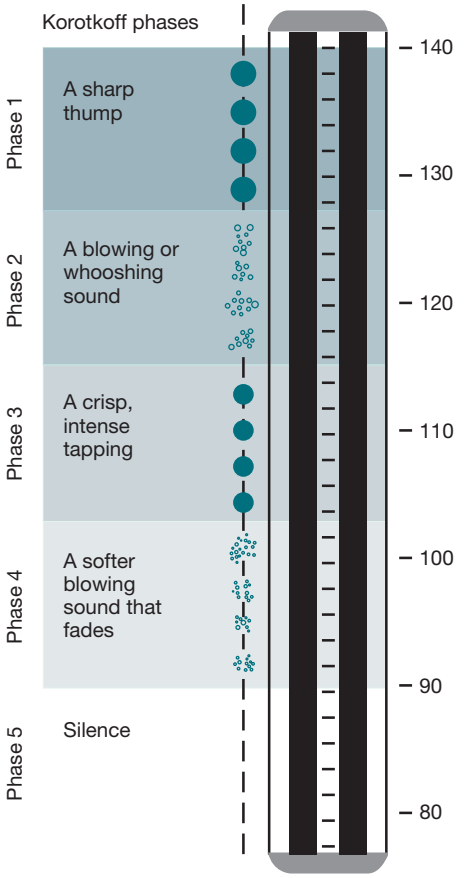


Figure 23-13 **The sounds auscultated during blood pressure measurement can be differentiated into five Korotkoff phases. In this example, blood pressure is 140/90 mmHg.**

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

5. The fifth KS is the absence of sound. In adolescents and adults, the fifth sound corresponds to the diastolic pressure.

In some patients, the sounds are clear and distinct. In other patients, only the beginning and ending sounds are clear.

Palpation technique

The palpation technique is often used when the patient's usual blood pressure reading is unknown. This approach is useful for determining how high to inflate the cuff. The palpation technique is also used for patients whose arterial pulsations are too weak to create Korotkoff sounds. Severe blood loss and decreased heart contractility are examples of conditions that result in blood pressures too low to auscultate accurately. Only the systolic blood pressure can be easily assessed by palpation (Box 23-6). When the palpation technique is used, the systolic value and the manner in which it was measured are recorded (e.g. RA 90/–, palpated, supine).

BOX 23-6 Palpating the systolic blood pressure

1. Apply blood pressure cuff to the upper arm in the same manner as the auscultation method (Skill 28-5).
2. Continually palpate the radial artery.
3. Inflate blood pressure cuff 30 mmHg above the point at which the radial pulse can no longer be palpated.
4. Release valve and allow mercury to fall 2 mmHg/second.
5. As soon as the radial pulse is palpable, note the manometer reading – this is the systolic blood pressure.

The palpation technique is used *with* auscultation in some instances. In some hypertensive patients, the sounds usually heard over the brachial artery when the cuff pressure is high disappear as pressure is reduced and then reappear at a lower level.

Auscultation

The best environment for blood pressure measurement by auscultation is a quiet room at a comfortable temperature. Although the patient may lie or stand, sitting is the preferred position. If auscultation is not performed correctly (Table 23-9), blood pressure readings will be incorrect. When unsure of a reading, a colleague should reassess the blood pressure.

Automatic blood pressure devices

Electronic devices are commonly used to determine blood pressure (Figure 23-14). Whereas the auscultation technique relies on the detection of Korotkoff sounds, some electronic devices rely on the principle of oscillometry. The system includes either a microphone or a pressure sensor built into the inflatable cuff. The microphone or acoustic system hears Korotkoff sounds and registers diastolic and systolic readings. The pressure sensor or ultrasonic system responds to the pressure waves generated by the movement of blood through the artery. The sensor determines the initial burst of oscillations and translates the information into a systolic pressure reading. The diastolic pressure is measured when the oscillations are lowest, just before they stop.

Electronic devices work automatically and are applied when frequent blood pressure assessment is required, such as in the critically ill or potentially unstable patient, during or after invasive procedures or when therapies require frequent monitoring (e.g. intravenous heart and blood pressure medications). However, some patient conditions are not appropriate for automatic blood pressure devices (Box 23-7).

TABLE 23-9 Common errors in blood pressure measurement

Error	Effect
Arm above heart level	False low reading
Arm below heart level	False high reading
Arm not supported	False high reading
Bladder or cuff too narrow	False high reading
Bladder or cuff too wide	False low reading
Cuff wrapped too loosely or unevenly	False high reading
Deflating cuff too quickly	False low systolic and false high diastolic readings
Deflating cuff too slowly	False high diastolic reading
Inaccurate inflation level	Inaccurate interpretation of systolic and diastolic readings
Inflating cuff too slowly	False high diastolic reading
Multiple examiners using different Korotkoff sounds for diastolic readings	False high systolic and low diastolic readings
Repeating assessments too quickly	False low systolic reading
Stethoscope applied too firmly against antecubital fossa	False low diastolic reading
Stethoscope that fits poorly or impairment of the examiner's hearing, causing sounds to be muffled	False low systolic and false high diastolic readings



Figure 23-14 Automatic vital-signs monitor.

Connex® Vital Signs Monitor, courtesy of Welch Allyn.

BOX 23-7 Patient conditions not appropriate for electronic blood pressure measurement

- Irregular heart rate
- Peripheral vascular obstruction (e.g. clots, narrowed vessels)
- Shivering (e.g. postoperative shivering)
- Seizures
- Excessive tremors
- Blood pressure less than 90 mmHg systolic

The advantages of automatic devices are the ease of use and efficiency when repeated or when frequent measurements are indicated. However, automatic devices are more sensitive to outside interference and are very susceptible to error. The microphone or pressure sensor must be positioned directly over the artery for proper function. Patient movements, vibration or outside noise can interfere with the microphone or sensor signal.

A baseline blood pressure should be obtained using the auscultation method before applying automatic devices. A comparison helps evaluate a patient's status and allows proper programming of the device. Once the blood pressure cuff is applied, the device is programmed to obtain and record blood pressure readings at preset intervals. Alarm limits can be programmed to be activated if the blood pressure measurement is outside desired parameters. If readings do not match your understanding of the patient's situation and other assessment data, correlate your finding with a manual blood pressure to reduce the potential for error.

Position

The patient's position during routine blood pressure measurement should be the same each time to permit a meaningful comparison of values. Controlling factors responsible for artificially high readings, such as pain, anxiety or exertion, are an important part of blood pressure measurement. The patient's perception of a stressful physical or interpersonal environment will affect blood pressure measurement. For example, blood pressure measurements taken at the patient's place of employment or in a medical practitioner's office are often higher than those taken in the patient's home.

Documenting blood pressure readings

Two numbers are usually recorded for a blood pressure measurement:

- The point on the manometer when the first Korotkoff sound is heard for systolic, and

- The point on the manometer when the fifth Korotkoff sound is heard for diastolic.

Document blood pressure (e.g. 120/80 mmHg) and the patient's position (e.g. sitting). The importance of obtaining an accurate blood pressure cannot be overemphasised, because many clinical decisions and interventions are made on the basis of findings. In most clinical situations, blood pressure is recorded graphically on a standardised observation chart alongside other vital signs (Figure 23-2).

Hypertension

A common alteration in blood pressure is hypertension. As a major factor underlying deaths from stroke, hypertension is often asymptomatic but characterised by persistently elevated blood pressure. Categories of hypertension have been developed and determine intervention (see Table 28-10). One elevated blood pressure measurement does not qualify as a diagnosis of hypertension. However, if the first blood pressure measurement shows a high systolic or diastolic reading (e.g. 150/90 mmHg), repeated measurements are required. A diagnosis of hypertension in adults is made when: (1) Average diastolic measurement on at least two subsequent occasions is at least 90 mmHg (diastolic hypertension), or (2) Average of multiple systolic blood pressures on two or more occasions is consistently higher than 135 mmHg (systolic hypertension).

Hypertension is associated with the thickening and loss of elasticity in the arterial walls. Peripheral vascular resistance increases within thick and inelastic vessels. The heart must continually pump against greater resistance. As a result, blood flow to vital organs such as the heart, brain and kidney decreases. People with a family history of hypertension are at significant risk. Obesity, cigarette smoking, heavy alcohol consumption, high sodium (salt) intake, sedentary lifestyle and continued exposure to stress are also linked to hypertension. The incidence of hypertension is greater in patients with diabetes, older adults and Indigenous Australians.

TABLE 23-10 Classification of blood pressure for adults

Diagnostic category	Systolic (mmHg)	Diastolic (mmHg)
Normal	< 120	< 80
High normal	120–139	80–89
Hypertension*		
Grade 1 (mild)	140–159	90–99
Grade 2 (moderate)	160–179	100–109
Grade 3 (severe)	≥ 180	≥ 110
Isolated systolic hypertension	≥ 140	< 90
Isolated systolic hypertension with widened pulse pressure	≥ 160	≤ 70

Reproduced with permission from National Heart Foundation of Australia (National Blood Pressure and Vascular Disease Advisory Committee). Quick reference guide for health professionals. Guide to management of hypertension 2008. Updated December 2010. Melbourne: National Heart Foundation of Australia, 2010. New guidelines will be released in mid to late 2016.

Hypotension

Hypotension is generally considered present when the systolic blood pressure falls to 90 mmHg or below. Although some adults have a low blood pressure normally, for the majority of people low blood pressure is an abnormal finding associated with illness. Hypotension occurs because of the dilation of the arteries in the vascular bed, the loss of a substantial amount of blood volume (e.g. haemorrhage) or the failure of the heart muscle to pump adequately (e.g. cardiac failure). Hypotension associated with pallor, skin mottling, clamminess, confusion, increased heart rate or decreased urine output is life-threatening and should be reported immediately.

Orthostatic hypotension, also referred to as *postural hypotension*, occurs when a normotensive person (one with normal blood pressure) develops symptoms and low blood pressure when rising to an upright position. When a healthy individual changes from a lying to a sitting to a standing position, the peripheral blood vessels in the legs constrict. Constriction of the lower-extremity vessels when standing prevents the pooling of blood in the legs due to gravity. When patients have a decreased blood volume, their blood vessels are already constricted. When a volume-depleted patient stands there is a significant drop in blood pressure with an increase in heart rate to compensate for the drop in cardiac output. Patients who are dehydrated or anaemic or who have experienced prolonged bed rest or recent blood loss are at risk of orthostatic hypotension. Some medications can cause orthostatic hypotension, especially in older adults or young patients. Blood pressure should always be measured before administering such medications.

Orthostatic vital sign measurements include obtaining blood pressure and pulse with the patient supine, sitting and standing. When recording orthostatic blood pressure measurements, record the patient's position in addition to the blood pressure measurement (e.g. 140/80 supine, 132/72 sitting, 108/60 standing). The readings are obtained at least 2–3 minutes after the patient changes position. If your findings are positive for orthostatic hypotension, the patient is helped to a lying position and the medical practitioner or nurse in charge is notified. While obtaining orthostatic measurements, observe for other symptoms of hypotension such as dizziness, weakness or light-headedness.

CLINICAL EXAMPLE CONTINUED

You note on the observation chart that Mrs Winter's oxygen saturations are normally > 93%, so you increase the oxygen therapy. The coarse crackles and wheeze you heard are probably due to the presence of secretions in the lower airways. The reduced sounds may be caused by an area of local collapse or consolidation. You remember that Mrs Winter was diagnosed with a chest infection, but it is evident now that this is worsening. After maintaining a clear airway and ensuring that she is taking in enough oxygen, you continue the ABCDE assessment:

CIRCULATION: Her pulse rate is 98 beats/minute (which has been trending upwards from a baseline of 70 bpm over the past shift), and the pulse is irregular (this has not been noted before). Mrs Winter is already attached to an automatic vital signs monitor, but you know it is important to take a manual BP for an accurate reading in a deteriorating patient. Her manual BP is 100/50 mmHg and she feels warm and sweaty. You are unable to determine urine output accurately without an indwelling catheter, but there is no record that she has passed urine over the past shift on the fluid balance chart.

Adapted from Scenario 5.2 in Adam S, Odell M, Welch J 2010 Rapid assessment of the acutely ill patient. Wiley-Blackwell, Oxford, pp.89-94.

Disability

Physiology

Disability refers to assessment of conscious state. The central nervous system (brain and spinal cord) is the primary regulator of all body functions; somatic and autonomic nervous systems (peripheral nervous system) are controlled by the central nervous system to regulate muscular tone and function, respiratory rate and effort, cardiac output and body temperature. Many patient situations can impair the function of the central nervous system. Common causes of impaired consciousness are summarised in Box 23-8.

BOX 23-8 Common causes of decreased level of consciousness

Hypoxia
Alterations in blood glucose
Decreased blood perfusion
Metabolic and electrolyte disorders
Altered body temperature
Brain injury or disease
Epilepsy
Drugs: opioid analgesics, sedatives

Level of consciousness

Assessment of **level of consciousness** must be documented on the standard observation chart each time you conduct a primary survey, most often using the AVPU scale:

A = Alert
V = Responsive to Verbal stimuli
P = Responsive to Pain
U = Unresponsive

Focused neurological assessment, including the Glasgow Coma Scale (GCS), is explained in Chapter 24. To use the AVPU scale, first conduct a general survey of the patient. They are considered alert if their eyes are open and they are taking in their surroundings. Basic mental status assessment includes asking simple questions about orientation, such as whether the patient knows who they are, where they are and what month/date it is (Adam et al 2010). As level of responsiveness decreases, the patient may only respond to voice or gentle shaking, recorded as 'responsive to verbal stimuli'. If application of pain is required to elicit a response, or the patient is unresponsive, call for help and stay with your patient to maintain ABCs.

CLINICAL EXAMPLE CONTINUED

You have not yet done a formal assessment of consciousness following the ABCDE approach, but your first interaction with Mrs Winter might suggest she has a reduced level of consciousness – so you talk to her again to check her mental status, particularly as she has already suffered a stroke.

DISABILITY: Mrs Winter slumps to one side of the bed and although this may be no different from how she has been previously, it is also possible that she may have had another stroke. She opens her eyes and responds only when you call her name and gently shake her shoulder, and so you score her as 'responds to voice' on the AVPU scale. Staff on the previous shift reported that she had become more confused and restless over the past 2 hours, but now she appears drowsy as she is starting to tire from increased respiratory effort. Her responses to simple orientation questions do not make sense.

Adapted from Scenario 5.2 in Adam S, Odell M, Welch J 2010 Rapid assessment of the acutely ill patient. Wiley-Blackwell, Oxford, pp.89-94.

Exposure

Exposure refers to measurement of body temperature and also involves a general head-to-toe scan for obvious problems (Adam et al 2010). A general survey should include observation of the skin, including risks or signs of pressure injury, any wounds, dressings or drains, and invasive lines. Basic clinical assessments over your shift can also reveal important changes in patient status that are early signs of clinical deterioration. Observe the patient's

ability to stand, transfer and mobilise. Bowel movements provide vital information on how the body is functioning (Holl 2014). Routinely ask about the patient's last bowel movement.

Body temperature

Physiology and regulation

The **body temperature** is the difference between the amount of heat produced by body processes and the amount of heat lost to the external environment:

Body temperature = Heat produced – Heat lost

Despite extremes in environmental conditions and physical activity, temperature control mechanisms keep the body's core temperature (temperature of the deep tissues) relatively constant (Figure 23-15). Surface temperature fluctuates depending on blood flow to the skin and the amount of heat lost to the external environment. While there is no single temperature that is 'normal' for all people, the body's tissues and cells function best within a relatively narrow temperature range, the normal range being approximately 36.2–37.5°C (Gordon & Craft 2011).

Nurses can use knowledge of temperature-control mechanisms to understand and promote temperature regulation. The balance between heat lost and heat produced, or thermoregulation, is precisely regulated by physiological and behavioural mechanisms.

Neural and vascular control

Body temperature is controlled in the anterior portion of the hypothalamus at a *set point* that is normal for each individual. This thermoregulatory centre is monitored by peripheral thermoreceptors in the skin and mucous membranes and central thermoreceptors in internal organs including the hypothalamus. A fall in environmental temperature activates heat-production mechanisms such as vasoconstriction of blood vessels to reduce blood flow to the skin and extremities. When vasoconstriction is ineffective in preventing additional heat loss, compensatory heat production is stimulated through voluntary muscle contraction and muscle shivering.

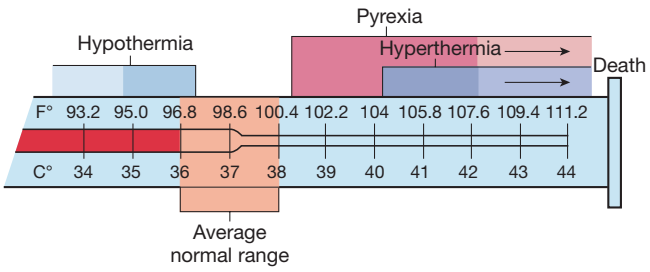


Figure 23-15 Ranges of normal temperature values and abnormal body temperature alterations.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Heat production

Heat production within the body is the by-product of metabolism, skeletal muscle tone and contraction, and chemical thermogenesis. Metabolism refers to the chemical reactions in all body cells. Chemical reactions require energy in the form of adenosine triphosphate (ATP). Any ATP metabolic process results in the production of heat. Food is the main fuel source for metabolism; its energy is transferred to ATP, which in turn transfers energy to body cells. When metabolism increases, additional heat is produced and vice versa.

Heat loss

Heat loss and heat production occur simultaneously. The skin's structure and exposure to the environment result in constant normal heat loss through radiation, conduction, convection and evaporation (Figure 23-16). Diaphoresis is profuse sweating associated with an elevated body temperature, physical exertion, exposure to heat, and mental or emotional stress.

Behavioural control

Individuals voluntarily act to maintain a comfortable body temperature when exposed to temperature extremes. An essential aspect of the nurse's role is the assessment and modification of risk factors for ineffective thermoregulation. Infants can sense uncomfortable warm conditions, but need help to change their environment. Older adults may need help in detecting cold environments and minimising heat loss. Illness, a decreased level of consciousness or impaired thought processes, all result in an inability to recognise the need to change behaviour for temperature control. When temperatures become

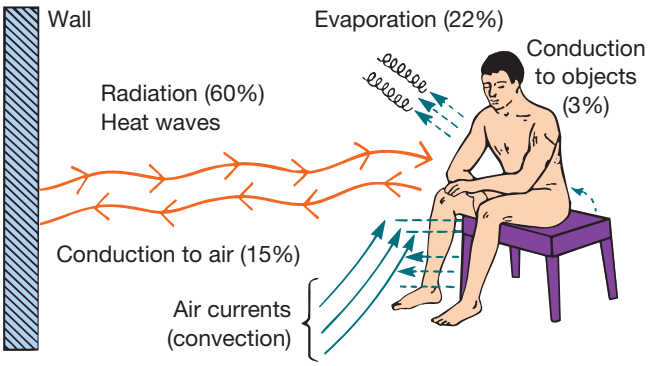


Figure 23-16 Mechanisms of heat loss from the body.

Modified from Guyton AC, Hall JE 2011 Textbook of medical physiology, 12th edn. Saunders, Philadelphia.

extremely high or low, health-promoting behaviours, such as removing or adding clothing, have a limited effect on controlling temperature.

Factors affecting body temperature

Age

At birth the newborn leaves a warm, relatively constant environment and enters one in which temperatures fluctuate widely. Extra care is needed to protect the newborn because their temperature-control mechanisms are immature. A newborn loses up to 30% of body heat through the head and therefore needs to wear a cap to prevent heat loss. When protected from environmental extremes, the newborn's body temperature is maintained within the range of 35.5–37.5°C.

The older adult has a narrower range of body temperatures than the younger adult. The average body temperature of older adults is approximately 36°C. Older adults are particularly susceptible to temperature extremes because of deterioration in control mechanisms, particularly poor vasomotor control (control of vasoconstriction and vasodilation), reduced amounts of subcutaneous tissue, reduced sweat gland activity and reduced metabolism.

Exercise

Muscle activity requires an increased blood supply and increases carbohydrate and fat breakdown. This increased metabolism increases heat production and thus body temperature. Prolonged strenuous exercise, such as long-distance running, can temporarily raise body temperatures up to 40°C.

Hormone level

Women generally experience greater fluctuations in body temperature than men. Menstrual cycle hormonal variations cause body temperature fluctuations. When progesterone levels are low, the body temperature is a few tenths of a degree below the baseline level; the lower temperature persists until ovulation occurs. During ovulation, greater amounts of progesterone raise the body temperature to previous baseline levels or higher. These variations can predict the most fertile time to achieve pregnancy.

Circadian rhythm

Body temperature follows a circadian pattern, peaking late afternoon (1800–2200 hours) and falling early morning (0200–0400 hours). Interestingly, temperature patterns are not automatically reversed in people who work at night and sleep during the day; it takes 1–3 weeks for the cycle to reverse. In general, the circadian temperature rhythm does not change with age.

Stress

Physical and emotional stress increases body temperature through hormonal and neural stimulation. These physiological changes increase metabolism, which increases heat production.

Environment

Environment influences body temperature. If temperature is assessed in a very warm room, a person may be unable to regulate body temperature by heat-loss mechanisms, and the body temperature will be elevated. If the person has just been outside in the cold without warm clothing, body temperature may be low because of extensive radiant and conductive heat loss. Infants and older adults are most likely to be affected by environmental temperatures, because their thermoregulatory mechanisms are less efficient.

Sites for measuring body temperature

There are several sites for measuring core and surface body temperature. The non-invasive sites used most commonly for temperature measurement include the tympanic membrane, mouth and axilla (Box 23-9). The rectum is an invasive site, which is occasionally used.

Oral, axillary and skin temperature sites rely on effective blood circulation at the measurement site. The heat of the blood is conducted to the thermometer probe. Non-invasive, chemically prepared thermometer patches can also be applied to the skin. Tympanic temperature relies on the radiation of body heat to an infrared sensor. Tympanic temperature is considered a core temperature because the tympanic membrane shares the same arterial blood supply as the hypothalamus.

The temperature obtained varies, depending on the site used, but should be between 36°C and 38°C. Research findings from numerous studies are contradictory; however, it is generally accepted that rectal temperatures are usually 0.5°C higher than oral temperatures, and axillary temperatures are usually 0.5°C lower than oral temperatures (Guyton & Hall 2011). Each of the common temperature measurement sites has advantages

BOX 23-9 Core and surface temperature measurement sites

Core	Surface
Tympanic membrane	Skin
Oesophagus	Axillae
Urinary bladder	Oral
Pulmonary artery	

and disadvantages (Box 23-10). Choose the safest and most accurate site for the patient (Skill 23-5). The same site should be used when repeated measurements are necessary.

Thermometers

The electronic thermometer consists of a rechargeable battery-powered display unit, a thin wire cord and a temperature-processing probe covered by a disposable plastic sheath (Figure 23-17). One form of electronic thermometer uses a pencil-like probe. Separate non-breakable probes are available for oral and rectal use. The oral probe can also be used for axillary temperature measurement. Within 20–50 seconds of insertion a reading appears on the display unit. A sound signals when the peak temperature reading has been measured.

Another form of electronic thermometer is used exclusively for tympanic temperature (Figure 23-18). An otoscope-like speculum with an infrared sensor tip detects heat radiated from the tympanic membrane. The head is

BOX 23-10 Advantages and disadvantages of select temperature measurement sites

Tympanic membrane sensor

Advantages:
- Easily accessible site
- Minimal patient repositioning required
- Very rapid measurement (2–5 seconds)
- Can be obtained without disturbing or waking patient
- Unaffected by oral intake of food, fluids, smoking
- Can be used for tachypnoeic patients
- More accurately reflects core temperature than any other method (Nimah et al 2006).

Disadvantages:
- Requires removal of hearing aids before measurement
- Should not be used with patients who have had surgery of the ear or tympanic membrane
- May have lower readings with cerumen impaction (Lu et al 2010).

Oral

Advantages:
- Accessible – requires no position change
- Minimal patient repositioning required
- Provides accurate surface temperature reading

Disadvantages:
- Affected by ingestion of fluids or foods, smoke and oxygen delivery (Guyton & Hall 2011)
- Should not be used with patients who have had oral surgery, trauma, history of epilepsy or shaking chills
- Should not be used with infants, small children or confused, unconscious or uncooperative patients
- Risk of body fluid exposure
- Uncomfortable for patients with nausea

Axilla

Advantages:
- Safe and non-invasive
- Can be used with newborns and uncooperative patients

Disadvantages:
- Long measurement time
- Requires continuous positioning by nurse
- Lags behind core temperature during rapid temperature changes
- Requires exposure of thorax
- Not recommended to detect fever in infants and young children

Skin

Advantages:
- Inexpensive
- Provides continuous reading
- Safe and non-invasive
- Does not require disturbing of patient
- Can be used for neonates
- Easy to read

Disadvantages:
- Lags behind other sites during temperature changes, especially during hyperthermia
- Adhesion can be impaired by diaphoresis or sweat
- Can be affected by environmental temperature
- Unreliable during chill phase of fever

Infrared

Advantages:
- Rapid measurement
- Safe and non-invasive
- Does not require disturbing of patient
- Can be used for neonates
- Easy to read

Disadvantages:
- May need advanced techniques for core measurement in assessment of hypothermia less than 35 degrees Celsius.

Adapted from: Guyton AC, Hall J 2011 Textbook of medical physiology,12th edn. Saunders, Philadelphia; Lu S-H et al 2010 A systematic review of body temperature variations in older people. J ClinNurs 19(1–2):4–16; Nimah MM et al 2006 Infrared tympanic thermometry in comparison with other temperature measurement techniques in febrile children. PediatrCrit Care Med 7(1):48–55.

SKILL 23-5

Measuring body temperature

Delegation considerations

Temperature measurement can be delegated to enrolled nurses who are informed of:

- the frequency of temperature measurement
- the reportable levels for patient
- the need to report any abnormalities that should be reconfirmed by the nurse.

Equipment

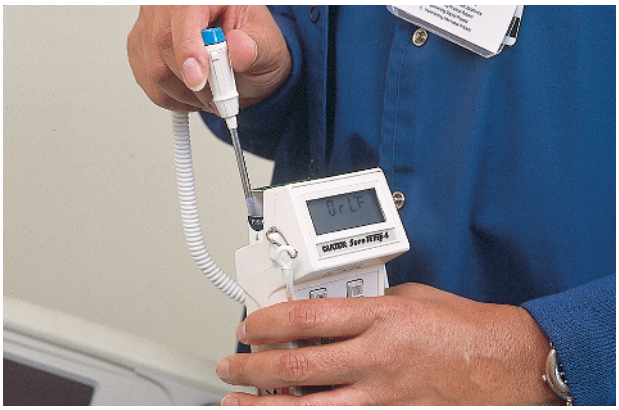
- Appropriate thermometer
- Pen, observation chart
- Plastic thermometer sleeve or disposable probe cover

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Determine the frequency of monitoring body temperature. Assess for signs and symptoms of temperature alterations and for factors that influence body temperature.	Physical signs and symptoms may indicate abnormal temperature.
2. Determine any previous activity that would interfere with accuracy of temperature measurement. When taking oral temperature, wait 15–20 minutes before measuring temperature orally if patient has smoked or ingested hot or cold liquids or foods.	Smoking or oral intake of food or fluids can cause false temperature readings in oral cavity.
3. Determine appropriate temperature site and device for patient.	Chosen based on patient requirements, advantages and disadvantages of each site (see Box 23-10).
4. Explain how temperature will be taken and importance of maintaining proper position until reading is completed.	
5. Perform hand hygiene.	Reduces transmission of microorganisms.
6. Help patient assume comfortable position that provides easy access to temperature site.	Ensures comfort and accuracy of temperature reading.
7. Obtain temperature reading.	
A. Oral temperature measurement with electronic thermometer	
(1) Put on oral probe cover.	Use of oral probe cover, which can be removed without physical contact, minimises need to wear gloves.

STEPS	RATIONALE
(2) Remove thermometer pack from charging unit. Attach oral probe (blue tip) to thermometer unit. Grasp top of probe stem, being careful not to put pressure on the ejection button.	Charging provides battery power. Ejection button releases plastic probe cover from tip.
(3) Slide disposable plastic probe cover over thermometer probe until cover locks in place (see illustration).	Soft plastic cover will not break in patient's mouth and prevents transmission of microorganisms between patients.



Step 7A(3) Sliding disposable probe cover over thermometer probe.

(4) Ask patient to open mouth; then gently place thermometer probe under tongue in posterior sublingual pocket lateral to centre of lower jaw.	Heat from superficial blood vessels in sublingual pocket produces temperature reading. With electronic thermometer, temperatures in right and left posterior sublingual pocket are significantly higher than in area under front of tongue.
(5) Ask patient to hold thermometer probe with lips closed.	Maintains proper position of thermometer during recording.
(6) Leave thermometer probe in place until audible signal occurs and patient's temperature appears on digital display; remove thermometer probe from under patient's tongue.	Probe must stay in place until signal occurs to ensure accurate reading.
(7) Push ejection button on thermometer stem to discard plastic probe cover into appropriate receptacle.	Reduces transmission of microorganisms.
(8) Return probe to storage position of thermometer unit.	Protects probe from damage. Returning probe automatically causes digital reading to disappear.
(9) Perform hand hygiene.	Reduces transmission of microorganisms.
(10) Return thermometer to charger.	Maintains battery charge.

STEPS	RATIONALE
B. Axillary temperature measurement with electronic thermometer	
(1) Draw curtain around bed and/or close door.	Provides privacy.
(2) Position patient lying supine or sitting.	Provides easy access to axilla.
(3) Move clothing or gown away from shoulder and arm.	Exposes axilla for correct thermometer probe placement.
(4) Remove thermometer pack from charging unit. Be sure oral probe (blue tip) is attached to thermometer unit. Grasp top of probe stem, being careful not to apply pressure on the ejection button.	Charging provides battery power. Ejection button releases plastic cover from probe.
(5) Slide disposable plastic probe cover over thermometer probe until cover locks in place.	Soft plastic cover prevents transmission of microorganisms between patients.
(6) Raise patient's arm away from torso, inspect for skin lesions and excessive perspiration. Insert probe into centre of axilla, lower arm over probe and place arm across patient's chest (see illustration).	Maintains proper position of probe against blood vessels in axilla.



Step 7B(6) Axillary temperature measurement.

(7) Leave probe in place until audible signal occurs and temperature appears on digital display.	Probe must stay in place until signal occurs to ensure accurate reading.
(8) Remove probe from axilla.	
(9) Push ejection button on thermometer stem to discard plastic probe cover into appropriate receptacle.	Reduces transmission of microorganisms.
(10) Return probe to storage position of thermometer unit.	Protects probe from damage. Returning probe automatically causes digital reading to disappear.
(11) Help patient assume a comfortable position.	Restores comfort and promotes privacy.
(12) Perform hand hygiene.	Reduces transmission of microorganisms.

STEPS	RATIONALE
(13) Return thermometer unit to charger.	Maintains battery charge.
C. Tympanic membrane temperature with electronic thermometer	
(1) Help patient assume comfortable position with head turned towards side, away from nurse. Right-handed people should obtain temperature from patient's right ear. Left-handed people should obtain temperature from patient's left ear. The less acute the angle of approach, the better the probe seal.	Ensures comfort and exposes auditory canal for accurate temperature measurement.
(2) Remove thermometer handheld unit from charging base, being careful not to apply pressure on the ejection button.	Base provides battery power. Removal of handheld unit from base prepares it to measure temperature. Ejection button releases plastic probe cover from tip.
(3) Slide clean disposable speculum cover over otoscope-like lens tip until it locks into place, being careful not to touch lens cover.	Lens cover must be unimpeded by dust, fingerprints or earwax to ensure clear optical pathway.
(4) Insert speculum into ear canal following manufacturer's instructions for tympanic probe positioning:	Correct positioning of the probe with respect to ear canal ensures accurate readings.
(a) Pull ear pinna backwards for a child, up and out for an adult. (b) Fit probe snugly into canal and do not move. (c) Point towards nose.	The ear tug straightens the external auditory canal, allowing maximum exposure of the tympanic membrane.
(5) As soon as probe is in place depress scan button on handheld unit. Leave thermometer probe in place until audible signal occurs and patient's temperature appears on digital display.	Depression of scan button causes infrared energy to be detected. Otoscope tip must stay in place until signal occurs to ensure accurate reading.
(6) Carefully remove speculum from auditory meatus.	
(7) Push ejection button on handheld unit to discard plastic probe cover into appropriate receptacle.	Reduces transmission of microorganisms. Automatically causes digital reading to disappear.
(8) If a second reading is necessary, replace probe lens cover and wait 2–3 min before inserting the probe tip.	Lens cover must be free of cerumen to maintain optical path.
(9) Return handheld unit to charging base.	Protects sensory tip from damage.
(10) Help patient assume a comfortable position.	Restores comfort and sense of wellbeing.
(11) Perform hand hygiene.	Reduces transmission of microorganisms.

STEPS	RATIONALE
8. Discuss findings with patient as needed.	Promotes participation in care and understanding of health status.
9. If temperature is assessed for the first time, establish temperature as baseline if it is within normal range.	Used to compare future temperature measurements.
10. Compare temperature reading with patient's previous baseline and acceptable temperature range for patient's age group.	Normal body temperature fluctuates within narrow range; comparison reveals presence of abnormality. Improper placement or movement of thermometer can cause inaccuracies. Second measurement confirms initial findings of abnormal body temperature.

RECORDING AND REPORTING

- Record temperature in observation chart.
- Report abnormal findings to nurse in charge or medical practitioner.



Figure 23-17 Electronic thermometer. Blue probe is for oral or axillary use. Red probe is for rectal use.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.



Figure 23-18 Tympanic thermometer with probe cover being inserted into auditory canal.

iStockphoto/tbradford.

stabilised, the ear pulled straight back (children) or up and back (adults), and within 2–5 seconds of placement of the speculum in the auditory canal a reading appears on the display unit. A sound signals when the peak temperature reading has been measured.

A recent inclusion to body temperature measurement is the infrared non-touch thermometer (Figure 23-19). Temperature can be ascertained by holding the thermometer near the patient's head and activating the device.

Disposable, single-use thermometers are thin strips of plastic with a temperature sensor at one end. The sensor consists of a matrix of dot-like indentations that contain chemicals which melt and change colour at different temperatures. They are used for oral or axillary temperatures, particularly with children (Figure 23-20). Single-use thermometers are inserted the same way as any oral or axillary thermometer. The thermometer is removed after 3 minutes and read after waiting about 10 seconds for the colour change to stabilise.

Another form of disposable thermometer is a temperature-sensitive patch or tape. Applied to the forehead or abdomen, the patch changes colour at different temperatures. Both forms of disposable thermometers are useful for screening patients, especially infants, for altered



Figure 23-19 **Infrared thermometer.**

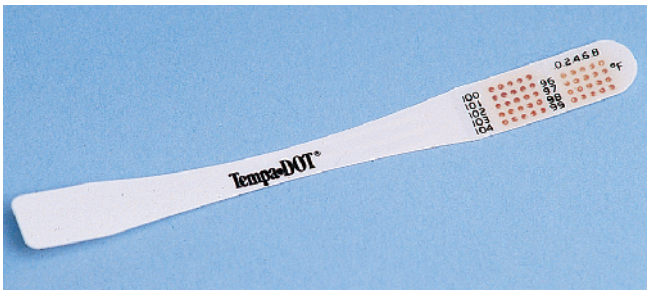


Figure 23-20 **Disposable, single-use thermometer strip.**

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

temperature, and are not appropriate for monitoring temperature therapies.

Fever

Fever (or pyrexia) occurs as a part of the inflammatory response caused by trauma, surgery, infection, immune responses and tissue damage. For example, in the immediate postoperative period it is common for a patient to develop a fever as part of the normal inflammatory response to surgery. During fever, white blood cell production is stimulated and there is a decrease in the concentration of iron in the blood plasma, suppressing bacterial growth. Fever also stimulates the production of antiviral interferon.

Fever is a host defence response, a *febrile response*, to invasion from exogenous pyrogens, including microbial pathogens such as bacteria, viruses, mycobacteria and fungi as well as non-microbial antigens such as inflammatory agents and drugs. During the febrile response, the set point in the thermoregulatory centre is reset to maintain a higher level of body temperature. This higher temperature is maintained through increased heat production, especially through peripheral vasoconstriction and behavioural measures such as covering oneself with blankets in response to chills even though the body temperature is elevated.

The febrile response is a coordinated series of events to defend the body against these invading organisms through the intentional elevation of the body's core temperature – a mean 1°C increase in body temperature (for that specific measurement site). Fever is an *adaptive* response, even though it places substantial demands on the body through

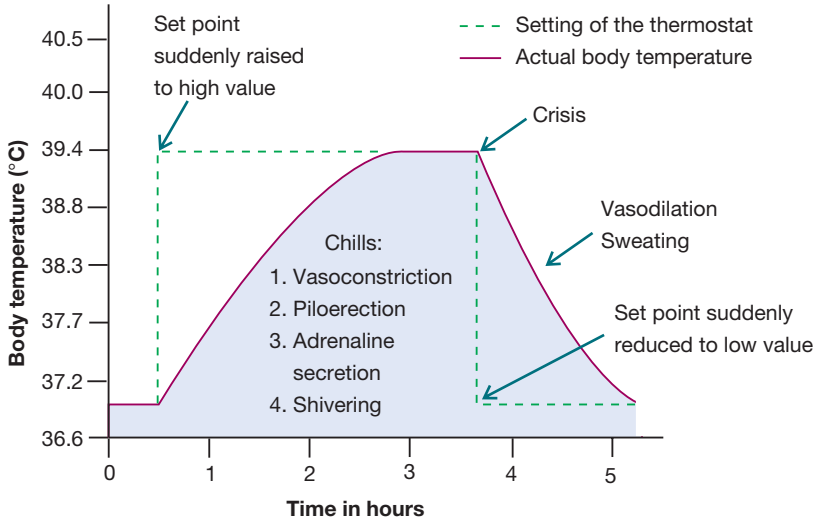


Figure 23-21 **Effect of changing the setpoint of the hypothalamic temperature control during a fever.**

Modified from Guyton AC, Hall JE 2011 Textbook of medical physiology, 12th edn. Saunders, Philadelphia.

increased metabolic demands. Fever has an upper limit ranging from 41°C to 42°C. Most infections produce fevers between 38.5°C and 40.5°C, and an average fever of 39.5°C.

Three phases of fever

The cold phase begins as the hypothalamic set point is reset to a higher level (Figure 23-21). This phase lasts approximately 10–40 minutes, during which all heat-producing mechanisms are activated and there is a rapid, steady rise in temperature. Heat production increases oxygen demands by 3–5 times normal resting levels, contributing to a hypermetabolic state. In this state there are associated increases in heart and respiratory rates and thirst. Vasoconstriction causes the skin to look pale with cyanotic nail beds, and to feel cool and dry. During this period, the person experiences chills and rigors, and feels cold even though the body temperature is rising.

During the *hot phase* the body has reached a new set point and maintains the body temperature at this new higher temperature. The length of this phase depends on the time it takes to eradicate the pyrogenic cytokines responsible for the raised set point. Higher temperatures in this phase are maintained through a balance in heat production and heat loss. Skin is flushed and warm and the individual feels hot. Basal metabolic rate remains high, so tachycardia and thirst continue. Other symptoms associated with this phase include drowsiness, headache, photophobia, reduced activity and appetite, feelings of weakness and/or restlessness and sometimes convulsions. This phase ends when the underlying cause of fever has been treated and/or eliminated by the body, resulting in a decrease in set point to normal.

The *defervescence phase* or the 'breaking' of the fever occurs when there is a sudden decline in circulating pyrogenic cytokines and resetting of the hypothalamic set point back to normal. Heat-loss mechanisms take over and heat production is inhibited. The skin feels warm and is flushed due to vasodilation and sweating, which can exacerbate existing dehydration. Finally, the temperature returns to normal and the patient becomes afebrile.

Benefits and costs of fever

Fever is beneficial in a normal healthy person in the home setting, but seriously ill children and adults can become severely compromised by the additional physiological strain of fever. For every 1°C above normal temperature there are associated physiological changes. There is an associated increase in oxygen consumption of 10–12% and an insensible fluid loss of 20%. Increased fluid loss associated with reduced intake leads to dehydration, the most common and dangerous side effect of fever. During the cold stage, blood pressure increases and glomerular filtration rates decrease; this reverses during the hot phase. Increased urine output assists in the removal of the additional metabolic wastes from the catabolic febrile state.

When fever is prolonged, the risk of dehydration increases and anorexia, secondary to generalised weakness and malaise, is common. Psychological effects include apathy, confusion, delirium and withdrawal from people and activities. These physiological and psychological effects of fever are important considerations for nurses and those caring for febrile children and adults. Fever should be reduced in those who are placed at risk due to the additional physiological burden from the febrile response. This includes children and adults who are seriously ill, and those who have cardiorespiratory, neurological or metabolic disorders or are malnourished, dehydrated or have epileptic lesions and may not tolerate the additional physiological demands during fever. In children, fever may trigger convulsions in those with a seizure disorder or a predisposition to febrile convulsions.

Hypothermia

Heat loss during prolonged exposure to cold overwhelms the body's ability to produce heat, causing hypothermia or temperature less than 35° Celsius (Talley & O'Connor 2014). In *hypothermia* the body at first increases metabolic rate (to increase heat production), increases vasoconstriction (to decrease heat loss), shunts blood from the peripheral vascular bed to the core (to reduce heat loss) and increases shivering (to increase heat production). Hypothermia is classified by core temperature measurements (Box 23-11). Some people are more prone to hypothermia than others (Box 23-12). Hypothermia may also be intentionally induced during surgical procedures, to reduce metabolic demand and the body's need for oxygen.

Hypothermia usually develops gradually and may go unnoticed for several hours. When skin temperature drops to 35°C, the person suffers uncontrolled shivering, loss of memory, depression and poor judgement. As the body temperature falls below 34.4°C, cyanosis occurs,

BOX 23-11 Classification of hypothermia

Mild	33.1–35°C
Moderate	30.1–33°C
Severe	27–30°C
Profound	< 27°C

BOX 23-12 Patients at risk of hypothermia

Neonates

Can lose as much as 4.5°C immediately after delivery, as a result of heat evaporation. They also have a larger surface-to-mass ratio and a small amount of subcutaneous tissue.

Older patients

Often have a decrease in level of thyroxine and therefore a decreased ability to increase metabolic rate and heat production. Have a decreased ability in vasomotor response, including decreased ability to produce heat through shivering.

Patients with alcohol problems

Alcohol increases peripheral vasodilation (increases heat loss), and long-term use may affect the hypothalamic response to cold.

Surgical patients

Patients can lose as much as 0.3°C per hour by loss of heat through an open cavity in a theatre where the ambient temperature is less than the body temperature. Anaesthetics block the activity of shivering and decrease the body's ability to produce heat.

and heart and respiratory rates and blood pressure fall. If hypothermia progresses, cardiac dysrhythmias, loss of consciousness and unresponsiveness to painful stimuli occurs. In cases of severe hypothermia, a person may demonstrate clinical signs similar to death (e.g. lack of response to stimuli and extremely slow respirations and pulse). The assessment of core temperature is critical when hypothermia is suspected. A special low-reading thermometer may be required, because standard devices often do not register below 35°C.

CLINICAL EXAMPLE CONTINUED

Mrs Winter is acutely unwell and at high risk of further deterioration. Following the ABCDE approach, you take a body temperature and begin a head-to-toe scan for other important assessment data:

EXPOSURE: The tympanic body temperature reading confirms Mrs Winter is febrile at 38.9°C and she feels hot and sweaty to touch. You are worried that taken together, the trends in vital signs suggest her chest infection is worsening and she is developing sepsis. Her skin is flushed. There are no wounds, dressings or drains. But you note an IV cannula in the left arm.

The ICU outreach nurse arrives and you are able to hand over your assessment and initial interventions using the ABCDE framework.

Adapted from Scenario 5.2 in Adam S, Odell M, Welch J 2010 Rapid assessment of the acutely ill patient. Wiley-Blackwell, Oxford, pp.89-94.

Conclusion

This chapter has introduced you to the ABCDE approach, which forms the foundation of patient assessment in any setting. It provides a simple framework so that clinical problems can be identified and addressed in priority order. Even during complex and stressful situations such as acute patient deterioration, taking time out to work through each step of the ABCDE approach will help you make sense of the situation and guide initial interventions. When patient problems are identified, a focused assessment will be triggered. The next chapter builds on the primary survey by explaining how to perform a focused body systems assessment.

Key concepts

- The ABCDE approach to assessment is a simple, structured process to improve the early recognition of clinical deterioration. It is the first element of patient assessment in any setting. The core skills during each step are to look, listen, feel and measure.
- Airway patency is the first priority. Look, listen and feel for any airway obstruction.
- Breathing focuses on assessment of respirations, work of breathing, and measurement of oxygen saturation.
- Circulation focuses on feeling the pulse, checking peripheral perfusion, and measuring blood pressure. Assess urine output if possible.
- Disability (level of consciousness) is quickly assessed from the outset using the AVPU scale. Simple questions can be used to evaluate mental status and speech. Ask about pain.
- Exposure includes measurement of body temperature and a general head-to-toe scan to identify any obvious problems. Assess skin colour, wounds, dressings or drains, invasive lines. Note ability to stand and move. Determine last bowel movement.

Online resources

NSW Health Between the Flags online education, www.cec.health.nsw.gov.au/programs/between-the-flags

This site describes the ABCDE assessment framework in action and contains learning modules and chapters on recognising patient deterioration. Links to the material are available through the NSW Health Education and Training Institute (HETI). University students have access through ClinConnect.

References

Adam S, Odell M, Welch J 2010 Rapid assessment of the acutely ill patient. Wiley-Blackwell, Oxford.

Bleyer AJ, Vidya S, Russell GB et al 2011 Longitudinal analysis of one million vital signs in patients in an academic medical center. Resuscitation 82(11):1387–92.

Cardona-Morrell M, Nicholson M, Hillman K 2015 Vital signs: from monitoring to prevention of deterioration in general wards. In Vincent J-L (ed.) 2015 Annual Update in Intensive Care and Emergency Medicine. Springer International Publishing, pp. 533–45.

Clarke D, Ketchell A 2011 Nursing the acutely ill adult. Palgrave-Macmillan, NY.

Considine J, Currey J 2015 Ensuring a proactive, evidence-based, patient safety approach to patient assessment. Journal of Clinical Nursing 24:300–7.

Cretikos MA, Bellomo R, Hillman K et al 2008 Respiratory rate: the neglected vital sign. Medical Journal of Australia 188(11):658–9.

Douglas C, Booker C, Fox R, et al 2016 Nursing physical assessment for patient safety in general wards: reaching consensus on core skills. Journal of Clinical Nursing doi: 10.1111/jocn.13201

Galvão CM, Liang Y, Clark AM 2010 Effectiveness of cutaneous warming systems on temperature control: meta-analysis. J AdvNurs 66(6):1196–206.

Gordon C, Craft J 2011 Inflammation and fever. In Craft J, Gordon C (eds), Understanding pathophysiology. Mosby, Sydney.

Guyton AC, Hall J 2011 Textbook of medical physiology, 12th edn. Saunders, Philadelphia.

Hockenberry M, Wilson D 2011 Wong's nursing care of infants and children, 9th edn. Mosby, St Louis.

Holl RM 2014 Bowel movement: the sixth vital sign. Holistic nursing practice 28(3):195–7.

Price AM, Smith SA, Challinor A 2016 Ward-based critical care: a guide for health professionals, 2nd edn. M&K Publishing, UK.

Storm-Versloot MN, Verweij L, Lucas C et al 2014 Clinical relevance of routinely measured vital signs in hospitalized patients: a systematic review. Journal of Nursing Scholarship 46: 39–49. doi: 10.1111/jnu.12048

Talley NJ, O'Connor S 2014 Clinical examination: a systematic guide to physical diagnosis 7th edn. Elsevier, Chatswood, NSW.

Zeitz K, McCutcheon H 2006 Observations and vital signs: ritual or vital for the monitoring of postoperative patients? Applied Nursing Research 19:204–11.

CHAPTER

24

Undertaking a focused assessment: physical assessment of body systems

Anthony Schoenwald and Clint Douglas

Learning outcomes

Mastery of content will enable you to:

- explain the importance of undertaking systematic health assessment as the basis for nursing care
- identify key considerations and patient preparations required before and during physical assessment
- apply core physical assessment skills relevant to each focused body system assessment and reflect on the use of these skills in your nursing practice
- differentiate normal from abnormal assessment findings
- analyse assessment data to determine the patient's health problems and clinical priorities
- document and communicate your health assessment.

KEY TERMS

Auscultation, p. 585
Body systems assessment, p. 580
Cardiovascular system, p. 593
Gastrointestinal system, p. 605
Inspection, p. 580
Integumentary system, p. 618
Musculoskeletal system, p. 614
Neurological system, p. 587
Palpation, p. 585
Percussion, p. 585
Physical assessment, p. 580
Renal system, p. 611
Respiratory system, p. 603

Introduction

Developing health assessment skills is one of the most important and challenging aspects of becoming a registered nurse (RN). While often invisible to others, patient assessment comprises a major part of what expert RNs do in their daily practice. Particularly in acute care settings, RNs are usually the first healthcare professional to recognise and respond to changes in a patient's condition (see Chapter 39). It can be argued that 'nurses are the professional group that carry the highest level of responsibility for patient assessment, accurate data collection and interpretation' (Considine & Currey 2015:300). They are responsible for implementing most of the hands-on patient care, monitoring patients for complications of illnesses and adverse reactions to treatment, as well as protecting them from deadly healthcare errors. RNs use their knowledge and clinical assessment skills at the bedside to diagnose and manage rapidly-developing, life-threatening emergencies. Well-developed physical assessment skills are also equally important for recognising subtle trends and early changes in a patient's condition to prevent clinical deterioration (Osborne et al 2015). Through this continuous cycle of 24/7 clinical monitoring, decision-making and intervention, RNs save lives and improve patient outcomes every day (Considine & Currey 2015).

As a student nurse you will learn to constantly observe and analyse situations to make clinical judgements. Learning to assess patients systematically and comprehensively is important because your assessment drives all components of patient care. *Objective data*, collected by performing a physical assessment, builds on the *subjective data*, gathered when taking a patient history (see Chapter 5), and is the foundation for clinical decisions, interventions and evaluations. This chapter presents an introduction to the fundamental knowledge and skills you will need as a beginning RN to conduct patient physical assessment. Other chapters will build on this with common focused assessments you will undertake, such as assessment of mobility, fluid and electrolyte balance and nutritional status.

Building on the primary survey approach to patient assessment

A framework provides a logical structure for learning the process of assessment and communication of your findings. Using a structured patient assessment framework has been shown to enhance clinician performance of patient assessment and has the potential to improve patient care and outcomes (Munroe et al 2013). There are multiple frameworks available and you must decide which

RESEARCH HIGHLIGHT

Research question

What is the clinical relevance of routine nursing physical assessment of body systems for hospitalised patient outcomes?

Research abstract

Rothman and colleagues' (2012) large US cohort study of over 42,000 inpatient visits examined whether the nursing physical assessment of body systems captured each shift in the electronic hospital record was a sensitive predictor of all-cause in-hospital and post-discharge mortality. Because nurses charted by exception, the investigators were able to create binary data indicating whether standard normal adult ranges were 'met' or 'not met' for each of the 12 areas of patient assessment.

Analysis of crude odd ratios (OR) revealed that the odds of in-hospital death was more than 9-fold greater for patients with abnormal neurological findings on admission (OR = 9.4), 8-fold for abnormal respiratory findings (OR = 8.1), and approximately 7-fold for abnormal food/nutrition (OR = 7.0), musculoskeletal (OR = 6.9) and psychosocial findings (OR = 6.7). Except for pain assessment, not meeting a minimum standard for the remaining body systems was also significantly associated with a 2.3- (gastrointestinal) to 5.6-fold (safety/falls risk) higher odds of death in hospital, regardless of medical history and diagnosis. Similarly, abnormal physical assessment findings on the final nursing assessment before discharge were strongly correlated with mortality at 2 days, 30 days and 1 year.

Evidence-based practice

- Signs of early deterioration identified during routine nursing physical assessment are strongly associated with patient mortality.
- Nursing physical assessment of functional deteriorations that often precede changes in vital signs are clinically valid and sensitive indicators of patient status during hospitalisation and after discharge.

Reference

Rothman MJ, Solinger AB, Rothman SI, Finlay GD 2012 Clinical implications and validity of nursing assessments: a longitudinal measure of patient condition from analysis of the electronic medical record. BMJ Open2, e000849. doi:10.1136/bmjopen-2012-000849

is the most relevant to the clinical situation. This chapter builds on the primary survey discussed in Chapter 23 and follows a body systems framework.

The key to a successful nursing assessment is to be organised and systematic. In the acute hospital setting the bedside assessment begins with a *primary survey* to determine the vital functioning of the patient and signs of acute deterioration, such as loss of consciousness (see Chapter 23). A *focused* **body systems assessment** can then be initiated once the patient is stable, using the core physical assessment skills in Box 24-1. Skill 24-1 reflects this approach to patient assessment and provides a framework to discuss the core skills you will need as a beginning RN in this chapter.

Fundamental physical assessment skills

Physical assessment is defined as the collection of objective patient data using the skills of inspection, palpation, percussion and auscultation (Fennessey & Wittmann-Price 2011).

Inspection

Inspection is the process of careful observation and visual examination of the patient and relevant body region or part. To use inspection effectively:

- position and expose body parts so that essential surfaces can be viewed (use adequate lighting) while maintaining the patient's dignity
- compare each area inspected with the same area on the opposite side of the body for symmetry
- be aware of normal physical characteristics related to age and gender
- always pay attention to the patient, watching all movements and non-verbal cues
- do not hurry inspection – be thorough and pay attention to detail.

BOX 24-1 Core nursing physical assessment skills for early recognition of patient deterioration in general wards

Vital signs
Measure body temperature
Palpate pulse rate and rhythm
Measure respiratory rate
Measure blood pressure by auscultation
Measure oxygen saturation
Assess for pain

Neurological
Assess level of consciousness
Evaluate speech
Check pupils are equal and reactive to light
Assess muscle strength

Cardiovascular
Inspect and palpate for skin colour and temperature
Palpate capillary refill
Palpate extremities for distal pulses and oedema
Palpate calves for tenderness
Auscultate heart sounds and apical pulse
Perform and interpret ECG for abnormal changes

Respiratory
Assess airway patency
Assess ability to cough
Evaluate work of breathing
Auscultate lung sounds

Gastrointestinal
Inspect abdomen
Auscultate bowel sounds
Palpate abdomen
Assess bowel movements

Nutritional
Inspect oral cavity
Assess ability to swallow
Estimate amount of meals eaten
Measure blood glucose levels
Measure body weight

Renal
Measure 24-hour fluid balance
Measure daily weight
Assess urine output
Palpate bladder
Perform and interpret urinalysis

Skin
Inspect skin integrity
Inspect and palpate skin for signs of pressure injury
Observe any wounds, dressings or drains, invasive lines

Musculoskeletal
Observe ability to transfer and mobilise
Observe gait
Inspect major joints for range of motion

Adapted from Douglas C, Booker C, Fox R et al 2016 Nursing physical assessment for patient safety in general wards: reaching consensus on core skills. Journal of Clinical Nursing, doi: 10.1111/jocn.13201

SKILL 24-1

Nursing physical assessment using a body systems framework

Delegation and other considerations

- Comprehensive patient assessment is the basis for the development of the nursing care plan and therefore should not be delegated by the registered nurse.
- Perform hand hygiene and apply personal protective equipment when appropriate before, during and after patient assessment.

Equipment

- Pen, relevant documentation
- Penlight torch
- Pulse oximeter
- Stethoscope
- Sphygmomanometer
- Thermometer

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Before you begin the active part of the physical examination, perform a rapid visual assessment of the patient and their environment for important cues.	Based on your nursing knowledge and information from handover, some of your observations will be expected. Allows you to determine if there is equipment in use that you need education about before you take over care.
2. **Primary survey** **A. Airway** – Is the airway clear? (1) Listen for noisy or obstructed breathing. (2) Feel for airflow over the mouth. • If indicated, assess whether artificial airway is patent and secure (e.g. Guedel, nasopharyngeal, tracheostomy, endotracheal tube, non-invasive mask). **B. Breathing** – Is the patient breathing spontaneously? (1) Look for rise and fall of the chest. **C. Circulation** – Does the patient have adequate circulation? (1) Observe skin colour. (2) Feel for a pulse. **D. Disability** – What is the patient's level of consciousness? (1) Determine if the patient is alert, responsive to voice, responsive to pain, or unresponsive (unconscious).	The primary survey is concerned with identifying life-threatening circumstances that require immediate attention. It should take about 1 minute to complete. The ABCDE approach is used.

STEPS	RATIONALE
E. Exposure – perform a quick head-to-toe scan of the patient and their environment: (1) Does the patient look well, sick or critical? (2) What treatments are in progress and how might these affect your assessment findings (e.g. medications, infusions, oxygen)? (3) What monitoring devices or equipment are attached to the patient or in their environment, and what do they reveal?	

■ **Critical decision point: Any problems identified during the primary survey need to be managed as a clinical priority before further patient assessment. Determine whether it is safe to proceed with a body systems assessment or whether you need to call for help and manage ABCs first.**

3. Neurological a. Perform hand hygiene. b. Assess level of consciousness and mental status. • If indicated, perform a focused neurological assessment (see Skill 24-2), including Glasgow Coma Scale, pupil size and reaction, limb assessment and vital signs. • If indicated, perform a mental state examination (see Skill 40-1). c. Assess for pain or discomfort. • If indicated, perform a focused pain assessment using a pain assessment tool (see Skill 36-1).	Prevents transmission of microorganisms. Applying the knowledge of normal neurological parameters to the patient's assessment enables identification of normal and abnormal values and immediate intervention.
4. Cardiovascular a. Perform hand hygiene. b. Inspect and palpate skin colour, temperature and capillary refill. c. Palpate peripheral pulses for rate, rhythm and strength (see Skill 23-3). d. Measure blood pressure (see Skill 23-4). e. Auscultate apical pulse and heart sounds. f. Palpate calves for tenderness. g. Palpate for oedema in feet and dependent areas (e.g. sacrum). • If indicated, perform a focused cardiovascular assessment (see Skill 24-3). • Other considerations: (1) Observe and interpret the electrocardiogram (ECG) (see Skill 35-2). (2) Observe for permanent pacemaker (PPM), pacing wires, external pacing, implantable defibrillator. (3) Observe for compression stockings and sequential compression devices.	Prevents transmission of microorganisms. Applying the knowledge of normal cardiovascular parameters to the patient's assessment enables identification of normal and abnormal values and immediate intervention.

STEPS	RATIONALE
5. Respiratory a. Perform hand hygiene. b. Inspect chest and work of breathing. c. Measure respiratory rate, rhythm and depth (see Skill 23-1). d. Assess ability to cough; examine sputum if indicated. e. Auscultate lung sounds. f. Measure oxygen saturation (see Skill 23-2). • If indicated, perform a focused respiratory assessment (see Skill 24-4). • Other considerations: (1) Observe for intercostal catheters and underwater seal drains. Is catheter/drain swinging, bubbling and/or draining freely? Is there wall suction? (2) Identify the colour and volume of any drainage from chest drains.	Prevents transmission of microorganisms. Applying the knowledge of normal respiratory parameters to the patient's assessment enables identification of normal and abnormal values and immediate intervention.
6. Gastrointestinal a. Perform hand hygiene. b. Inspect the abdomen for symmetry, masses or distension. c. Auscultate for bowel sounds. d. Palpate the abdomen lightly noting any tenderness, guarding or rigidity; feel for any masses or pulsations. e. Assess most recent and frequency of bowel action. • If indicated, perform a focused abdominal assessment (see Skill 24-5). • Other considerations: (1) Is the patient nil by mouth (NBM)? If oral diet: normal, soft, smooth/minced? Percent of meal eaten? (2) Observe for enteral feeding tubes (e.g. nasogastric or orogastric tube (NGT/OGT), percutaneous endoscopic gastrostomy (PEG) tube. Continuous, intermittent or bolus feeds? Central or parenteral total parenteral nutrition (TPN)? (3) Observe for stomas. Pink? Active? Consistency and volume of effluent. Intact faecal containment device? Integrity of surrounding skin?	Prevents transmission of microorganisms. Applying the knowledge of normal gastrointestinal parameters to the patient's assessment enables identification of normal and abnormal values and immediate intervention.

STEPS	RATIONALE
7. Renal a. Perform hand hygiene. b. Observe current intake and output 24-hour fluid balance. Assess and interpret fluid status (see Skill 24-6). • If indicated, measure and compare daily weight to determine fluid balance. c. Measure and observe urine output, colour, presence of sediment. • If indicated, palpate bladder for distension. • If indicated, perform urinalysis. • Other considerations: (1) Observe and interpret blood urea and electrolytes. (2) Assess and interpret fluid status (see Skill 34-1). (3) Observe for urostomy, indwelling urinary catheter (IDC), suprapubic catheter (SPC). (4) Observe for peritoneal or haemodialysis. Arteriovenous fistula thrill/bruit? Fluid and sodium restrictions?	Prevents transmission of microorganisms. Applying the knowledge of normal renal parameters to the patient's assessment enables identification of normal and abnormal values and immediate intervention.
8. Musculoskeletal a. Perform hand hygiene. b. Inspect major joints for range-of-motion. c. Assess muscle strength and compare sides. d. Observe safe use of mobility aids. e. Observe ability to transfer and mobilise. • If indicated, perform a focused musculoskeletal assessment (see Skill 24-7).	Prevents transmission of microorganisms. Applying the knowledge of normal musculoskeletal parameters to the patient's assessment enables identification of normal and abnormal values and immediate intervention.
9. Integumentary a. Perform hand hygiene. b. Inspect and palpate the skin for general colour, temperature, moisture and turgor and capillary refill. c. Inspect and palpate for signs of pressure injury such as non-blanchable redness, localised heat, oedema and induration. d. Observe any wounds, dressings and drains for warmth, redness, swelling, exudate and odour. • If indicated, perform a focused wound assessment (see Chapter 26). • If indicated, perform a focused skin assessment (see Skill 24-8). • Other considerations: (1) Observe invasive lines (e.g. peripheral intravenous catheter (IVC), central venous catheter (CVC), peripherally inserted central line (PICC), Vascath, Portacath).	Prevents transmission of microorganisms. Applying the knowledge of normal integumentary parameters to the patient's assessment enables identification of normal and abnormal values and immediate intervention.

STEPS	RATIONALE
10. Compare assessment findings with patient's baseline assessment data. Analyse for important changes or trends over time.	Allows you to make decisions about whether there are clinically significant changes in the patient's condition.
11. Discuss your findings with the patient.	Promotes involvement in care and understanding of health status.

RECORDING AND REPORTING

- Document assessment findings in patient's healthcare record following a structured nursing assessment framework.
- Report any significant abnormal data to senior nurse and/or medical officer.

HOME CONSIDERATIONS

- Health assessment provides an opportunity for patient and family education related to their clinical problems and management.
- Identifies patient's healthcare needs for discharge planning.
- Discharge planning information communicated to all stakeholders.

An example of inspection is observing the patient's work of breathing during your assessment of respiratory rate. Beyond increased respiratory rate, you may observe increased work of breathing with use of accessory muscles, soft tissue retraction (tracheal tug, rib or abdominal recession), or an inability to speak in sentences or cough properly. These represent signs of respiratory distress in your patient that you would identify through the use of inspection.

Palpation

Further assessment is made through the use of touch. Through **palpation**, the fingers or hands can be used to examine underlying body structures. For example, palpation is a major component of gastrointestinal assessment. The abdomen is lightly palpated and should feel soft, non-tender and without masses.

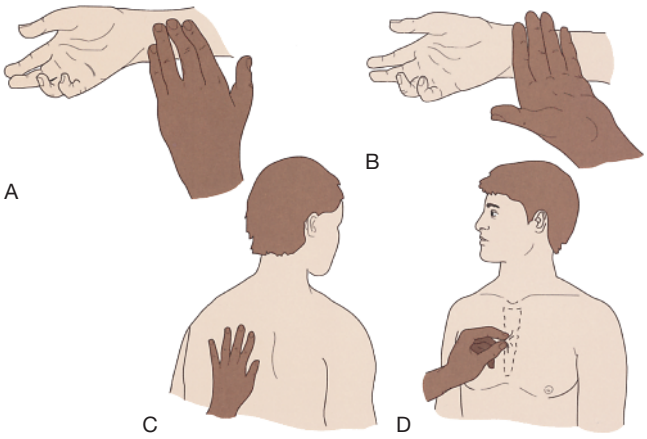


Figure 24-1 Palpation.

A, The radial pulse is detected with the pads of the fingertips, the most sensitive part of the hand. B, The dorsum of the hand allows the nurse to detect temperature variations in skin. C, The palms can be used to detect vibration. D, Grasp the skin with the fingertips to assess turgor.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Percussion

Percussion involves tapping the body with the fingertips to evaluate the size, borders and consistency of body organs and to discover fluid or air in body cavities. When the examiner strikes the middle finger of the non-dominant hand resting against the body's surface with the tip of the middle finger of the dominant hand, percussion tones are generated which can be heard and felt (Figure 24-2). Use a loose swinging motion at the wrist of the percussing hand. With practice you can hear different sounds depending on the density of the underlying tissue (Table 24-1). For example, percussion of fluid in the abdomen can elicit a dull sound over structures that should sound tympanic. Ascites from liver failure would be an example of stony dullness on percussion.

Auscultation

Auscultation is listening to sounds produced by the body. Some sounds may be audible without a stethoscope, such as stridor with a partial airway obstruction. However, lung, heart and bowel sounds are routinely assessed with

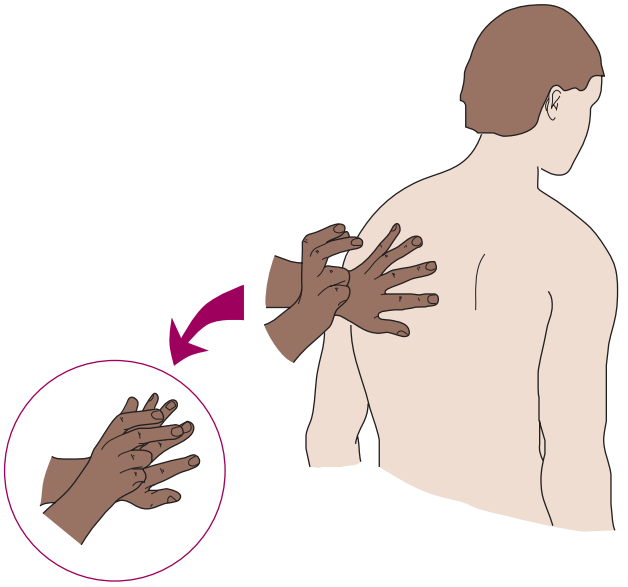


Figure 24-2 Percussion.
To perform indirect percussion, place your middle finger of the non-dominant hand against the body's surface. The tip of the middle finger of the dominant hand strikes the top of the middle finger of the non-dominant hand.

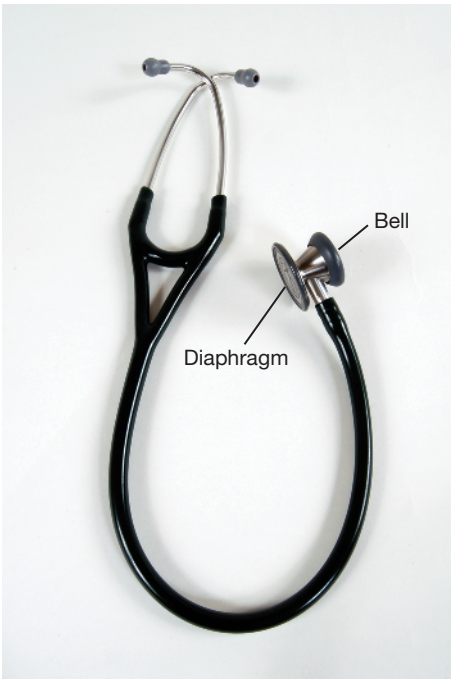


Figure 24-3 Stethoscope diaphragm (front) and bell (back).
Forbes H, Watt E 2016 Jarvis's physical examination and health assessment, 2nd edn. Elsevier, Chatswood, NSW.

TABLE 24-1 Percussion tones

Sound	Quality	Common location
Tympanic	Drum-like	Abdominal areas
Resonance	Hollow	Normal lung
Dullness	Thud-like	Urine in the bladder, liver, spleen
Flatness	Flat	Muscle

a stethoscope. A good quality stethoscope and correct technique is necessary to hear sounds easily (Figure 24-3). When the ear tips are in your ears, the ear pieces should be pointed forward (towards your nose). Place the chest piece directly against the skin, because clothing obscures sound. The diaphragm is used most often and is best for *high-pitched sounds*, such as lung sounds, whereas the bell (held lightly against the skin) is best for *low-pitched sounds*, such as heart murmurs. A number of extraneous sounds created by movement of the tubing or chest piece interfere with auscultation. You will learn to recognise and disregard them during the actual examination.

Preparing for patient assessment

A few simple considerations can make physical assessment easier, while improving data collection and patient safety:

BOX 24-2 Equipment used for health assessment

Clean gloves
Healthcare record for documentation
Sphygmomanometer and cuff
Stethoscope
Penlight torch
Pulse oximeter
Thermometer
Watch

- Ensure patient privacy and protect the patient's dignity at all times.
- Consider the cultural and developmental needs of the patient and how the assessment might need to be adapted (refer to Chapters in Part 4).
- Explain the purpose of the assessment and obtain verbal consent.
- Make sure there is adequate lighting in the room and minimal noise (difficult in most settings).
- Have all the equipment and documentation available at hand (Box 24-2).
- Infection control: Always wash your hands before and after the activity. Use precautions as per facility policy.

WORKING WITH DIVERSITY

Age and developmental stage of patients will determine how you approach physical assessment. Young children aged 2–7 may pose a challenge when undertaking physical assessment. It may be difficult, for example, for you to gain cooperation from the child to sit in a particular position or just to obey any instructions. Often, this may be due to anxiety and so it is imperative for you to gain the child's trust by engaging a parent or caregiver throughout the process. Using aids, such as toys and play, may also help you to perform an accurate assessment. Elderly patients may tire easily during procedures such as lung auscultation and so skill is necessary to ensure comfort and swiftness in obtaining health assessment data. All patients will feel more comfortable with appropriate explanations regarding the assessment.

Neurological system

The rapid primary survey provides you with some basic information about the patient's level of consciousness based on the AVPU scale (Alert, responds to Voice, responds to Pain, or is Unresponsive). Changes in vital signs can also reflect important neurological changes and are always completed first during the primary survey. A more focused assessment of the **neurological system** is then needed to examine the functioning of the central nervous system (CNS). The three most important components covered in this chapter include (1) the Glasgow Coma Scale, (2) pupil size and reaction to light, and (3) limb assessment. You should also evaluate the patient's speech and screen for normal functioning of the special senses such as vision and hearing. Skill 24-2 demonstrates how to perform these steps in a neurological assessment. More advanced skills, such as evaluation of cranial nerves or deep tendon reflexes, are needed for a comprehensive neurological examination, but are not discussed here.

Glasgow Coma Scale

Changes in mental state or level of consciousness are major signs of patient deterioration. The Glasgow Coma Scale (GCS) is the most widely used tool to assess level of consciousness and is incorporated in standard neurological observation charts. It provides a standardised approach to assessment of level of consciousness and a common language for healthcare workers, although consistency in scoring between staff can be unreliable (Reith et al 2015). It is best that the same RN monitors the patient's neurological status each time and performs the GCS together with the oncoming staff during handover. You can watch a video that demonstrates how to correctly perform the GCS (see *Online resources*).

Figure 24-4 shows how the GCS is divided between the eye (E), verbal (V) and motor (M) responses of the patient. It is best to describe the patient responses you actually observed and document a score for each response,

SKILL 24-2

Focused neurological assessment

Delegation and other considerations

- Comprehensive patient assessment is the basis for the development of the nursing care plan and therefore should not be delegated by the registered nurse.
- Perform hand hygiene and apply personal protective equipment when appropriate before, during and after patient assessment.

Equipment

- Penlight torch
- Neurological observation chart
- Pen

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Review the patient's baseline assessment data.	The key point of clinical examination is to determine if something has changed. Refer to baseline or previous findings to determine an acute change in patient status.
2. Perform hand hygiene.	Prevents transmission of microorganisms.
3. Ensure comfort and privacy. Explain procedure and clarify any concerns.	Promotes patient's cooperation and comfort during the assessment.
4. Approach the patient with a structured Glasgow Coma Scale (GCS) assessment to determine level of consciousness (see Figure 24-4). Score and describe the patient's responses according to: a. Eye opening b. Best verbal response c. Best motor response	A subtle change in level of consciousness or mentation is usually the earliest and most sensitive indicator of neurologic deterioration. A decrease in total GCS score of 2 or more points is a critical finding and should trigger a rapid response call.
5. Check pupils for size (mm), shape and reaction to light. a. Measure pupil size (which should be equal). b. Use a pen torch to elicit a reflex response from the pupils (Figure 24-6), which should be brisk constriction to light in both eyes.	Changes in pupillary function can indicate cranial nerve dysfunction associated with increased intracranial pressure.
6. Assess limb power (Table 24-2): Upper limbs a. Ask the patient to take your fingers and squeeze. b. Ask the patient to pull your hands towards them against resistance. c. Ask the patient to push your hands away against resistance.	All four extremities are tested for muscle strength and for any asymmetry that could indicate neurological deficit.
Lower limbs a. Ask the patient to push down with their foot onto your hands against resistance. b. Ask the patient to lift up their foot against your hand with resistance. c. Apply gently pressure to the shins and ask the patient to extend and flex their legs against resistance.	
7. Determine the frequency of neurological monitoring required based on the patient's condition.	Certain conditions place patients at high risk of neurological alterations (e.g. stroke, seizures, head injuries).

RECORDING AND REPORTING

- Score and describe GCS findings for each domain, size of each pupil (mm) and response to light, and muscle strength in arms and legs.
- Report acute changes in level of consciousness or mental activity, or any neurological deficit as a priority to senior nursing or medical staff.

GLASGOW COMA SCALE : Do it this way

GCS at 40 EYES VERBAL MOTOR

Institute of Neurological Sciences NHS Greater Glasgow and Clyde

CHECK

For factors interfering with communication, ability to respond and other injuries

OBSERVE

Eye opening, content of speech and movements of right and left sides

STIMULATE

Sound: spoken or shouted request
Physical: Pressure on fingertip, trapezius or supraorbital notch

RATE

Assign according to highest response observed

Eye opening

Criterion	Observed	Rating	Score
Open before stimulus	✔	Spontaneous	4
After spoken or shouted request	✔	To sound	3
After fingertip stimulus	✔	To pressure	2
No opening at any time, no interfering factor	✔	None	1
Closed by local factor	✔	Non testable	NT

Verbal response

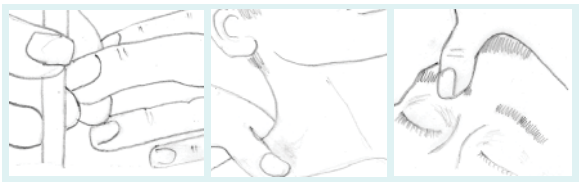
Criterion	Observed	Rating	Score
Correctly gives name, place and date	✔	Orientated	5
Not orientated but communication coherently	✔	Confused	4
Intelligible single words	✔	Words	3
Only moans / groans	✔	Sounds	2
No audible response, no interfering factor	✔	None	1
Factor interfering with communication	✔	Non testable	NT

Best motor response

Criterion	Observed	Rating	Score
Obey 2-part request	✔	Obeys commands	6
Brings hand above clavicle to stimulus on head neck	✔	Localising	5
Bends arm at elbow rapidly but features not predominantly abnormal	✔	Normal flexion	4
Bends arm at elbow, features clearly predominantly abnormal	✔	Abnormal flexion	3
Extends arm at elbow	✔	Extension	2
No movement in arms / legs, no interfering factor	✔	None	1
Paralysed or other limiting factor	✔	Non testable	NT

Sites For Physical Stimulation

Fingertip pressure | Trapezius pinch | Supraorbital notch



Features of Flexion Responses

Modified with permission from Van Der Naalt 2004
Ned Tijdschr Geneeskd

Abnormal flexion
Slow sterotyped
Arm across chest
Forearm rotates
Thumb clenched
Leg extends



Normal flexion
Rapid
Variable
Arm away from body

For further information and video demonstration visit www.glasgowcomascale.org

Graphic design by Margaret Frej based on layout and illustrations from Medical Illustration M I • 268093

Figure 24-4 Glasgow Coma Scale.

Glasgow Coma Scale © Sir Graham Teasdale 2014.

such as 'E = 2, V = 2, M = 5'. A total score can be added up, although this score should not be used alone because it does not indicate changes in each area of functioning (Teasdale et al 2014). A fully responsive, awake, alert and oriented patient will score 15/15 (highest possible score), whereas a completely unresponsive patient in a deep coma will score 3/15 (lowest possible score). A patient with a score of 8 or less requires airway management. A drop in overall score by 2 or more points requires a medical emergency team response.

The GCS is scored according to the patient's *best response* and you need to use adequate stimulation to elicit the patient's best response, otherwise your assessment will be incorrect. Teasdale and colleagues (2014) provide an updated, simple and structured approach to GCS assessment. After checking for factors that could interfere with assessment (e.g. hearing loss, injury or sedation with medication), observe for spontaneous behaviour in each of the three response domains. If stimulation is required, begin by speaking in a normal voice. If they do not respond, call the patient's name loudly. Then try applying increasing peripheral fingertip pressure over the nail bed for up to 10 seconds to assess eye opening. To determine the best motor response with stimulation, use a trapezius squeeze/pinch by twisting the muscle with the thumb and two fingers where the head meets the shoulder, followed by pressure over the supraorbital notch if needed. Always start with the least noxious irritation or pressure and proceed to more painful stimulation for up to 10 seconds if the patient does not respond. Explain what you are doing to the patient even if they are unresponsive.

Assess whether the patient's eyes open *spontaneously* when you approach the patient (score 4), only to *sound*, including spoken or shouted requests (score 3), only *to fingertip pressure* (score 2), or *not at all* (score 1). Wake a sleeping patient before evaluation and if they require ongoing verbal stimulation to keep eyes open, then score a 3.

Assess verbal response to evaluate speech and orientation to person, place and time. Ask open-ended questions, such as 'What is your name?' 'Where are you at the moment?' and 'What month is it?' Remember patients may have moved from ward to ward and been unwell for a number of days, so they may not be able to identify the exact location, day or date. The patient is *orientated* if they are able to correctly report who they are, where they are (e.g. in hospital or other specific location) and why they are there, and the month (score of 5). A patient may be able to hold a conversation but cannot correctly answer your questions, indicating they are *confused* (score 4), only replies with inappropriate *words* (score 3), only makes *sounds* such as moaning and groaning (usually with physical stimulus; score 2), or makes *no verbal response* to any stimulus (score 1).

Assess the patient's best motor response only in the upper limbs. Ask the patient to follow simple commands such as 'squeeze my fingers and let go' or 'stick out your tongue and pull it in again' and assess if they can *obey commands*, even weakly (score 6). If unable, with an increasing central pain stimulus described above (trapezius squeeze), assess the patient's ability to move their hand to *localise* to pain by bringing their hand up to above clavicle level (score 5). Withdrawal from pain – also called *normal flexion* (score 4) – occurs when patient rapidly flexes or bends their arm towards the source of the pain, but does not actually localise or try to remove the source of the pain (they do not manage to get their arm up to clavicle level or to the point where the central pain stimulus is coming from). Follow up by checking whether the hand quickly withdraws from fingertip pressure. Abnormal posturing (see Figure 24-3) in response to pain includes *abnormal flexion* where the arm bends at the elbow, the forearm rotates and wrist and fingers are flexed (score 3) and *extension* where the patient straightens the arm at the elbow (score 2). No response to a central pain stimulus is scored as 'none' (score 1).

Pupil size and reaction to light

Inspect both eyes for pupil size (normal range 2–6 millimetres in diameter) and symmetry. Left and right pupils should be equal in size (although slight differences may be a normal variation). Patients with normal neurology demonstrate a brisk and consensual pupillary reaction to light. Ask the patient to look straight ahead past your shoulder and then briefly shine a penlight torch from the side of the face into each eye. The pupils of both eyes should briskly constrict. Repeat the procedure with the other eye and record this on the neurological observation chart:

- Reacts '+' if there is a brisk constriction of the pupil.
- Sluggish 'SL' if the pupil takes longer to constrict.
- No reaction '–' if the pupil is non-reactive and has not changed in size.

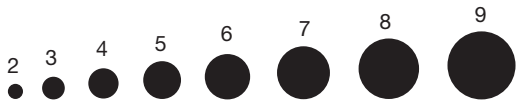


Figure 24-5 Measuring pupil size.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.



Figure 24-6 Testing pupil reflexes.

A, To check pupillary reflexes, first hold the penlight to the side of the patient's face. B, Illumination of the pupil normally causes brisk constriction.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Limb assessment: Motor and sensory function

Evaluating muscle strength in each limb is also a key component of neurological assessment. Limb power should be present in all major and minor joints. Diminished function may indicate a lesion in the central or peripheral nervous system. You may ask the patient to flex each knee one at a time and get the person to try and straighten the leg or push against resistance applied by you (Figure 24-7). Similarly, ask to flex each elbow while you gently hold the arm in the straight position. Unlike the GCS where you are assessing for the 'best response' in either arm, here you are carefully assessing for bilateral equality of muscle strength in the arms and legs. Note any neurologic deficit such as weakness in one limb. Record upper and lower extremity power on both sides of the body using a scale ranging from 'normal power' to 'none', as in Table 24-2.

For most patients, a quick screening of sensory function is sufficient unless there are symptoms of reduced sensation, motor impairment or paralysis. Sensations along the body's surface are felt equally on both sides of the face, trunk and extremities. Sensation to light touch is usually sufficient to conduct a basic assessment. Ask the patient to close their eyes and indicate when they feel light touch in each sensory distribution, comparing side to side. Try to map the area of any sensory loss to a single peripheral nerve territory (see neurovascular assessment) or sensory dermatomes (Chapter 36) of the spinal nerves, such as when assessing epidural blockade for pain management. There may be loss of sensation on one side of the body (hemisensory loss) with some types of stroke or spinal cord injury.

Assessing the special senses: Vision, hearing and speech

Speech is a function of the higher centres of the brain and is a core part of your neurological assessment. Routinely *evaluate speech* during general interaction and communication with the patient, noting abnormally slurred speech or abnormal responses to the conversation. Facial structures, including the mouth, should appear symmetrical.

Screening for sensory-perceptual deficits will help you identify problems that will interfere with activities of daily living and put patients at risk for injury. The assessment of *visual acuity* – the ability to see small details – tests central vision. If the patient wears glasses, they should wear them during the examination. Assess distant vision by asking the patient to read or identify objects in the distance. If patients cannot identify objects in the distance, their ability to count upraised fingers or distinguish light is assessed. A hand is held 30 cm from the patient's face and they count the upraised fingers. Near vision can be assessed by asking patients to read from a newspaper, wristwatch or similar item. Ask the patient to hold the item at a comfortable distance (5–6 cm) from the eyes and read the smallest line possible.

As the patient looks straight ahead, all objects in the periphery can normally be seen. To assess *visual fields*, the patient stands or sits 60 cm away, facing you at eye level (Figure 24-8). The patient closes or covers one eye (e.g. the left) and looks at your eye directly opposite. Close your opposite eye (in this case the right) so that your left eye aligns with the patient's right eye. Move your left finger outside the field of vision, then slowly bring it back into



Figure 24-7 A–D, Testing power in the upper limbs E–H, Testing power in the lower limbs.

A, 'Stop me pushing your arms down' B, 'Stop me pulling your arms up' C, 'Stop me straightening your elbow' D, 'Stop me bending your elbow' E, 'Lift your leg up against my hand' F, 'Stop me lifting your leg' G, 'Bend your heel up towards your bottom' H, 'Try to straighten your leg against my hand'.

Talley NJ, O'Connor S 2016 Clinical examination essentials, 4th edn. Elsevier, Chatswood, NSW.

TABLE 24-2 Scoring limb power based on the Medical Research Council (MRC) scale for muscle strength

Score		Explanation
5	Normal power	Active movement of the limb against gravity with full resistance. Muscle strength is equal to the examiner.
4	Active movement against resistance	Active movement of the limb against gravity with some resistance. Muscle strength is weak and the examiner easily overpowers the patient when resistance is applied.
3	Active movement against gravity	Active movement of the limb against gravity, not resistance. The patient can lift the extremity, but it collapses as soon as the examiner applies resistance.
2	Active movement of limb with gravity eliminated	Active movement of the limb when effect of gravity is eliminated (limb can roll in bed but not lift). The patient can move the limb, but cannot lift the limb from the bed.
1	Flicker of movement	Weak muscle contraction observed or palpated without active movement.
0	None	No detectable muscle contraction or movement of the extremity.

TABLE 24-3 Assessment of sensory function

Function	Equipment	Method	Precautions
Light touch	Cotton ball or cotton-tip applicator	Apply light wisp of cotton to different points along skin's surface. Ask patient to say when sensation is felt.	Apply at areas where skin is thin or more sensitive (e.g. face, neck, inner aspect of arms, top of feet and hands).
Position sense	None	Grasp finger or toe, holding it by its sides with thumb and index finger. Alternate moving finger or toe up and down. Ask patient to state when finger is up or down. Repeat with toes.	Avoid rubbing adjacent appendages as finger or toe is moved. Do not move joint laterally; return to neutral position before moving again.
Pain	Broken tongue blade or wooden end of cotton applicator	Ask patient to say when dull or sharp sensation is felt. Alternately apply sharp and blunt ends of tongue blade to skin's surface. Note areas of numbness or increased sensitivity.	Remember that areas where skin is thickened, such as heel or sole of foot, may be less sensitive to pain.

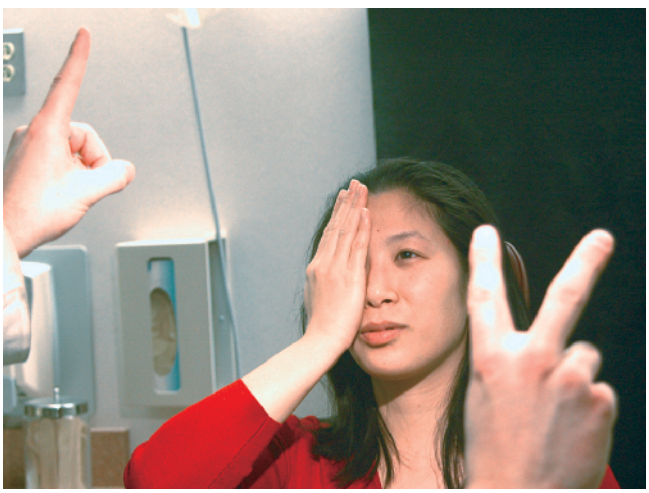


Figure 24-8 Visual field assessment.

Forbes H, Watt E 2016 Jarvis's physical examination and health assessment, 2nd edn. Elsevier, Chatswood, NSW.

the visual field. Ask the patient to tell you when they first see your finger. Repeat the test for the opposite eye and if you detect your finger before the patient does, the patient's visual field is reduced.

Hearing acuity can be grossly assessed from the patient's response to normal conversation or using the whisper test. Explain to the patient that you are testing their hearing and that you will come close to their face. Whisper a different word in both ears and ask the person to repeat it back to you. Loss of hearing may indicate a blocked external ear or neurological deficit relating to the acoustic nerve (cranial nerve VIII).

Cardiovascular system

The rapid primary survey and vital signs establish adequate perfusion. A focused assessment of the **cardiovascular system** may be further divided into *cardiac assessment* (the heart) and *peripheral vascular*

BOX 24-3 Early and late warning signs associated with neurological deterioration

Early warning signs

SBP 80–100 mmHg	SpO_2 90–95%
SBP 180–240 mmHg	PaO_2 50–60 mmHg, $PaCO_2$ 50–60 mmHg
GCS 9–11 or alteration in mentation/a drop of 2 points in GCS	BSL 1–2.9 mmol/L
Any seizure	BSL 16–25 mmol/L

Late warning signs

SBP < 80 mmHg	SpO_2 < 90%
SBP > 240 mmHg	PaO_2 < 50 mmHg, $PaCO_2$ > 60 mmHg
Unresponsive to verbal command	BSL < 1 mmol/L
GCS ≤ 8	BSL > 25 mmol/L
2 or more seizures with no return to baseline state of consciousness	

Data from: Jacques T, Fisher M, Hillman K et al (eds) 2011 DETECT Manual: Detecting deterioration, evaluation, treatment, escalation and communicating in teams, 3rd edn. NSW Health and Clinical Excellence Commission, Neutral Bay.

assessment (arteries and veins). An efficient approach is to start with the hands and nails (inspect and palpate skin colour, temperature, capillary refill), move up to the arms (palpate radial pulses and measure BP) and neck (inspect neck veins), then the chest (auscultate heart sounds) and finally lower limbs (palpate for distal pulses, tenderness, oedema). Skill 24-3 demonstrates how to perform a focused cardiovascular assessment.

Inspection and palpation

Start with a general survey of the patient's appearance and activity tolerance to assess perfusion. Look for any obvious signs of distress, such as chest pain or shortness of breath. *Skin colour/temperature*, *urine output* and *mental status* are three clinical indicators of *end-organ perfusion*. Is the patient's skin cool, pale, dusky or mottled (patchy discolouration)? Is it warm, flushed and sweaty (diaphoretic)? Blue extremities (peripheral cyanosis) can be a sign of poor peripheral perfusion (Figure 24-9). Blue lips and tongue (central cyanosis) is a late sign of serious respiratory or cardiac compromise and oxygen therapy should be started if not already in place (Adam et al 2010). Measure the urine output if possible (see renal system assessment) because it reflects renal perfusion, which in turn is an extremely important measure of systemic perfusion. A reduced urine output may be the earliest sign of shock. Altered mental status (agitation and confusion)

SKILL 24-3

Focused cardiovascular assessment

Delegation and other considerations

- Comprehensive patient assessment is the basis for the development of the nursing care plan and therefore should not be delegated by the registered nurse.
- Perform hand hygiene and apply personal protective equipment when appropriate before, during and after patient assessment.

Equipment

- Stethoscope
- Sphygmomanometer
- Watch
- Pen

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Review the patient's baseline assessment data.	The key point of clinical examination is to determine if something has changed. Refer to baseline or previous findings to determine an acute change in patient status.
2. Perform hand hygiene.	Prevents transmission of microorganisms.
3. Ensure comfort and privacy. Explain procedure and clarify any concerns.	Promotes patient's cooperation and comfort during the assessment.
4. Approach from the right side with patient appropriately positioned (sitting at 45 degrees/supine when possible) for examination.	Assists with performance and interpretation of data.
5. Begin with a general observation of skin colour/temperature and mental status.	These are indicators of adequate tissue perfusion.
6. Inspect and palpate upper limbs for colour, warmth, movement and sensation.	
7. Check peripheral and central capillary refill time.	
8. Palpate radial pulses for rate, rhythm and strength.	
9. Measure manual blood pressure.	
10. Observe neck veins with patient at 45 degrees.	An indicator of volume status.
11. Auscultate apical heart sounds, noting rate and rhythm. Determine normal heart sounds. Listen for any acute changes such as added sounds and murmurs.	New abnormal findings require further clinical investigations.
12. Inspect and palpate lower limbs for colour, warmth, movement and sensation. Palpate pedal pulses and check for pitting ankle oedema.	These are indicators of adequate tissue perfusion.
13. Inspect and palpate the calves for redness, warmth, tenderness.	An indicator of venous thromboembolism.
14. Observe urine output and any losses in drains.	
15. Observe ECG for abnormal changes.	New abnormal findings require further clinical investigations.
16. Determine the frequency of cardiovascular monitoring required based on the patient's condition.	Certain conditions place patients at high risk of cardiovascular alterations (e.g. chest pain, arrhythmias, bleeding).

RECORDING AND REPORTING

- Core documentation includes pulse rate and rhythm, blood pressure, capillary refill time, and urine output. Note any new abnormal findings or investigations.
- Report early and late warning signs associated with cardiovascular deterioration (Box 24-6) as a priority to senior nursing or medical staff.



Figure 24-9 **Peripheral cyanosis.**

By James Heilman, MD – CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=17978808.

with low blood pressure also suggests decreased cerebral perfusion.

The nails are palpated for *capillary refill* that should return within 2 seconds after blanching the nail bed and releasing pressure in an adult (Figure 24-10). Palpate the radial pulses for rate, rhythm and strength. Feel the patient's hands and feet: are they warm or cold? If the feet and knees are warm the cardiac output is nearly always okay (Jacques et al 2011). Inspect for any inserts, such as central venous catheters or arterial lines, to measure blood pressure directly. Check all drains for any fluid losses. Measure blood pressure manually if not already completed (Skill 23-4). Determine correct positioning and functioning of monitoring equipment (e.g. cardiac monitoring). With the patient sitting at 45 degrees, inspect the neck for *jugular venous distension* (Figure 24-11), which is an abnormal sign associated with fluid overload and heart failure.

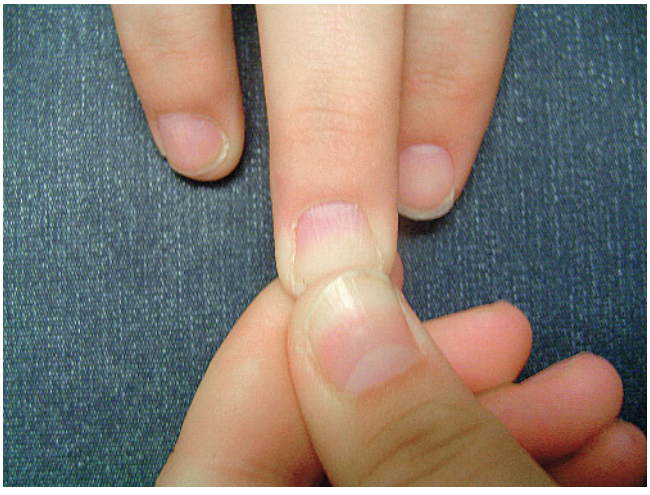


Figure 24-10 **Testing peripheral capillary refill time.**

Wilson S, Giddens J 2013 Health assessment for nursing practice, 5th edn. Elsevier Mosby, St Louis.

Cardiac auscultation

To understand the significance of cardiac assessment findings, you will need to have a working knowledge of the cardiac cycle (Figure 24-12). The heart normally pumps blood through its four chambers during two phases. During *systole*, the ventricles contract and eject blood from the left ventricle into the aorta and from the right ventricle into the pulmonary artery. During *diastole*, the ventricles relax and the atria contract to move blood into the ventricles and fill the coronary arteries.

At the beginning of systole the ventricles contract and the mitral and tricuspid valves close to prevent regurgitation of blood into the atria, creating the first heart sound (S_1). When the ventricles empty, pressure within the



Figure 24-11 **Jugular venous distention.**

By James Heilman, MD – CC BY SA 3.0, https://commons.wikimedia.org/wiki/File:Elevated_JVP.JPG.

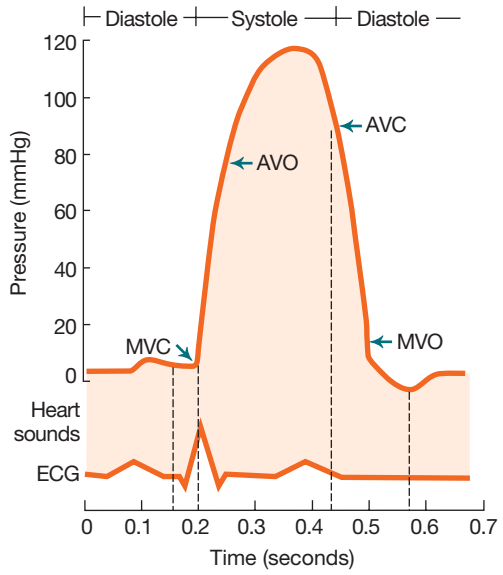


Figure 24-12 Cardiac cycle.

MVC, mitral valve closes; AVO, aortic valve opens; AVC, aortic valve closes; MVO, mitral valve opens.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

chambers fall. At the beginning of diastole the aortic and pulmonic valves close, creating the second heart sound (S_2). Auscultation of the normal heart therefore reveals dual heart sounds (S_1 and S_2), with a regular rate and rhythm. Abnormal findings include added sounds such as extra heart sounds and murmurs.

As a beginning RN you should be able to identify normal heart sounds (S_1 and S_2) from abnormal, which need to be validated by more experienced staff (Box 24-4). Begin by listening over the apex of the heart with the diaphragm of the stethoscope, palpated at approximately the fourth to fifth intercostal space just medial (to the left) of the mid-clavicular line (Figure 24-13). It may be necessary to ask an adult female to lift their left breast while you locate the apex. You should palpate the carotid pulse while you listen to heart sounds to identify S_1, which correlates with the timing of the pulse wave. Normally no sound is heard between S_1 and S_2 during the periods of systole and diastole. Count the *apical heart rate* for 1 minute and determine whether the rhythm is regular or irregular while listening and feeling.

Peripheral vascular

A focused peripheral vascular assessment is normally undertaken as an extension to cardiac evaluation. For example, it may be necessary if there are cues from the health history that there may be peripheral vascular disease or deep vein thrombosis. Or a neurovascular assessment may be indicated by the patient's presentation or type of surgery (e.g. orthopaedic or vascular). The most important neurovascular assessment skills are summarised in Figure 24-14. Look and feel for colour,

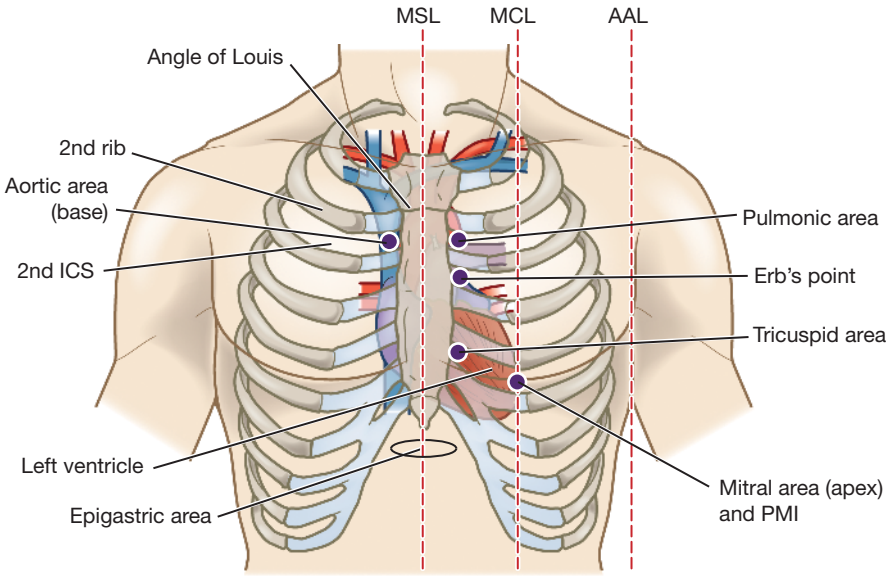


Figure 24-13 Orientation of the heart within the thorax and cardiac auscultatory areas.

Red lines indicate the mid-sternal line (MSL), mid-clavicular line (MCL) and anterior axillary line (AAL). ICS, intercostal space; PMI, point of maximal impulse.

Brown D, Edwards H, Seaton L, Buckley T 2015 Lewis's medical-surgical nursing: assessment and management of clinical problems, 4th edn. Elsevier, Chatswood, NSW.

BOX 24-4 Abnormal heart sounds

Abnormal heart sounds and murmurs are described by where they occur in the cardiac cycle. The normal sequence of events in the cardiac cycle can be diagrammed as follows:

$S_1 \rightarrow$systole$\rightarrow S_2 \rightarrow$diastole$\rightarrow S_1 \rightarrow$etc.

To determine if an abnormal sound occurs in systole or diastole, determine if the sound occurs after S_1 or after S_2.

- During diastole, when 80% of the blood in the atria rapidly fills the ventricles, a third heart sound may be heard (S_3). It is often heard at the apex. An S_3 occurs just after the S_2 and lasts about the same time as it takes to say 'me too'. The 'me' is the S_2, and the 'too' is the S_3. An S_3 is normal in children and young adults. However, when an S_3 is heard in adults over 30 years of age, it signifies fluid volume overload to the ventricle that may be caused by heart failure or mitral or tricuspid regurgitation.
- At the end of diastole, when atrial contraction completes the filling of the ventricle, a fourth heart sound may be heard (S_4). An S_4 occurs just before the S_1 and lasts about the same time as it takes to say 'middle.' The 'mi' is the S_4, and the 'ddle' is the S_1. An S_4 is normal in children and young adults. However, when an S_4 is heard in adults over 30 years of age, it signifies a non-compliant or 'stiff' ventricle. Hypertrophy of the ventricle precedes a non-compliant ventricle. Coronary artery disease is also a major cause of a stiff ventricle. Useful mnemonics for remembering the cadence and pathophysiology of the third and fourth heart sounds are as follows.

SLOSH'ing-in	SLOSH'ing-in	SLOSH'ing-in
$S_1\ S_2\ S_3$	$S_1\ S_2\ S_3$	$S_1\ S_2\ S_3$
a-STIFF'-wall	a-STIFF'-wall	a-STIFF'-wall
$S_4\ S_1\ S_2$	$S_4\ S_1\ S_2$	$S_4\ S_1\ S_2$

Another way to remember the cadence of the S_3 and S_4 heart sounds is to use the words 'Kentucky' and 'Tennessee'.

Ken-tuck-y	Ken-tuck-y	Ken-tuck-y
$S_1\ S_2\ S_3$	$S_1\ S_2\ S_3$	$S_1\ S_2\ S_3$
Ten-ness-ee	Ten-ness-ee	Ten-ness-ee
$S_4\ S_1\ S_2$	$S_4\ S_1\ S_2$	$S_4\ S_1\ S_2$

Thus the third and fourth heart sounds can be abnormal when they occur in adults over 30. Both sounds occur in diastole.

The opening *snap* caused by the opening of the mitral or tricuspid valves is another abnormal sound heard in diastole when either valve is thickened, stenotic or deformed. The sounds are high-pitched and occur early in diastole.

- In systole *ejection clicks* may be heard if either the aortic or pulmonic valve is stenotic or deformed. The aortic valve ejection click is heard at either the apex or base of the heart and does not change with respiration. The less common pulmonic valve ejection click is heard over the second or third left intercostal space. It increases with expiration and decreases with inspiration.
- *Pericardial friction rubs* are caused by inflammation of the layers of the pericardial sac. A rubbing sound is usually present in both diastole and systole and is best heard over the apical area.

Wilson S, Giddens J 2013 Health assessment for nursing practice, 5th edn. Elsevier Mosby, St Louis.

warmth, movement and sensation. Palpate distal pulses and capillary refill time. Monitor for swelling and ooze from any wound. Every student nurse should be able to recall the signs of an acute ischaemic limb in Box 24-5 – known as *the six Ps of acute limb ischaemia* – indicating a limb-threatening medical emergency.

To examine the peripheral vascular system, first assess the adequacy of blood flow to the extremities by measuring arterial pulses and inspecting the condition of the skin and nails. Use a head-to-toe approach, starting with the carotid arteries in the neck and moving down to the arteries in the upper and lower extremities. The wall of an artery is normally elastic, making it easily palpable. After the artery is depressed, it will spring back to shape when pressure is released. The arterial pulses to be palpated include the carotid, brachial, radial, femoral, popliteal, posterior tibial and dorsalis pedis. Compare left and right sides of the body for equal strength.

Each peripheral artery is examined using the distal *pads* of the fingers. Gentle pressure is applied without

Facility:.....

Neurovascular Observation Chart – Lower Limb

☐ Left ☐ Right

(Affix patient identification label here)

URN:
Family Name:
Given Name(s):
Address:
Phone:
Date of Birth: Sex ☐ M ☐ F ☐ I

SMO/Registrar to review
Resident to review

Date | **Time**

Pain Score
Please tick:
☐ Numerical
☐ Faces Pain Scale – Revised
☐ FLACC
10 9 8 7 6 5 4 3 2 1 0

Sensation
Peroneal Nerve (dorsal surface) **Tibial Nerve** (plantar surface)
A – Absent
P – Pins and needles / fuzzy / numb
M – Moves to touch
N – Normal
Peroneal: A P M N
Tibial: A P M N

Movement
Peroneal Nerve (dorsiflexion) **Tibial Nerve** (plantarflexion)
4 – Passive movement with pain
3 – Active movement with pain
2 – Passive movement without pain
1 – Active movement without pain
Peroneal: 4 3 2 1
Tibial: 4 3 2 1

Pulses
A – Absent
W – Weak
S – Strong
D.P: A W S
P.T: A W S

Capillary Refill
4 = 4+ sec
3 = 3 sec
2 = < 2 sec
4 3 2

Warmth
Cold
Cool
Hot
Warm

Colour
Dusky
Pale
Pink

Swelling
L – Large
M – Moderate
S – Small
N – Nil
L M S N

Ooze
L – Large
M – Moderate
S – Small
N – Nil
L M S N

Date	Time	Prescribed alteration to parameters	Signature	Designation

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Illustration Purposes Only

NEUROVASCULAR OBSERVATION CHART – LOWER LIMB

Figure 24-14 Neurovascular assessment chart.

BOX 24-5 Six Ps of acute limb ischaemia

Pallor

Pale in colour, can be dusky or mottled in appearance. Severe ischaemia may present as marble white or gangrene.

Pain

Sudden onset with pain starting distally. Pain can eventually decrease if nerves die from ischaemia.

Pulselessness

Absence of distal pulses.

Paralysis

Loss of function of the affected limb and late paralysis.

Paraesthesia

Burning, tingling feeling that may develop to complete loss of sensation.

Perishing cold

Limb feels cool (compare with other side).

Freezing cold pain.

Smith et al 2014 The role of the community clinician in the early detection, referral and treatment of critical limb ischaemia. British Journal of Community Nursing 19(6):269.

occluding the pulse. When it is difficult to find a pulse, it is helpful to vary pressure and feel all around the pulse site.

Carotid arteries

For palpation of the carotid pulse, the patient turns the head slightly towards the side being examined. This manoeuvre relaxes the neck muscles for easier palpation. Slide the tips of your index and middle fingers around the medial edge of the sternocleidomastoid muscle.

Both carotid arteries should be equal in pulse rate, rhythm and strength, and should be equally elastic (never palpate both together as they provide the main blood supply to the brain). The carotid is commonly auscultated using the bell of the stethoscope for abnormal vascular sounds indicating stenosis. When the lumen of a blood vessel is narrowed, blood flow is turbulent sometimes causing a *bruit* (pronounced *brew-ee*), which is a soft, blowing sound.

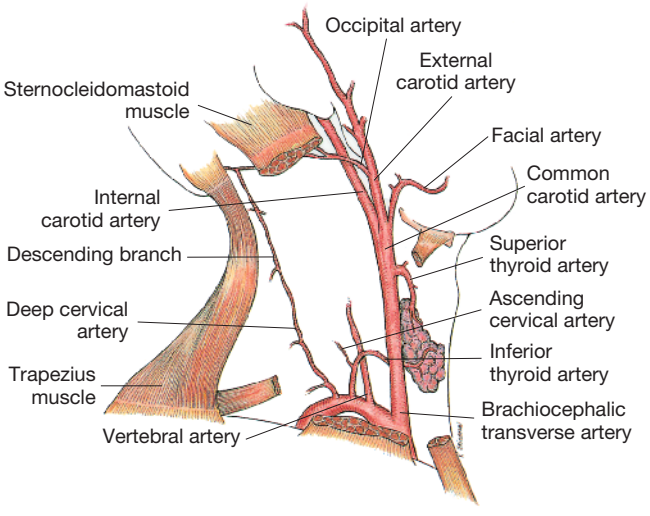

Figure 24-15 Palpation of carotid pulse.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Brachial arteries

In the upper extremities the main artery is the brachial artery, which channels blood to the radial and ulnar arteries of the forearm and hand. To palpate the brachial pulse, find the groove between the biceps and triceps muscles above the elbow at the antecubital fossa (Figure 24-16). The artery runs along the medial side of the extended arm. Palpate the artery with the fingertips of the first three fingers in the muscle groove. If circulation in this artery becomes blocked, the circulation in the radial or ulnar arteries will be impaired and the hands will not receive adequate blood flow.

Radial arteries

To locate pulses in the arm and hand, have the patient sit or lie down. The radial pulse is found along the radial side of the forearm, at the wrist. In a thin person, a groove is formed lateral to the flexor tendon of the wrist. The radial pulse can be felt with light palpation in the groove (Figure 24-17).

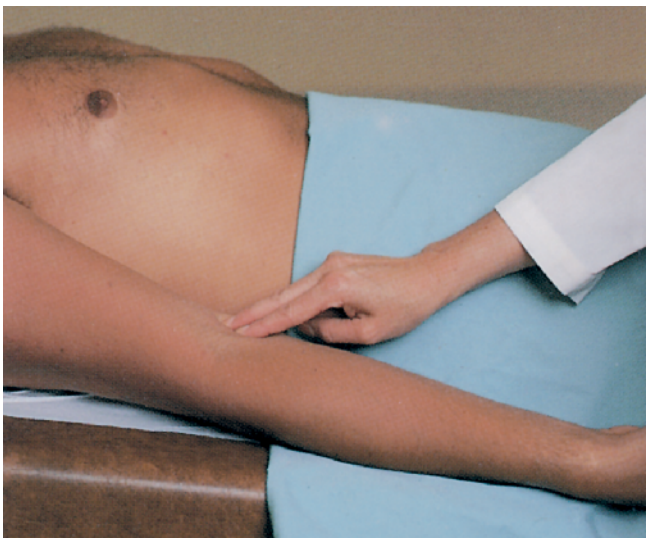

Figure 24-16 Palpation of brachial pulse.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.



Figure 24-17 **Palpation of radial pulse.**

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Femoral arteries

The femoral artery is the main artery in the leg, delivering blood to the popliteal, posterior tibial and dorsalis pedis arteries (Figure 24-18). It is one of the strongest arteries in an infant or small child. An interconnection between the posterior tibial and dorsalis pedis arteries guards against local arterial occlusion.

Popliteal arteries

The popliteal pulse is found behind the knee and is difficult to locate. The patient should slightly flex the knee, with the foot resting on the bed, or assume a prone position with the knee slightly flexed and leg muscles relaxed (Figure 24-19). With the fingers of both hands, palpate deeply into the popliteal fossa, just lateral to the midline. The popliteal pulse sometimes used to take a leg BP measurement with the cuff placed on the thigh.



Figure 24-18 **Palpation of femoral pulse.**

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.



Figure 24-19 **Palpation of popliteal pulse.**

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Dorsalis pedis arteries

With the patient's foot relaxed, locate the dorsalis pedis pulse. The artery runs along the top of the foot in line with the groove between the extensor tendons of the great toe and first toe (Figure 24-20). Locate the pulse by placing the fingertips between the great and first toe and slowly inching up the foot. This pulse may be congenitally absent.



Figure 24-20 **Palpation of dorsalis pedis pulse.**

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Posterior tibial arteries

The posterior tibial pulse is found on the inner side of each ankle (Figure 24-21). Place the fingers behind and below the medial malleolus. The artery is easily located with the foot relaxed and slightly extended.

Doppler ultrasound

Factors influencing the ability to assess a pulse include obesity, reduction in the heart's stroke volume, diminished blood volume or arterial obstruction. A Doppler can amplify the sounds of a pulse wave. A thin layer of transmission gel is applied to the patient's skin at the pulse site or directly onto the transducer tip of the probe. The volume control is then turned to 'on', and the tip of the probe placed at an angle of 45–90 degrees on the skin (Figure 24-22). The probe is moved until a pulsating 'whooshing' sound is heard, indicating the presence of arterial blood flow.

Peripheral veins

The status of the peripheral veins is assessed by asking the patient to assume sitting and standing positions. Assessment includes inspection and palpation for abnormal findings. For example, varicosities are superficial veins that become dilated, especially when the legs are in a dependent position. They are common in older adults and people who spend a lot of time standing.

Deep vein thrombosis (DVT) is characterised by pain and swelling in one of the extremities. Feel for increased warmth and palpate the calves for tenderness. It is of utmost importance that you report this finding to prevent emboli to the lungs and central nervous system. Prevention and early detection of DVT and pulmonary embolism (PE) is a priority in health facilities as patients become more at risk due to immobility and venous stasis. Health facilities should have policies and procedures for venous thromboembolism prophylaxis (VTE) and this usually involves the application of compression stockings, administration of anticoagulants and postoperative pressure devices that deliver gentle pressure sequentially to both limbs to increase venous blood flow (see Chapter 39).

The upper and lower extremities should be inspected and palpated for any signs of oedema. Areas of the skin become swollen or oedematous from a build-up of fluid in the tissues as a result of impaired venous return, systemic diseases (e.g. cardiac, hepatic, renal) or some drugs. Typical sites for dependent oedema caused by poor venous return are the feet, ankles and sacrum. In particular, bilateral oedema in the lower extremities may signify cardiac failure or fluid overload from intravenous fluids. Inspection for oedema is a fundamental component of cardiovascular assessment.

Oedematous skin looks stretched and shiny. Palpate areas of oedema against bony structures with your thumb for at least 10 seconds. Oedema may be *pitting* (the skin is indented and only slowly refills, see Figure 24-23) or *non-pitting*. If oedema is present note the upper level (e.g. 'pitting oedema to mid-calf' or 'pitting oedema to



Figure 24-21 **Palpation of posterior tibial pulse.**

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.



Figure 24-22 **Doppler ultrasound stethoscope in position over dorsalis pedis pulse.**

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.



Figure 24-23 Pitting oedema.

By James Heilman, MD – CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=11787530.

mid-thigh'). Severe pitting oedema can begin to weep exudate.

Respiratory system

Because respiratory changes are often the first sign of patient deterioration, RNs frequently perform assessment of the **respiratory system**. Your rapid primary survey will have examined airway and breathing. The airway is patent if the patient can talk normally and is conscious and alert. The work of breathing and peripheral oxygen saturation (SpO_2) are routinely assessed with vital signs (see Chapter 23). Skill 24-4 demonstrates how to then perform a focused respiratory assessment.

Inspection

Once again, start with general observation of appearance and behaviour of the patient and observe for signs of respiratory distress (see Box 24-7). Is the respiratory rate fast, slow or normal? Are they able to talk in sentences without stopping to take a breath? What is the patient's oxygen requirement to maintain adequate oxygen saturation? Anxiety, agitation and confusion can be due to hypoxia. Examine the face, looking at the colour of the skin for central cyanosis (blue-tinged tongue and mucous membranes: a late sign and medical emergency). Inspect the nose for symmetry of nares, presence of discharge and evidence of nasal flaring. Assess the patient's ability to cough and whether it is productive of sputum. Inspect the nail beds for *clubbing* (Figure 24-24) which is a sign of chronic respiratory disease. Note oxygen saturation if a monitor is attached.

Inspect the chest for pattern, depth and symmetry of breathing. Note barrel chest associated with air trapping in COPD (Figure 24-25). There should be no audible respiratory sounds, such as wheezing or stridor. Use of accessory muscles like neck muscles and retraction of intercostal muscles are signs of distress. If the patient has a chest drain, observe for swinging of dependent fluid in the chest tube and the amount and colour of drainage (see Chapter 35).

Palpation

If chest movement is only present on one side, the trachea can be gently palpated to identify if it is midline. Locate the trachea above the sternal notch and gently palpate

BOX 24-6 Early and late warning signs associated with cardiovascular deterioration

Early warning signs	
Poor peripheral circulation	pH 7.2–7.3
SBP 80–100 mmHg	Base deficit –5 to –8 mmol/L
Pulse rate 40–49 or 120–140/min	Reports chest pain
SBP 180–240 mmHg	> Expected blood loss
Note of decreased urine output	New bleeding any site
Urine output < 200 mL/8 hours	> Expected drain fluid loss
Alteration in mentation	SpO_2 90–95%
Late warning signs	
Cardiac arrest	Unresponsive to verbal command
SBP < 80 mmHg	pH < 7.2
Pulse rate < 40 or > 140 bpm	Base deficit < –8 mmol/L
SBP > 240 mmHg	Failure to reverse warning sign within 1 hour
Urine output < 200 mL/24 hours	Excess blood loss unable to be controlled by local staff
SpO_2 < 90%	

Data from Jacques T, Fisher M, Hillman K et al (eds) 2011 DETECT Manual: Detecting deterioration, evaluation, treatment, escalation and communicating in teams, 3rd edn. NSW Health and Clinical Excellence Commission, Neutral Bay.

SKILL 24-4

Focused respiratory assessment

Delegation and other considerations

- Comprehensive patient assessment is the basis for the development of the nursing care plan and therefore should not be delegated by the registered nurse.
- Perform hand hygiene and apply personal protective equipment when appropriate before, during and after patient assessment.

Equipment

- Stethoscope
- Pen
- Watch
- Portable pulse oximeter

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Review the patient's baseline assessment data.	The key point of clinical examination is to determine if something has changed. Refer to baseline or previous findings to determine an acute change in patient status.
2. Perform hand hygiene.	Prevents transmission of microorganisms.
3. Ensure comfort and privacy. Explain procedure and clarify any concerns.	Promotes patient's cooperation and comfort during the assessment.
4. Approach from the right side with patient appropriately positioned (high Fowlers' when possible) for examination.	Assists with performance and interpretation of data.
5. Observe airway patency, ability to speak and cough.	Identify signs of respiratory distress that require immediate intervention.
6. Observe work of breathing, skin colour and mental status.	These are indicators of adequate ventilation and oxygenation.
7. Measure respiratory rate, depth and pattern of breathing.	
8. Measure peripheral oxygen saturation. Note the patient's oxygen requirement.	
9. Auscultate anterior and posterior lung sounds. Determine normal sounds over each lung field. Listen for any acute changes such as adventitious sounds, decreased or absent lung sounds.	New abnormal findings require further clinical investigations.
10. Determine the frequency of respiratory monitoring required based on the patient's condition.	Certain conditions place patients at high risk of respiratory alterations (e.g. post-anaesthesia, acute exacerbation of COPD or asthma).

RECORDING AND REPORTING

- Core documentation includes respiratory rate, effort of breathing, oxygen saturation and any oxygen requirement. Note any new abnormal findings or investigations.
- Report early and late warning signs associated with respiratory deterioration (Box 24-8) as a priority to senior nursing or medical staff.

BOX 24-7 Signs associated with increased work of breathing (respiratory distress)

Increased respiratory rate
Use of accessory muscles
Soft tissue recession: tracheal tug, rib or abdominal recession
Increased pulse rate
Increased sweating or clammy skin
Anxiety, agitation and confusion



Figure 24-24 Finger clubbing.

Talley NJ, O'Connor S 2014 Clinical examination: a systematic guide to physical diagnosis, 7th edn. Elsevier, Chatswood, NSW.

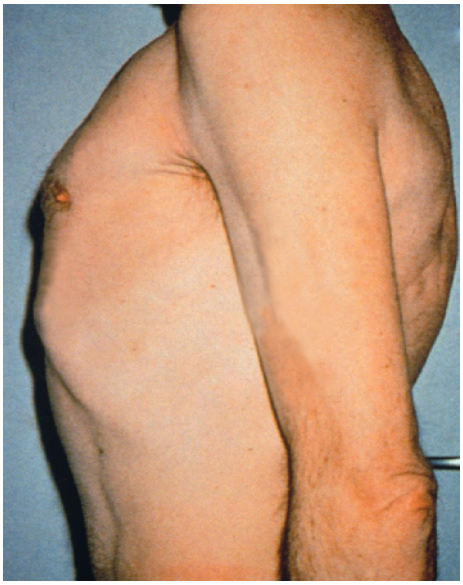

Figure 24-25 Barrel chest.

Talley NJ, O'Connor S 2014 Clinical examination: a systematic guide to physical diagnosis, 7th edn. Elsevier, Chatswood, NSW.

with two fingers. Tracheal deviation would usually be accompanied by respiratory distress due to significant disease such as lung collapse.

Auscultation

Chest percussion is not covered here and is only useful in very quiet environments. In acute care settings, clinicians usually move straight to auscultation of the chest. Normal lung sounds differ in character, depending on the area of the chest being auscultated and normally include bronchovesicular and vesicular sounds (Table 24-4 and Figure 24-26). Position the patient sitting upright if possible and ask them to breathe through the mouth. It is easier to hear air entry over the main bronchi, so it is often useful to start there. It is important to auscultate in an ordered sequence over upper, middle and lower lung zones, comparing each side with the other (Figure 24-27 and Figure 24-28). Then listen over the posterior chest, which contains primarily the lower lobes. During each breath listen to whether lung sounds can be heard at all, the volume of sound is more or less than normal, and is similar on both sides. If abnormal sounds are heard, ask the patient to cough to see whether they clear.

Abnormal lung sounds result from air passing through moisture, mucous or narrowed airways. Adventitious (abnormal) lung sounds often occur superimposed over normal sounds. The two types of adventitious sounds which beginning RNs should be able to identify are *crackles* and *wheezes*. Crackles are fine or coarse, discontinuous, crackling or moist sounds and are associated with small airways and alveoli popping open during inspiration with secretions or fluid as in heart failure. Wheezes are continuous musical sounds that occur with airway narrowing and are a key sign of asthma or COPD. Diminished or absent sounds may occur with collapse or consolidation. This may be a common finding on both sides if there is postoperative atelectasis caused by reduced respiratory effort. Table 24-5 explains the mechanisms and characteristic features of key abnormal lung sounds.

Gastrointestinal system

After a rapid primary survey, an abdominal (**gastrointestinal system**) assessment is a major component of any body systems assessment. Abdominal pain is also a common indication for a focused assessment and the beginning RN needs to be able to distinguish an *acute abdomen* (a medical emergency) from benign causes. Taking an elimination history is important to interpret your physical assessment findings. You should also routinely assess the most recent bowel movement and frequency of bowel movements each shift (see Chapter 32).

TABLE 24-4 Normal lung sounds

Description	Location	Origin
Vesicular		
Vesicular sounds are soft, breezy and low-pitched. Inspiratory phase is three times longer than expiratory phase	Best heard over lung's periphery (except over scapula or clavicles)	Created by air moving through smaller airways
Bronchovesicular		
Bronchovesicular sounds are blowing sounds that are medium-pitched and of medium intensity. Inspiratory phase is equal to expiratory phase	Best heard posteriorly between scapulae and anteriorly over bronchioles lateral to sternum at first and second intercostal space	Created by air moving through large airways
Bronchial		
Bronchial sounds are loud and high-pitched with hollow quality. Expiration sometimes longer than inspiration	Best heard over trachea	Created by air moving through trachea close to chest wall

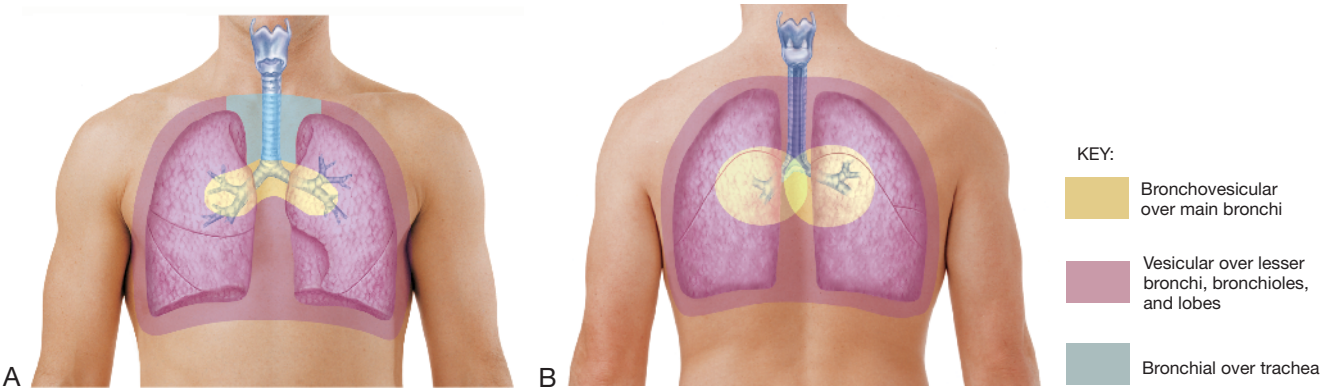

Figure 24-26 Auscultatory sounds over the chest.

Wilson S, Giddens J 2013 Health assessment for nursing practice, 5th edn. Elsevier Mosby, St Louis.

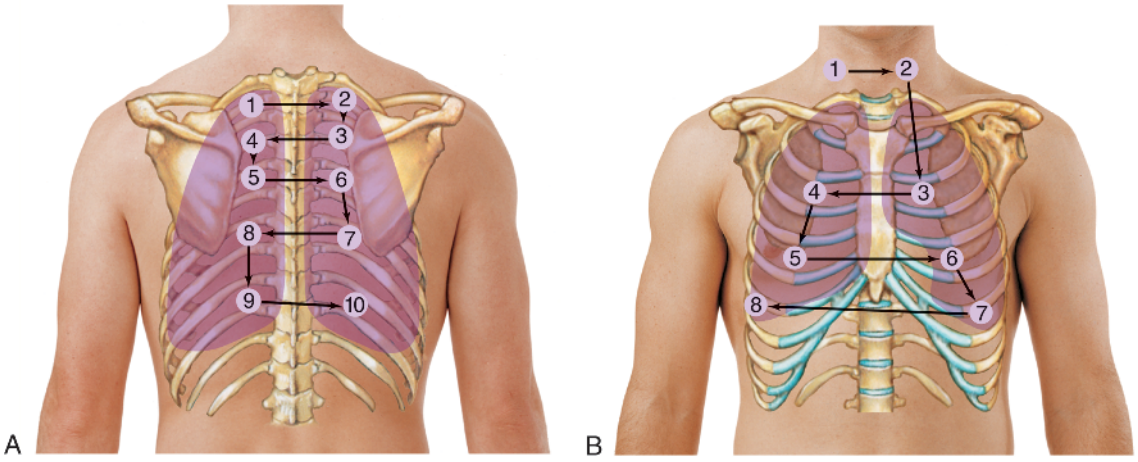

Figure 24-27 Sequence for chest auscultation.

Wilson S, Giddens J 2013 Health assessment for nursing practice, 5th edn. Elsevier Mosby, St Louis.

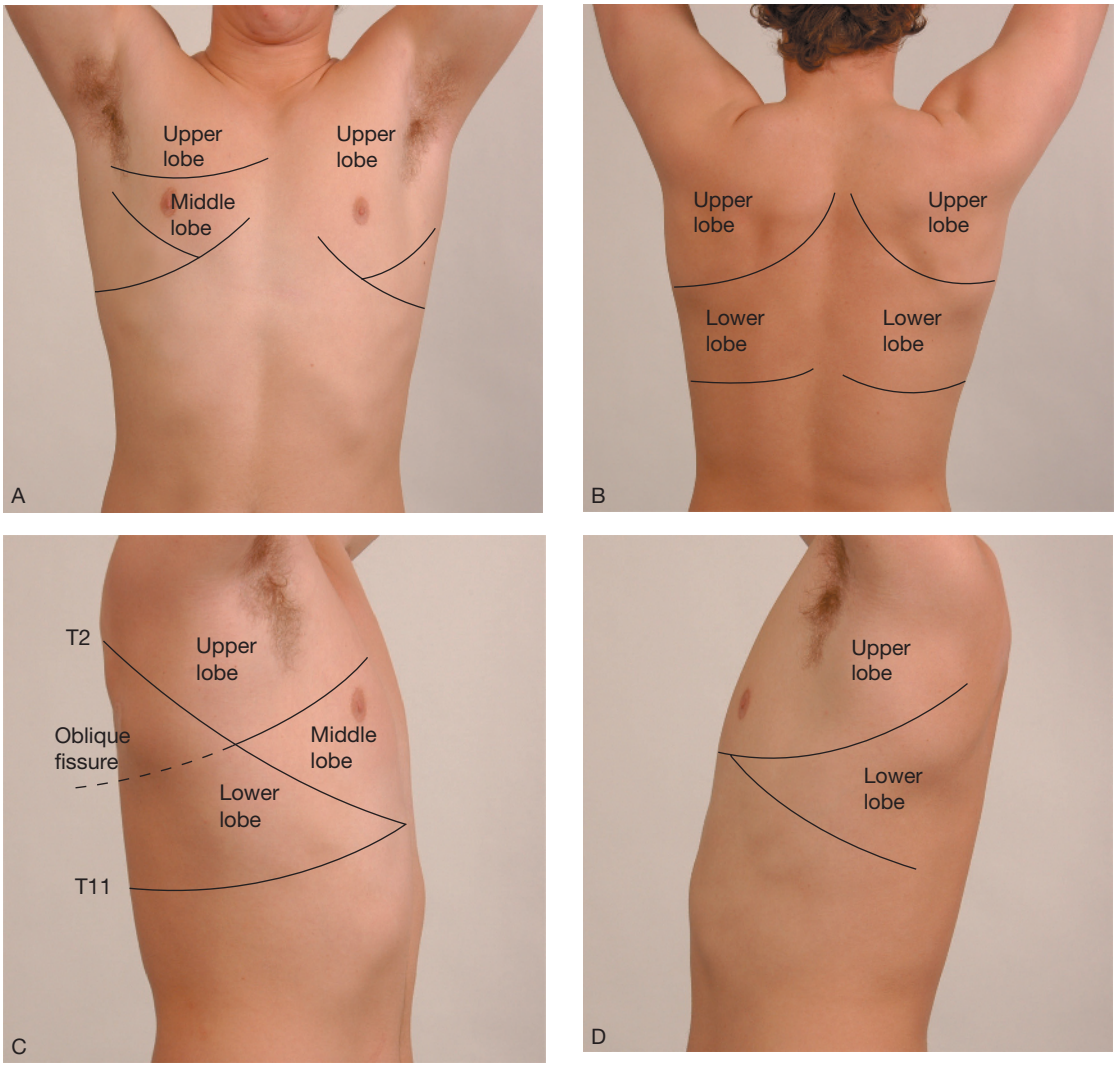

Figure 24-28 **Lobes of the lung.**

Talley NJ, O'Connor S 2014 Clinical examination: a systematic guide to physical diagnosis, 7th edn. Elsevier, Chatswood, NSW.

TABLE 24-5 **Abnormal (adventitious) lung sounds**

Sound	Site auscultated	Cause	Character
Crackles	Most commonly heard in dependent lobes: right and left lung bases	Random, sudden re-inflation of groups of alveoli; disruptive passage of air	Fine crackles are high-pitched fine, short, interrupted crackling sounds heard during end of inspiration, usually not cleared with coughing Medium crackles are lower, more moist sounds heard during middle of inspiration; not cleared with coughing Coarse crackles are loud, bubbly sounds heard during inspiration; not cleared with coughing
Wheeze	Can be heard over all lung fields	High-velocity airflow through severely narrowed bronchus	High-pitched, continuous musical sounds like a squeak heard continuously during inspiration or expiration; usually louder on expiration

Based on: Ball J et al 2015 Seidel's guide to physical examination, 8th edn. Elsevier, St Louis.

BOX 24-8 Early and late warning signs associated with respiratory deterioration

Early warning signs

Pulse rate 40–49 or 120–140/min	SpO_2 90–95%
Alteration in mentation	PaO_2 50–60 mmHg
Partial airway obstruction	$PaCO_2$ 50–60 mmHg
RR 5–9 or 30–40 breaths/min	pH 7.2–7.3

Late warning signs

Pulse rate < 40 or > 140 bpm	PaO_2 < 50 mmHg
Unresponsive to verbal command	$PaCO_2$ > 60 mmHg
Airway obstruction/stridor	pH < 7.2
RR < 5 or > 40 breaths/min	Failure to reverse warning sign within 1 hour
SpO_2 < 90%	

Data from Jacques T, Fisher M, Hillman K et al (eds) 2011 DETECT Manual: Detecting deterioration, evaluation, treatment, escalation and communicating in teams, 3rd edn. NSW Health and Clinical Excellence Commission, Neutral Bay.

Skill 24-5 demonstrates how to perform a focused gastrointestinal (GIT) assessment.

By dividing the abdomen into four imaginary quadrants (Figure 27-29), you can then record assessment findings in relation to each quadrant. For example, you may determine that the patient is experiencing tenderness over the left lower quadrant (LLQ) with normal bowel sounds present.

Inspection

The order of an abdominal examination, or inspection, differs slightly from that in other assessments: inspect and auscultate before you feel the abdomen. Inspect the skin over the abdomen for colour, scars, lesions, wounds, stomas and drains. Inspect for contour and symmetry of the abdomen, noting any masses, bulging or *abdominal distension*. Common causes of acute abdominal distension are found in Box 24-9. Note bleeding or ooze from surgical wounds and drains. Inspect for the correct functioning of wound vacuum devices and stomas.

Auscultation

Peristalsis, or intestinal motility, is a normal function of the small and large intestine. Bowel sounds are the audible passage of air and fluid created by peristalsis. The warmed

SKILL 24-5

Focused gastrointestinal assessment

Delegation and other considerations

- Comprehensive patient assessment is the basis for the development of the nursing care plan and therefore should not be delegated by the registered nurse.
- Perform hand hygiene and apply personal protective equipment when appropriate before, during and after patient assessment.

Equipment

- Stethoscope
- Pen
- Documentation

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Review the patient's baseline assessment data.	The key point of clinical examination is to determine if something has changed. Refer to baseline or previous findings to determine an acute change in patient status.
2. Perform hand hygiene.	Prevents transmission of microorganisms.

STEPS	RATIONALE
3. Ensure comfort and privacy. Explain procedure and clarify any concerns.	Promotes patient's cooperation and comfort during the assessment.
4. Approach from the right side with patient appropriately positioned (supine when possible) for examination.	Assists with performance and interpretation of data.
5. Inspect abdomen contour and symmetry. Note any wounds or drains.	These are indicators of normal gastrointestinal function.
6. Auscultate for the presence of bowel sounds with diaphragm of stethoscope.	
7. Gently percuss over abdomen for tympany. Note any tenderness.	
8. Lightly palpate each quadrant. Normally, the abdomen should feel soft, non-tender and without masses. Note any guarding.	
9. Assess most recent and frequency of bowel movements. After bowel surgery, assess whether the patient is passing flatus.	Identify changes in bowel habit that suggest need for intervention.
10. Determine the frequency of abdominal assessment required based on the patient's condition.	Certain conditions place patients at high risk of gastrointestinal alterations (e.g. post-surgery, critical illness).

RECORDING AND REPORTING

- Core documentation includes presence of bowel sounds, findings on abdominal palpation, and assessment of bowel movements. Note any new abnormal findings or investigations.
- Report any acute changes such as signs of peritonism as a priority to senior nursing or medical staff.

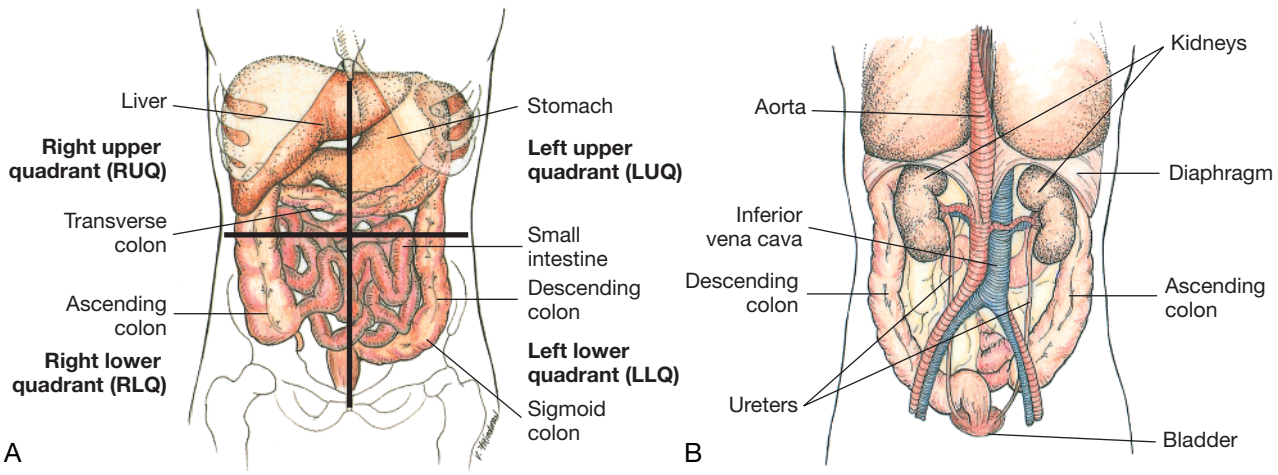

Figure 24-29 Abdominal quadrants.

A, Anterior view of abdomen divided by quadrants. B, Posterior view of abdominal sections.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

BOX 24-9 Possible causes of acute abdominal distension

Bowel obstruction: constipation, cancer, paralytic ileus
Ascites: liver failure
Excessive flatus
Pregnancy
Haemorrhage: trauma, postoperative

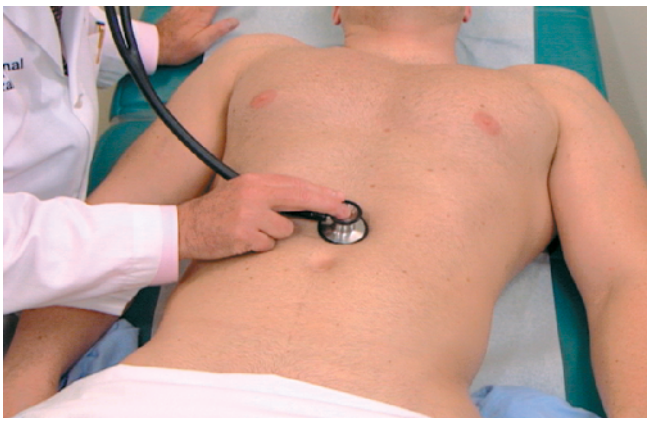

Figure 24-30 Auscultation of bowel sounds.
Talley NJ, O'Connor S 2014 Clinical examination: a systematic guide to physical diagnosis, 7th edn. Elsevier, Chatswood, NSW.

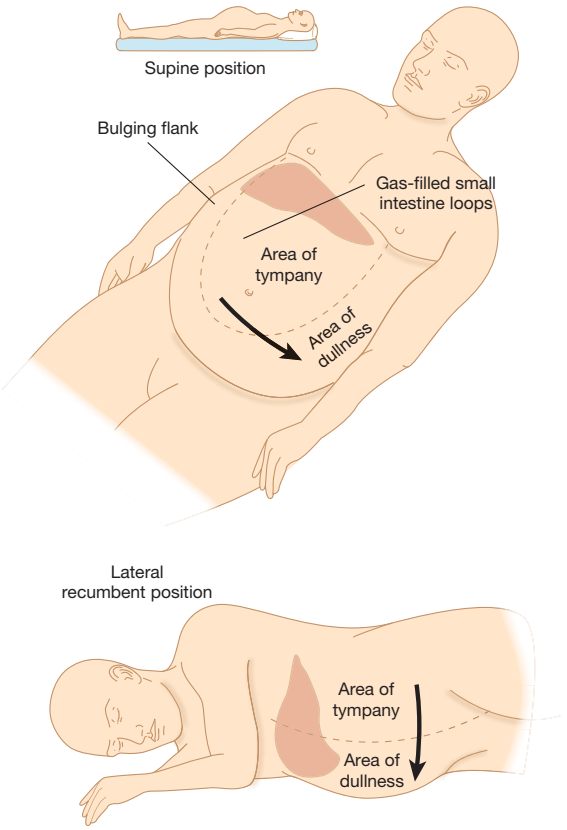

Figure 24-31 Shifting dullness.
Talley NJ, O'Connor S 2014 Clinical examination: a systematic guide to physical diagnosis, 7th edn. Elsevier, Chatswood, NSW.

diaphragm of the stethoscope is placed lightly over the middle of the abdomen. Because bowel sounds are easily transmitted over the abdomen there is no need to listen in more than one place (Talley & O'Connor 2014).

Normally, air and fluid move through the intestines, creating soft gurgling or clicking sounds that occur irregularly, depending on when the last meal was eaten. Bowel sounds should be described as either *present* or *absent*. It normally takes 5–20 seconds to hear a bowel sound, but may take up to 5 minutes of continuous listening before determining the absence of bowel sounds. Absent bowel sounds indicates ileus, or the absence of peristalsis in the bowel. Loud tinkling bowel sounds may be heard with a bowel obstruction.

Percussion

Percussion of the abdomen is done less often, but helps reveal the presence of fluid and air in the stomach and intestines or urine in the bladder. Each quadrant is systematically percussed to assess tympanic areas, dullness and for any pain. A tympanic sound usually predominates because of air in the stomach and intestines. Eliciting pain during percussion is an important sign known as *percussion tenderness* and suggests peritoneal inflammation.

To assess urinary elimination, percuss the abdomen starting at the symphysis pubis and move towards the umbilicus. A dull percussion note is heard over a distended bladder. Dullness when percussing outwards from the midline over the abdominal flanks signifies fluid. Dullness on percussion may shift with patient position when there are significant ascites and is called *shifting dullness* (Figure 24-31).

Palpation

Palpation is aimed mainly at detecting areas of abdominal tenderness and noting the quality of abnormal distension or masses. After rubbing your hands together to warm them, use *light palpation* over each quadrant. Lay the palm of the hand with fingers extended and close together lightly on the abdomen, keeping the palm and forearm horizontal (Figure 24-32). The pads of the fingertips depress approximately 1.5 cm in a gentle dipping motion. Avoid quick jabs and use smooth, coordinated movements. A systematic palpation of each quadrant assesses for muscular resistance, distension, tenderness and



Figure 24-32 Light palpation of the abdomen.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

superficial masses. While palpating, observe the patient's face for signs of discomfort. The abdomen is normally smooth with consistent softness and non-tender without masses. The older adult often lacks abdominal tone.

If a sensitive area is palpated, *guarding* or voluntary muscle contraction may occur. Involuntary guarding may be localised or generalised (*rigid abdomen*) and is a sign of acute peritonitis. A distended bladder is easy to detect with light palpation. Normally the bladder lies below the umbilicus and above the symphysis pubis. Palpate for a distended bladder if the patient has been unable to void, has been incontinent or if an indwelling urinary catheter is not draining well.

Most organs in the abdomen (liver, kidneys, spleen, bladder) are not normally palpable. For example, easy palpation of the spleen may signify splenomegaly and liver enlargement may accompany ascites in liver failure (Figure 24-33).

Renal system

The kidneys play a central role in maintaining homeostasis. The glomeruli filter blood and excrete unwanted solutes, including the products of metabolism. Hormones act on the kidneys to control body water and help to regulate blood pressure and electrolyte balance. Renal function is closely related to the cardiovascular system and blood pressure regulation. Clinically, investigations such as the estimated glomerular filtration rate (eGFR) and blood urea, creatinine and electrolyte values are the mainstay of routine kidney assessment. However, your bedside-focused fluid balance assessment (see Chapter 33) and **renal system** assessment skills are critical to detect changes in kidney function (Skill 24-6).

Most important is measurement of *urine output*, which should be at least > 0.5 mL/kg/hour in adults. Of course,



Figure 24-33 Ascites.

Talley NJ, O'Connor S 2014 Clinical examination: a systematic guide to physical diagnosis, 7th edn. Elsevier, Chatswood, NSW.

always check that the IDC is patent and draining properly (check for blocked catheter, kinks or a misplaced catheter) before concluding your patient is not producing urine. Remember to palpate the bladder for distension (see above) or do a bladder scan. Measure and observe urine output for colour and presence of sediment. Is it clear, dark or blood-stained? For example, dark concentrated urine can indicate dehydration and blood-tinged urine (haematuria) is always abnormal. A pungent smell of urine may be a sign of urinary tract infection. Urinalysis needs to be performed (see Chapter 34). If there is no IDC, determine the last time the patient voided (e.g. since returning from surgery).

Determine the patient's volume status (see Box 24-10). *Fluid balance charts* are used to record all input and output as well as the results of urinalysis. Recording the *daily weight* of patients each morning at the same time is often the most accurate way to determine fluid shifts (remember 1 kg = 1 L fluid). Measurement of abdominal girth (cm) and oedematous limbs may also be conducted.

Part of your hydration assessment includes *mucous membranes* and *skin turgor*. Grasp a fold of skin on the back of the forearm or over the sternal area with your fingertips and release (Figure 24-34). Normally the skin lifts easily and recoils immediately to its resting position.

SKILL 24-6

Focused renal assessment

Delegation and other considerations

- Comprehensive patient assessment is the basis for the development of the nursing care plan and therefore should not be delegated by the registered nurse.
- Perform hand hygiene and apply personal protective equipment when appropriate before, during and after patient assessment.

Equipment

- Fluid balance chart
- Urinalysis test kit
- Watch
- Pen

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Review the patient's baseline assessment data. Review recent blood results for urea and electrolytes (U&Es) and creatinine.	The key point of clinical examination is to determine if something has changed. Refer to baseline or previous findings to determine an acute change in patient status.
2. Perform hand hygiene.	Prevents transmission of microorganisms.
3. Ensure comfort and privacy. Explain procedure and clarify any concerns.	Promotes patient's cooperation and comfort during the assessment.
4. Approach from the right side with patient appropriately positioned (supine when possible) for examination.	Assists with performance and interpretation of data.
5. Measure urine output (when possible) or determine last time patient voided.	Reduced or increased urine output may be the earliest signs of impaired renal function.
6. If indwelling urinary catheter (IDC) in situ, determine patency. If required, gently palpate for a distended bladder or perform bladder scan for residual volume (will be zero if patent IDC in situ).	
7. Observe urine for colour, offensive smell or presence of sediment.	New abnormal findings require further clinical investigations.
8. Perform urinalysis (see Chapter 33).	
9. Assess fluid volume status: a. Calculate 24-hour fluid balance from recorded input and output, or daily weight. b. Assess hydration of oral mucous membranes and skin turgor.	

STEPS	RATIONALE
c. Assess adequate intravascular volume with capillary refill time, heart rate, systolic BP, pulse pressure, and JVP. d. Note signs of fluid volume deficit or excess (see Box 24-10).	
10. Determine the frequency of renal assessment required based on the patient's condition.	Certain conditions place patients at high risk of renal alterations (e.g. chronic kidney disease, nephrotoxic medications, shock).

RECORDING AND REPORTING

- Core documentation includes urine output, colour and positive findings on urinalysis, and cumulative fluid balance. Note any new abnormal findings or investigations.
- Report early and late warning signs associated with renal deterioration (Box 24-11) as a priority to senior nursing or medical staff.

BOX 24-10 Signs and symptoms of fluid volume imbalances

Fluid volume deficit	Fluid volume excess
Dry skin and mucous membranes, decreased skin turgor	Peripheral oedema with taught, non-compliant skin, pre-sacral or ankle oedema
Weight loss	Weight gain
Negative fluid balance (fluid output exceeding fluid intake)	Positive fluid balance (fluid intake exceeding fluid output)
Hypotension, postural drop	Hypertension
Tachycardia	Bradycardia
Flat neck veins with patient sitting at 45-degrees	Pulmonary congestion (lung crackles), dyspnoea
Raised haematocrit	Distended neck veins with patient sitting at 45-degrees
	Decreased haematocrit with haemodilution

Poor skin turgor is when skin is slow to resume its normal contour or shape. With worsening dehydration the skin remains pinched up, called *tenting*.

Chronic kidney disease patients receiving dialysis treatment may have an arteriovenous fistula observed on the forearm (Figure 24-35) or a Tenkhoff catheter in the abdomen for peritoneal dialysis. Inspect the skin for any signs of infection.



Figure 24-34 Assessing skin turgor.

Wilson S, Giddens J 2013 Health assessment for nursing practice, 5th edn. Elsevier Mosby, St Louis.

Musculoskeletal system

Following a systematic approach, once the head (CNS), neck and chest (CVS and RESP) and abdomen (GIT and RENAL) are examined, the extremities and skin are carefully assessed. You will have already collected a significant amount of data about these systems. The neurological and musculoskeletal systems are closely interrelated, so assessment is often conducted simultaneously (e.g. limb assessment for Tone/Power/Reflexes/Sensory). General skin inspection also occurs during each system and body region examination.



Figure 24-35 Arteriovenous (AV) fistula in a patient with chronic kidney disease.

Talley NJ, O'Connor S 2014 Clinical examination: a systematic guide to physical diagnosis, 7th edn. Elsevier, Chatswood, NSW.

Key components of a focused musculoskeletal assessment include examination of gait, arms, legs and spine (Skill 24-7). A focused assessment of the **musculoskeletal system** is especially important when the patient reports pain or loss of function in a joint or muscle. Musculoskeletal assessment is also part of your mobility and falls risk assessment (see Chapter 28).

BOX 24-11 Early and late warning signs associated with renal deterioration

Early warning signs	
Poor peripheral circulation	pH 7.2– 7.3
Note of decreased urine output	Base deficit –5 to –8 mmol/L
Urine output < 200 mL/8 hours	
Late warning signs	
Urine output < 200 mL/24 hours	pH < 7.2
Anuric	Base deficit < –8 mmol/L

Data from Jacques T, Fisher M, Hillman K et al (eds) 2011 DETECT Manual: Detecting deterioration, evaluation, treatment, escalation and communicating in teams, 3rd edn. NSW Health and Clinical Excellence Commission, Neutral Bay.

Inspection

You can integrate portions of the musculoskeletal assessment when observing the patient walking (to assess gait), moving in bed or performing any type of physical

SKILL 24-7

Focused musculoskeletal assessment

Delegation and other considerations

- Comprehensive patient assessment is the basis for the development of the nursing care plan and therefore should not be delegated by the registered nurse.
- Perform hand hygiene and apply personal protective equipment when appropriate before, during and after patient assessment.

Equipment

- Pen
- Documentation

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Review the patient's baseline assessment data.	The key point of clinical examination is to determine if something has changed. Refer to baseline or previous findings to determine an acute change in patient status.
2. Perform hand hygiene.	Prevents transmission of microorganisms.
3. Ensure comfort and privacy. Explain procedure and clarify any concerns.	Promotes patient's cooperation and comfort during the assessment.
4. Ensure patient appropriately positioned for examination.	Assists with performance and interpretation of data.
5. Observe patient's ability to safely stand, transfer and mobilise. Note how much assistance is necessary.	Basic clinical assessment of mobility and falls risk. May indicate need for safety interventions and need for mobility aid.
6. Observe gait.	
7. Inspect and gently palpate major joints for range of motion in arms, legs and (when possible) spine. Note any pain, swelling, warmth or crepitus.	
8. Assess muscle strength. Compare the right and left of paired muscle groups. Note involuntary movements.	
9. Determine the frequency of musculoskeletal assessment required based on the patient's condition.	Certain conditions place patients at high risk of musculoskeletal alterations (e.g. immobility, trauma, risk of falls).

RECORDING AND REPORTING

- Core documentation includes mobility, range of motion and ability to perform activities of daily living. Note any new abnormal findings or investigations.
- Report acute changes in musculoskeletal status such as loss of function as a priority to senior nursing or medical staff.

activity, including self-care activities. Normally, walking is initiated in a smooth and rhythmic motion. The foot is lifted and propelled forwards in a straight line; as the heel strikes the floor, bodyweight is shifted to the ball of the foot. The patient remains erect and balanced during all stages of gait. Routinely observe your patient's ability to transfer and mobilise during the course of each shift. Observe safe use of mobility aids and need for patient teaching and/or referral to physiotherapist.

The assessment of musculoskeletal function focuses on inspecting major joints for range of motion (ROM). During general inspection, look at the extremities for overall size, alignment and symmetry. Note any deformities, swelling, erythema, bruising, and muscle atrophy. Ask the patient to put each major joint through active full ROM. If passive joint movement is required, then gently support and move the joints of the extremities through their normal ROM. Do not force a joint if there is pain or muscle spasm. Knowledge of each joint's normal range and the extent to which it can be moved is important to detect abnormal findings (see Chapter 33). Describe your findings using the correct clinical terminology (Table 24-6). Normal joints are non-tender, without swelling and move freely. If a joint appears swollen and inflamed, palpate it for warmth.

Palpation

Apply gentle palpation to bones, joints and surrounding muscles of the extremities and the spine. As you palpate, note any heat, tenderness, oedema or resistance to pressure. Feel for joint *crepitus* during ROM, which is

TABLE 24-6 Clinical terminology for normal range of motion

Term	Range of motion	Examples of joints
Abduction	Movement of extremity away from midline of body	Leg, arm, fingers
Adduction	Movement of extremity towards midline of body	Leg, arm, fingers
Dorsiflexion	Flexion of toes and foot upwards	Foot
Eversion	Turning of body part away from midline	Foot
Extension	Movement increasing angle between two adjoining bones	Elbow, knee, fingers
External rotation	Rotation of joint outwards	Knee, hip
Flexion	Movement decreasing angle between two adjoining bones; bending of limb	Elbow, fingers, knee
Hyperextension	Movement of body part beyond its normal resting extended position	Head
Internal rotation	Rotation of joint inwards	Knee, hip
Inversion	Turning of body part towards midline	Foot
Plantar flexion	Bending of toes and foot downwards	Foot
Pronation	Movement of body part so that front or ventral surface faces downwards	Hand, forearm
Supination	Movement of body part so that the front or ventral surface faces upwards	Hand, forearm

a grating sensation caused by the rubbing together of synovial surfaces of the joints, such as in osteoarthritis. For assessment of muscle strength, each muscle group is examined comparing left with right, following a routine (e.g. starting with the hand and working upward towards the shoulder). Ask the patient to first flex the muscle to be examined and then resist when opposing force is applied against that flexion (Table 24-7).

Musculoskeletal assessment is also closely tied to neurovascular assessment. Trauma or surgery to limbs increases the risk of compartment syndrome from swelling and sometimes bleeding in the affected limb. This may cause compartments to put excessive pressure on nerves and vascular structures which can result in irreversible tissue injury. For these reasons, neurovascular observations are routine after orthopaedic surgery or trauma as well as in vascular assessment (Figure 24-14).

Integumentary system

RNs are responsible for regular assessment of the skin each shift to prevent skin breakdown and pressure injuries. Patients most at risk of significant skin lesions are those suffering from neurological impairments, chronic illnesses, orthopaedic problems, diminished cognitive and/or mental status, poor tissue oxygenation, low cardiac output, inadequate nutrition and immobility (see Chapter 26). The skin is routinely assessed for colour, temperature, moisture, turgor and oedema (see renal and cardiovascular assessment), as well as for any vascular changes or lesions (Skill 24-8).

TABLE 24-7 Assessing muscle strength

Muscle group	Manoeuvre
Neck (sternocleidomastoid)	Place hand firmly against patient's upper jaw. Ask patient to turn head laterally against resistance
Shoulder (trapezius)	Place hand over midline of patient's shoulder, exerting firm pressure. Have patient raise shoulders against resistance
Biceps	Pull down on forearm as patient attempts to flex arm.
Triceps	As patient's arm is flexed, apply pressure against forearm. Ask patient to straighten arm
Quadriceps	When patient is sitting, apply downward pressure to thigh. Ask patient to raise leg up from table
Gastrocnemius	Patient sits, holding shin of flexed leg. Ask patient to straighten leg against resistance

Barkauskas VH et al 2002 Health and physical assessment, 3rd edn. Mosby, St Louis.

SKILL 24-8

Focused skin or integumentary assessment

Delegation and other considerations

- Comprehensive patient assessment is the basis for the development of the nursing care plan and therefore should not be delegated by the registered nurse.
- Perform hand hygiene and apply personal protective equipment when appropriate before, during and after patient assessment.

Equipment

- Good lighting
- Pen
- Documentation

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Review the patient's baseline assessment data.	The key point of clinical examination is to determine if something has changed. Refer to baseline or previous findings to determine an acute change in patient status.
2. Perform hand hygiene.	Prevents transmission of microorganisms.
3. Ensure comfort and privacy. Explain procedure and clarify any concerns.	Promotes patient's cooperation and comfort during the assessment.
4. Ensure patient appropriately positioned for examination with good lighting.	Assists with performance and interpretation of data.
5. Expose each body region from head-to-toe to inspect and palpate skin, hair and nails, noting: a. General colour b. Temperature c. Moisture and turgor d. Capillary refill time	These are indicators of skin integrity.
6. Inspect and palpate for signs of pressure injury or skin lesions, noting: a. Non-blanchable redness b. Localised heat c. Oedema and induration	Identify abnormal changes that require intervention.
7. Observe any wounds, dressings or drains, and invasive lines, noting: a. Warmth b. Redness c. Swelling d. Exudate and odour	Identify abnormal changes that require intervention.

STEPS	RATIONALE
8. Determine the frequency of skin assessment required based on the patient's condition.	Certain conditions place patients at high risk of skin alterations (e.g. immobility, malnutrition, invasive procedures).

RECORDING AND REPORTING

- Core documentation includes general skin condition, assessment of any lesions or wounds. Note any new abnormal findings or investigations.
- Report acute changes in integumentary status such as the development of a pressure injury or greater than expected drain loss as a priority to senior nursing or medical staff.

Inspection and palpation are used to assess the function and integrity of the **integumentary system** and mucous membranes, which includes the skin, hair, scalp, oral cavity and nails. Initially either inspect all skin surfaces or assess the skin gradually while other parts of the body are being examined. Remember that the skin is most of what we can see about a patient and skin abnormalities are often associated with other body system disorders.

Colour

The skin is normally free of lesions, except for common freckles or age-related changes such as skin tags, senile keratosis (thickening of skin), cherry angiomas (ruby-red papules) and atrophic warts. Jaundice is a yellowish skin colour that may indicate liver disease, often noticed first in the sclera of the eyes (Figure 24-36). Pallor of the conjunctiva may be a sign of anaemia.

Temperature

The temperature of the skin depends on the amount of blood circulating through the dermis. Therefore a reduction in skin temperature reflects a decrease in blood flow. Use the back of your hands to assess skin temperature. Skin infections, such as cellulitis, result in an area that is red, hot and painful (Figure 24-37).

Moisture

Skin and mucous membranes are assessed for hydration. The skin is normally smooth and dry. Skin folds, such as the axillae, are normally moist. Flaking is the appearance of flakes resembling dandruff when the skin surface is

TABLE 24-8 Skin colour variations

Colour	Condition	Causes	Assessment locations
Cyanosis (bluish)	Increased amount of deoxygenated haemoglobin (associated with hypoxia)	Heart or lung disease	Nail beds, lips, mouth, skin (severe cases)
Pallor	Reduced amount of oxyhaemoglobin Reduced visibility of oxyhaemoglobin resulting from decreased blood flow	Anaemia Shock	Face, conjunctivae, nail beds, palms of hands Skin, nail beds, conjunctivae, lips
Loss of pigmentation	Vitiligo	Congenital or autoimmune condition causing lack of pigment	Patchy areas on skin over face, hands, arms
Jaundice (yellow-orange)	Increased deposit of bilirubin in tissues	Liver disease, destruction of red blood cells	Sclera, mucous membranes, skin
Erythema (redness)	Increased visibility of oxyhaemoglobin caused by dilation or increased blood flow	Fever, direct trauma, blushing, alcohol intake	Face, area of trauma, sacrum, shoulders, other common sites for pressure ulcers
Tan-brown	Increased amount of melanin	Suntan, pregnancy	Areas exposed to sun



Figure 24-36 **Jaundice.**

Brown et al 2015 Lewis's medical surgical nursing, 4th edn. Elsevier, Chatswood, NSW.



Figure 24-37 **Cellulitis.**

Talley NJ, O'Connor S 2014 Clinical examination: a systematic guide to physical diagnosis, 7th edn. Elsevier, Chatswood, NSW.

lightly rubbed. Scaling involves fishlike scales that are easily rubbed off the skin's surface. Both flaking and scaling are common in older adults, people who use excessive amounts of soap and in skin conditions such as eczema and dermatitis. Other factors causing dry skin include lack of humidity, exposure to sun, smoking, stress, excessive perspiration and dehydration.

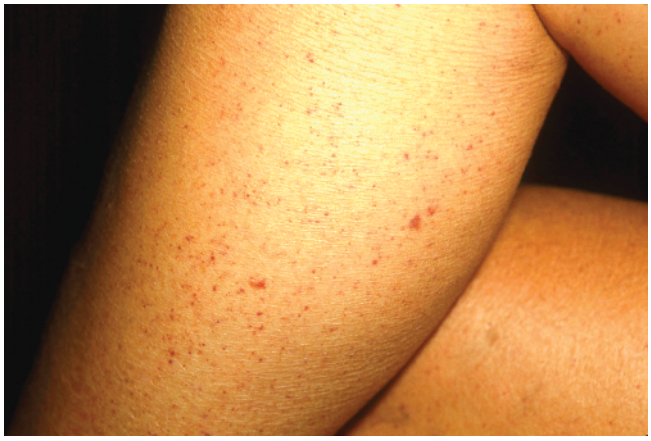

Figure 24-38 **Petechial rash.**

Talley NJ, O'Connor S 2014 Clinical examination: a systematic guide to physical diagnosis, 7th edn. Elsevier, Chatswood, NSW.



Figure 24-39 **Venous staining.**

Talley NJ, O'Connor S 2014 Clinical examination: a systematic guide to physical diagnosis, 7th edn. Elsevier, Chatswood, NSW.

Vascularity

Look for signs of vascular changes during skin assessment. Localised pressure areas, found after a patient has been in one position for a time, appear reddened, pink or pale (see Chapter 30). Petechiae are tiny, pinpoint-sized red or purple spots on the skin caused by small haemorrhages in the skin layers (Figure 24-38). Petechiae may indicate serious blood-clotting disorders, drug reactions or liver disease. You might observe the brownish discolouration of the lower legs in older adults with chronic venous stasis (Figure 24-39).

Skin eruptions can be a sign of acute systemic illness such as allergy and anaphylaxis. Allergy may start simply with an urticarial rash (known as hives; Figure 24-40) and progress rapidly to angioedema (commonly seen in



Figure 24-40 Urticarial hives.

Habif T 2016 Clinical dermatology: A color guide to diagnosis and therapy, 6th edn. Elsevier.



Figure 24-41 Angiooedema. The lips are a common site.

Habif T 2016 Clinical dermatology: A color guide to diagnosis and therapy, 6th edn. Elsevier.

the lips; Figure 24-41) and anaphylactic shock. Quickly notify relevant staff if you see any of these potentially life-threatening signs of allergy.

Documentation and communication of assessment findings

An important aspect of patient assessment is your documentation and communication of events. These are essential for the continuity of effective care of the patient. Your clinical judgement about the patient's condition based on your assessment, as well as a management plan, must be clearly stated. This defines professional nursing practice and the contribution of nursing to patient care. Clearly document your assessment findings and care plan in the healthcare record or progress notes:

- Nursing notes should be written in a logical, structured way (following your assessment framework).
- Avoid narrative progress notes. They are confusing to other members of the team.
- Use headings to make it thorough but concise.
- There is no clinical requirement to complete every line in the progress notes.
- Some organisations have an electronic health record system. Review this and consider how you might adapt your style of nursing documentation.

Always communicate significant abnormal findings to appropriate nursing and medical staff as a priority. Report data that indicate deterioration in the patient's condition such as any abnormal finding in your primary survey (ABCDE), as well as clinically significant problems identified during body system assessment. It is imperative that your findings are reported urgently and action taken to keep the patient safe. We recommend you use the ISBAR (identify, situation, background, assessment, recommendation) communication tool when you call to inform a colleague about a problem (see Chapter 13).

• CRITICAL REFLECTION POINT

Think about current nursing documentation in your clinical area. Imagine you are a busy clinician trying to read about a patient in the notes. Reflect on whether current nursing notes are helpful to a thorough assessment of the situation. How could this be improved?

Conclusion

The importance of learning how to correctly perform and integrate physical assessment of body systems into your nursing practice cannot be overstated. Patient assessment begins with a primary survey, including vital signs, which then triggers the need for a more focused body systems assessment. The fundamental physical assessment skills for each body system include inspection, palpation, percussion and auscultation. With a little practice, it takes much less time to integrate these skills into a head-to-toe, body systems assessment.

Patient assessment should be targeted or focused on the individual's needs, so you don't need to perform every step in every situation. We have focused on the most important skills that a beginning RN will need to apply in everyday practice – but there is much more to learn! Consult a textbook on physical examination when you encounter the need for more advanced or specialist skills.

Communicate your assessment findings in the healthcare record using a logical framework and verbally using an ISBAR approach. Again, use critical thinking skills to be selective in what you report including the most salient positive and negative findings. Always consider how you would like to be treated during a clinical examination: ensure privacy and respect the patient's preferences.

Key concepts

- Neurological assessment includes the level of consciousness (Glasgow Coma Scale), pupil size and reaction to light, and limb assessment. Evaluate speech and screen for normal vision and hearing.
- Cardiovascular assessment includes the hands and nails (skin colour, temperature, capillary refill), arms (pulse and BP), then the chest (auscultate heart sounds) and lower limbs (palpate for distal pulses, tenderness, oedema).
- Respiratory assessment also includes general observation (skin colour, respirations and work of breathing). Assess the airway and ability to speak and cough. Inspect the chest and auscultate lung sounds. Measure oxygen saturation (SpO_2) noting the patient's oxygen requirement.
- Gastrointestinal assessment includes abdominal inspection and auscultation for bowel sounds. Gently palpate the abdomen. Assess the last bowel movement.
- Renal assessment includes clinical investigations such as the glomerular filtration rate, blood urea and electrolytes, creatinine. Bedside assessment focuses on urine output and fluid balance.
- Musculoskeletal assessment includes examination of gait, arms, legs and spine. Inspect, feel and move each major joint.
- Skin assessment includes colour, temperature, moisture, turgor and oedema, as well as for any vascular changes or lesions.

Online resources

Glasgow Coma Scale video, www.glasgowcomascale.org/.

A practical guide to clinical examination. Excellent images and videos of physical assessment skills, https://meded.ucsd.edu/clinicalmed/

The NSW DETECT Online learning program is available for NSW Health staff or university students through ClinConnect. Provides online education using the ABCDE assessment framework, www.cec.health.nsw.gov.au/programs/between-the-flags.

The UCLA Auscultation Assistant. Provides examples of heart and lung sounds, www.wilkes.med.ucla.edu

References

Adam S, Odell M, Welch J 2010 Rapid assessment of the acutely ill patient. John Wiley & Sons, Oxford.

Ball J et al 2015 Seidel's guide to physical examination, 8th edn. Elsevier, St Louis, Missouri.

Considine J, Currey J 2015 Ensuring a proactive, evidence-based, patient safety approach to patient assessment. Journal of Clinical Nursing 24(1–2):300–7.

Douglas C, Booker C, Fox R et al 2016 Nursing physical assessment for patient safety in general wards: reaching consensus on core skills. Journal of Clinical Nursing, doi: 10.1111/jocn.13201.

Fennessey A, Wittmann-Price RA 2011 Physical assessment: a continuing need for clarification. Nursing Forum 46:45–50.

Habif T 2009 Clinical dermatology: a colour guide to diagnosis and therapy, 5th edn. Elsevier Saunders.

Jacques T, Fisher M, Hillman K et al (eds) 2011 DETECT Manual: Detecting deterioration, evaluation, treatment, escalation and communicating in teams, 3rd edn. NSW Health & Clinical Excellence Commission, Neutral Bay.

Munroe B, Curtis K, Considine J, Buckley T 2013 The impact structured patient assessment frameworks have on patient care: an integrative review. Journal of Clinical Nursing 22(21–22): 2991–3005.

Osborne S, Douglas C, Reid C et al 2015 The primacy of vital signs – acute care nurses' and midwives' use of physical assessment skills: a cross sectional study. International Journal of Nursing Studies 52(5):951–62.

Reith FC, Brennan PM, Maas A, Teasdale GM 2015 Lack of standardization in the use of the Glasgow Coma Scale.Results of international surveys. Journal of Neurotrauma 32:1–6.

Rothman MJ, Solinger AB, Rothman SI, Finlay GD 2012 Clinical implications and validity of nursing assessments: a longitudinal measure of patient condition from analysis of the electronic medical record. BMJ Open2, e000849. doi:10.1136/bmjopen-2012-000849.

Smith L, Fox M, Seriki D 2014 The role of the community clinician in the early detection, referral and treatment of critical limb ischaemia. British Journal of Community Nursing 19(6):266–72.

Talley N, O'Connor S 2014 Clinical examination. Elsevier, Sydney.

Teasdale G, Allen D, Brennan P et al 2014 Forty years on: updating the Glasgow Coma Scale. Nursing Times 110(42):12–16.

CHAPTER

25

Understanding infection control

Sonya Osborne

KEY TERMS

Asepsis, p. 659
Aseptic field, p. 657
Aseptic technique, p. 659
Chain of infection, p. 623
Colonisation, p. 623
Disinfection, p. 657
Five moments for hand hygiene, p. 644
Healthcare-associated infections, p. 629
Immune response, p. 634
Infection, p. 623
Inflammatory response, p. 633
Microorganisms, p. 623
Normal flora, p. 623
Pathogens, p. 624
Standard precautions, p. 628
Sterilisation, p. 625
Surgical asepsis, p. 660
Transmission-based precautions, p. 623

Learning outcomes

Mastery of content will enable you to:

- recognise individual, cultural and age-related similarities and differences in patients' response to infection and infection control
- explain the chain of infection concept relating to transmission of infection
- identify the body's normal defences against infection
- discuss the events in the body's inflammatory response
- explain the difference between cell-mediated and humoral immunity
- describe the signs and symptoms of a localised infection and a systemic infection
- identify patients most at risk of infection
- explain conditions that promote the transmission of healthcare-associated infection
- explain the difference between medical and surgical asepsis
- identify nursing interventions that target each element in the chain of infection
- explain the rationale for standard and transmission-based precautions
- correctly perform hand hygiene procedures
- explain how infection control measures in the home may differ from those in the hospital
- correctly don a surgical mask, sterile gown and sterile gloves.

It has been estimated that approximately 175,000 healthcare-associated infections (HAIs) occur annually in Australia, accounting for almost one million bed-days lost to HAIs per year (Graves et al 2009). Patients in all healthcare settings are at risk of acquiring infections because of their lowered resistance to infectious micro-organisms, increased exposure to disease-causing microorganisms and invasive procedures. In acute care or daycare facilities, or even in the home, patients can be exposed to pathogens, some of which may be resistant to most antibiotics. Surgical site infection (SSI) and catheter-associated urinary tract infection (CAUTI) are two of the most common HAIs (Graf et al 2011).

Effective infection prevention and control techniques can minimise transmission of infection and protect patients and health workers from disease. Patient education, including information concerning infections, modes of transmission and methods of prevention, is essential if patients and their families are to recognise sources of infections and implement protective measures. Infection can be transmitted through *direct contact* (touch), *droplet contact* (body fluids), *airborne spread* (air currents), *contaminated articles*, *food*, *water* and *vectors* (insects or rodents). Understanding the modes of transmission of infectious organisms and knowing how and when to apply the basic principles of infection prevention and control, such as standard and **transmission-based precautions**, is critical to the success of an infection control program. Health workers can also protect themselves from contact with infectious material or exposure to communicable diseases by understanding the infectious process and implementing appropriate infection prevention and control practices.

Nature of infection

Colonisation is the sustained presence of replicating infectious agents on or in the body, without the production of an immune response or disease (National Health and Medical Research Council 2010). An **infection** involves the entry and multiplication of an infectious agent within the tissues of a host, resulting in an immune response with or without symptomatic disease (NHMRC 2010). If the infectious agent (pathogen) fails to cause injury to cells or tissues, the infection is *asymptomatic*. If the pathogens multiply and cause clinical signs and symptoms, the infection is *symptomatic*. If the infectious disease can be transmitted directly from one person to another, it is a *communicable* or *contagious* disease.

Chain of infection

The presence of a pathogen does not always result in an infection. Development of an infection is dependent on the following elements (NHMRC 2010):

- a source (or reservoir) of infectious agents (or pathogens) and an exit portal out of the reservoir
- a mode of transmission for the pathogen
- a susceptible host with a portal of entry receptive to the pathogen.

The potential for infection is enhanced by the inter-relationship of these elements, which together form a process known as the **chain of infection** (Figure 25-1). An infection will develop if the chain remains intact. Adherence to infection prevention and control practices can break the chain and prevent infection.

Infectious agents

Most infectious agents are **microorganisms**, including bacteria, viruses, fungi, protozoa and prions (Table 25-1). Microorganisms on the skin may be resident (also called **normal flora**) or transient flora. *Resident* flora are the microorganisms that normally reside under the superficial cells of the stratum corneum or on the surface of the skin. *Transient* microorganisms colonise the superficial layers of the skin and attach to the skin when a person has contact with another person or object. For example, when a nurse touches a bed pan or a contaminated dressing, transient bacteria from these objects adhere to the nurse's skin. Transient organisms attach loosely to the skin in

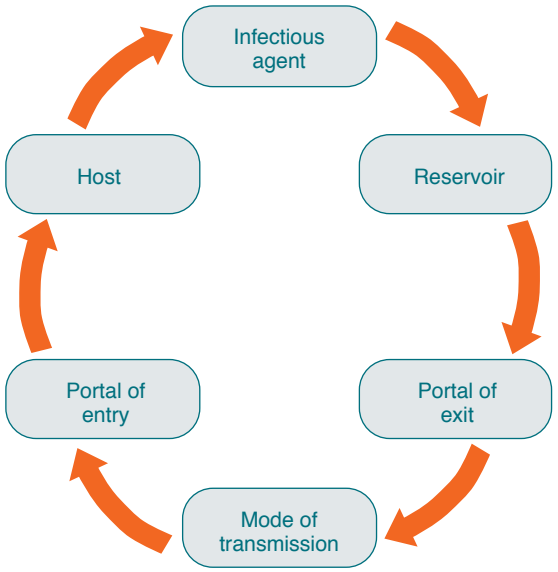

Figure 25-1 Chain of infection.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

debris and oils, or under the fingernails, and are readily transmitted unless removed by adequate hand hygiene.

When microorganisms cause disease in their host, they are considered infectious agents or **pathogens**. Infection is the result of a complex interrelationship between a host and an infectious agent, and individuals vary in their response to exposure to an infectious agent. The potential for microorganisms or parasites to cause disease depends on the following factors:

- sufficient number of organisms
- virulence, or ability to produce disease
- ability to enter and survive in the host
- susceptibility of the host.

Although normal flora is usually non-pathogenic, serious infection can occur from resident skin microorganisms. For example, when surgery or other invasive procedures breach the integrity of skin and allow the transfer of microbes to deeper tissues, or when a patient is severely immune-compromised, resident skin flora can cause infection.

CRITICAL REFLECTION POINT

Mrs Atkins is attending an outpatient clinic to have a venous ulcer on her left leg reviewed. The ulcer is large, with wound fluid visible through the dressing. Mrs Atkins is slightly confused. You notice that the registered nurse attending to the dressing is using tap water to cleanse the wound and is not wearing gloves. When you ask why, he says, 'These wounds are heavily colonised anyway – a few more bugs won't hurt.'

1. **Is this practice justifiable based on the registered nurse's rationale?**
2. **How and when would you respond to this comment?**

TABLE 25-1 Common pathogens and some infections or diseases they produce

Organism	Major reservoir(s)	Major infections/diseases
Bacteria		
Escherichia coli	Colon	Gastroenteritis, urinary tract infection
Mycobacterium tuberculosis	Droplet nuclei from lungs	Tuberculosis
Neisseria gonorrhoeae	Genitourinary tract, rectum, mouth	Gonorrhoea, pelvic inflammatory disease, infectious arthritis, conjunctivitis
Rickettsia rickettsia	Wood tick	Rocky Mountain spotted fever
Staphylococcus aureus	Skin, hair, anterior nares	Wound infection, pneumonia, food poisoning, cellulitis
Staphylococcus epidermidis	Skin	Wound infection, bacteraemia, line infection
Streptococcus (beta-haemolytic group A) organisms	Oropharynx, skin, perianal area	'Strep throat', rheumatic fever, scarlet fever, impetigo, wound infection
Streptococcus (beta-haemolytic group B) organisms	Adult genitalia	Urinary tract infection, wound infection, postpartum sepsis, neonatal sepsis
Viruses		
Hepatitis A virus	Faeces	Hepatitis A
Hepatitis B virus	Blood and body fluids	Hepatitis B
Hepatitis C virus	Blood	Hepatitis C
Herpes simplex virus (type I)	Lesions of mouth or skin, saliva, genitalia	Cold sores, aseptic meningitis, sexually transmitted disease, herpetic whitlow
Human immunodeficiency virus (HIV)	Blood, semen, vaginal secretions (also isolated in saliva, tears, urine and breast milk, but not proved to be sources of transmission)	Acquired immune deficiency syndrome (AIDS)
Fungi		
Aspergillus organisms	Soil, dust, mouth, skin, colon, genital tract	Aspergillosis, pneumonia, sepsis
Candida albicans	Mouth, skin, colon, genital tract	Moniliasis, pneumonia, sepsis
Protozoa		
Plasmodium falciparum	Blood	Malaria

Reservoir

A *reservoir* is a place where a pathogen can survive and may or may not multiply. For example, hepatitis A virus survives in shellfish but does not multiply; *Pseudomonas* organisms may survive and multiply in nebuliser reservoirs. Infectious agents transmitted during health care come primarily from human sources, including patients, healthcare workers and visitors. Although a variety of microorganisms live on the skin, within body cavities and within body fluids, the presence of microorganisms does not always cause illness. People or animals with no symptoms of illness but with evidence of pathogens on or in their bodies that can be transferred to others are termed *carriers*. For example, a person can be a carrier of the hepatitis B virus without having signs or symptoms of the infection. Animals, insects, food, water and inanimate objects (fomites) can also be reservoirs for infectious organisms. For example, shellfish can also become contaminated with *Vibrio cholerae*, the bacterium that causes cholera. *Clostridium botulinum* toxin survives in incorrectly processed foods and can cause botulism. The bacterium *Legionella pneumophila* causes Legionnaire's disease and can reside in contaminated water, cooling towers and water systems.

Microorganisms and parasites require a favourable environment in which to thrive. This can include food, the presence or absence of oxygen, water, an appropriate temperature, pH and light.

Food

Although microorganisms differ in their food requirements, all require nourishment from some source. Most require an external source of food, but a few rare microorganisms are capable of manufacturing their own energy through the same photosynthesis process used by plants. For example, *Clostridium perfringens*, the microbe that causes gas gangrene, thrives on organic matter and *Escherichia coli* consumes undigested food in the bowel. Soil provides nourishment for other types of organisms such as *Clostridium tetani*, which can cause tetanus.

Oxygen

Aerobic bacteria require oxygen for survival and sufficient multiplication to cause disease. Aerobic organisms such as *Staphylococcus aureus* and strains of *Streptococcus* commonly cause infections in humans, compared with the less common anaerobic organisms, for example, those that cause tetanus, gas gangrene and botulism. Anaerobic bacteria flourish where little or no free oxygen is available. Traumatic wounds, such as stab wounds, compound fractures and burns, can be infected with anaerobic bacteria (e.g. *C. perfringens*) or aerobic bacteria (e.g. *S. aureus*).

Water

Most organisms require water or moisture for survival. For example, a common place for microorganisms to multiply is within the moist drainage from a surgical wound. The spirochete causing syphilis, *Treponema pallidum*, only survives in a moist environment. However, spore-forming bacteria (endospores), such as those that cause anthrax, botulism and tetanus, are resistant to drying and can survive without water.

Temperature

Microorganisms survive in specific temperature ranges. The ideal temperature for most human pathogens is 37°C. However, some microorganisms can survive temperature extremes that are usually fatal to humans. Cold temperatures tend to prevent growth and reproduction of bacteria (bacteriostasis). A temperature that destroys bacteria is classified as *bactericidal*. For example, steam **sterilisation** of correctly pre-cleaned items occurs at a temperature of 134°C, under 203 kPa of pressure, when maintained in a steriliser with these parameters for 3 minutes (Standards Australia 2014).

pH

The acidity of an environment affects the viability of microorganisms. Most survive in a pH environment range of 5–8. In particular, bacteria thrive in urine with an alkaline pH. Most organisms cannot survive the acidic environment of the stomach. However, administration of acid-reducing medications such as an antacid or H_2-receptor antagonist may cause an overgrowth of a gastrointestinal organism such as *Candida albicans*, resulting in a nosocomial, treatment-related disease.

Light

Microorganisms multiply in dark, moist, warm conditions, such as under dressings and within body cavities. This environment also predominates on a nurse's hands when gloves are worn. Gloves may contain microscopic perforations permitting the entry of microbes, which proliferate in the moist, warm environment created. It is therefore essential for health workers to wash their hands or liberally apply an antimicrobial alcohol hand rub immediately after the removal of protective gloves.

Portal of exit

Once microorganisms find a site in which to grow and multiply, they must locate a portal of exit if they are to enter a host and cause disease. Microorganisms can

exit through a variety of sites, for example, the skin and mucous membranes, as well as the respiratory, urinary, gastrointestinal and reproductive tracts.

Skin and mucous membranes

Any break in the integrity of the skin and mucous membranes should be considered to be a portal of exit for pathogens. Direct contact with skin lesions can be a source of infection. Often the body responds to a pathogenic organism with the creation of purulent (pus-containing) drainage. For example, *S. aureus* causes a characteristic yellow, creamy drainage and *Pseudomonas aeruginosa* causes a greenish, creamy drainage.

Respiratory tract

Pathogens infecting the respiratory tract, such as *Mycobacterium tuberculosis*, can be released from the body when an infected person sneezes, coughs, talks or even breathes. Microorganisms exit through the mouth and nose in healthy people. Artificial airways, such as tracheostomy or endotracheal tubes (see Chapter 40), facilitate easy transmission of organisms via the respiratory tract.

Urinary tract

Normally, urine is sterile. However, when a patient has a urinary tract infection (UTI), microorganisms exit during urination or through urinary diversions such as urethral catheters, ileo conduits and suprapubic catheters (see Chapter 38).

Gastrointestinal tract

The mouth is one of the most bacterially contaminated sites of the body, although most of the organisms are normal flora – bacteria that normally reside within the body and defend against infection. However, the transfer of normal flora between people can create an infection. For example, organisms exit when a person spits (expectorates) or kisses another person. Bowel elimination, drainage from abdominal surgical wounds or drainage tubes and escape of gastric contents during vomiting are additional portals of exit.

Reproductive tract

Organisms such as *Neisseria gonorrhoeae*, *Chlamydia* species and human immunodeficiency virus (HIV) may exit through the male urethral meatus or a woman's vaginal canal. Semen and vaginal secretions are common pathogenic vehicles for sexually transmitted infections (see Chapter 24).

Blood

Blood-borne diseases, such as HIV or hepatitis B or C, can be transmitted when a break in the skin allows pathogens to exit the body. Caregivers can easily become infected unless precautions are taken, for example, by wearing personal protective equipment such as eyewear, gloves and masks.

Modes of transmission

There are many ways microorganisms can be transmitted from the reservoir to the host, such as contact, droplet or airborne transmission. Table 25-2 summarises the most common modes of transmission. Certain infectious diseases tend to be more transmissible by specific modes. The same microorganisms may also be transmitted by more than one route. Chickenpox (varicella), for example, is caused by primary infection with the varicella zoster virus (VZV). Although the primary mode of VZV transmission is via droplets or airborne particles, it is also spread through direct contact with contaminated secretions or the vesicular fluid from skin lesions of varicella or herpes zoster (shingles) (Weaver 2009). The most common mode of transmission of microorganisms to patients is via the hands of health workers. However, almost any object in the environment, for example, a stethoscope or thermometer, can transmit pathogens (see *Research highlight*).

Nurses have the most direct and continuous role in performing the procedures and interventions on which the risk of infection often hinges, making them a critical component of infection prevention. Studies demonstrate a strong association between nurse staffing and the risk of healthcare-associated infections (Stone et al 2008). Other hospital personnel that provide direct patient care or those performing diagnostic and support services also play an important role in minimising the spread of infection. Caregivers can easily become infected unless precautions are taken, such as wearing protective apparel such as eyewear, gloves and masks. In addition, infection control procedures must be followed for the safe handling of equipment and supplies used by each patient; for example, hand hygiene before working with each patient and disposing of soiled equipment appropriately.

Certain medical equipment and devices or diagnostic procedures provide avenues for the spread of pathogens. Invasive procedures such as cystoscopy (instrumentation and examination of the bladder) facilitate diagnosis but also increase the risk of transmitting infection. Therefore, the used cystoscope must be reprocessed and sterilised to prevent cross-infection. As many factors promote the spread of infection, health workers must conscientiously adhere to infection control practices such as hand hygiene. All equipment used on patients must be correctly decontaminated to prevent cross-infection.

TABLE 25-2 Modes of transmission

Routes and means	Examples of organisms
Contact	
Direct: Person-to-person direct transfer of infectious agent (e.g. faecal, oral, blood) from physical contact between source and susceptible host (e.g. touching patient, patient's blood entering healthcare worker through break in skin)	Influenza A (avian influenza, H5N1 virus, 'bird flu'), hepatitis A virus, *Shigella*, *Staphylococcus*, herpes simplex, multi-resistant organisms (MROs), SARS-associated coronavirus norovirus, respiratory syncytial virus (RSV), highly contagious skin infections/infestations (e.g. impetigo, scabies)
Indirect: Personal contact of susceptible host with contaminated inanimate object (e.g. needles or sharp objects, dressings)	Hepatitis B virus, *Staphylococcus*, *Pseudomonasaeruginosa*, MRSA, VRE, *C. difficile*
Droplet	
Large particles that travel up to 1 metre and come in contact with susceptible host (e.g. coughing, sneezing, talking or other procedures); droplets can also be transmitted indirectly to mucosal membranes (i.e. by contact from hands)	Rubella virus (measles), varicella zoster virus (chickenpox), influenza virus, rubella virus, *Bordetella pertussis*, adenovirus, rhinovirus, *Mycoplasma pneumonia*, SARS-associated coronavirus, group A streptococcus, *Neisseria meningitidis*
Airborne	
Small-particle aerosols, droplet nuclei or residue or evaporated droplets created (e.g. by breathing, coughing, sneezing, talking) and suspended in air or carried on dust particles	*Mycobacterium tuberculosis* (TB), varicella zoster virus (chickenpox), *Aspergillus* spp.
Vehicles (contaminated)	
Water	*Vibrio cholerae*
Medications, solutions	*Pseudomonas*
Blood	Hepatitis C virus
Food (improperly handled, stored or cooked, fresh or thawed meats)	Salmonella, *Escherichia coli*, *C. botulinum*
Vector	
External mechanical transfer (flies; birds, e.g. chickens, ducks; rats)	*Vibrio cholera*, Hendra virus
Internal transmission such as parasitic conditions between vector and host, such as mosquito, louse and flea	*Plasmodium falciparum* (malaria), *Rickettsia typhi*, *Yersinia pestis* (plague)

MRSA = methicillin-resistant *Staphylococcus aureus*; SARS = severe acute respiratory syndrome; TB = tuberculosis; VRE = vancomycin-resistant enterococci.

Portal of entry

Organisms can enter the body through the same routes as they exit. For example, as a contaminated needle pierces a patient's skin, microorganisms enter the body. Contamination of bandages placed over an open wound permits pathogens to enter exposed tissues. These are examples of factors that impair the body's normal defences and increase the opportunity for pathogens to enter and infect the body. Urinary tract infection (UTI) is one of the most common healthcare-associated infections (HAI). Eighty per cent of UTIs are caused by indwelling urinary catheters (IDCs), and the risk of acquiring a catheter-associated urinary tract infection (CAUTI) increases between 3% and 7% every day an IDC remains in situ (Parker et al 2009, Traunter 2010).

• CRITICAL REFLECTION POINT

Mrs Ng has had an indwelling urethral catheter (IDC) in situ for 1 week. The IDC was removed 24 hours ago; she now complains of urinary frequency and pain on urination. Mrs Ng suggests reinsertion of the IDC because of the need to urinate frequently and the distress this is causing her.

1. **What can frequency or dysuria indicate?**
2. **Should the IDC be reinserted? Justify your answer.**
3. **What evidence-based nursing interventions could you use to prevent catheter-associated urinary tract infections in the acute care setting?**

Susceptible host

Whether a person acquires an infection or not depends on their *susceptibility* to an infectious agent. Important predictors of an individual's outcome after exposure include (NHMRC 2010):

RESEARCH HIGHLIGHT

Research focus

Identity badges and lanyards worn by healthcare workers (HCWs) frequently come into contact with patients and the clinical environment, and it is reasonable to expect that they could become colonised with nosocomial pathogens. This Australian study was the first to examine whether identity badges and lanyards worn by HCWs are capable of harbouring potentially pathogenic bacteria.

Research abstract

Design, setting and participants

Cross-sectional study of 71 HCWs (59 clinical ward staff and 12 infection control staff) at Monash Medical Centre, a university teaching hospital. Samples from lanyards, identity badge surfaces and connections (e.g. clips, keys, pens) were cultured.

Main outcome measures

Presence of pathogenic bacteria on identity badges and lanyards; differences in bacterial counts on items carried by nurses and doctors.

Results

A total of 27 lanyards were identified with pathogenic bacteria, compared with 18 badges. Analysing lanyards and badges as a combined group, seven had methicillin-resistant *Staphylococcus aureus* 29 had methicillin-sensitive *S. aureus* (MSSA), 4 had *Enterococcus* spp and 5 had aerobic Gram-negative bacilli. Lanyards were found to be contaminated with 10 times the median bacterial load per area sampled compared with identity badges. There were no significant differences between nurses and doctors in total median bacterial counts on items carried, but doctors had 4.41 times the risk of carrying MSSA on lanyards (95% CI, 1.14–13.75).

Conclusion

Identity badges and lanyards worn by HCWs may be contaminated with pathogenic bacteria, which could be transmitted to patients.

Implications for practice

- Identity badges are constantly touched by HCWs' hands and this action can recontaminate hands with pathogens, even after hand hygiene procedures have been followed.
- Based on these data the authors suggest HCWs remove non-essential connections and clean identity badges frequently.
- Lanyards should be changed frequently or disposed of altogether in preference to clipped-on identity badges.

Reference

Kotsanas D, Scott C, Gillespie EE, et al. What's hanging around your neck? Pathogenic bacteria on identity badges and lanyards. Med J Aust 2008;188(1):5-8.
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- immune status at the time of exposure (including whether immune status is compromised by medical treatment such as immunosuppressive agents or irradiation)
- age (e.g. neonates and elderly patients are more susceptible)
- health status (e.g. when a patient has other underlying disease such as diabetes or is a smoker)
- the virulence of the agent
- other factors that increase the risk of transmission of infection (e.g. undergoing surgery, requiring an indwelling device such as a catheter or remaining in hospital for lengthy periods).

Susceptibility depends on the individual's degree of resistance to a pathogen. Although everyone is constantly in contact with large numbers of microorganisms, an infection will not develop until an individual becomes susceptible to the strength and numbers of micro-organisms capable of producing infection. The more virulent an organism is, the greater the likelihood of a person becoming susceptible to infection. Organisms with greater virulence and resistance to antibiotics are becoming more common in acute care settings, associated with the frequent and sometimes inappropriate use of antibiotics. A person's natural defences against infection, as well as a number of other factors, influence resistance. A person's resistance to an infectious agent is enhanced by vaccines or by actually contracting the disease and developing a natural immunity.

The infectious process

Understanding the chain of infection enables the nurse to intervene and help prevent the development of infection. All patients should be treated as potentially infectious and the nurse should employ **standard precautions**, which are measures to minimise spread of infection. When a patient acquires an infection, the nurse observes for signs and symptoms of infection and takes appropriate action to prevent its spread. Infections follow a progressive course (Box 25-1). The severity of a patient's illness depends on the extent of the infection, the pathogenicity of the microorganisms and the susceptibility of the host.

BOX 25-1 Course of infection by stage

Incubation period

Interval between entry of pathogen into body and appearance of first symptoms (e.g. chickenpox, 2–3 weeks; common cold, 1–2 days; influenza, 1–3 days; mumps, 18 days).

Prodromal stage

Interval from onset of non-specific signs and symptoms (malaise, low-grade fever, fatigue) to more-specific symptoms (during this time, microorganisms grow and multiply, and patient is more capable of spreading disease to others).

Illness stage

Interval when patient manifests signs and symptoms specific to type of infection (e.g. common cold manifested by sore throat, sinus congestion, rhinitis; mumps manifested by earache, high fever, parotid and salivary gland swelling).

Convalescence

Interval when acute symptoms of infection disappear (length of recovery depends on severity of infection and patient's general state of health; recovery may take several days to months).

If infection is *localised*, such as a wound infection, appropriate use of standard precautions will help control its spread and minimise the illness. The patient may experience localised symptoms such as pain and tenderness at the wound site. An infection affecting the entire body instead of a single organ or limb is termed *systemic* and can be fatal.

The severity of an infection influences the level of nursing care provided. The nurse is responsible for implementing appropriate infection control measures, administering antibiotics and monitoring the patient's response to medication therapy (see Chapter 31). Supportive therapy includes providing adequate nutrition and rest to bolster defences against the infectious process. The complexity of care will also depend on the body systems affected by the infection.

Regardless of whether the infection is localised or systemic, the nurse plays an important role in minimising its spread. For example, the organism causing a simple wound infection can spread to involve an intravenous (IV) cannula insertion site if the nurse does not adhere to principles of standard precautions while performing routine patient-care procedures. Nurses with breaks in their own skin integrity can also acquire infections from patients if techniques for controlling infection transmission are inadequate.

Healthcare-associated infections

Patients in healthcare settings have an increased risk of acquiring infections. **Healthcare-associated infections** (HAIs), previously referred to as nosocomial infections, are contracted by patients during their admission to a healthcare facility. HAIs are often transmitted by health workers, for example, if they fail to wash their hands in between patients. A hospital is one of the most likely places for acquiring an infection because it harbours a high population of virulent, potentially antibiotic-resistant strains of microorganisms. It is estimated that up to 70% of some types of HAIs are preventable through improved infection control practices among healthcare providers. The intensive care unit (ICU) is an area where the risk of acquiring an HAI is increased, due to the high acuity of patients and the prevalent use of antibiotics (Box 25-2).

BOX 25-2 Risk of healthcare-associated infection in critical-care units

Healthcare-associated infection is a major problem in critical-care areas which may affect up to 20% of patients, with a mortality rate of around 30% (Orsi et al 2005).

Healthcare workers in critical-care areas should therefore be vigilant with hand hygiene and infection control practices. Critical-care patients are 5–10 times more likely to become infected than ward patients (Lim & Webb 2005).

Nurses working in intensive care units (ICUs) should be particularly conscious of aseptic practices. Patients are at risk of infection for a variety of reasons, including:

- patients are compromised by their disease or trauma and are more susceptible to infection
- patients often have comorbidities or a history of prolonged medical treatment
- invasive devices, such as intravenous, arterial and central venous lines, are often inserted
- a greater number of invasive procedures are performed in critical-care areas
- occasionally emergency surgical procedures are performed in ICUs instead of the operating room, because of a patient's critical condition
- overuse of broad-spectrum antibiotics increases the formation of resistant microorganisms both in patients and within the environment
- staff shortages and the fast pace in critical-care areas can often cause healthcare providers to become less diligent with hand hygiene and asepsis.

Lim SM, Webb SAR 2005 Nosocomial bacterial infections in intensive care units 1: organisms and mechanisms of antibiotic resistance. Anaesthesia 60:887–902; Orsi GB, Raponi M, Franchi C et al 2005 Surveillance and infection control in an intensive care unit. Infect Control Hosp Epidemiol 26:321–5.

Iatrogenic infections are a type of HAI that result from a diagnostic or therapeutic procedure. For example, intravascular catheters (IVCs) are the most frequently used medical devices in hospitals, yet they are associated with life-threatening catheter-associated bloodstream infection (CABSI). You should always consider the patient's risk of infection during procedures and implement the most appropriate intervention to decrease the opportunity for contamination.

HAIs may be exogenous or endogenous. An *exogenous* infection, for example, *Salmonella* organisms and *C. tetani*, arises from microorganisms external to the individual that do not exist as the person's normal flora. An *endogenous* infection, for example, enterococci, yeasts and streptococci, can occur when part of the patient's flora becomes altered and overgrowth results. When sufficient numbers of microorganisms normally found in one body cavity or lining are transferred to another body site, an endogenous infection develops; for example, transmission of enterococci normally found in faecal material can cause a wound infection.

The number of microorganisms required to cause an HAI depends on the virulence of the organism, the host's susceptibility and the site affected. The number of health workers in direct contact with a patient, the type and number of invasive procedures, the therapy received and the length of hospitalisation all influence the risk of infection. Major sites for HAI include surgical or traumatic wounds, urinary and respiratory tracts and the bloodstream (Box 25-3).

HAIs significantly increase costs to the patient, the healthcare institution and funding bodies, for example, Medicare and private health insurance. Infections can result in increased pain, disability, increased costs of antibiotics, procedures and laboratory tests and prolonged recovery times. Hospitals may not be reimbursed by health-insurance companies for costs relating to HAIs, and therefore prevention has a beneficial financial effect for healthcare facilities and the wider community.

Multi-resistant organisms

Multi-resistant organisms (MROs) are, for the most part, bacteria resistant to multiple classes of antimicrobial agents (e.g. antibiotics), which can become established as endemic pathogens in healthcare institutions. Resistance to antibiotics increases the morbidity and mortality associated with infections (Struelens 1998). The CDC has classified MROs into three threat levels: urgent, serious or concerning, based on key factors including health and economic impact, how common the infection is and how common it is projected to become in 10 years, how

BOX 25-3 Sites and causes of healthcare-associated infections

Urinary tract

(e.g. catheter-associated urinary tract infection)

- Insertion of urinary catheter
- Open drainage system
- Catheter and tube becoming disconnected
- Drainage bag port touching contaminated surface
- Improper specimen-collection technique
- Obstruction or interference with urinary drainage
- Urine in catheter re-entering the bladder (reflux)
- Improper or absent hand hygiene, e.g. handwashing or antimicrobial hand rub technique
- Failure to wash hands or apply an antimicrobial 'rub' solution following removal of gloves
- Repeated catheter irrigations with solutions, altering the pH of urine

Surgical or traumatic wounds

(e.g. surgical site infection)

- Improper skin preparation prior to surgery
- Improper or absent surgical hand antisepsis techniques
- Failure to clean the patient's skin surface properly
- Failure to use a correct aseptic technique during dressing changes
- Reuse of antiseptic solutions

Respiratory tract

(e.g. ventilator-associated pneumonia)

- Contaminated respiratory therapy equipment
- Failure to use correct aseptic technique while suctioning a patient's airway
- Improper disposal of mucous secretions
- Improper or absent hand hygiene, e.g. handwashing or antimicrobial hand rub technique

Bloodstream

(e.g. catheter-associated bloodstream infection)

- Contamination of IV fluids by tubing or inserting needles
- Insertion of drug additives to IV fluids
- The addition of tube or stopcocks to IV system
- Improper care of needle insertion sites
- Use of contaminated needles or catheters
- Failure to resite an IV when inflammation first appears at the IV site
- Improper technique during the administration of multiple blood products
- Improper care of peritoneal or haemodialysis shunts
- Improper or absent hand hygiene, e.g. handwashing or antimicrobial hand rub technique

easily it spreads, the availability of effective antibiotics and barriers to prevention (CDC 2013). Resistant organisms of particular epidemiological significance include all methicillin-resistant *Staphylococcus aureus* (MRSA), all vancomycin-resistant enterococci (VRE) and a range of Gram-negative bacteria with multiple classes of drug resistance (e.g. *Pseudomonas aeruginosa* and *Acinetobacter baumannii*). In Australia, other new challenges have emerged with the increase of *Clostridium difficile* infections and other multi-resistant Gram-negative bacteria, including those producing extended-spectrum beta-lactamases (ESBLs) or carbapenemases (ACQSHC 2012).

The National Health and Medical Research Council (NHMRC) guidelines on infection control recommend a two-level approach for prevention and control of MROs, which includes core strategies and organism-based or resistance-based approaches, assuming that an institution already has basic infection prevention and control processes in place (NHMRC 2010). Core strategies include compliance with standard and transmission-based precautions such as diligent hand hygiene and use of appropriate personal protection equipment, isolating in single rooms or cohorting colonised or infected patients, contact precautions that include environmental cleaning and disinfecting of patient surroundings and frequently touched items and equipment, use of disposable or patient-dedicated equipment and ongoing monitoring. If the use of these core strategies is ineffective in reducing the incidence and prevalence of an MRO outbreak, a more targeted, or organism-specific, approach needs to be enacted. A more targeted approach includes a risk management strategy that takes into account the organism, patient factors, the healthcare environment and availability and access to resources needed to control the outbreak. Additionally, an organism-specific approach would include: targeted screening to identify colonised patients and extension of contact precautions to include new cases; decolonisation via topical, systemic or combination interventions; and increased surveillance and timely feedback to healthcare workers.

It is every healthcare professional's responsibility to minimise the risk of infection for patients and staff by identifying risk factors for transmission of pathogenic organisms and implementing appropriate infection prevention and control practices.

Defences against infection

The body has normal defences against infection. Each organ system has defence mechanisms to protect against exposure of infectious microorganisms (see Figure 25-2). *Normal flora*, *body system defences* and *inflammation* are non-specific defences that protect against microorganisms, regardless of previous exposure. Separate cells and molecules of the *immune system* help the body to resist disease. Immune-system responses are either pathogen-specific or non-pathogen-specific defences. If any of the body's defences fail, an infection can quickly progress into a serious health problem.

Normal flora

Microorganisms normally reside on the surface and in the deep layers of the skin, in the saliva and oral mucosa, in the respiratory tract and in the gastrointestinal and genitourinary tracts. Normal flora do not generally cause disease when residing in their usual location within the body. Instead, they help maintain health by creating an environment which inhibits colonisation by other organisms – by altering the pH, thereby inhibiting the growth of other bacteria; by excreting antibacterial chemicals; and by producing vitamins which benefit the host.

The skin contains a large population of resident flora. These organisms are permanent residents of the skin, where they survive and multiply. The skin's normal flora exert a protective action by inhibiting multiplication of other microorganisms. Large numbers of normal skin flora live in warm, moist areas of the body, for example, nasal passages, axillae, groin, hair follicles and sweat glands, with fewer normal flora found on exposed skin surfaces. Resident organisms are not easily removed by washing with plain soaps and detergents unless considerable friction is used.

Resident microorganisms in the mouth and pharynx impair growth of invading microbes. Upper-respiratory normal flora include streptococci, staphylococci, diphtheroids and Gram-negative cocci.

A person normally excretes trillions of microbes daily through the intestines. A large number of normal flora exists in the large intestine without causing disease. These serve a protective function by competing with disease-producing microorganisms for food, thereby limiting colonisation and disease. Normal flora also secrete antibacterial substances within the intestinal wall.

In the genitourinary tract, the lower portion of the urethra contains microorganisms similar to those present on the skin. Although usually flushed out by acidic urine, microorganisms can increase in alkaline urine, causing UTIs. The action of lactobacilli can lower the pH of the vaginal fluid to 5 (acidic), which inhibits the growth of other organisms. A decrease in lactobacillus through

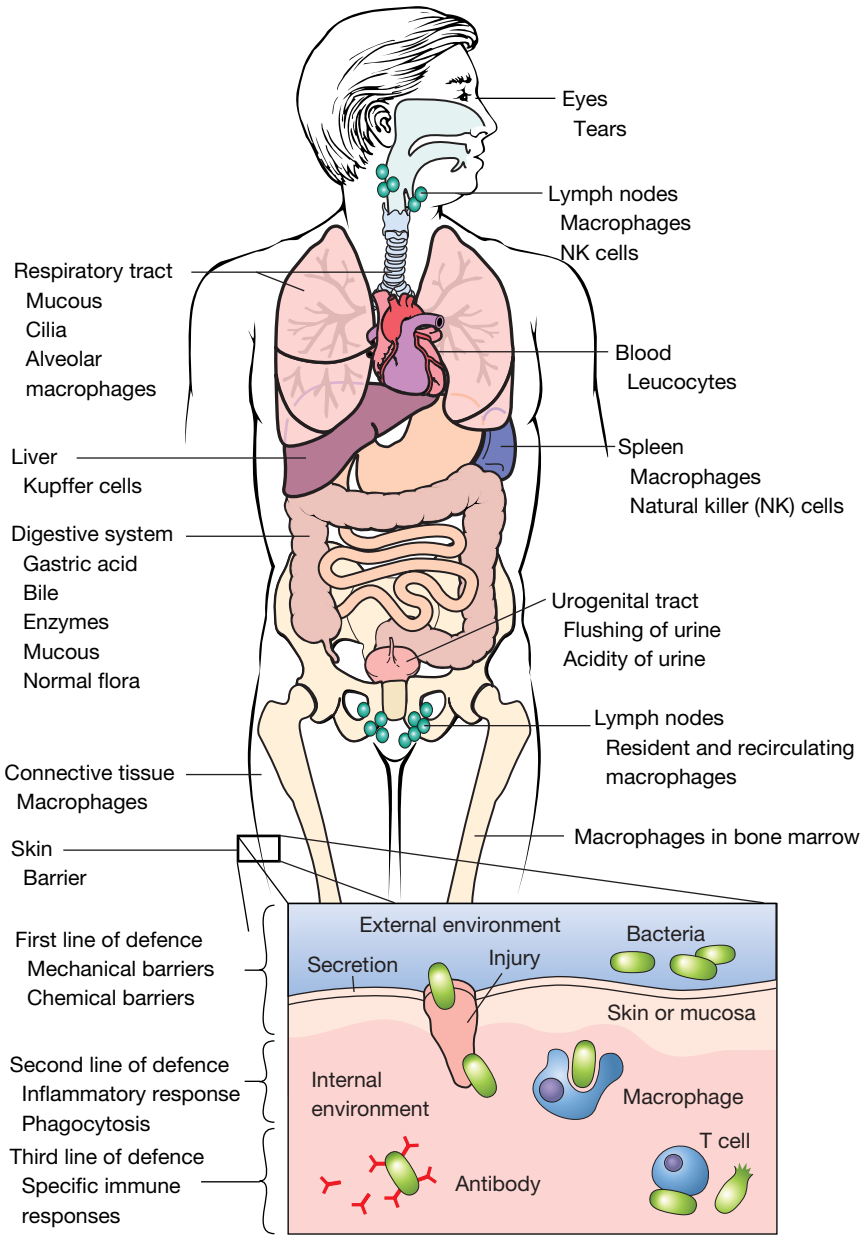

Figure 25-2 Normal defences against infection.

Craft J et al 2011 Understanding pathophysiology: ANZ edition. Mosby, Sydney.

long-term antibiotic use allows the colonisation of other organisms, for example, *C. albicans*.

The mass of normal flora within the body maintains a sensitive balance with other microorganisms to prevent infection. Any factor disrupting this balance places a person at increased risk of acquiring an infectious disease. For example, the use of broad-spectrum antibiotics for the treatment of infection can lead to *suprainfection* – normal bacterial flora are eliminated, allowing disease-producing microorganisms to multiply.

Body system defences

A number of the body's organ systems have unique defences against infection (Table 25-3). The skin, respiratory tract and gastrointestinal tract are easily accessible to microorganisms. Pathogenic organisms can adhere to the skin's surface, be inhaled into the lungs or be ingested with food. Each organ system has defence mechanisms physiologically suited to their structure and function. Although the lungs cannot completely control the entrance of microorganisms, the airways are lined with

TABLE 25-3 Normal defence mechanisms against infection

Defence mechanism	Action	Factors that may alter defence
Skin		
Intact multilayered surface (body's first line of defence against infection)	Provides barrier to microorganisms	Cuts, abrasions, puncture wounds, areas of maceration
Shedding of outer layer of skin cells	Removes organisms that adhere to skin's outer layers	Failure to bathe regularly
Sebum	Contains fatty acid that kills some bacteria	Excessive bathing
Mouth		
Intact multilayered mucosa	Provides mechanical barrier to microorganisms	Lacerations, trauma, extracted teeth
Saliva	Washes away particles containing microorganisms Contains microbial inhibitors (e.g. lysozyme)	Poor oral hygiene, dehydration
Respiratory tract		
Cilia lining upper airway, coated by mucous	Traps inhaled microbes and sweeps them outwards in mucous to be expectorated or swallowed	Smoking, high concentration of oxygen and carbon dioxide, decreased humidity, cold air
Macrophages	Engulfs and destroys microorganisms that reach lung's alveoli	Smoking
Urinary tract		
Flushing action of urine flow	Washes away microorganisms on lining of bladder and urethra	Obstruction to normal flow by urinary catheter placement, obstruction from growth or tumour, delayed micturition
Intact multilayered epithelium	Provides barrier to microorganisms	Introduction of urinary catheter, continual movement of catheter in urethra
Gastrointestinal tract		
Acidity of gastric secretions	Chemically destroys microorganisms incapable of surviving low pH	Administration of antacids
Rapid peristalsis in small intestine	Prevents retention of bacterial contents	Delayed motility resulting from impaction of faecal contents in large bowel or mechanical obstruction by masses
Vagina		
At puberty, normal flora causing vaginal secretions to achieve low pH	Inhibits growth of many microorganisms	Antibiotics and oral contraceptives disrupting normal flora

hair-like projections, termed cilia, which rhythmically beat to move a blanket of mucous and adherent organisms up the respiratory tract to the pharynx, to be exhaled or expectorated.

Inflammatory response

The body's cellular response to injury or infection is inflammation. The **inflammatory response**, a protective vascular and cellular reaction, neutralises pathogens and repairs body cells. The inflammatory response may be triggered by physical agents such as mechanical trauma, temperature extremes and radiation, chemical agents, external and internal irritants such as harsh poisons, gastric acid or by microorganisms. When tissues are injured, a well-coordinated inflammatory response occurs.

Vascular and cellular responses

Acute inflammation is an immediate response to cellular injury. This protective vascular reaction delivers increased blood products and nutrients to interstitial tissues in an area of injury. The process neutralises and eliminates pathogens or dead (necrotic) tissues and establishes a

means of repairing body cells and tissues. Arterioles supplying the injured area dilate, allowing more blood into the local circulation. The increase in local blood flow causes the characteristic redness of inflammation. The symptoms of localised warmth and swelling result from a greater volume of blood accumulating at the inflamed site. Local vasodilation delivers blood and white blood cells (WBCs) to injured tissues.

Injury causes tissue necrosis and, as a result, the body releases histamine, bradykinin, prostaglandin and serotonin. These chemical mediators or transmitters increase the permeability of small blood vessels. Fluid, protein and cells then enter interstitial spaces. Accumulated interstitial fluid results in localised swelling, termed *oedema*.

The cellular response of inflammation involves WBCs arriving at the site. WBCs pass through blood vessels and into the tissues. Through the process of *phagocytosis*, specialised WBCs, called *neutrophils* and *monocytes*, ingest and destroy microorganisms or other small particles. As inflammation becomes systemic, other signs and symptoms develop. *Leucocytosis* – an increase in the number of circulating WBCs – is evident as the body responds to WBCs leaving blood vessels. A serum WBC count is normally in the range of 4–11 × 10^9/L; this may rise to 14–22 × 10^9/L or higher during inflammation. Fever is caused by the phagocytic release of pyrogens from bacterial cells, causing a rise in the hypothalamic set point, which regulates temperature (see Chapter 28).

Inflammatory exudates

Exudates include a serous, protein-rich, pale pink liquid in which blood cells are suspended, known as *haemoserous exudate*, containing both serous liquid and some blood cells or frank blood. Inflammatory exudate, consisting of an accumulation of fluid, dead microorganisms, tissue cells and WBCs, forms at the site of inflammation. Platelets and plasma proteins such as fibrinogen produce a mesh-like matrix at the site of inflammation to prevent its spread. Eventually the exudate is cleared away through lymphatic drainage. *Purulent exudate*, termed pus, consists of dead cells and microorganisms and is indicative of infection.

Tissue repair

Injury to tissue cells initiates a healing process involving defensive, reconstructive and maturative stages (see Chapter 30).

Immune response

When an invading microorganism enters the body, it is initially attacked by monocytes. Foreign material – *antigens* – are remnants of the microorganism that triggered the **immune response**. Antigens are usually composed of proteins not normally found in a person's body and which often exist as part of the bacterium or virus structure. The series of immune responses changes the body's biological make-up. Reactions to subsequent exposure to this particular antigen, therefore, are different from the initial reaction. These altered immune responses ensure a repeated antigen is neutralised, destroyed or eliminated. After an antigen enters the body it travels in the blood or lymph and initiates *cell-mediated immunity* or *humoral immunity*.

Cell-mediated immunity

There are two classes of lymphocytes: T lymphocytes (CD4 T-cells) and B lymphocytes (B-cells). T-cells play a major role in cell-mediated immunity. There are antigen receptors on the surface membranes of CD4 T-cells. When an antigen identifies a cell with surface receptors that fit the antigen, binding occurs. This binding activates the CD4 T-cell to divide rapidly to form sensitised cells. Sensitised CD4 T-cells travel to the area of inflammation or injury, bind with antigens and release chemical compounds called *lymphokines*. The lymphokines attract macrophages and stimulate them to attack antigens. Eventually the antigens are killed. The cell-mediated response is altered by HIV infections, which cause AIDS (Figure 25-3).

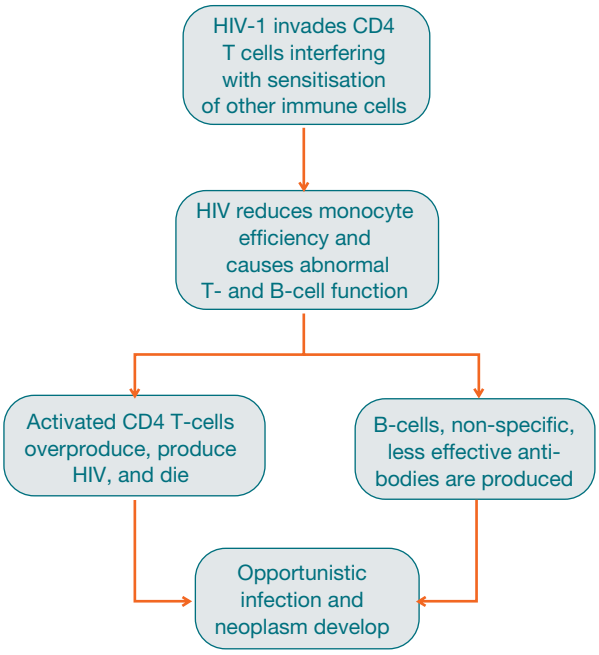

Figure 25-3 Pathological responses of HIV infection.

Humoral immunity

Stimulation of B-cells triggers the humoral immune response, causing synthesis of immunoglobulins or antibodies that destroy antigens. After a B-cell binds with an antigen it causes formation of plasma and memory B-cells. Plasma cells synthesise and secrete large amounts of antibodies. Memory B-cells prepare the body against future antigen invasion. When an antigen enters the body a second time, antibodies form more rapidly than during the first exposure, and immunoglobulin levels remain high to attack the antigen.

Antibodies

Antibodies are large protein molecules. The five classes of antibody immunoglobulins are identified by the letters M, G, A, E and D. Immunoglobulin M (IgM) is the predominant early antibody formed after initial contact with an antigen. This initial contact is the primary immune response, and the presence of IgM denotes current inflammation. The most abundant circulating antibody is IgG, which is formed after subsequent contact with antigens or during the secondary immune response, and its presence denotes past contact with a particular antigen.

The basis of immunisation against disease involves the formation of antibodies. This is either a natural or an artificially induced event. *Natural immunity* results after having a certain disease, such as measles, and usually lasts a lifetime. *Artificial immunity* follows the receipt of a vaccine, such as tetanus or polio vaccine. Depending on the duration of immunity, a booster vaccine may be required. *Passive immunity* is usually of short duration and can occur transplacentally, from mother to child.

Complement

A *complement* is an inactive protein compound found in blood serum. It is activated when an antigen and an antibody bind together. After a complement is activated, a rapid sequence of catalytic activity changes the shape of antigenic cells; for example, the foreign bacteria assume the shape of a doughnut. The complement actually makes a hole through the antigen's cell membrane. Ions and water enter the cell, causing it to burst. This process is called *cytolysis*.

Interferon

When viruses invade certain cells, they synthesise the protein *interferon*. Interferon interferes with the ability of viruses to multiply and protects body cells from simultaneous infection with other viruses. Interferon also directly inhibits the growth and division of tumour cells.

• CRITICAL REFLECTION POINT

Mrs Tendulka accompanies her 12-year-old daughter to have her viral meningitis strain C immunisation. She asks you to explain how a virus causes disease. How would you explain this to her?



CLINICAL REASONING PROCESS

GATHERING RELEVANT INFORMATION AND DATA

The nurse assesses the patient's defence mechanisms, susceptibility and knowledge of infections. By recognising the early signs and symptoms of infection, a nurse can alert others in the healthcare team about the need for therapy and can implement appropriate nursing measures.

Status of defence mechanisms

A review of physical assessment findings and the patient's medical condition can reveal the status of normal defence mechanisms against infection. For example, any break in the skin or mucosa is a potential site for infection. Similarly, a patient who is a chronic smoker is at greater risk of acquiring a respiratory tract infection following general anaesthesia because the cilia of the lung are generally less active or able to propel retained mucous from the lungs. Any reduction in the body's primary or secondary defences against infection places a patient at risk (Box 25-4).

Patient susceptibility

Many factors influence susceptibility to infection. The nurse gathers information about each factor by assessing the patient, including their family history. A review of disease history with the patient and family may reveal an exposure to a communicable disease. Analysis of laboratory findings may

BOX 25-4 Risk factors for infection

Inadequate primary defences

- Broken skin or mucosa
- Traumatised or burnt tissue
- Decreased respiratory ciliary action
- Obstructed urine outflow
- Altered gastrointestinal peristalsis
- Change in pH of secretions
- Decreased mobility

Inadequate secondary defences

- Reduced haemoglobin level
- Suppression of white blood cells (WBCs) (drug- or disease-related)
- Suppressed inflammatory response (drug- or disease-related)
- Low WBC count (leucopenia)

provide information about a patient's defence against infection. Knowledge of the factors that increase patient susceptibility or risk of infection enables the nurse to effectively plan infection prevention and control techniques.

Age

Throughout the life span susceptibility to infection changes. An infant has immature defences against infection. Born with only the antibodies provided by the mother, the immune system of an infant is incapable of producing the necessary immunoglobulins and WBCs to adequately fight some infections. Breastfed infants have greater immunity than bottle-fed infants, because they receive the mother's antibodies through breast milk. As the child grows, their immune system matures, but the child is still susceptible to organisms that cause the common cold, intestinal infections and, if not vaccinated, infectious diseases such as mumps and measles.

The young or middle-aged adult has refined defences against infection. Normal flora, body system defences, inflammation and the immune response provide protection against invading microorganisms. Viruses are the most common cause of infectious illness in young or middle-aged adults.

Defences against infection may change with ageing. The immune response, particularly cell-mediated immunity, declines; this leaves elderly patients with a lower resistance to infection (Weiskopf et al 2009). Older adults also undergo alterations in the structure and function of the skin, urinary tract and lungs. Loss of skin turgor and thinning of the epithelium increases the risk of abrasions and tears and subsequent invasion by pathogens (Table 25-4).

Not only does immunity to infection decrease with advancing age, but alterations in the immune system may even trigger events associated with the ageing process (Gomez et al 2008). Cells of the immune system, such as lymphocytes, become more diversified with age, and the body undergoes a progressive loss of cellular regulation. When viruses or other antigens and corresponding antibodies lodge in sites such as the kidney and arteries, factors injurious to the tissues are released and deterioration begins. With ageing and autoimmune diseases, cellular changes, such as depletion of lymphoid tissues, occur. The basic mechanism for the ageing process is not well understood.

Nutritional status

When protein intake is inadequate due to poor diet or a debilitating disease, the rate of protein breakdown exceeds that of tissue synthesis. A reduction in the intake of protein and other nutrients such as carbohydrates and fats reduces the body's defences against infection and impairs wound healing (see Chapter 30).

Patients with illnesses or problems that increase protein requirements are at further risk. Such problems include

TABLE 25-4 Assessing the risk of infection in older adults

Component	Possible changes with age	Outcome
Skin	Thinner dermal and epidermal layers, decreased collagen strength, decreased skin elasticity, decreased ability to perspire (sweat)	Pressure ulcers
Peripheral nerves	Reduced sensitivity, particularly in patients with history of alcohol abuse, vitamin B_{12} deficiency and diabetes mellitus	Pressure ulcers, ignored trauma leading to infection
Circulation	Heart disease: congestive heart failure, calcified mitral and aortic valves	Pneumonia, bacterial endocarditis
Peripheral circulation	More-elastic veins, less-effective venous valves, blood pooling in lower extremities, dependent oedema in lower limbs	Venous stasis ulcers
Mouth	Dehydration, loss of saliva production, functional inability to maintain oral hygiene	Parotid gland infection, periodontal disease, localised abscess, bacteraemia
Gastrointestinal tract	Loss of ability to secrete stomach acid in 30% of persons over 70 years of age	Salmonella diarrhoea
Pulmonary system	Increased colonisation of oropharynx, impaired mucociliary clearance, decreased macrophage function, decreased cough reflex	Viral and bacterial pneumonia
Urinary tract	Prostatic hyperplasia, urethral strictures, age-related hormonal changes in vaginal wall, pelvic floor relaxation, ureterocele or cystocele, degeneration of nerves leading to neurogenic bladder, use of tricyclic antidepressants, dehydration	Asymptomatic bacteriuria, cystitis, pyelonephritis
Nutrition	Malnutrition, vitamin deficiency (vitamin A, pyridoxine and riboflavin), protein and caloric malnutrition	Impaired immune response to infection
Drug therapy	Corticosteroid and cytotoxic drugs	Impaired immune response to infection
Nursing home residency	Exposure to nosocomial infections, including influenza, *Proteus* and *Providencia* organisms with an indwelling catheter, tuberculosis and wound infections	Frequent serious infection, increased risk of pneumonia

Modified from Tideiksaar R 1987 Infections in the elderly: I. Diagnosis and treatment. Physician Assist 11(2):17.

traumatic injury, extensive burns and conditions causing fever. Patients who have had surgery also require increased protein.

The nurse must assess each patient's dietary intake and their ability to tolerate solid foods. Patients with swallowing difficulties or alterations in digestion, or those who are too confused or weak to feed themselves, are at increased risk of nutritional deficits. A dietitian may be consulted to calculate the energy value of foods ingested. In preparation for discharge, the nurse should evaluate the patient's and carers' understanding of nutrition in relation to health.

Stress

The body responds to emotional or physical stress (surgery, trauma or hospitalisation) via the general adaptation syndrome (see Chapter 42). Stress increases the body's basal metabolic rate and use of energy stores. Adrenocorticotrophic hormone (ACTH) and the release of cortisone increases serum glucose levels and decreases unnecessary anti-inflammatory responses. If stress continues, elevated cortisone levels decrease resistance to infection. Continued stress leads to exhaustion, depletion of energy stores and decreased resistance to invading organisms.

Heredity

Certain hereditary conditions impair a person's response to infection. Pre-existing medical problems may reveal known hereditary disorders. For example, agammaglobulinaemia is a rare inherited or acquired disorder characterised by the absence of serum antibodies. A patient with this disorder has virtually no ability to initiate defences.

Disease process

Patients with diseases of the immune system are at particular risk of infection. Leukaemia, AIDS, lymphoma and aplastic anaemia are conditions that compromise a host by weakening their defences against infectious organisms. Patients with leukaemia, for example, are unable to produce enough WBCs to ward off infection.

Patients with chronic diseases such as diabetes mellitus and multiple sclerosis are also more susceptible to infection because of the disease process and impaired health status. Diseases such as pulmonary emphysema and bronchitis cause impaired ciliary action and thickened mucous. Cancer alters the immune response; peripheral vascular disease reduces blood flow to injured tissues; and burns or damage to skin surfaces impair body system defences and increase a person's susceptibility to infection.

Medical therapy

A review of medical and medication therapies will reveal potential for compromised immunity to infection. Glucocorticoids, for example, prednisolone, can cause protein breakdown and impair the inflammatory response against bacteria and other pathogens. Cytotoxic or antineoplastic drugs attack cancer cells but cause side effects, including bone marrow depression and normal cell toxicity. Bone marrow depression renders the body unable to produce sufficient lymphocytes and WBCs. When antineoplastic agents alter normal cells, cellular defences against infection fail. Cyclosporin and other immunosuppressant drugs can decrease the body's immune response, and are commonly prescribed for recipients of organ transplants. Immunosuppressants prevent organ and tissue rejection but increase a person's susceptibility to infection. The massive doses of radiation received by patients with cancer destroy cancerous cells but increase their risk of infection by depressing bone marrow and destroying normal cells.

Clinical examination: signs and symptoms of infection

Signs of local infection may include swelling, redness, localised heat, pain or tenderness, accumulation of body fluids (serous, haemoserous or purulent) and loss of function in the affected body part. Localised infections most commonly occur in areas of skin or mucous membrane breakdown, such as surgical and traumatic wounds, pressure ulcers and mouth lesions. Infections can also develop locally in cavities beneath the skin, for example, an abscess. Assessment for localised infection requires inspection for redness and swelling caused by inflammation and drainage from open lesions or wounds. Infected drainage may be yellow, green or brown, depending on the infecting pathogen. The nurse should ask the patient to describe the pain, tenderness or discharge experienced around the site of infection.

Swollen, inflamed tissues increase pressure on nerve endings and this causes pain. Chemical substances such as histamine are released and stimulate nerve endings. The physiological changes associated with infection can cause a temporary loss of function to the involved body part. For example, a localised infection of the hand causes the fingers to become swollen, painful and discoloured. Joints may become stiff as a result of swelling, but function returns to the fingers once the inflammation subsides. If the nurse suspects a patient's hand may swell, they are advised to ensure the patient removes all rings, watches and bracelets from the hand, to prevent constricting damage to tissues.

When inflammation becomes systemic, other signs and symptoms can develop. These include fever, increased pulse and respiratory rate, leucocytosis, malaise, anorexia, lymph node enlargement (lymphadenopathy) and an increase in antibodies (e.g. IgM is elevated for a current infection and IgG is elevated for a past infection). Lymph nodes that drain the area of infection often become enlarged, swollen and tender to palpation. For example, an abscess in the peritoneal cavity may cause enlargement of lymph nodes in the groin. An infection of the upper respiratory tract may cause cervical lymph node enlargement. If an infection is serious and widespread, all major lymph nodes may enlarge.

Systemic infections develop after treatment for localised infection has failed and may initially result in changes in the patient's level of activity and responsiveness. As a systemic infection develops, the patient may become lethargic, complain of decreased energy, or present with an elevation in temperature, increased pulse and increased respiratory rates and hypoxia. Involvement of major body systems may produce specific signs. For example, a pulmonary infection may result in a productive cough with purulent sputum. A CAUTI may result in cloudy, foul-smelling urine.

Older adults may not present with typical signs and symptoms of an infection because of reduced inflammatory and immune responses. Their temperature may not elevate initially if they regularly use aspirin or non-steroidal anti-inflammatory drugs (NSAIDs). Atypical symptoms such as confusion, incontinence

or agitation may be the only symptoms of an infectious illness. For example, some older adults with the influenza complication of pneumonia do not present with typical signs and symptoms such as fever, rigors, chills and productive sputum. Their only symptoms may be tachycardia, aching joints or generalised fatigue.

Laboratory data

A review of laboratory test results may reveal infection (Table 25-5). Laboratory values alone are not enough to detect infection and should be combined with an interpretation of other clinical signs and symptoms. Factors other than infection may alter test values. For example, trauma and physical stress can cause an elevation in the number of neutrophils. However, a culture result may show growth of an organism in the absence of clinical signs and symptoms of infection.

Patients with infection

A patient with infection may have a variety of health problems. Infection may affect the patient and family's physical, psychological, social or economic needs. For example, a patient with a chronic disease such as AIDS may experience serious psychological problems as a result of self-imposed isolation or rejection by their family and friends. Assessment of the patient and family's ability to adjust to the disease and initial and ongoing resources is required.

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

During assessment, the nurse gathers objective findings (e.g. an open incision or a reduced kilojoule intake) and subjective data (such as a patient's complaint of tenderness over a surgical wound site). The nurse then interprets the data carefully, looking for defining characteristics or risk factors that suggest a specific nursing problem (Box 25-5). Data should then be validated (e.g. by inspecting the integrity of a wound) and additional data, such as laboratory findings, assessed. Selection of appropriate nursing problems depends on correct analysis of data (Box 25-6).

The identified problem must take into account aetiological factors in the establishment of an appropriate comprehensive plan. For example, minimising the risk of infection related to impaired skin integrity requires modified hygiene measures and wound care. Minimising the risk of infection related to malnutrition requires nutritional support and fluid balance.

BOX 25-5 Example of priority problems associated with infection

Body image disturbance
Infection
Injury
Altered nutrition
Altered oral mucous membrane
Impaired skin integrity
Social isolation
Impaired tissue integrity

TABLE 25-5 Laboratory tests to screen for infection*

Laboratory test	Normal (adult) values	Indication of infection
C-reactive protein (CRP)	Negative or < 5 mg/L	Increased in acute and chronic inflammatory conditions
Cultures of urine and blood	Normally sterile, without microorganism growth	Presence of infectious microorganism growth
Cultures of wound, sputum and throat	Possible normal flora	Presence of infectious microorganism growth
Erythrocyte sedimentation rate	Up to 15 mm/h for men and 20 mm/h for women	Elevated in presence of inflammatory process
Iron level	13–36 micromol/L (males) 12–31 micromol/L (females)	Decreased in chronic infection
WBC count	4–11 × 10^9/L	Increased in acute infection, decreased in certain viral or overwhelming infections
Differential count (percentage of each type of WBC)		
Basophils	0.06–0.1 × 10^9/L	Normal during infection
Eosinophils	0.04–0.4 × 10^9/L	Increased in parasitic infection
Lymphocytes	1.5–4.0 × 10^9/L	Increased in chronic bacterial and viral infection, decreased in sepsis
Monocytes	0.2–0.8 × 10^9/L	Increased in protozoal, rickettsial and tuberculosis infections
Neutrophils	2.0–7.5 × 10^9/L	Increased in acute suppurative infection, decreased in overwhelming bacterial infection (older adult)

*Values may vary slightly depending on the laboratory.

BOX 25-6 Sample clinical reasoning process

Infection

Assessment activities	Defining characteristics	Priority problem associated with
Check results of laboratory tests	White cell count < 4 × 10^9/L	Risk of infection related to lowered immunity
Review current medications	Patient receiving azathioprine (Imuran), an immunosuppressant	Risk of infection related to lowered immunity
Identify potential sites of infection	Central venous catheter in place for 3 days Foley catheter draining amber-coloured urine	Risk of CLABSI or UTI
Inspect condition of dependent pressure points	Reddened area 2 cm in diameter, superficial broken skin over sacrum	Impaired skin integrity related to pressure and exposure to faecal irritants
Observe for skin contamination	Patient incontinent (semi-liquid stool)	Risk of incontinence-associated dermatitis

Nursing problems may include a risk of infection or the impact of an infection on the patient's health status. The nurse's success in planning appropriate nursing interventions depends on the accuracy of the diagnosis and the ability to implement effective care to meet the patient's needs.

SETTING PRIORITIES AND ESTABLISHING GOALS

The patient's care plan is based on each nursing problem and related factors. The plan should set attainable outcomes and purposeful, appropriate interventions. Caring for a patient with a nursing problem of risk of infection related to impaired skin integrity includes skin care measures to promote healing. The expected outcomes of 'reduction in wound size by 1 cm' and 'absence of drainage' enables improvements to be measured. Once these outcomes are met, the goal of 'skin intact and without drainage' can be set. Interventions are selected in collaboration with the patient, the family and other healthcare providers. Common goals of care may include the following:

- prevention of exposure to infectious agents
- controlling or reducing the spread of infection
- maintaining resistance to infection
- educating the patient and family about infection prevention and control techniques
- educating the patient and family about nutritional requirements for healing.

The nurse establishes priorities for the goals of care. If a patient has an open wound, suffers a debilitating disease such as cancer and has been unable to tolerate solid foods, administering therapies to promote wound healing would take priority over educating the patient to assume self-care therapies at home. When the patient's condition improves, the priorities will change and patient education becomes an essential intervention prior to discharge.

The nurse may initiate appropriate referrals, for example, to a dietitian, infection control professional or home health nurse, to collaborate with the patient's care. The nurse plans for the home environment to be consistent with informed infection control practice. Educating patients and families about the importance of infection control is also an important preventive measure.

Infection control guidelines

The development of a care plan includes infection prevention and control practices. Refer to the current infection control guidelines published by the NHMRC (2010) and the Australian Commission on Quality and Safety in Healthcare (ACQSHC) (2012) in Australia and the standards for infection prevention and control published by Standards New Zealand (2008). These guidelines provide recommendations that outline the critical aspects of infection prevention and control (see Box 25-7). It is recognised that the level of risk differs in different healthcare settings and therefore some recommendations should be justified by risk assessment.

PREPARING FOR AND TAKING ACTION

By recognising and assessing each patient's risk factors and implementing measures that break the chain of infection, the nurse can help minimise infection.

Standard and transmission-based precautions

The risk of transmitting HAIs or infectious diseases among patients is high. When a patient has a suspected or known infection, health workers follow infection control practices. However, health workers may not be aware that some patients have infections, as the majority of organisms causing HAIs are found in the colonised body substances of patients, regardless of whether a culture has confirmed infection and a diagnosis has been made. Both Australia and New Zealand have endorsed the use of standard precautions to minimise the risk of transmission of infectious organisms. Standard precautions include the use of barrier measures in all situations to prevent cross-contamination (NHMRC 2010, Standards New Zealand 2008). The NHMRC recommends standard precautions as the minimum requirement in work practices to promote infection control (see Box 25-8).

Standard precautions are recommended for the treatment and care of all patients, regardless of their perceived infectious status. Standard precautions should be used in the handling

BOX 25-7 Summary of recommendations of the Australian guidelines for the prevention and control of infection in health care

Standard precautions

Hand hygiene

1. Routine hand hygiene

Hand hygiene must be performed before and after every episode of patient contact. This includes:

- before touching a patient
- before a procedure
- after a procedure or body substance exposure risk
- after touching a patient
- after touching a patient's surroundings.

Hand hygiene must also be performed after the removal of gloves.

2. Choice of product for routine hand hygiene practices

For all routine hand hygiene practices in healthcare settings, use alcohol-based hand rubs that:

- contain between 60% and 80% v/v ethanol or equivalent
- meet the requirements of EN1500.

3. Choice of hand hygiene product when hands are visibly soiled

If hands are visibly soiled, hand hygiene should be performed using soap and water.

4. Hand hygiene for *C. difficile* and non-enveloped viruses

Hand hygiene should be performed using soap and water when *C. difficile* or non-enveloped viruses such as norovirus are known or suspected to be present and gloves have not been worn. After washing, hands should be dried thoroughly with single-use towels.

Personal protective equipment

5. Wearing of aprons/gowns

Aprons or gowns should be appropriate to the task being undertaken. They should be worn for a single procedure or episode of patient care and removed in the area where the episode of care takes place.

6. Use of face and protective eyewear for procedures

A surgical mask and protective eyewear must be worn during procedures that generate splashes or sprays of blood, body substances, secretions or excretions into the face and eyes.

7. Wearing of gloves

Gloves must be worn as a single-use item for:

- each invasive procedure
- contact with sterile sites and non-intact skin or mucous membranes
- any activity that has been assessed as carrying a risk of exposure to blood, body substances, secretions and excretions.

Gloves must be changed between patients and after every episode of individual patient care.

8. Sterile gloves

Sterile gloves must be used for aseptic procedures and contact with sterile sites.

Handling and disposal of sharps

9. Safe handling of sharps

Sharps must not be passed directly from hand to hand and handling should be kept to a minimum. Needles must not be recapped, bent or broken after use.

10. Disposal of single-use sharps

The person who has used the single-use sharp must be responsible for its immediate safe disposal. Used disposable sharps must be discarded into an approved sharps container at the point-of-use. These must not be filled above the mark that indicates the bin is three-quarters full.

Routine environmental cleaning

11. Routine cleaning of surfaces

Clean frequently touched surfaces with detergent solution at least daily, and when visibly soiled and after every known contamination.

Clean general surfaces and fittings when visibly soiled and immediately after spillage.

12. Cleaning of shared clinical equipment

Clean touched surfaces of shared clinical equipment between patient uses with detergent solution. Exceptions to this should be justified by risk assessment.

13. Surface barriers

Use surface barriers to protect clinical surfaces (including equipment) that are:

- touched frequently with gloved hands during the delivery of patient care
- likely to become contaminated with blood or body substances
- difficult to clean.

14. Site decontamination after spills of blood or other potentially infectious materials

Spills of blood or other potentially infectious materials should be promptly cleaned as follows:

- wear utility gloves and other PPE appropriate to the task
- confine and contain spill, clean visible matter with disposable absorbent material and discard the used cleaning materials in the appropriate waste container
- clean the spill area with a cloth or paper towels using detergent solution.

Use of chemical disinfectants such as sodium hypochlorite should be based on assessment of risk of transmission of infectious agents from that spill.

continued

Transmission-based precautions

Contact precautions

15. Implementation of contact precautions

In addition to standard precautions, implement contact precautions in the presence of known or suspected infectious agents that are spread by direct or indirect contact with the patient or the patient's environment.

16. Hand hygiene and personal protective equipment to prevent contact transmission

When working with patients who require contact precautions:

- perform hand hygiene
- put on gloves and gown upon entry to the patient-care area
- ensure that clothing and skin do not contact potentially contaminated environmental surfaces
- remove gown and gloves and perform hand hygiene before leaving the patient-care area.

17. Patient-care equipment for patients on contact precautions

Use patient-dedicated equipment or single-use non-critical patient-care equipment.

If common use of equipment for multiple patients is unavoidable, clean the equipment and allow it to dry before use on another patient.

Droplet precautions

18. Implementation of droplet precautions

In addition to standard precautions, implement droplet precautions for patients known or suspected to be infected with agents transmitted by respiratory droplets that are generated by a patient when coughing, sneezing or talking.

19. Personal protective equipment to prevent droplet transmission

When entering the patient-care environment, put on a surgical mask.

20. Placement of patients requiring droplet precautions

Place patients who require droplet precautions in a single-patient room.

Airborne precautions

21. Implementation of airborne precautions

In addition to standard precautions, implement airborne precautions for patients known or suspected to be infected with infectious agents transmitted person-to-person by the airborne route.

22. Personal protective equipment to prevent airborne transmission

Wear a correctly fitted P2 respirator when entering the patient-care area when an airborne-transmissible infectious agent is known or suspected to be present.

23. Placement of patients requiring airborne precautions

Patients on airborne precautions should be placed in a negative pressure room or in a room from which the air does not circulate to other areas.

Exceptions to this should be justified by risk assessment.

24. Implementation of core strategies in the control of MROs (MRSA, MRGN, VRE)

Implement transmission-based precautions for all patients colonised or infected with a multi-resistant organism, including:

- performing hand hygiene and putting on gloves and gowns before entering the patient-care area
- using patient-dedicated or single-use non-critical patient-care equipment
- using a single-patient room or, if unavailable, cohorting patients with the same strain of multi-resistant organism in designated patient-care areas
- ensuring consistent cleaning and disinfection of surfaces in close proximity to the patient and those likely to be touched by the patient and healthcare workers.

MRO = multi-resistant organisms; MRGN = multi-resistant Gram-negative bacilli; MRSA = methicillin-resistant *Staphylococcus aureus*; VRE = vancomycin-resistant enterococci.

National Health and Medical Research Council (NHMRC) 2010 Australian guidelines for the prevention and control of infection in healthcare. NHRMC, Canberra. Online. Available: www.nhmrc.gov.au/_files_nhmrc/publications/attachments/cd33_exec_summary.pdf; accessed 16 Feb 2016.

BOX 25-8 Standard precautions

Standard precautions include:

- hand hygiene, before and after every episode of patient contact (i.e. five moments for hand hygiene)
- the use of personal protective equipment
- the safe use and disposal of sharps
- routine environmental cleaning
- reprocessing of reusable medical equipment and instruments
- respiratory hygiene and cough etiquette
- aseptic non-touch technique
- waste management
- appropriate handling of linen.

National Health and Medical Research Council (NHMRC) 2010 Australian guidelines for the prevention and control of infection in healthcare. NHMRC, Canberra. Online. Available: www.nhmrc.gov.au/guidelines/publications/cd33; accessed 16 Feb 2016.

of blood, including dried blood; all other body substances, secretions and excretions (excluding sweat), regardless of whether they contain visible blood; non-intact skin; and mucous membranes (NHMRC 2010).

• CRITICAL REFLECTION POINT

You are a graduate registered nurse working in a post-anaesthesia care unit (PACU) in an adult public hospital and notice it is normal practice for nurses to highlight patients on the operating room lists with known infectious diseases such as hepatitis C or HIV with red pen and highlighter. You find that medical and nursing staff emphasise this information during handover (e.g. 'This patient is an IV drug user.') and take 'extra precautions', such as wearing additional PPE, during care and clinical procedures with these patients.

1. **Are these actions justifiable?**
2. **What are the possible implications of this practice for patients and staff?**

Transmission-based precautions are recommended in addition to standard precautions for patients with a known or suspected infection or colonisation with highly transmissible pathogens that can cause infection (see Box 25-9 for an example).

This second tier of additional precautions focuses on three transmission categories: airborne, droplet and direct or indirect contact with skin in accordance with a patient's diagnosis and the suspected organism (see Box 25-10). *Airborne precautions* are implemented for infections spread in small particles in the air, such as chickenpox (varicella). *Droplet precautions* are implemented for infections spread in large droplets by coughing, talking or sneezing, such as rubella, pharyngitis or influenza. *Contact precautions* are implemented for infections spread by skin or mucous membrane contact, such as herpes simplex virus.

Transmission-based precautions should be used in combination with standard precautions. This two-tiered approach to infection control ensures a high level of protection for patients, family members and staff involved in the care of infectious patients (see Figure 25-4).

Hand hygiene

Hand hygiene is the single most important intervention for reducing HAIs and preventing the spread of infection. While hand hygiene may be the cornerstone of infection prevention and control today, it is interesting to note that the original proponents of clinical handwashing during the 19th century were rejected by the medical community (Stewardson & Pittet 2011). Despite its central importance, compliance with hand hygiene among healthcare workers is poor (Gould et al 2010, WHO 2009). In Australia, national compliance audits estimate the average hand hygiene compliance rate is approximately 82% (HHA 2015).

Hand hygiene is a general term referring to any action of hand cleansing which includes washing hands with the use of water and soap or a soap solution, either non-antimicrobial or antimicrobial; or applying a waterless antimicrobial hand rub to the surface of the hands (e.g. alcohol-based hand rub).

The purpose of handwashing is to remove debris and transient microorganisms from the hands and to reduce total microbial counts over time. Handwashing must last for at least 15 seconds and the hands should be patted dry rather than rubbed, to preserve skin integrity. A more thorough, lengthy surgical hand and arm scrub is performed preoperatively by surgical personnel to remove transient bacteria and reduce resident microorganisms.

Contaminated hands commonly cause cross-infection. For example, a nurse caring for a patient with excessive pulmonary secretions may help the patient expectorate sputum and dispose of tissues in a bedside container. The patient's roommate may ask the nurse to open a container of food on their meal tray; the nurse then leaves the room to prepare a

BOX 25-9 Airborne precautions for a patient with active tuberculosis (TB)

The Australian infection control guidelines recommend:

- Single-patient room maintained under negative pressure
- Doors kept closed except when entering or leaving the room
- Negative pressure monitored daily using a differential pressure-sensing device
- Minimum of 12 air exchanges per hour
- HEPA filtration of air to 99% clean, as it exits the isolation room
- Use of appropriate personal respiratory protective devices capable of efficient filtration of the infecting organism, applied prior to entering the room (Figure 25-7)
- Use of a mask by the patient when out of the room (with the patient leaving the room only if necessary)
- Screening of health workers for TB before commencement of employment, regular surveillance for TB, offering BCG vaccination for staff with positive Mantoux tests and follow-up chest X-rays.

Regardless of the type of isolation system, the nurse must follow these basic principles:

- Wash hands thoroughly before entering and leaving the room of a patient in isolation
- Dispose of contaminated supplies and equipment in a manner that prevents spread of microorganisms to other persons as indicated by the mode of transmission of the organism
- Apply knowledge of disease processes and the mode of infection transmission when using protective barriers
- Protect all people who might be exposed during transport of patients outside their private room.

BCG = bacille Calmette-Guérin; HEPA = high-efficiency particulate air; TB = tuberculosis.

Adapted from National Health and Medical Research Council (NHMRC) 2010 Australian guidelines for the prevention and control of infection in healthcare. NHMRC, Canberra. Online. Available: www.nhmrc.gov.au/guidelines/publications/cd33; accessed 16 Feb 2016.

BOX 25-10 Transmission-based precautions

Transmission-based precautions may include one or any combination of the following:

- Continued implementation of standard precautions
- Appropriate use of personal protective equipment (including gloves, apron or gowns, surgical masks or P2 respirators and protective eyewear)
- Patient-dedicated equipment
- Allocation of single rooms or cohorting of patients
- Appropriate air-handling requirements
- Enhanced cleaning and disinfecting of the patient environment
- Restricted transfer of patients within and between facilities.

National Health and Medical Research Council (NHMRC) 2010 Australian guidelines for the prevention and control of infection in healthcare. NHMRC, Canberra. Online. Available: www.nhmrc.gov.au/guidelines/publications/cd33; accessed 16 Feb 2016.

dose of medication due in 5 minutes. If the nurse fails to wash their hands before opening the container of food or preparing medication, organisms from the first patient's sputum can easily be transmitted to the roommate's food or to the medication container.

Fingernails of health workers should be kept short, clean and free from infection. Research has linked long fingernails, artificial nails, nail additives and nail polish to the harbouring and transmission of pathogens, including bacteria and fungi (Boyce & Pittet 2002, Grayson et al 2010).

National programs established in both Australia (Hand Hygiene Australia 2013) and New Zealand (Hand Hygiene New Zealand 2009) have been developed to target and monitor hand hygiene behaviour. Consistent with the World Health Organization guidelines (WHO 2009), both countries advocate, and have incorporated into their respective national hand hygiene programs, the 'five moments for hand hygiene' (Figure 25-5) as critical to the prevention and control of infections.

Routine hand hygiene (Skill 25-1) may be performed with the use of water and soap or a soap solution, either non-antimicrobial or antimicrobial; or applying a waterless antimicrobial hand rub to the surface of the hands (e.g. alcohol-based hand rub). Use of antimicrobial solutions is encouraged in certain high-risk situations to reduce the microbial load on nurses' hands. These include situations where nurses are

Type of precaution	Examples of infectious agents	Single room or cohort	Gloves	Gown	Mask	Eye protection	Handling of equipment	Visitors*
Standard	Standard precautions apply for all work practices to prevent the likelihood of infection							Hand hygiene Respiratory hygiene and cough etiquette
Contact	MROs, *C. difficile*, intestinal tract pathogens (e.g. norovirus), highly contagious skin infections	✓	✓	✓	♣	☆	Single use or reprocess before reuse on next patient	Same precautions as staff
Droplet	Influenza, RSV, norovirus, pertussis (whooping cough), meningococcus	✓	☆	☆	✓ Surgical mask	☆	Single use or reprocess before reuse on next patient	Restrict visitor numbers and precautions as for staff
Airborne	Pulmonary TB, chickenpox (varicella)†, measles (rubeola)†, SARS	✓ Negative pressure	☆	☆	✓ P2 (N95) respirator	☆	Single use or reprocess before reuse on next patient	Restrict visitor numbers and precautions as for staff

Notes:

✓ Essential component of transmission-based precautions.

♣ Surgical mask required if infectious agent isolated in sputum

☆ As required – Gloves to be worn wherever there is the potential of direct or indirect contact with blood or body substances

Gowns to be worn for procedures when there is the potential of direct or indirect contact with body substances

Face and eye protection to be worn when there is the potential of exposure to splashes or sprays to mucous (including during aerosol generating procedures)

* Visitors should be given instruction about correct procedures when transmission-based precautions are applied and given appropriate resources to support them in meeting those requirements.

† If staff or visitor HAVE HAD chickenpox/measles in the past or vaccination for these diseases, masks, gown and gloves are not required.

Environmental cleaning has not been addressed in this table but it is an essential component of infection prevention and control.

Figure 25-4 Application of standard and transmission-based precautions.

National Health and Medical Research Council (NHMRC) 2010 Australian guidelines for the prevention and control of infection in healthcare. NHMRC, Canberra.

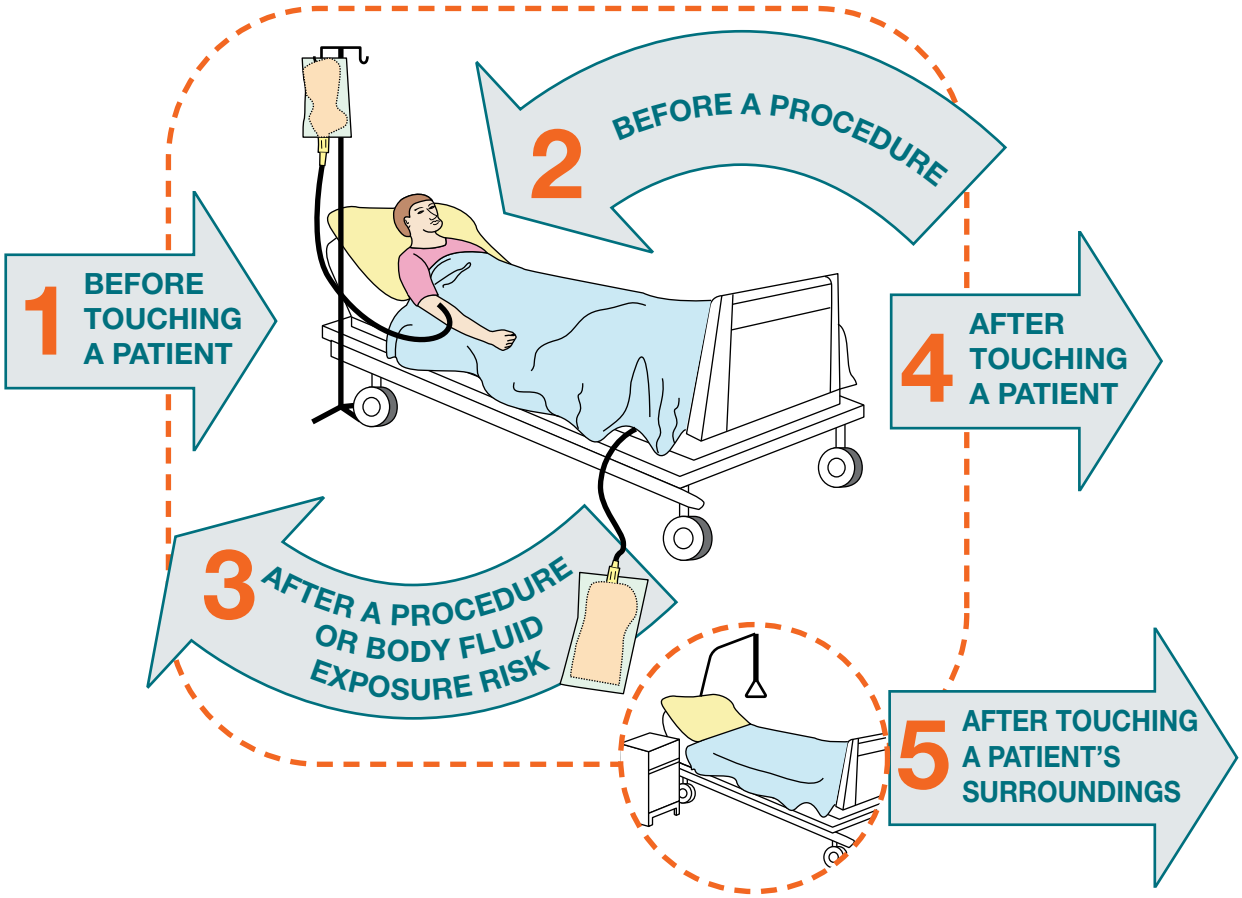

Figure 25-5 **The five moments for hand hygiene.**

Redrawn from Hand Hygiene Australia 2012 5 moments for hand hygiene. Online. Available: www.hha.org.au/home/5-moments-for-hand-hygiene.aspx (diagram based on 'My 5 moments for hand hygiene', www.who.int/gpsc/5may/background/5moments/en/index.html © World Health Organization 2009 All rights reserved). Used with permission of Hand Hygiene Australia.

SKILL 25-1

Handwashing

Delegation considerations

All staff caring for patients must wash their hands using correct handwashing techniques. All staff and carers should:

- gain instruction and demonstrate competency in correct handwashing techniques
- report any skin irritation from soaps or antimicrobial solutions immediately
- gain instruction regarding the importance of caring for and maintaining the integrity of their skin.

Equipment

- Accessible sink with warm running water
- Antimicrobial or regular soap solution
- Paper towels or air dryer
- Disposable plastic nail pick (optional)

STEPS	RATIONALE
1. Assess patient's risk of or extent of infection, e.g. white blood cell count, extent of open wounds, known medical diagnosis.	Transmission-based precautions, such as the wearing of a mask and clean gown, may be required for immunocompromised patients.
2. Inspect surface of hands for breaks or cuts in skin or cuticles. Report and cover lesions before providing patient care.	Open cuts or wounds can harbour high concentrations of microorganisms. Agency policy may prevent nurses from caring for high-risk patients.
3. Inspect hands for heavy soiling.	Requires more-lengthy handwash.
4. Ensure nails are short and free of nail polish and/or artificial nails. Do not tear or cut skin under or around nail.	Most microbes on hands come from beneath the fingernails.
5. Remove all jewellery, including wristwatch, rings and bracelets.	Jewellery can harbour microbes and rub against skin causing shedding of skin cells.
6. Stand in front of sink, keeping hands and uniform away from sink surface. (If hands touch sink during handwashing, repeat.)	The inside of the sink is considered a contaminated area. Reaching over sink increases risk of touching edge, which is contaminated.
7. Turn on water and regulate flow and temperature so that temperature is warm.	Warm water is more comfortable and it removes less of the skin's protective oils than hot water.
8. Avoid splashing water against uniform.	Microorganisms multiply in moisture.
9. Regulate temperature and intensity of flow.	Warm water is most comfortable.
10. Wet hands and wrists thoroughly under running water. Keep hands and forearms higher than elbows during washing.	Keeping hands elevated allows water to flow from least to most contaminated areas.
11. Apply a small amount of soap or antimicrobial solution, lather thoroughly.	The amount applied should be as per the manufacturer's instructions.
12. Wash hands using plenty of lather and friction for at least 15 seconds. Interlace fingers and rub palms, sides and back of hands with circular motion at least 5 times each (see illustration).	Soap cleans by emulsifying fat and oils. Friction and rubbing mechanically will loosen and remove debris and transient bacteria. Interlacing the fingers and thumbs helps to ensure all surfaces are cleaned.
13. Areas underlying fingernails are often soiled. Clean fingernails with a plastic, disposable nail pick.	Most microbes on hands come from beneath the fingernails.
14. Rinse hands and wrists thoroughly (see illustration).	Rinsing mechanically washes away debris and microorganisms.

STEPS	RATIONALE
 Step 11 Lathering hands.	 Step 14 Rinsing hands.
15. Gently pat hands dry from fingers to wrists and forearms with paper towel.	Drying from cleanest (fingertips) to least clean (forearms) area avoids contamination. Gently patting hands dry helps prevents chapping and roughened skin.
16. Discard paper or towel into the proper receptacle.	Prevents transfer of microorganisms.
17. Turn off water with foot or knee pedals. To turn off hand tap use clean, dry paper towel; avoid touching handles with hands (see illustration).	Minimises contamination of hands.
 Step 17 Turning off hand tap.	
18. Inspect hands for obvious signs of debris and contamination.	If found, indicates poor technique. Handwashing should be repeated.
19. Inspect hands for dermatitis or cracked skin as this may indicate complications from excessive handwashing or an allergic reaction to the antimicrobial or soap solution.	Seek advice from infection control professional. Note: use small, single-use containers of barrier cream because large, refillable containers have been associated with hospital-acquired infections.
20. If hands are dry or chapped, a small amount of lotion or barrier cream can be applied.	If dermatitis occurs, additional interventions may be needed.

RECORDING AND REPORTING

- It is not necessary to record or report this procedure.
- Report any dermatitis to employee health services and/or infection control professional per agency policy.

HOME CARE CONSIDERATIONS

- Evaluate the handwashing facilities in the home to determine the possibility of contamination, the proximity of the facilities to the patient and available supplies in the area.
- Evaluate the availability of warm running water and soap when conducting home visits and anticipate the need for alternative handwashing products such as alcohol-based hand rubs and antimicrobial-impregnated, disposable towels.
- Instruct the patient and primary caregiver in proper techniques and situations for handwashing.

in contact with patients who are immunocompromised or have damaged skin and mucous membranes. In addition, an antimicrobial solution should be used before performing an invasive procedure such as insertion of an intravenous catheter. There are a number of effective antimicrobial solutions, including chlorohexidine gluconate, povidone–iodine and alcohol. Certain antimicrobial solutions can irritate the skin of some staff. Nurses are advised to consult an infection control consultant in this situation.

WHO hand hygiene guidelines recommend use of an alcohol-based hand rub solution, when the hands are not visibly soiled or dirty (WHO 2009). When using an alcohol-based hand rub solution, the skin surface should be wet with the solution, and the hands rubbed together for at least 20–30 seconds (or as per manufacturer's instructions for use), ensuring contact of the solution with all skin surfaces. The solution should be allowed to dry naturally.

Handwashing is required when hands are visibly soiled or dirty. Effective handwashing with water and an antimicrobial or non-antimicrobial soap or soap solution should last at least 15–20 seconds unless the hands are visibly soiled, in which case additional time may be required. Following handwashing, the hands should be thoroughly dried with a disposable towel. The towel or elbow should be used to turn off the tap. Using hot water should be avoided, as repeated exposure may increase the risk of dermatitis (Boyce & Pittet 2002). Fingernails should be cleaned with a disposable nail pick at the commencement of the shift if nails are dirty (NHS 2014, Tanner et al 2008). The use of scrub brushes is not recommended unless hands are grossly soiled; brushes can cause microscopic abrasions to the outer layer of the skin, breaching the protective barrier and providing a portal of entry for normal flora to penetrate, thus increasing the risk of allergic reactions to antimicrobial solutions.

Nurses can ensure that patients and visitors understand the appropriate technique and rationale for handwashing. Teaching handwashing is particularly important if health care is to continue at home. Patients should wash their hands before eating or handling food, after handling contaminated equipment, linen or organic material and after elimination. Visitors are encouraged to wash their hands before eating or handling food, after coming into contact with patients with an infection and after handling contaminated equipment or organic material.

Health promotion

An infection can be prevented from developing or spreading by minimising the organisms transmitted to potential infection sites. Eliminating reservoirs of infection, controlling portals of exit and entry and avoiding actions that transmit microorganisms prevent the colonisation of bacteria. The correct use of sterile supplies, barrier protection and appropriate hand hygiene practices can control the spread of microorganisms. Strengthening a potential host's defences against infection by nutritional support, rest, maintenance of physiological protective mechanisms and recommended immunisations can protect them from invasion by pathogens.

When a patient develops an infection, the nurse continues preventive care to ensure that healthcare personnel and other patients are not exposed to the infection. Patients with communicable diseases may need to be isolated or have barriers in place to prevent transmission of infection. Nurses are well placed to educate patients and their families about the proper use of antibiotics to decrease the risk of antibiotic-resistant infections (Box 25-11).

Acute care measures

Treatment of an infectious process includes eliminating the infectious organisms and supporting the patient's defences. To identify the causative organism, the nurse may collect specimens of body fluids or drainage from infected body sites for microbiological culture. When the disease process or causative organism has been identified, a medical or nurse practitioner will prescribe the most effective treatment for the situation. The nurse correctly administers antibiotics and other treatments as ordered, while observing for adverse reactions and assessing progress of the infection and the patient's response to treatment.

Systemic infections require measures to prevent complications from the stress of fever. Maintaining intake of fluids prevents dehydration resulting from diaphoresis. The patient's increased metabolic rate requires an adequate nutritional intake. Rest preserves energy and allows the healing process to occur.

BOX 25-11 Decreasing the risk of antibiotic-resistant infection

Include these instructions when teaching patients and/or their carers how to decrease the risk for antibiotic-resistant infection:

1. *Do not take antibiotics to prevent illness* – Doing this increases your risk of developing resistant infection. Exceptions include taking antibiotics before certain surgeries and taking antibiotics before dental work if you have a heart valve disorder.
2. *Wash your hands frequently* – Handwashing is the single most important thing you can do to prevent an infection.
3. *Follow directions* – Not taking your antibiotic as prescribed or skipping doses can allow antibiotic-resistant bacteria to develop.
4. *Do not request an antibiotic for the flu or colds* – If your healthcare provider says that you do not need an antibiotic, chances are that you do not. Antibiotics are effective against bacterial infections but not viruses, which cause colds and flus.
5. *Finish your antibiotic* – Do not stop taking your antibiotic when you feel better. If you stop taking your antibiotic early, you allow the hardiest bacteria to survive and multiply. Eventually, you could develop an infection resistant to many antibiotics. You should never have leftover antibiotics.
6. *Do not take leftover antibiotics* – Do not save unfinished antibiotics for later use or borrow leftover drugs from family or friends. This is dangerous because: (1) the leftover antibiotic may not be appropriate for you; (2) your illness may not be a bacterial infection; (3) old antibiotics can lose their effectiveness and in some cases can even be fatal; and (4) there will not be enough doses in a leftover bottle to allow a full therapeutic dose.

Brown D, Edwards H 2012 Lewis's Medical–surgical nursing: assessment and management of clinical problems. Mosby, Sydney.

BOX 25-12 Infection control: protecting the susceptible host

Protecting normal defence mechanisms

- Regular bathing removes transient microorganisms from the skin's surface. Lubrication helps keep the skin hydrated and intact.
- Regular oral hygiene removes proteins in the saliva that attract microorganisms. Flossing removes tartar and plaque that can build up on teeth.
- Maintenance of adequate fluid intake promotes normal urine formation and a resultant outflow of urine to flush the bladder and urethral lining of microorganisms.
- Physically dependent or immobilised patients should be encouraged to perform regular coughing and deep breathing to expectorate and keep lower airways clear of mucous.
- Correct immunisation of children or adults exposed to or potentially exposed to certain infectious microorganisms should be encouraged in accordance with the relevant health authorities. Children should be vaccinated for smallpox, measles, mumps, rubella and diphtheria.
- Human papilloma virus (HPV) immunisation is recommended for adolescent and young adult females.
- Adults should have tetanus–diphtheria boosters every 10 years.
- Influenza vaccines are recommended for health workers and older adults.

Maintaining healing processes

- The nurse promotes intake of adequate fluids and a well-balanced diet containing essential proteins, vitamins, carbohydrates and fats. The nurse also uses measures to increase the patient's appetite.
- The nurse promotes a patient's comfort and sleep so that energy stores are replaced daily.
- The nurse assists the patient to learn stress management techniques.

Localised infections often require measures to facilitate removal of debris to promote healing. The nurse applies strict principles of infection control and wound care to remove infected drainage from wound sites and support the integrity of healing wounds. Various dressings (see Chapter 30) can be applied to facilitate removal of infectious drainage and promote the healing of wound margins. Drainage tubes may be inserted to remove infected discharge from body cavities. The nurse must wear personal protective equipment, use an aseptic technique to manage wounds and carefully ensure the correct handling and disposal of exudate.

During the course of an infection, the nurse supports the patient's body defence mechanisms. For example, if a patient has infectious diarrhoea, the nurse employs hygiene measures to maintain skin integrity to prevent tissue breakdown and entry of microorganisms. Other routine hygiene measures include cleansing and bathing to protect the skin and mucous membranes from invasion and overgrowth of opportunistic microorganisms.

Generally, infection control and prevention interventions are employed to minimise cross-infection by targeting components of the chain of infection.

Protection of the susceptible host

The nurse intervenes to maintain the body's normal healing processes (Box 25-12). Nurses also protect themselves and others from cross-infection through vigilant use of standard and transmission-based precautions. Decisions concerning the level of precaution required in specific circumstances are not always straightforward.

CRITICAL REFLECTION POINT

Mrs Niles is 83 years old and lives alone. She has multiple comorbidities and uses a wheelie-walker to mobilise herself. She relies on a church volunteer group to deliver lunches to her during the week. Her fixed income limits her ability to buy food. She has therefore been dividing each lunch so that it will provide her with two meals. Last week, Mrs Niles's 79-year-old sister died. The two sisters had been very close.

Explain the factors that might increase Mrs Niles's risk of infection.

Protective environment

Private rooms used for isolation may have negative-pressure airflow to prevent infectious particles from flowing out of the room. Air leaving the room is filtered using high-efficiency particulate air (HEPA) filters to 99% clean it, ensuring air is free of microbes as it is released into the atmosphere (Siegel et al 2007). Conversely, positive-pressure airflow is used in surgical operating rooms and for highly susceptible patients such as organ transplant recipients. Air in these rooms is HEPA-filtered as it enters from the ceiling, and used air is extracted through vents located on the walls close to floor level. A notice listing the additional transmission-based precautions can be posted outside the room (Figure 25-6). This notice is a handy reference for healthcare personnel and visitors and alerts anyone who might enter the room that special precautions must be followed.

The private isolation room or an adjoining anteroom should contain soap and antiseptic solutions and toilet facilities. Personnel and visitors are required to wash their hands before approaching the patient's bedside and again before leaving the room. If toilet facilities are unavailable, infection control procedures for handling portable commodes, bed pans or urinals are implemented. Personal protective equipment should be stored in an anteroom between the room and hallway or in a convenient location close to the point of use.

An impervious bag for soiled or contaminated linen, as well as a rubbish container with plastic liners, should be readily available and never overfilled. Impervious receptacles prevent transmission of microorganisms by preventing seepage to and soiling of the outside surface. A disposable, rigid 'sharps' container should be available in the room to discard used needles, syringes and sharp objects.

Depending on the microorganism and the mode of transmission, the nurse must evaluate what articles or equipment may be taken into the patient's room. For example, the NHMRC (2010) recommends the dedicated use of articles such as stethoscopes, sphygmomanometers and thermometers in the room of a patient infected or colonised with vancomycin-resistant enterococci (VRE). These devices should not be used on other patients unless they are first adequately cleaned and disinfected. If, after bringing any article into the room, the nurse exposes an article to infected material and then touches or removes the article, the risk of transmitting infection to other patients or personnel is increased. Box 25-13 describes the procedures commonly performed in a protective environment.

Personal protective equipment

Personal protective equipment (PPE) should be readily available for staff involved in patient care. A summary of PPE

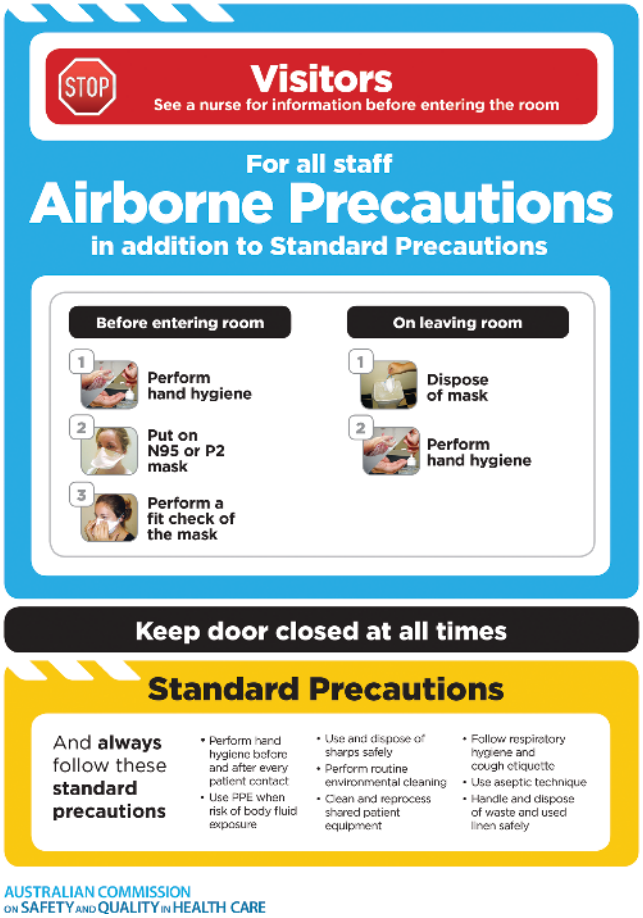

Figure 25-6 Example of transmission-based precautions poster for door of patient room.

The Australian Commission on Safety and Quality in Health Care, Airborne Standard Precautions poster (2012). Sydney. ACSQHC.

requirements for different clinical procedures according to the NHMRC (2010) guidelines is presented in Table 25-6. The main reason for wearing a gown is to prevent soiling of clothes during contact with the patient. Gowns protect healthcare personnel and visitors from coming into contact with infected material and blood or body fluids. Gowns may also be required for contact precautions, depending on the expected amount of exposure to infectious material. Gowns used for barrier protection are made of a fluid-resistant material and should be changed immediately if damaged or contaminated. Depending on agency policy, gowns can be disposable or reusable.

Gowns usually open at the back and have ties or snaps at the neck and waist to keep the gown closed and secure and are long enough to cover all outer garments. Long sleeves with tight-fitting cuffs provide added protection and prevent cross-contamination from skin cells shed from the wearer to the patient. There is no special technique for donning clean gowns, provided they are fastened securely. The nurse must carefully remove and discard gowns to minimise contamination of the hands and uniform. The gown should be removed first and placed in a receptacle, followed by the gloves. The nurse's hands must then be washed immediately.

BOX 25-13 Procedural guidelines for caring for a patient on isolation precautions

1. Assess isolation indications, e.g. current laboratory tests or patient's history of exposure.
2. Review agency policies and precautions necessary for the specific isolation system, and consider care measures to be performed while in patient's room.
3. Review nurses' notes or confer with colleagues regarding patient's emotional state and adjustment to isolation.
4. Wash hands and prepare all equipment to be taken into patient's room.
5. Prepare for entrance into isolation room:
   a. Place either surgical mask or respirator around mouth and nose. (Type will depend on type of isolation and facility policy.)
   b. Wear protective eyewear.
   c. Wear a freshly laundered or clean disposable gown and cover all outer garments. Pull sleeves down to the wrist. Tie securely at neck and waist (see illustration).
   d. Put on disposable gloves. If gloves are worn with gown, bring glove cuffs over edge of gown sleeves. Note: If the patient is allergic to latex, nitrile, non-latex gloves should be worn.
6. Enter patient's room. Arrange supplies and equipment. If equipment being removed from the room requires reprocessing, place in a container with a well-fitting lid for transfer.
7. Explain the purpose of isolation and necessary precautions to the patient and family. Offer an opportunity to ask questions. Assess for evidence of emotional problems due to isolated state.



Step 5c Tying gown at waist.



Step 5d Applying gloves over gown sleeves.

8. Assessing vital signs: wear personal protective equipment, including gown, gloves, eye and face protection.
   a. If patient is infected or colonised with a resistant organism, e.g. vancomycin-resistant enterococcus (VRE) or methicillin-resistant *S. aureus* (MRSA), assessment equipment must remain in the room. Assess vital signs routinely. Avoid contact of stethoscope or blood-pressure cuff with infected material.
   b. Clean the diaphragm or bell of the stethoscope with an antimicrobial solution after each use to reduce contaminants. Set it aside on clean surface.
   c. Individual or disposable thermometers should be used.
9. Administer medications (see Chapter 31):
   a. Administer oral medications in wrapper or using a cup.
   b. Dispose of the wrapper or cup in a plastic-lined receptacle.
   c. Administer injections as ordered.
   d. Do not remove the needle from the syringe. Discard the syringe and needle into a puncture-resistant container designated for sharp items.
   e. Gloves must be worn at all times to avoid contact of hands with contaminated articles, blood, tissue or body fluids.
10. Administer hygiene, encouraging the patient to raise questions or concerns about their isolation. This time can often be effectively used for informal teaching.
    a. Avoid allowing gown to become wet.
    b. Remove linen from the patient's bed; avoid contact with gown and place in an impervious linen bag.
    c. Change gloves and wash hands or apply an antimicrobial, alcohol hand rub until dry.

continued

11. Collect specimens:
    a. Place a specimen container on clean paper towel. The speciman container should be labelled with the patient's name, date of birth, date and time of specimen collection and the exact contents of the specimen to be collected.
    b. Follow non-touch technique to collect the specimen.
    c. Transfer the specimen to the container without soiling outside of container. Place the container in a plastic bag and register the specimen as per facility policy.
12. Dispose of linen and rubbish bags as they become full.
    a. Use sturdy, moisture-resistant, single-use bags to contain soiled articles.
    b. Tie bags securely at top in knot (see illustration).
13. Resupply the isolation room with equipment and consumables to ensure an adequate supply.
14. Leaving the isolation room:
    a. Untie waist and neck strings of gown. Allow gown to fall from shoulders. Remove hands from sleeves without touching outside of gown. Hold gown inside at shoulder seams and fold inside out and dispose of.
    b. Remove gloves. Remove one glove by grasping cuff and pulling glove inside out over hand. Discard glove. With ungloved hand, tuck finger inside cuff of remaining glove and pull it off, inside out (see illustration).
    c. Untie the top mask string and then bottom strings, pull mask away from face and place in a rubbish receptacle. Do not handle outer surface of mask.



Step 12B Tie rubbish bag securely.



Step 14b Removing gloves.



Step 14c A, Untying top strings of mask. B, Dropping mask into rubbish bin.

    d. Wash hands for minimum of 15 seconds.
    e. Explain to the patient when you plan to return to room. Ask whether the patient requires any personal-care items, books or magazines.
    f. Leave room and close the door.
    g. All contaminated supplies and equipment should be disposed of in a manner that prevents spread of microorganisms to other persons (see agency policy).
    h. Remove protective eyewear and wash hands for minimum of 15 seconds.

TABLE 25-6 Summary of personal protective equipment requirements

Procedure	Hand hygiene	Gloves	Sterile gloves	Surgical mask	Eye protection	Gown
Activities of daily living (washing, toilet etc)	✓	✓ if risk of contamination with urine or faeces likely	–	–	–	✓ gown or apron if risk of contamination with urine or faeces likely
Routine observations (e.g. blood pressure measurement)	✓	–	–	–	–	–
General medical examination	✓	✓ for contact with broken skin/ rash/mucous membrane	–	✓ if splash risk likely	✓ if splash risk likely	✓ if splash risk likely
Wound examination/dressing	✓	✓ for contact with body substances	✓ for direct contact with wound	✓ for wound irrigation if splash likely	✓ for wound irrigation if splash likely	✓ for grossly infected wounds
Blood glucose and haemoglobin monitoring	✓	✓	–	–	–	–
Vaginal delivery	✓	–	✓	–	✓	✓
Intravenous cannula insertion	✓	✓	–	–	✓ if splash risk likely	–
Intravascular access device insertion	✓	–	✓	✓	✓	✓ where maximum barrier precautions are used
Intravascular access device care	✓	–	✓	–	–	–
Surgical aseptic technique procedure (e.g. lumbar puncture)	✓	–	✓	✓	✓	✓
Insertion of urinary catheter	✓	–	✓	✓ if exposure risk likely	✓ if exposure risk likely	✓ if exposure risk likely
Urinary catheter care	✓	✓	–	–	✓ when emptying drainage bag	✓ if exposure risk likely
Suctioning: endotracheal tube, tracheostomy	✓	–	✓ dominant hand (open suction system)	✓	✓	✓ if exposure risk likely
Major dental procedures*	✓		✓	✓	✓	✓
Routine intra-oral dental procedures	✓	✓	–	✓	✓	✓ if exposure risk likely

* Including most dental implants, surgical removal or exposure of completely impacted teeth or tooth fragment, vital endodontics, surgical periodontics, maxillo-facial surgery.

National Health and Medical Research Council (NHMRC) 2010 Australian guidelines for the prevention and control of infection in healthcare. NHRMC, Canberra. Online. Available: www.nhmrc.gov.au/guidelines/publications/cd33; accessed 16 Feb 2016.

Masks or masks with face shields should be worn when it is possible that blood or body fluids may be splashed or sprayed into the healthcare worker's face and when patient airborne or droplet precautions are implemented. A correctly applied mask fits snugly over the mouth and nose so that pathogens and body fluids cannot enter or escape through the sides (Box 25-14), thereby preventing contamination by droplet nuclei. A mask discourages the wearer from touching the eyes, nose or mouth. If a person wears glasses, the top edge of the mask fits below the glasses to prevent fogging of eyewear as the person exhales. A mask protects the nurse from inhaling microorganisms from a patient's respiratory tract and prevents transmission of pathogens from the nurse's respiratory tract to the patient. The surgical mask protects the wearer from inhaling large-particle aerosols that travel short distances (1 metre) and small-particle droplet nuclei that remain suspended in the air and travel longer distances. At times, a patient who is susceptible to infection may wear a mask to prevent inhalation of pathogens. Patients with droplet or airborne infections, transported outside their room, should wear a mask to protect other patients and personnel. Masks may prevent transmission of infection by direct contact with mucous membranes.

Talking should be kept to a minimum while wearing a mask to reduce respiratory airflow. When a mask is worn, moisture increases around the mouth and nose, diminishing its effectiveness as a barrier to microorganisms. The mask should be discarded and never reused, as it is a contaminated filter. Staff must wash their hands immediately after discarding a mask. Patients and family members should be warned that a mask might cause a sensation of smothering. If family members are uncomfortable, they should leave the room, discard the mask and immediately wash their hands.

P2-rated respirators that meet the requirements of AS/NZS 1716 (Standards Australia 2012) are required when caring for a patient with known or suspected tuberculosis (TB), avian influenza or severe acute respiratory syndrome (SARS). These masks have a suitable filtration rating and face-fit performance not achieved by a regular surgical mask and must be fit-tested to ensure an effective seal on the face of each wearer to control leakage around the edges of the mask. P2 masks are recommended for use against infections, aerosols and mechanically and thermally generated particulates, so also provide protection from surgical plume generated intraoperatively by electrosurgery and lasers (ACORN 2014). The nurse should be aware of agency policy regarding the type of respiratory protective devices required.

When full protective apparel is necessary, the nurse first washes and dries the hands, applies a mask and protective eyewear, applies a gown and then applies gloves. Gloves help to prevent the transmission of pathogens by direct and indirect contact. Clean, non-sterile gloves should be worn when handling body fluids and contaminated items. Clean gloves should be donned before touching mucous membranes and non-intact skin. Gloves should be changed between tasks and procedures on the same patient after contact with material that may contain a high concentration of microorganisms. Gloves should be removed promptly after use and disposed of appropriately. The wearer's hands should be washed for 15 seconds using an antimicrobial solution or rubbed with an alcohol-based antimicrobial solution until it dries, before touching non-contaminated items and environmental surfaces and before nursing another patient. Washing hands immediately after glove removal helps prevent transfer of microorganisms.

Disposable gloves are easily applied and are designed to fit either hand. The glove can easily be torn. If a break or tear is detected in a glove while providing care, the nurse should change gloves. The nurse should explain the use of gloves to the patient's family members and emphasise the importance of hand hygiene after the removal of gloves.

Nurses must wear protective equipment, including eyewear and a mask or a face shield, when:

- handling toxic chemicals, for example, cytotoxic drugs, formalin
- reprocessing contaminated equipment or instruments
- handling or working in the presence of blood or body fluids, such as the operating room or postoperative care

BOX 25-14 Procedural guidelines for donning a surgical mask

1. Find top edge of mask (usually has thin metal strip along edge). Pliable metal fits snugly against bridge of nose.
2. Hold mask by top two strings or loops. Tie two top ties at top of back of head (see illustration), with ties above ears. (Alternative: slip loops over each ear.)





3. Tie two lower ties snugly around neck with mask well under chin (see illustration).
4. Gently pinch upper metal band around bridge of nose.

Note: mask should be changed if wet, moist or contaminated.

Potter PA, Perry AG 2004 Fundamentals of Nursing, 6th edn. Mosby, St Louis.



Figure 25-7 Nurse wearing a P2-rated respirator and protective eye gear.

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unit, for example, when irrigating a large abdominal wound or assisting with the insertion of an arterial catheter.

Protective eyewear, available as shields, plastic glasses or goggles, or reusable headbands with disposable shields (Figure 25-7) should fit snugly around the forehead and face to prevent fluids from entering between the face and the eyewear.

Specimen collection

Laboratory studies are required when a patient is suspected of having an infectious disease. Body fluids and secretions suspected of containing infectious organisms are collected for culture and sensitivity tests (Box 25-15). The specimen is placed in a medium that promotes growth of organisms. A laboratory technologist then assesses the microorganisms growing in the culture. Sensitivity test results indicate antibiotics to which organisms are resistant or sensitive.

The nurse wears eye protection and uses disposable gloves and sterile equipment to obtain patient specimens. When collecting fresh material from the site of an infection, such as wound drainage, it is important to ensure the specimen is uncontaminated by neighbouring microbes. Specimen containers should be sealed tightly to prevent spillage and contamination of the outside of the container and be placed in a leak-proof bag (NHMRC 2010). Specimens must be clearly labelled on the body of the container (not the lid, as this can easily be discarded in the pathology department). The date

BOX 25-15 Specimen collection techniques

Wound specimen

- Clean site with sterile water or saline before wound specimen collection.
- Wear gloves and use cotton-tipped swab or syringe to collect as much drainage as possible. Have clean test tube or culture tube on clean paper towel.
- After swabbing centre of wound site, hold collection tube with paper towel. Carefully insert swab without touching outside of tube. After securing the top of the tube, transfer tube into bag for transport and then wash hands.

Blood specimen

- Use a syringe and culture media bottles to collect up to 10 mL of blood per culture bottle (check agency policy).
- After prepping, perform venepuncture at two different sites to decrease likelihood of both specimens being contaminated with skin flora.
- Place blood culture bottles on bedside table or other surface; swab off bottle tops with alcohol. Inject appropriate amount of blood into each bottle.
- Remove gloves and transfer specimen into clean, labelled bag for transport. Wash hands.

Stool specimen

- Wearing gloves, use clean cup with seal top (need not be sterile) and tongue blade to collect small amount of stool, approximately the size of a walnut.
- Place cup on clean paper towel in patient's bathroom. Using tongue blade, collect needed amount of faeces from patient's bed pan. Transfer faeces to cup without touching cup's outside surface.
- Dispose of tongue blade, and place seal on cup. Transfer specimen into clean bag for transport. Remove gloves and wash hands.

Urine specimen

- Wearing gloves, use sterile cup to collect 1–5 mL of urine.
- Place cup or tube on clean towel in patient's bathroom. Have patient follow procedure to obtain a clean voided specimen (see Chapter 38).
- Transfer urine into sterile container by drawing up urine using a syringe or pouring it from used collection cup. Secure top of container and transfer specimen into clean, labelled bag for transport.
- Alternatively, use a Monovette to draw up the urine from the collection cup, recap, break off plunger and send the labelled Monovette to the laboratory.
- If patient has a urinary catheter, use syringe to collect specimen. If there is an interlink port on urinary catheter drainage bag, use a Monovette to obtain urine specimen, recap, break off plunger, label and send to laboratory.
- Remove gloves and wash hands.

and time of collection and exact title of the specimen, along with the correct patient details, should be documented on the label. Always confirm with the attending doctor whether the specimen is required to be sent fresh, in a specific medium or in a fixative solution such as formalin.

Bagging rubbish or linen

Nurses use special bagging procedures for removing contaminated items from a patient's environment. Bagging prevents accidental exposure of personnel and prevents contamination of the surrounding environment.

The NHMRC (2010) recommends a single bag for discarding items if the bag is impervious and sturdy and if the article can be placed in the bag without contaminating the outside of the bag. Soiled or wet linen should be placed in an impervious laundry bag (to prevent seepage) in the patient's room. This should be removed from the clinical environment as soon as possible. Double-bagging is only recommended if it is impossible to prevent contamination of the bag's outer surface. All linen and rubbish bags must be securely tied and never overfilled.

Transporting patients

Before transferring a patient to a wheelchair or trolley, the nurse should ensure the patient is dressed in a clean gown to serve as a robe. Patients infected with organisms transmitted by the airborne route should leave their rooms only for essential purposes, such as diagnostic procedures or surgery. These patients must also wear masks, as previously discussed. Personnel transporting these patients should also wear barrier protection.

An extra layer of sheets should be used to cover the trolley or seat of the wheelchair as body fluids can leak onto transport equipment. The nurse must ensure that all transport equipment, including IV poles, is thoroughly disinfected immediately after use to prevent cross-infection to other patients.

Personnel in diagnostic or procedural areas or the operating room should be notified of a patient's precautionary care and document this in the patient's chart. The nurse explains ways in which the patient can help prevent transmission of their infection during transport; for example, a patient with a respiratory infection is provided with tissues and a bag to allow appropriate disposal of secretions.

The operating suite should be notified as soon as possible if an infectious patient requires surgery, as transmission-based precautions may be required and the order of the operating list may need to be altered to ensure the most infectious patient is operated on last. The operating room is then thoroughly cleaned and 'rested' to enable adequate HEPA-filtered air changes to remove airborne microorganisms.

Psychosocial implications of isolation

The use of contact precautions or isolation as strategies for infection prevention and control may have negative impacts on several aspects of patient care. Contact precautions and isolation can not only affect patient safety because of decreased time spent with healthcare workers (Abad et al 2010), but can also increase patients' risk for unintended psychological consequences such as loneliness, anxiety and depression (Abad et al 2010, Morgan et al 2009). When a patient needs to be cared for in a private room, a sense of loneliness may develop because usual social relationships are disrupted. As a result of the infectious process, a patient's body image may be altered. They may feel unclean, rejected, lonely or guilty. Infection prevention and control practices further intensify these beliefs of difference or undesirability. Being alone in a private room limits sensory contact and can lead to sensory deprivation. This situation can be psychologically harmful, especially for children. Patient education prior to initiation of contact precautions, as well as staff education regarding the potential shortcomings of care received by patients in isolation, may decrease the risk for unintended negative consequences (Abad et al 2010, Morgan et al 2009). The nurse can act to minimise feelings of psychological and physical isolation to improve patients' emotional state and recovery (see *Research highlight*).

Prior to implementing isolation procedures, the patient and family should clearly understand the nature of the disease or condition, how infectious organisms are transmitted, the difference between contaminated and clean objects and the purposes of isolation and specific precautions. If they can participate in maintaining infection prevention, the chances of reducing the spread of infection are increased. The patient and family should be taught when and how to wash their hands correctly and how to wear and discard barrier protection, if appropriate. Each procedure should be demonstrated and the patient and family should be given an opportunity to practise. Participation of the patient and family in the treatment of the disease can provide a positive sense of purpose and empowerment.

The nurse also takes measures to improve the patient's sensory stimulation while confined to a private room. The room environment should be clean and pleasant. Curtains or blinds should be open, and excess supplies and equipment removed. The nurse can effectively listen to the patient's concerns or interests. If the nurse rushes through care or shows a lack of interest, the patient will feel rejected and even more isolated. Mealtime is a particularly good opportunity for conversation. Measures such as repositioning increase comfort. Recreational and diversional activities such as board games or cards may be an option to keep the patient mentally stimulated. Depending on the patient's condition, the nurse should encourage the patient to sit out of bed and mobilise in order to minimise the chance of deep vein thrombosis formation. The nurse must explain to the family the patient's risk of depression or loneliness. Visiting family members should be encouraged to avoid expressions or actions that convey revulsion or disgust. The nurse can explain ways to provide meaningful stimulation and a positive approach.

Control or elimination of infectious agents

If an object or instrument is labelled 'disposable' it is considered 'single use' and must be discarded after use. Reusable instruments or objects used in patient care must be appropriately reprocessed after use. Correct reprocessing, which includes cleaning and either high-level disinfection or sterilisation of contaminated objects, significantly reduces microorganisms. Australia and New Zealand have a National Standard (AS/NS 4187:2014) to guide the cleaning and disinfection/sterilisation of reusable items (Standards Australia 2014).

CLEANING Reusable objects must first be cleaned after use, before further reprocessing occurs. Cleaning involves the removal of all foreign materials, such as soil and organic

RESEARCH HIGHLIGHT

Research focus

Methicillin-resistant *S. aureus* (MRSA) is one of the leading multi-resistant organisms (MROs) concerning clinicians worldwide. Preventing and controlling the increase and spread of MRSA within the healthcare environment is an imperative for the infection control team. The prevention and control of MRSA requires strict use of both standard and transmission-based precautions, which include effective hand hygiene practices, stewardship in antimicrobial prescribing and source isolation.

Research abstract

This paper presents a review of the literature on the patient experience of source isolation for MRSA or other infectious diseases. The review yielded five major interconnected themes: (1) psychological effects of isolation; (2) coping with isolation; (3) social isolation; (4) communication and information provision; and (5) physical environment and quality of care. It found that the experience of isolation by patients has both negative and positive elements. Isolation may result in detrimental psychological effects including anxiety, stress and depression, but may also result in the patient receiving less or substandard care. However, patients may also benefit from the quietness and privacy of single rooms.

Evidence-based practice

- The psychological effects of isolation in the form of stress, anxiety and depression are clearly documented in the literature.
- Having some control over their isolation experience appears to provide some means by which patients can cope with the situation.
- Social restrictions placed on patients in source isolation may contribute to feelings of loneliness, abandonment and social isolation.
- Effective communication and the adequate provision of information to patients is important in improving their experience of being in source isolation.
- Patients' perceptions, both negative and positive, of isolation are often influenced by their physical surroundings and environment.
- Nurses and other healthcare workers must look for ways to improve the experience of isolation and contact precautions of patients in source isolation, particularly in improving the environment and the patient's self-control of the situation and in providing adequate information.

Reference

Arratt RL, Shaban R, Moyle W 2011 Patient experience of source isolation: lessons for clinical practice. Contemp Nurse 39(2):180–93.

material, from objects. In larger healthcare facilities, central supply department personnel manually remove gross debris and then, if recommended by the manufacturer, ultrasonically remove debris from crevices and joints in instruments and equipment. Generally, cleaning requires a mild detergent and water combined with the mechanical action of rubbing or scrubbing (NHMRC 2010).

When cleaning and handling used items and equipment soiled by organic material, for example, blood, faecal matter, sputum or pus, or by chemicals, the nurse must take care to minimise exposure to contaminated surfaces, which may include wearing a face shield, plastic apron and disposable gloves. These barriers help provide protection from infectious organisms.

The following general steps help ensure the cleanliness of an object:

1. Clean the instrument or object as close to the point of use as possible to prevent contaminated debris from drying on the object.
2. Fully dismantle the equipment or instrument to ensure all surfaces are subjected to reprocessing.
3. Rinse the contaminated item with warm running water to remove organic material. Hot water causes the protein in organic material to coagulate and adhere to objects, making removal difficult.
4. After rinsing well, wash the object with soap and warm water. Soap or detergent reduces the surface tension and emulsifies debris. Rinse the object thoroughly to remove the emulsified debris.
5. Use a bristled brush to remove material in grooves or seams. Friction dislodges contaminated material for easy removal. Open any hinged items for cleaning.
6. Place the item in an ultrasonic machine (if acceptable in accordance with manufacturer's instructions) to remove debris or bioburden from crevices and joints.
7. Turn off the ultrasonic machine, remove the item and rinse in warm water.
8. Dry the object and prepare it for sterilisation or disinfection.
9. The sink in which the equipment is cleaned is contaminated and should be cleaned and dried.
10. The apron and gloves should be discarded. The face shield is discarded if disposable; if reusable, it should be disinfected prior to reuse.
11. Cleaning brushes should be cleaned and sterilised after use to minimise microbe populations.

It is recommended that a written description of the process and procedures for cleaning contaminated items should be available in all areas where this activity is likely to occur (Standards Australia 2014).

DISINFECTION AND STERILISATION After thorough cleaning, reusable objects are then, ideally, sterilised. If the item cannot

withstand sterilisation, high-level disinfection may be used in accordance with manufacturer's instructions.

Disinfection describes the process of eliminating microorganisms, with the exception of bacterial spores, by thermal or chemical means. *Thermal disinfection* is a simple, cost-effective method that uses heat and water at temperatures that would destroy pathogens (NHMRC 2010). *Chemical disinfection* is generally accomplished by a chemical disinfectant, such as glutaraldehyde, which may or may not be used in conjunction with an automated washer-steriliser (NHMRC 2010). Disinfectants, such as alcohols, chlorines, glutaraldehydes and phenols, can be caustic to equipment and toxic to tissues. Care must be taken to ensure all residual disinfectant is removed prior to use. The disinfected item must be thoroughly dried prior to storage.

Sterilisation involves the complete elimination or destruction of all microorganisms, including spores. Steam under pressure, ethylene oxide (ETO) gas, hydrogen peroxide plasma and chemicals such as periacetic acid are the most common sterilising agents. Once cleaned and disinfected or sterilised, reusable items are then appropriately repackaged, accurately labelled and diligently stored for next use.

It is important for the nurse to be aware of and recognise occupational risks associated while working with chemicals used in disinfection and sterilisation and take appropriate precautions, such as the use of a respirator mask to minimise exposure to toxic fumes when working with glutaraldehydes.

Whether an item is to be simply cleaned, cleaned and disinfected or cleaned and sterilised depends on the intended use of the item. There are three categories of classification: *critical*, *semi-critical* and *non-critical* (Box 25-16). National Standard Australian/New Zealand Standard 4187 (Standards Australia 2014) recommends that all items used within a body cavity be sterile and all items used within the **aseptic field** be documented, so they can be tracked should a product recall be necessary in the event of sterilisation failure.

Nurses should be familiar with the relevant standards, policies and procedures for cleaning, handling and reprocessing items and be competent in correct cleaning, disinfection and sterilisation techniques. Nurses may be required to perform these processes and must be competent to do so. The following factors influence the effectiveness of the disinfecting or sterilising method:

- *Concentration of sterilising or disinfecting solution and duration of contact*. A weakened concentration or shortened exposure time may lessen effectiveness.
- *Type and number of pathogens*. Certain organisms are killed more easily than others by disruption. The greater the number of pathogens on an object, the longer the disinfecting time required.
- *Surface areas to treat*. All contaminated surfaces and areas must be fully exposed to disinfecting or sterilising agents.
- *Temperature of the environment*. Disinfectants tend to work best at room temperature.
- *Presence of soap*. Soap may render certain disinfectants ineffective. Thorough rinsing of an object is necessary to remove soap prior to disinfecting or sterilisation.
- *Presence of organic materials*. Disinfectants can be rendered ineffective in the presence of organic material, for example, blood, saliva, pus or other body fluids. All items should therefore be thoroughly cleaned, rinsed and dried prior to disinfection.

Selection of the appropriate method for disinfecting or sterilising an item depends on its intended use and the nature of the item; for example, delicate fibre-optic instruments such as endoscopes cannot tolerate steam and must be processed using gas, plasma or periacetic acid to achieve sterilisation (Table 25-7).

Control or elimination of reservoirs

To control or eliminate reservoir sites of infection, the nurse should eliminate or contain sources of body fluids, drainage or solutions that can potentially harbour microorganisms. Articles contaminated with infectious material are carefully discarded (Box 25-17). Mandatory standards exist for minimising occupational exposure to blood-borne pathogens or other potentially infectious materials. All healthcare institutions must have policies and procedures to ensure the safe disposal of infectious waste according to local and state regulations. Health workers must adhere to standard precautions and wear protective equipment to prevent cross-contamination.

BOX 25-16 Categories of sterilisation, disinfection and cleaning

Critical items

Items that enter sterile tissue or the vascular system present a high risk of infection if the items are contaminated with microorganisms, especially bacterial spores. Critical items must be sterile, e.g.:

- surgical instruments
- intravascular catheters
- urinary catheters
- needles.

Semi-critical items

Items that come in contact with mucous membranes or skin that is not intact also present risks. These objects must be free of all microorganisms. Semi-critical items must be disinfected or sterilised, e.g.:

- respiratory suction tubing and catheters
- endotracheal tubes
- gastrointestinal endoscopes.

Non-critical items

Items that come in contact with intact skin but not mucous membranes must be clean. Non-critical items must be disinfected, e.g.:

- bed pans
- blood-pressure cuffs
- bedclothes
- stethoscopes
- food utensils.

TABLE 25-7 Examples of disinfection and sterilisation processes

Characteristics	Examples of use
Moist heat	
Moist heat includes steam (moist heat under pressure). When exposed to high pressure, water vapour can attain temperatures above boiling point to kill pathogens and spores	Autoclave is used to sterilise surgical instruments, parenteral solutions and surgical dressings
Radiation	
Ionising radiation penetrates deeply into objects for effective sterilisation and disinfection	Radiation is used in sterilising drugs, foods and other heat-sensitive items
Chemicals	
Chemicals are effective disinfectants because they attack all types of microorganisms, act rapidly, work with water, are stable in light and heat, are inexpensive, are not harmful to body tissues, do not destroy article being disinfected and are not inactivated by organic material	Chemicals are used for disinfection of instruments and equipment Chlorine is useful for disinfecting water and for housekeeping purposes
Ethylene oxide gas	
This gas destroys spores and microorganisms by altering cells' metabolic processes. Fumes are released within an autoclave-like chamber. Ethylene oxide gas is toxic to humans, and aeration time varies with products	This gas sterilises some rubber and plastic items
Boiling water	
Boiling is least expensive for use in the home. Bacterial spores and some viruses resist boiling. It is not used in hospitals	The items (e.g. glass baby bottles) should be boiled for at least 15 minutes

BOX 25-17 Infection control to reduce reservoirs of infection

Bathing
Use soap and water to remove drainage, dried secretions or excess perspiration.

Dressing changes
Change dressings that become wet and/or soiled (see Chapter 30).

Contaminated articles
Place tissues, soiled dressings or soiled sheets in moisture-resistant bags for disposal in accordance with healthcare facility infection control guidelines.

Contaminated needles
- Place syringes, uncapped hypodermic needles, suture needles, skin staples and IV needles in puncture-resistant container, ideally located in patients' rooms or treatment areas so that exposed, contaminated, sharp equipment is not carried long distances (see Chapter 34).
- Do not recap needles.

Bedside unit
Clean table surfaces regularly with antiseptic and ensure they are kept clean and dry.

Skin preparation solutions
Use single-use skin preparation solutions.

Surgical wounds
Keep drainage tubes and collection bags patent to prevent accumulation and backflow of drained fluids.

Drainage canisters and bags
- Dispose of full drainage suction canisters according to facility policy.
- Empty drainage systems at least once per shift or as required, unless otherwise ordered by a doctor.
- Never raise a drainage system, e.g. urinary drainage bag or thoracic drainage reservoir, above the level of the site being drained unless it is clamped off, as the contents of the tubing/reservoir may re-enter the wound.

Control of portals of exit

The nurse must follow infection control practices to minimise or prevent infectious organisms from exiting the body. To control organisms exiting via the nurse's respiratory tract, avoid talking, sneezing or coughing directly over surgical wounds or sterile dressings. Nurses should thoroughly wash their hands after coughing, sneezing, touching their hair, applying a face mask, removing gloves or contacting any potentially contaminated surface. The nurse is also responsible for teaching patients infection control practices when they sneeze or cough and for

providing patients with disposable wipes or tissues to help control the spread of microorganisms.

A nurse with an upper respiratory tract infection or open wound can infect immunocompromised patients and other staff. They should seek medical advice, obtain a medical certificate and if necessary notify and not attend work.

Special attention by the nurse to hand hygiene is essential when dealing with patients who are highly susceptible to infection, for example, immunocompromised patients, patients with burns and neonates. Transmission-based precautions may be implemented for patients with known infections in conjunction with standard precautions.

Another way of controlling the exit of microorganisms is through the careful handling of urine, faeces, emesis and blood, as these can easily splash while being discarded. Disposable gloves, masks, gowns and protective eyewear should be worn. The nurse appropriately disposes of soiled items in contaminated waste bags. Patient laboratory specimens and all tissue, blood and body fluids must be considered potentially infectious and handled appropriately.

Control of transmission

Effective control of infection requires a nurse to remain aware of the modes of transmission and methods of control. In the hospital, home or extended-care facility, a patient should have a personal set of care items. Sharing bed pans, urinals, bath basins and eating utensils can easily lead to transmission of infection. Single-use chemical-strip thermometers or single-use covers on tympanic or electronic thermometers present less risk of infection, provided the reusable component is thoroughly cleaned and disinfected between patients.

To prevent transmission of microorganisms through indirect contact, soiled items and equipment must be kept from touching the nurse's clothing. A common error is to carry contaminated linen in the arms, thus touching the nurse's uniform. Fluid-resistant linen bags should be located at the point of use, or soiled linen should be carried with hands held away from the body. Linen containers should be placed close to the area of use and replaced before they are overflowing.

Control of portals of entry

Many measures that control the exit of microorganisms similarly control the entrance of pathogens. Maintaining the integrity of skin and mucous membranes reduces the opportunity for microorganisms to reach a host. Immobilised and debilitated patients are particularly susceptible to skin breakdown. Patients should not be positioned on tubes or objects that might cause breaks in the skin. Dry, wrinkle-free linen also reduces the chances of skin breakdown. Turning and repositioning of patients should be performed regularly before a patient's skin becomes reddened. Frequent oral hygiene prevents the drying of mucous membranes. A water-soluble ointment can help keep a patient's lips lubricated.

After elimination, a woman should clean the rectum and perineum by wiping from the urinary meatus towards the rectum. Cleansing in a direction from the least to the most contaminated area helps reduce genitourinary infections. Meticulous and frequent perineal care is especially important in older women who wear disposable incontinence pads.

Correct handling and management of urinary catheters and drainage sets includes maintaining a closed, intact system and minimising movement of the catheter in the urethra to prevent infection.

The nurse may care for patients with drainage systems collecting wound drainage, bile or other body fluids. The site from which a drainage tube exits should remain clear of excess moisture or accumulated drainage. All tubing should remain connected in a closed system throughout use. Drainage receptacles should only be opened to discard the volume of drainage. The amount, colour and consistency should be noted in the patient's documentation.

When specimens are required from drainage tubes or needles inserted into IV ports, disinfection should be achieved by initially washing one's hands, then carefully wiping the site outwards with an alcohol swab and allowing it to dry, before entering a tube or system.

Patients and healthcare personnel are at risk of infection from accidental needle-stick injuries. After administering an injection or inserting an IV catheter, needles should never be recapped but carefully disposed of in a puncture-resistant 'sharps' container. A stray needle lying in bedclothes or carelessly thrown into a wastebasket is a prime source of exposure to blood-borne pathogens, for example, hepatitis B and C. A needle-stick injury should be reported immediately, appropriate treatment implemented and an injury/incident report completed (Box 25-18).

A final method for minimising the entrance of microorganisms into a person is the technique of cleansing wounds, as described fully in Chapter 30.

Asepsis and aseptic technique

The nurse's efforts to minimise the onset and spread of infection during clinical procedures are based on the principles of aseptic technique. **Asepsis** is defined as the absence of pathogenic microorganisms. An **aseptic technique** 'aims to prevent pathogenic organisms, in sufficient quantity to cause infection from being introduced to susceptible sites by hands, surfaces and equipment' (NHMRC 2010:86). It is a method employed to help prevent contamination of wounds and other susceptible sites by organisms that could cause infection by ensuring that only aseptic parts of equipment and fluids come into contact with aseptic parts of the patient or susceptible body sites during certain clinical procedures. It is used during any procedure that bypasses the body's natural defences (e.g. peripheral and central intravenous access, wound care or urinary catheterisation).

BOX 25-18 Hepatitis B vaccination and follow-up after exposure

- Healthcare employers must make available hepatitis B vaccine to all employees at no cost. The serum level of those who may have had an occupational exposure should be tested for hepatitis B and HIV immediately. Evaluation and follow-up care must be available to all employees who have been exposed to blood or body fluids at no cost to employee.
- A confidential written medical evaluation and counselling should be available to employees with exposure incidents.

Principles of aseptic non-touch technique

Aseptic non-touch technique (ANTT) is the framework for promoting and ensuring asepsis adopted in the current Australian infection control guidelines (NHMRC 2010). In ANTT, asepsis is ensured by: identifying and then protecting key parts and key sites; effective hand hygiene; effective non-touch technique; appropriate glove choice; and use of aseptic fields (Rowley et al 2010).

'Key parts' – the aseptic key parts of procedure equipment – must be identified and protected at all times. Key parts must only come into direct contact with other aseptic key parts and/or key sites, such as wounds or insertion sites (Rowley et al 2010). While effective hand hygiene is also an essential component of ANTT, it is known that hand hygiene is not always correctly performed; and that even when correctly performed, hand hygiene cannot always remove all pathogenic organisms. Therefore, a non-touch technique – identifying key parts and not touching them directly or indirectly – is a vital component of achieving asepsis. In other words, the optimal way of protecting key parts is never to touch them (Rowley et al 2010). If it is necessary to touch key parts/sites directly, then sterile gloves should be used to minimise the risk of contamination. Otherwise, wear non-sterile gloves.

Even well-cleaned hospitals can be said to be 'dirty' – busy and dynamic environments resident with unusual antibiotic-resistant organisms. Consequently, aseptic fields are important in providing a controlled aseptic working space to help promote or ensure the integrity of asepsis during clinical procedures. It is also important that aseptic fields are fit for purpose. In ANTT, aseptic fields are increased in size and sterilised drapes added on the basis of procedure complexity. For example, in IV therapy, 'mobile' aseptic fields such as plastic trays should be large enough and with sides high enough to provide an adequate working space to contain equipment, sharps and spillages. ANTT employs two types of aseptic fields – general and critical – that require different management depending on whether the primary purpose is to promote or ensure asepsis. *General aseptic fields* are used when key parts can be easily protected, and *critical aseptic fields* are used when key parts cannot be protected at all times due to their size or number (Rowley et al 2010).

Ensuring and promoting asepsis using ANTT principles appropriately depends on the healthcare professional undertaking a risk assessment which takes into account: whether the procedure can be performed without touching key parts and key sites directly; the technical difficulty of the procedure and the competency of the healthcare professional; and risks posed by the immediate environment (Rowley et al 2010). Although the principles of ANTT remain constant, the level of practice will change according to the risk assessment (NHMRC 2010). The risk assessment will determine whether a 'standard' ANTT or a 'surgical' ANTT is required (Figure 25-8).

Principles of surgical asepsis

The principles of surgical ANTT encompass situations where procedures are technically complex, involve large or numerous key parts, involve large open key sites and entail extended periods of time. One such example is surgery in the operating room (Rowley et al 2010).

Surgical asepsis is used during surgical procedures to eliminate introduction of all additional microorganisms, including pathogens and spores, to an object or area, thus creating a critical aseptic field. In surgical asepsis an area or object is considered contaminated if touched by any object that has not been sterilised and treated in an aseptic manner. For example, a torn surgical glove exposes the outside of the glove to the skin surface; it is therefore contaminated. Nurses working within a critical aseptic field or with sterile equipment must rectify the slightest break in asepsis, because contamination can place a patient at risk of infection.



Standard ANTT and the use of a general main aseptic field (yellow outline) and critical micro-asceptic fields (red outline)

Surgical ANTT and the use of a main critical aseptic field

Figure 25-8 Use of standard and surgical aseptic non-touch technique.

A, Standard aseptic non-touch technique (ANTT). B, Surgical ANTT.

National Health and Medical Research Council (NHMRC) 2010 Australian guidelines for the prevention and control of infection in healthcare. NHRMC, Canberra. Online. Available: www.nhmrc.gov.au/guidelines/publications/cd33; accessed 16 Feb 2016.

Surgical asepsis is routinely practised in the operating room and the perioperative nurse follows a series of steps to promote and ensure asepsis, including donning fresh scrub clothes, hair covering, mask and protective eyewear, and performing a thorough surgical hand and arm scrub. The perioperative nurse then dons a sterile gown and gloves (see below).

PATIENT PREPARATION Surgical asepsis requires precision to avoid compromising the aseptic field; the nurse must therefore gain the patient's cooperation. The nurse must carefully prepare the patient before any procedure. Certain patients may fear moving or touching objects during an aseptic procedure, whereas others may even try to help. The nurse explains how a procedure is to be performed and what the patient can do to avoid compromising the aseptic field, including the following:

- Avoid sudden movements of body parts covered by surgical drapes within the aseptic field.
- Refrain from touching surgical supplies, drapes or the nurse's gloves and gown.
- Avoid coughing, sneezing or talking over an aseptic area. The nurse may suggest the patient gently raise their hand if they think they may cough, sneeze or move.

Certain aseptic procedures may last an extended time. The nurse assesses the patient's needs to anticipate factors that may disrupt a procedure. Analgesics should be administered proactively to ensure procedural pain relief. Patients must often assume relatively uncomfortable positions during aseptic procedures, so they are assisted to achieve the most comfortable position possible. To prevent wound contamination, the nurse should anticipate problems related to the patient's condition which may result in actions or events that can compromise an aseptic field, such as offering a mask to a patient with a respiratory infection.

ENSURING ASEPSIS When beginning a surgically aseptic procedure, the nurse should be guided by the following principles to ensure asepsis:

- *A sterile object is sterile inside its unopened, uncompromised sterile packaging* (Rowley et al 2010).
  - Sterile items are removed from their sterile packaging and aseptically presented to the surgical field (ACORN 2014).
  - In the course of constant exposure to airborne organisms, sterile items can no longer be considered sterile; but are considered aseptic.
- *A sterile object remains sterile only when touched by another sterile object*.
  - Aseptic items within the aseptic field touching each other enables the item to remain aseptic; for example, aseptic gloves or aseptic forceps are used to handle objects within the aseptic field.
  - Aseptic items touching clean items are considered contaminated; for example, if an aseptic object touches the surface of a clean disposable glove, the object is considered contaminated and must be discarded.
  - Aseptic item touching contaminated items occurs when the nurse touches an aseptic object with an ungloved hand.
- *Only sterile objects may be placed on a sterile field.* A package that is torn, punctured, wet or open is considered unsterile. Where there is a tear, break or puncture in the covering of a sterile item, the item cannot be used on the sterile field as it is not sterile (it is considered contaminated). The nurse should carefully check the integrity of the packaging of all items when preparing for a sterile procedure.
- *Aseptic objects on aseptic fields should be kept in view.* Aseptic gloved hands should be held above waist level. Nurses never turn their backs on an aseptic tray or leave it unattended. Aseptic objects should be kept in front with the hands as close together as possible. Items held below waist level are considered contaminated. Contamination can occur accidentally by a dangling piece of clothing, falling hair or a patient touching an aseptic object.
- *An aseptic object or field becomes contaminated by prolonged exposure to air*. The nurse avoids activities that create air currents, such as excessive movements, rearranging aseptic items or rearranging linen after an aseptic object or field is exposed. The number of people walking into the area and talking, laughing, sneezing or coughing when gathering and using aseptic equipment should be minimised, to reduce contamination by airborne transmission. When opening sterile packages, the nurse holds the item or piece of equipment close to the aseptic field, without touching the aseptic surface. An aseptic field must be prepared immediately prior to use. It must not be left unattended, as sterility cannot be guaranteed. Ideally, a second nurse aseptically opens items to be placed on the aseptic field and the nurse performing the procedure, wearing aseptic gloves and/or using an aseptic instrument, receives the items, to minimise contamination.
- *When an aseptic field comes in contact with a wet, contaminated surface, the aseptic object or field becomes contaminated by a 'wicking' action.* If moisture seeps through an aseptic package's protective covering, microorganisms can travel onto the aseptic object. When stored sterile packages become wet, the nurse discards the objects immediately or sends the equipment for reprocessing. Any spill from pouring sterile or aseptic solutions can be a source of contamination unless the object or field rests on an aseptic surface that cannot be penetrated by moisture. For example, urinary catheterisation trays, once opened, contain aseptic supplies that rest in an aseptic, plastic container – if aseptic solutions are spilled within the container, they will not contaminate the catheter or other objects. In contrast, if sterile gauze is left in its wrapper on a wet bedside table the gauze is considered contaminated.
- *The edges of an aseptic field or tray are considered to be contaminated*. Frequently a nurse places sterile objects on an aseptic drape. The edges of the drape touch an unsterile surface, such as a table or bedclothes; a 2.5 cm border around the drape is therefore considered contaminated. The edges of sterile containers become exposed to air after they are open and are also considered contaminated. A sterile item removed from its protective container must not touch the container's edge.
- *Fluid flows in the direction of gravity.* A sterile object becomes contaminated if gravity causes unsterile liquid to flow over the object's surface. To avoid contamination during a surgical hand scrub, hands are held above elbows,

allowing water to flow downwards, without allowing water to flow back from the elbow area and over hands and fingers. After performing a surgical hand scrub, scrubbed personnel dry their hands from fingers to elbows, with their hands held upwards and using one end of the towel, then repeat the process using the other end of the towel; the towel is then discarded.

Performing aseptic procedures

All equipment required, plus extra supplies in case of accidental contamination, should be assembled before a procedure. The nurse then avoids leaving the area unattended. If an object is contaminated during the procedure, it should be discarded immediately. Prior to commencement of the aseptic procedure, each step should be carefully explained to the patient to help gain their cooperation.

DONNING AND REMOVING CAPS, MASKS AND EYEWEAR Nurses generally wear a surgical mask and protective eyewear without a cap when performing aseptic procedures in a ward environment. During surgical procedures, perioperative staff wear freshly laundered attire, a cap or balaclava to cover all hair, protective eyewear and a surgical mask. Post-procedure, the contaminated gloves are removed first, then the gown and finally the mask. This order aims to prevent contamination of the hair, neck and facial area. After untying the mask, the nurse holds it by the ties to discard it. Masks should not be worn hanging from the neck after removal, as they are a contaminated filter. After removing all protective wear, the nurse washes hands thoroughly.

OPENING STERILE PACKAGES Sterile items such as syringes, gauze dressings and catheters are packaged in paper or plastic containers, impervious to microorganisms provided they remain dry and intact. Reusable supplies may be wrapped in packaging that is permeable to steam, to allow steam, gas or plasma penetration during sterilisation. Sterile items are kept in clean, enclosed storage systems and must be separated from unsterile or contaminated equipment.

Sterile supplies generally have chemical indicators or tapes that change colour during the sterilisation process. Failure of the tapes to change colour signifies that the item is unsterile and must not be used. A sterile supply should never be used if the integrity of the packaging is compromised. Healthcare facilities label each item with the date processed, a load number and the steriliser number. If an item is found to be unsterile – the chemical indicator has not changed colour to indicate sterilisation has taken place – a product recall of all items processed by that steriliser during that load must commence immediately. In accordance with AS/NZS 4187 (Standards Australia 2014), healthcare facilities are required to demonstrate the ability to competently track all items sterilised within the facility. Double-sided stickers or barcoding systems may be used to identify when items were sterilised and in which steriliser, and on which patients the items was used.

Before opening a sterile item, the nurse should disinfect and dry the work area, then thoroughly wash their hands. Supplies are inspected for integrity and sterility and assembled in the work area, such as the bedside table or treatment room, before opening packages. A bedside table or counter top can provide a large, clean working area for opening items. The work area should be above waist level. Sterile supplies should not be opened in a wet, contaminated or confined space.

OPENING A STERILE ITEM ON A FLAT SURFACE Sterile packaged items must be opened without contaminating the contents by use of aseptic technique. Commercially packaged items are usually designed to allow the nurse to open or separate the paper or plastic cover, opening the wrapper away from the body (Figure 25-9). The following steps are used when opening items wrapped in polypropylene, paper or linen:

1. Ensure the surface of the trolley or table has been disinfected and dried.
2. Check the integrity of the packaging, the date, sterilisation indicator and contents.
3. Place the item flat in the centre of the work surface.
4. Remove the steriliser indicator label and affix to patient documentation. Then remove sterilisation tape or seal.
5. Grasp the outer surface of the tip of the outermost flap.
6. Open the outer flap away from the body, keeping the arm outstretched and away from the aseptic field (Figure 25-10A) and pull the packaging firmly.
7. Grasp the outside surface of the first side flap.
8. Open the side flap, allowing it to lie flat on the table surface. Keep the arm to the side and not over the sterile surface (Figure 25-10B). Do not allow the flaps to spring back over the sterile contents.
9. Grasp the outside surface of the second side flap and allow it to lie flat on the table surface (Figure 25-10C).
10. Grasp the outside surface of the last and innermost flap.
11. Stand away from the sterile package and pull the flap back, allowing it to fall flat on the surface (Figure 25-10D).
12. Use the inner surface of the package (except for the 2.5 cm border around the edges) as an aseptic field to add additional sterile items. The 2.5 cm border can be grasped to manoeuvre the field on the table surface.

OPENING A STERILE ITEM WHILE HOLDING IT To open small sterile items, the package is held in the non-dominant hand while the top flap is opened and pulled away from the nurse. Using the dominant hand, carefully open the sides and top flaps away from the enclosed sterile item in the order previously mentioned. Open the item aseptically and retrieve the item for transfer to the aseptic field.

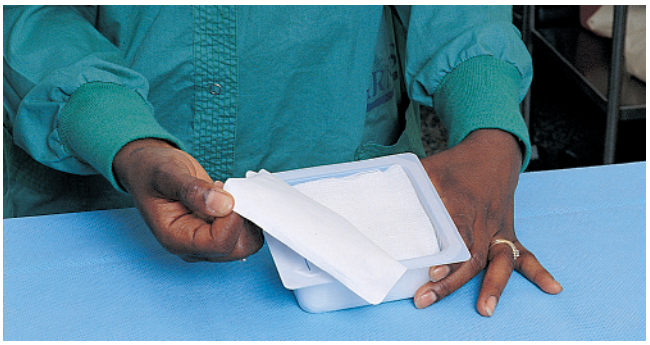


Figure 25-9 When opening a commercially packaged sterile item, the nurse tears the wrapper away from the body.

Potter PA, Perry AG 2013 Fundamentals of Nursing, 8th edn. Mosby, St Louis.

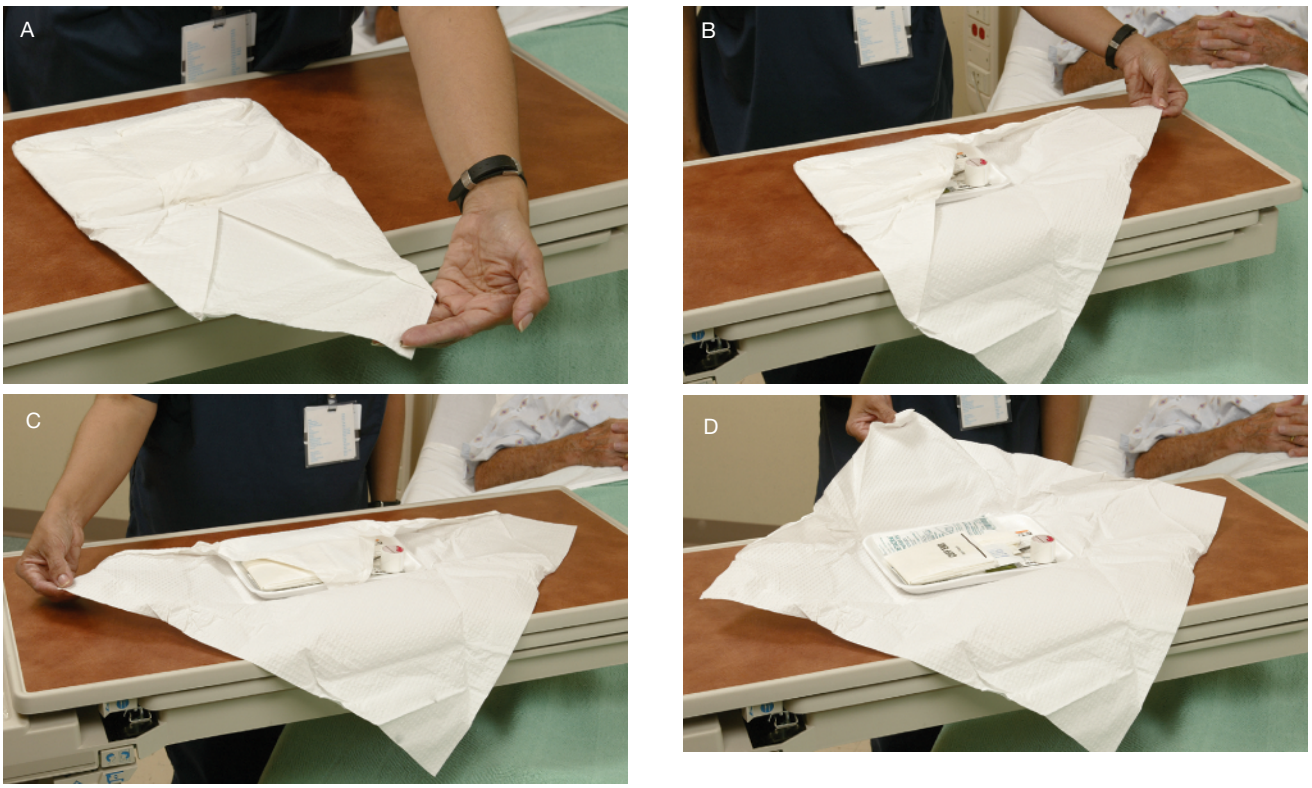


Figure 25-10 Opening sterile packaged items on a flat surface.
A, The nurse opens the top flap away from the body. B, The nurse's arm is kept out away from the aseptic field while opening a side flap. C, The second side flap is opened. D, The back flap is opened.
Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

PREPARING AN ASEPTIC FIELD When performing aseptic procedures, the nurse requires an aseptic work area that provides room for handling and placing sterile items. An aseptic field is an area free of additional microorganisms and prepared to receive sterile items. The field may be prepared by using the inner surface of a sterile wrapper as the work surface or by using a sterile drape. Skill 25-2 describes preparation of an aseptic field. After the surface of the field is created, the nurse adds sterile items by placing them directly on the field or by transferring them with aseptic forceps. When transferring

SKILL 25-2

Preparing an aseptic field

Delegation considerations

Preparing an aseptic field requires specialised knowledge regarding surgical asepsis.

Equipment

- Sterile drapes
- Assorted sterile supplies

STEPS	RATIONALE
1. Prepare aseptic field just before planned procedure. Supplies are to be used immediately.	Prevents exposure of aseptic field and supplies to air and contamination.
2. Work surfaces should be above waist level. Clean the work surface with an antiseptic solution and dry thoroughly.	An aseptic object held below waist level is considered contaminated.
3. Check all necessary equipment is present and inspect the integrity of packaging.	Preparation of equipment in advance prevents break in technique.
4. Check chemical indicators on supplies that indicate sterility of equipment. Scan barcodes of items or attach labels to patient documentation to enable effective tracking of sterilised items.	
5. Apply personal protective equipment.	
6. Wash and dry hands thoroughly.	Prevents transmission of infection.
7. Place pack containing sterile drape on work surface and open as shown in Figure 25-10.	Ensures sterility of packaged drape.
8. With fingertips of one hand, pick up folded top edge of sterile drape.	2.5 cm border around drape is considered unsterile and may be touched.
9. Gently lift drape up from its outer cover and let it unfold by itself without touching any object. Discard outer cover with your other hand.	If sterile object touches any other non-sterile object, it becomes contaminated.
10. With other hand, grasp adjacent corner of drape and hold it straight up and away from your body (see illustration).	Drape can now be properly placed while using two hands. Drape must be held away from unsterile surfaces.
11. Holding drape, first position and lay bottom half over intended work surface (see illustration).	
12. Allow top half of drape to be placed over work surface last (see illustration).	Prevents nurse from reaching over aseptic field.
13. Grasp 2.5 cm border around edge to position as needed.	Creates aseptic work surface.



Step 10 Hold drape straight up and away from body.



Step 11 Lay bottom half over work surface.



Step 12 Place top half of drape over work surface.

STEPS	RATIONALE
ADDING STERILE ITEMS	
14. Open sterile item (following package directions) while holding outside wrapper in non-dominant hand.	Frees dominant hand for unwrapping outer wrapper.
15. Carefully peel wrapper onto non-dominant hand.	Item remains sterile. Inner surface of wrapper covers hand, making it sterile.
16. Being sure wrapper does not fall down on aseptic field, place item onto field at angle. Do not hold arm over aseptic field (see illustration).	Prevents reaching over field and contaminating its surface.
17. Dispose of outer wrapper.	Prevents accidental contamination of aseptic field.
18. Pouring sterile solutions:	
a. Verify contents and expiration date of solution.	Ensures correct solution and sterility of contents.
b. Ensure receiving container for solution is on or near edge of aseptic field. Some aseptic field kits have cups or moulded plastic sections into which fluids can be poured.	Prevents reaching over aseptic field.
c. Remove sterile seal and cap from bottle in an upward motion. Holding bottle away from aseptic field with label facing up and the bottle lip 3–4 cm over inside of receiving container, slowly pour contents into container (see Figure 25-11).	Prevents contamination of bottle lip and keeps inside of cap aseptic. Edge and outside of bottle are considered contaminated. Slow pouring prevents splashing of liquids which causes fluid permeation of aseptic field and results in contamination.
19. Perform procedure using aseptic non-touch technique.	Prevents transmission of infection to patient.



Step 16 Placing sterile item on aseptic field.

RECORDING AND REPORTING

- It is not necessary to record or report this procedure.

aseptic items, the nurse must carefully place objects onto the aseptic field. An object that comes in contact with the 2.5 cm border around the field is considered contaminated and must be discarded.

Sterile gloves may be worn while preparing items on the aseptic field. If this is done, the nurse can touch the entire drape, but sterile items must be handed over by an assistant. The nurse's gloves cannot touch the wrappers of sterile items.

POURING STERILE SOLUTIONS Often sterile solutions must be poured into aseptic containers. The patient's allergy status, the type, strength and expiry date of the solution should first be checked. A bottle containing a sterile solution is sterile on the inside and contaminated on the outside; the bottle's neck is also contaminated, but, once opened, the inside of the bottle cap is considered aseptic. After a cap or lid is removed, it is held in the hand or placed aseptic side (inside) up on a clean surface so the inside of the lid can be seen as it rests on the table surface. A bottle cap or lid should never rest on an aseptic surface as the cap's outer edge is unsterile and would contaminate the surface. Similarly, placing an aseptic cap down on an unsterile surface contaminates the cap. A single-use solution is recommended; any remaining solution is discarded.

The bottle should be held with its label in the palm of the hand to prevent the possibility of the solution wetting and fading the label. The nurse pours the solution slowly to avoid splashing the underlying aseptic drape or aseptic field. The bottle should never be held so high above the container that even slow pouring will cause splashing. The bottle should be held outside the edge of the aseptic field (Figure 25-11).

SURGICAL HAND ANTISEPSIS Patients undergoing operative procedures are at an increased risk of infection. Nurses working in the operating rooms perform surgical hand antisepsis to decrease and suppress the growth of skin microorganisms in case of glove tears (ACORN 2014, Ghorbani et al 2012, WHO 2009, Widmer et al 2013). Surgical hand antisepsis can be achieved by a surgical hand antiseptic scrub or an alcoholic-based surgical hand rub. Regardless of the method, the Australian College of Operating Room Nurses (2014) recommends that standardised and correct procedures will ensure all members of the team minimise transmission.



Figure 25-11 **Pouring a sterile solution into a receiving container on the aseptic field.**

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

All jewellery should be removed from the arms, wrists and hands, including rings, as these may harbour microorganisms. Fingernails must be kept clean, short and free of nail fillers, artificial nails and nail polish (ACORN 2014). Nurses with active skin infections, open lesions or respiratory infections should be excluded from the surgical team. The efficacy of surgical hand antisepsis is influenced by the choice of skin disinfectant and the duration and coverage of the product (Ghorbani et al 2012, Howard et al 2014). Surgical hand antisepsis products should be used in accordance with the manufacturer's recommendations for use, including volume of product used and contact time of product on skin (ACORN 2014). During **surgical hand antiseptic scrub** (Skill 25-3), the nurse washes from fingertips to elbows with an antiseptic solution under tepid running water. The three (3) minute surgical hand scrub has been shown to be as effective as the five (5) minute surgical hand scrub, depending on selection of surgical handwash (Widmer 2013). Using a standardised procedure, an initial wash that takes 5 minutes would include the cleaning of fingernails with a disposable nail pick. Use of a sterile scrub brush is not

SKILL 25-3

Surgical hand antisepsis ('scrubbing'): preparing for gowning and gloving

Delegation considerations

The role of the circulating and instrument nurse can be delegated to a surgical technologist or licensed practical nurse in some countries. In Australia, registered nurses (RNs) typically perform these roles, but the roles can be delegated to an enrolled nurse (EN) with the requisite education and preparation. Individual healthcare organisations will determine the level of competency required for the role of the circulating and instrument nurse.

Equipment

- Deep scrub sink with automatic, foot or knee controls for dispensing water and antiseptic soap (taps should be high enough for hands and forearms to fit comfortably).
- Non-irritating, broad-spectrum, fast-acting antimicrobial scrub solutions with ensured persistent or sustained activity should be used. Note: the same antimicrobial solution used for the initial scrub of the day should be used for

subsequent scrubs during the day, to maximise the residual cumulative antimicrobial effects. Staff using antimicrobial solutions should have direct access to the manufacturer's material safety data sheet (MSDS) which outlines directions for use and first aid.

- Surgical scrub sponge with nail pick. Note: a scrub brush should only be used if hands are grossly contaminated, e.g. following gardening, painting, etc. Routine use damages the outer dermal layer of skin causing abrasions which breach the skin barrier enabling penetration of microbes into deeper tissue, increasing the risk of skin reactions.
- Other: personnel are required to remove jewellery and don protective equipment: freshly laundered scrub attire, appropriate footwear, shoe covers as required, hair covering, appropriate surgical face mask and protective eyewear prior to scrubbing.

STEPS	RATIONALE
1. Scrub all surfaces of hands and forearms working from the nail beds and between fingers before proceeding to wash the forearms. The first hand and arm wash (scrub) for the day should take 5 minutes; subsequent scrubs should take 3 minutes (ACORN 2014).	Allows sufficient time to ensure the effectiveness of the surgical scrub.
2. Ensure fingernails are short, clean, healthy and free of artificial nails, nail polish and nail fillers.	Long nails and chipped or old polish increase number of bacteria residing on the fingernails. Long fingernails can puncture gloves, causing contamination.
3. Inspect hands for presence of abrasions, cuts or open lesions. Consult infection control professional as necessary.	Damaged tissue may have a greater number of microbes residing on skin surfaces.
4. Don surgical face mask and protective eyewear.	Protects from splashes of chemicals and patient blood and body fluids.
5. Turn on water using knee or foot controls and adjust to comfortable temperature.	Taps should be high enough to allow hands and forearms to fit comfortably underneath.
6. Start timing. Wet hands and arms under running lukewarm water and lather with an antimicrobial solution to 5 cm below the elbows. Keep hands higher than elbows at all times.	Water runs by gravity from fingertips to elbows. Hands become cleanest part of upper extremity. Keeping hands elevated allows water to flow from least to most contaminated areas.
7. Under running water, clean under nails of both hands with either a nail pick or the bristled side of a scrub brush (see illustration). Discard after use.	This removes debris that may harbour large numbers of microorganisms. Note: WHO guidelines recommend that a surgical hand scrub with a medicated soap, such as chlorhexidine or povidone–iodine for 2 or 3 minutes, reduces bacterial counts to acceptable levels and the time required for surgical alcohol-based hand rubbing depends on the compound used (WHO 2009). WHO guidelines also state that for preoperative hand preparation, alcohol-based formulations have better antimicrobial effectiveness than all other currently available methods (WHO 2009).

STEPS	RATIONALE



Step 7 Cleaning under fingernails.

8. Rinse hands and arms thoroughly under running warm water. Remember to keep hands above the elbows.	Rinsing removes transient microorganisms from fingers, hands and forearms.
9. Wash arms using a circular motion, from hands to elbows, without returning to hands (see illustration). Discard brush. This 'pre-wash' should take 3 minutes initially, then 2 minutes for subsequent scrubs.	This step allows the antimicrobial solution time to work.
10. Re-apply the antimicrobial solution and wash all surfaces of hands including between fingers (see illustration) and around wrists. Wash arms using a circular motion from hands to elbows, without returning to hands. This process should take 2 minutes initially, then 1 minute for subsequent scrubs.	Scrubbing in a circular motion loosens resident bacteria that adhere to skin and helps ensure full coverage of surfaces.
11. Ensure hands are elevated above the elbows. Carefully rinse hands and arms thoroughly under running water, without touching taps (see illustration).	Correct rinsing to remove antimicrobial solution helps prevent skin irritation.
12. Turn off taps without touching them with the scrubbed parts of the hands and arms. Shake off excess water, clasp hands together and hold away from the body.	Keeping hands and arms elevated and away from clothing avoids contamination.



Step 9 Washing arms.



Step 10 Scrubbing sides of fingers.

STEPS	RATIONALE



Step 11 Rinsing arms.

13. Walk carefully into the operating or set-up room to dry hands and arms in preparation for donning a sterile gown and gloves.	Floors around scrub sink can be slippery.
14. Obtain a sterile hand towel and stand back from the aseptic field. Lean forwards, outstretch hands and allow the towel to unfold. Use one half of the towel to thoroughly pat dry, from the hand to the elbow using a circular motion, on one side of the towel, then use the other half of the towel to repeat the process for the other hand and arm (ACORN 2014).	Leaning forwards prevents accidental contact of arms with clothing. Drying hands thoroughly makes donning gloves easier.
15. Finally, drop the towel into the appropriate receptacle (ACORN 2014) and proceed with gowning.	

RECORDING AND REPORTING

- Scan barcodes of sterile items or apply tracking stickers to documentation.
- Report any dermatitis to employee health services or infection control professional as per agency policy.

recommended; continued use can damage the outer layer of the skin. The recommended duration of subsequent surgical scrubs is 3 minutes, as the residual antimicrobial solution on the skin surface reduces the microbe population (ACORN 2014, NHMRC 2010). The light friction created by scrubbing effectively removes microorganisms; however, vigorous scrubbing may remove outer layers of the epidermis, exposing deeper layers to bacterial flora (Rothrock 2007). If undertaking an alcoholic-based surgical hand rub, the nurse must ensure adequate skin contact/coverage with the solution according to the manufacturer's recommended instructions for use.

DONNING STERILE GLOVES Sterile gloves are an additional barrier to bacterial transfer. Nurses who work on general nursing wards use open gloving (Skill 25-4) for aseptic procedures such as urinary catheter insertion. The closed gloving method (Skill 25-5) is performed after nurses put on sterile gowns and is practised in operating rooms and procedure rooms. Once out of their original packaging, gloves and gowns are no longer considered sterile, but aseptic.

The appropriate glove size should be selected; the glove should not stretch so tightly that it constricts hand movement or tears easily. Double gloving is recommended to maximise glove integrity and reduce the microbial load of contaminated needles perforating gloves. Gloves one size larger are applied first, with the nurse's usual size of glove worn on top (Tanner & Parkinson 2009).

DONNING A STERILE GOWN Nurses must don sterile gowns when assisting at the aseptic field in the operating room and delivery room so that aseptic objects can be comfortably handled with less risk of contamination. The aseptic gown acts as a barrier to decrease shedding of microorganisms from skin surfaces. Nurses caring for patients with large open wounds or

SKILL 25-4

Open gloving

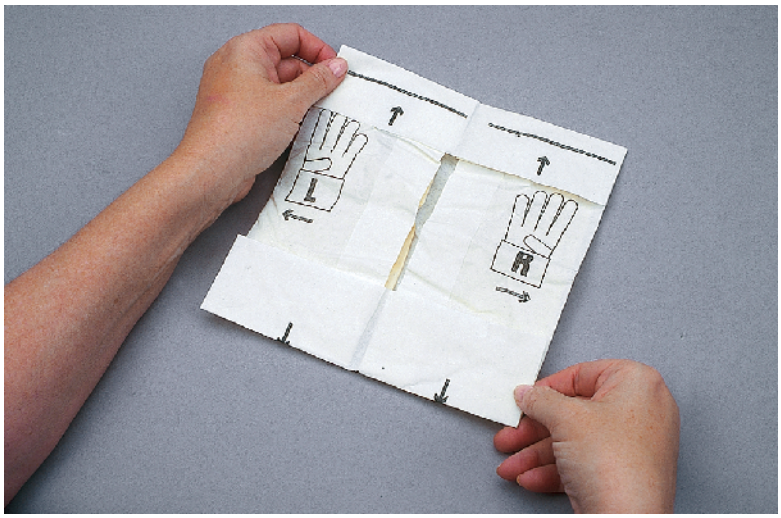
Delegation considerations

Requires knowledge of aseptic technique.

Equipment

- Sterile gloves of the correct size
- A clean surface on which to open the glove packet. Wipe over the surface with an antiseptic and allow it to dry thoroughly before use

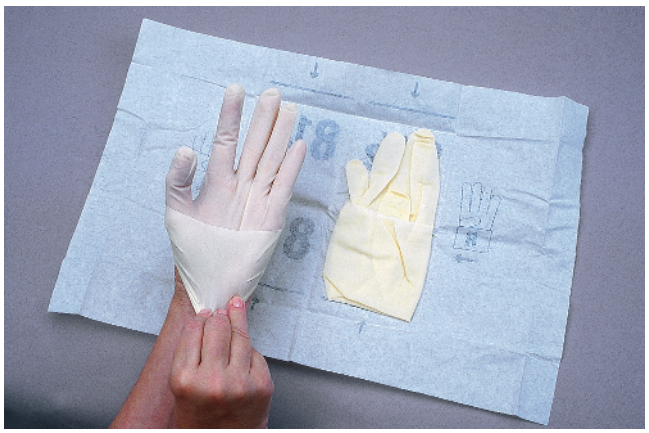
STEPS	RATIONALE
OPEN GLOVING	
1. Perform hand hygiene.	Removes bacteria from skin surfaces and reduces transmission of infection.
2. Open the glove packet by carefully separating and peeling apart the sides, on a recently cleaned surface.	Maintains the integrity of the sterile gloves.
3. Grasp the inner package, keeping the gloves on the sterile inside of the wrapper surface (see illustration).	Inner surface of glove package must remain sterile.



Step 3 Opening glove package.

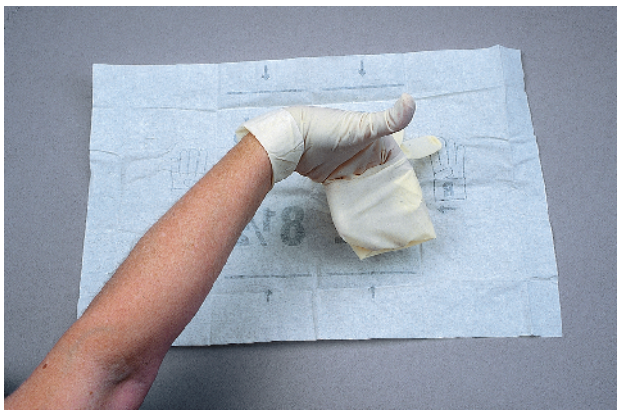
4. Identify right and left glove. Each glove has cuff approximately 5 cm wide. Glove the dominant hand first.	Proper identification of gloves enables efficient, correct gloving. Gloving the dominant hand first improves dexterity.

STEPS	RATIONALE
5. With thumb and first two fingers of the non-dominant hand, grasp edge of the cuff of the glove for dominant hand. Touch only glove's inside surface.	Inner edge of cuff will lie next to skin and is therefore not sterile.
6. Carefully pull glove over dominant hand, leaving cuff and being sure cuff does not roll up wrist. Be sure thumb and fingers are in proper spaces (see illustration).	If the outer surface of the glove touches the skin it is considered contaminated and must be replaced with a sterile glove.



Step 6 Pulling glove over dominant hand.

7. With gloved dominant hand, slip the fingers underneath second glove cuff (see illustration).	Cuff protects gloved fingers. Ensures aseptic items only touch aseptic surfaces, thus avoiding contamination.
8. Carefully pull second glove over non-dominant hand. Do not allow the fingers and thumb of the gloved, dominant hand to touch any part of exposed non-dominant hand. Keep the thumb of the dominant hand abducted back (see illustration).	Contact of gloved hand with exposed skin of ungloved hand causes contamination. Unsterile glove must then be removed and replaced with a sterile glove.

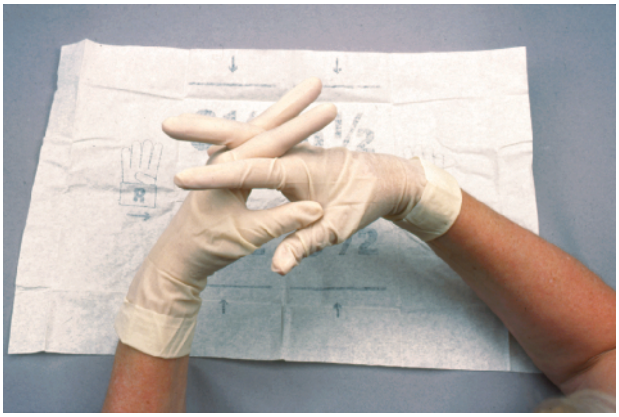


Step 7 Slipping fingers under cuff of second glove.



Step 8 Pulling second glove over non-dominant hand.

STEPS	RATIONALE
9. Once the second glove is applied, ensure a smooth fit over fingers and interlock the gloved hands, taking care not to touch the uniform (unless the nurse has donned a sterile gown). The cuffs usually fall down after application. Be sure to touch only sterile sides (see illustration).	Ensures a smooth fit over fingers.



Step 9 Interlocking gloved hands.

GLOVE DISPOSAL

10. Grasp the outside of one cuff with the other gloved hand; avoid touching wrist.	Minimises contamination of underlying skin.
11. Pull the glove off, turning it inside out. Place the removed glove in the remaining gloved hand.	Outside of glove does not touch skin surface.
12. Use the fingers of the bare hand to pull the remaining glove from the cuff over the hand. This will remove the glove and tuck the other glove inside.	Contaminated gloves are contained.
13. Discard in an appropriate infectious waste receptacle.	Used gloves are contaminated with the microbes of the wearer and handled contaminants.
14. Ensure hands are washed thoroughly, or apply an antimicrobial alcohol hand rub immediately after the removal of gloves.	Microorganisms multiply in dark, moist, warm conditions such as on hands when gloves are worn. Gloves may contain microscopic perforations permitting the entry of microbes, which can proliferate on the wearer's hands.

RECORDING AND REPORTING

- It is not necessary to record or report this procedure.

SKILL 25-5

Donning a sterile gown and performing closed gloving

Delegation considerations

The role of the circulating and instrument nurse can be delegated to a surgical technologist or licensed practical nurse in some countries. In Australia, RNs usually perform these roles. Individual healthcare organisations will determine the level of competency required for the role of the circulating and instrument nurse.

Equipment

- Freshly laundered scrub attire
- Appropriate, non-slip, clean shoes or shoes worn with shoe covers
- Hair covering: hat or balaclava (to contain facial hair)
- Two pairs of sterile gloves, the inner pair one size larger, the outer pair being the nurse's correct size
- Surgical mask
- Appropriate eye protection: for infection control. Protective eyewear specific to various types of lasers may also be required
- Sterile gown that complies with national requirements

STEPS	RATIONALE
DONNING A STERILE GOWN	
1. Personnel are required to don protective equipment: freshly laundered scrub attire, appropriate footwear, shoe covers as required, hair covering, appropriate surgical face mask and protective eyewear, prior to gowning and gloving.	Prevents hair and air droplet nuclei from contaminating the aseptic field. Eyewear protects staff from inadvertent splashes of chemicals, blood and body fluids.
2. Perform thorough surgical hand antisepsis (see Skill 25-3).	Removes transient and resident bacteria from fingers, hands and forearms.
3. The circulating nurse aseptically opens a sterile gown pack containing a sterile gown, which is folded inside out.	Outer surface of gown remains sterile.
4. The circulating nurse peels open glove package without contaminating the sterile inner contents. Inner glove package is then placed on sterile outer created by sterile outer wrapper.	Inner packaging and gloves remain sterile, allowing instrument nurse to handle aseptically.
5. Reach down to sterile gown package; lift folded gown directly up and step back away from table.	Provides sufficient space to don gown without contamination.
6. Hold the folded gown away from the scrub suit, locate neckband and allow the remainder of the gown to unfold without being touched.	Outside of gown remains sterile.
7. Use both hands to find the arm holes of the gown and push the hands and arms through simultaneously (see illustration), without allowing the hands to protrude out from the wrist cuffs. Once the gown is pulled on, the sleeves should cover hands.	Clean hands may touch the inside of the gown without contaminating the outer surface. Gown covers hands to prepare for closed gloving.
8. Circulating nurse may reach inside gown to arm seams to bring gown over shoulders. Ask the circulating nurse to securely tie up the back of the gown (see illustration).	Gown must completely enclose underlying garments. The front tie or tab of the gown is handed to another sterile person to 'turn' the gown. This allows a sterile flap to cover the back.

STEPS	RATIONALE
 Step 7 Placing arms in sleeves with hands kept inside cuffs.	 Step 8 Circulating nurse tying back of gown.
CLOSED GLOVING	
1. With hands still covered by the gown sleeves, open the inner package of the larger sized gloves (see illustration). The right glove will be located on the right side of the package, and the left glove will be located on the left side of the package.	Outside of gown remains sterile. Double gloving is recommended to minimise pathogen transmission.
2. With the dominant hand inside gown cuff, pick up the glove for the non-dominant hand by grasping the folded cuff.	Sterile gown touches sterile glove.
3. Extend non-dominant hand and forearm, with the palm facing upwards and place the palm of the glove against the palm of non-dominant hand. Glove fingers will point towards the elbow.	Positions glove for application over cuffed hand, maintaining glove sterility.
4. Grasp back of glove cuff with covered dominant hand. Turn glove cuff over end of non-dominant hand and gown cuff (see illustration).	Seal created by glove cuff over gown prevents exit of microorganisms over operative aseptic field.
5. Grasp the cuff of the glove and the underlying gown sleeve, with the gown cuff still covering dominant hand. Carefully extend fingers into the sterile glove.	
6. Glove the dominant hand in same manner, reversing hands (see illustration). Use gloved non-dominant hand to pull the other glove at the cuff of the gown and extend fingers into the glove. Keep the hand inside sleeve cuff at all times to ensure 'closed gloving'. Ensure fingers are fully extended into both gloves.	When both hands are covered by sterile gloves, fingers can more easily be manipulated into the gloves. A seal is created by the glove cuff over the gown to prevent exit of microorganisms onto the operative aseptic field.

STEPS	RATIONALE
 Step 1 Opening glove package with covered hands.	 Step 4 Applying glove to non-dominant hand as dominant hand remains inside gown cuff.
 Step 6 Applying second glove.	
7. The second outer pair of gloves can be applied by the instrument nurse; the sterile gloved hands touch the second sterile pair of gloves.	
8. Undo the fastener or ties in front of the gown and hand to a gowned and gloved 'sterile' member of the surgical team. They will stand still while the instrument nurse turns around to cover their back, with extended gown flap. The instrument nurse retrieves their gown tie from sterile surgical team member and securely ties the gown (see illustration).	Contact with an unsterile team member can risk contamination of sterile gown or gloves. Gown must completely enclose underlying garments.
9. The scrub team must ensure they either pass each other face to face or back to back, to avoid the unsterile back of the gown contaminating the aseptic field or personnel.	Scrubbed personnel are considered aseptic from mid-chest to waist and elbows to glove tips only. The back of the gown, the area under the arms, the collar, the area below the waist and the sleeves above the elbows are considered unsterile, as the nurse cannot keep these areas in constant view to ensure their sterility.

STEPS	RATIONALE



Step 8 Handing tie to 'sterile' team member.

RECORDING AND REPORTING

- It is not necessary to record or report this procedure.

assisting medical staff during invasive procedures, for example, inserting an epidural catheter, may also don sterile gowns.

A hair cover, mask and eye protection are worn, a surgical hand scrub or rub performed and then a sterile gown and gloves are applied (see Skill 25-5). The nurse picks up the gown from a sterile pack without touching the outside of the packaging. Once donned, only certain parts of the gown are considered aseptic: the gloved fingertips to elbows and the gown front from waist to mid-chest. The back of the gown, the area under the arms, the collar, the area below the waist and the sleeves above the elbows are considered unsterile, as the nurse cannot keep these areas in constant view to ensure their aseptic integrity.

Infection prevention and control for hospital personnel

In Australia and New Zealand, legislation exists to promote the health and safety of people in the workplace through the elimination, reduction and control of hazards, including transmission of infection. Exact details can be found in the relevant national and state Acts and other legislation. Although each state has individual legislation, they share common goals and contain common elements:

- *Exposure control plan*. Institutions must have plans designed to eliminate or minimise employee exposure to hazardous material. The plan must be accessible to all employees and describe how to avoid exposure to infectious agents, including how and when to use protective equipment.
- *Compliance with standard precautions*. Employees must be informed of precautions to prevent contact with blood and body fluids or other potentially infectious material during the routine care of patients. Personal protective equipment must be provided for the employees by the employer.
- *Housekeeping*. Workplaces must be maintained in a clean and sanitary condition. Cleaning and decontamination procedures and routines must be in place.
- *High-risk exposure*. If health workers sustain a needle stick, sharps injury or mucous membrane exposure to blood or other body fluids, the incident should be reported immediately. Evaluation and appropriate preventive treatment for hepatitis B and HIV infection are critical.
- *Training*. Employers must ensure that all employees at risk of occupational exposure participate in a training program that presents the exposure control plan for the institution and specifically explains the measures to be taken by employees for their safety. Written policies and guidelines must be provided for all personnel, outlining prevention and control activities.

Role of the infection control professional

Many hospitals employ professionals, most of whom are registered nurses, with postgraduate qualifications in infection control and prevention. These infection control professionals are responsible for advising hospital personnel and monitoring infections within the hospital. Roles of an infection control professional may include the following:

- provision of staff education on infection prevention and control
- development and review of infection prevention and control policies and procedures
- recommending implementation of appropriate standard and transmission-based precautions

- screening patients for community-acquired infections that may be reportable to the public health department
- consulting with health departments to implement recommendations to prevent and control the spread of infection among personnel, such as TB testing
- gathering statistics regarding the epidemiology of nosocomial or hospital-acquired infections
- notifying the public health department of communicable diseases diagnosed within a hospital
- conferring with all hospital departments to investigate unexpected or clustered infections
- educating patients and families
- identifying infection control risks with equipment and instrumentation
- monitoring antibiotic-resistant organisms in the institution.

An infection control professional can be a valuable resource for helping nurses control and prevent nosocomial infections.

Patient education

Often, patients must learn to use infection control practices at home (Box 25-19). Preventive techniques become almost second nature to nurses who practise them daily, but patients may be less aware of the factors that promote the spread of infection or ways to prevent its transmission. The home environment does not always lend itself to infection prevention, and nurses can help patients adapt to maintain hygienic techniques. Generally, patients in a home care setting have a decreased risk of infection because of decreased exposure to resistant organisms, such as those found in a hospital.

When patients are at home, nurses determine their ability to comply with infection control practices through education about infection and techniques to prevent or control its spread.

Topics in a teaching session include:

- patient susceptibility to infection
- the chain of infection, with specific reference to means of transmission
- hygiene practices to minimise organism growth and spread, emphasising hand hygiene
- preventive health care, for example, immunisation, nutrition, diet and exercise
- use of antibiotics and how to decrease the risk of antibiotic-resistant infection
- appropriate methods for handling and storing food
- identifying family members who are at risk of acquiring infection, and prevention strategies.

It is important to involve family members who care for patients in the teaching plan.

BOX 25-19 Client teaching for infection control

Objective

- Patient will assume self-care using proper infection control techniques.

Teaching strategies

- Instruct the patient about decontaminating equipment using soap and water and disinfecting with an appropriate disinfectant.
- Demonstrate proper handwashing, and explain rationale, e.g. before and after all treatments and following contact with infected body fluids.
- Instruct the patient about signs and symptoms of wound infection.
- Explain the importance of preparing adequate formula no longer than 8 hours in advance for patients who receive commercially prepared enteral tube feedings at home.
- Explain to the patient how contaminated enteral feeding can cause infections.
- Demonstrate how to cleanse their stoma site with mild soap and water daily and how to dry the area well.
- Instruct the patient to place contaminated dressings and other disposable items containing infectious body fluids in impervious plastic bags and securely tie them off.
- Instruct the patient to place used needles and other contaminated sharp items into a commercially available sharps container – these are usually supplied by local councils or community health nurses.
- Clean noticeably soiled sheets separately from other laundry. Wash in water that is as hot as possible. Add 1 cup of colourfast bleach to the detergent. Ideally dry outside in the sun, as the ultraviolet rays of sunlight have an antimicrobial effect. Otherwise, set the clothes dryer temperature as high as fabric will allow.

Evaluation

- Ask patient or family member to describe and demonstrate the techniques you have explained to reduce transmission of infection.
- Have patient demonstrate various techniques discussed.
- Ask patient to explain the signs and symptoms of infection and their plan of action should an infection arise.

EVALUATING IMPACTS AND OUTCOMES

The success of infection control techniques is measured by achievement of the goals for reducing the risk of or preventing infection. A comparison of the patient's response (absence of fever or development of wound drainage) with expected outcomes determines the success of nursing interventions (Figure 25-12) and whether interventions should be revised or eliminated. The ability to correctly assess wound healing and conduct a physical assessment of body systems is an important evaluation skill. The nurse closely monitors a patient for signs and symptoms of infection. For example, a patient who has undergone a surgical procedure is at risk of a wound infection at the surgical site, as well as at other invasive sites, such as drainage tube sites or arterial line sites. The patient is also at risk of developing a respiratory tract infection due to decreased mobility, or a UTI if an indwelling catheter is in situ. All invasive and surgical sites should be carefully monitored for signs of infection such as redness, swelling or purulent drainage. Temperature, breath sounds and sputum character should be

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DO NOT WRITE IN THIS BINDING MARGIN

Queensland Government

Acute Management of Suspected Meningococcal Disease Clinical Pathway

Facility: .....

(Affix identification label here)

URN:

Family name:

Given name(s):

Address:

Date of birth: Sex: ☐ M ☐ F ☐ I

Clinical Pathways never replace clinical judgement. Care outlined in this Pathway ***must be varied*** if it is not clinically appropriate for the individual patient.

Signs and Symptoms suggestive of meningococcal disease on presentation may or may not include (tick as appropriate):

☐ Photophobia ☐ Neck stiffness ☐ Headache ☐ Depressed consciousness
☐ Fever ☐ Hypotension ☐ Petechial non-blanching rash (may not be present)

Early Management	Completed	Initial	Time	Date
Move to appropriate resuscitation room				
Perform Primary Survey (ABCD)				
Document vital signs - temp, HR, RR, BP, SpO_2, central capillary refill time				
Notify senior medical officer immediately				
Gain IV or IO access using aseptic technique				
Collect blood for the following tests: • Meningococcal **PCR:** Adult: collect 4mL in a mauve top tube Child: collect 1mL in a paediatric EDTA pink top tube • FBC, coagulation tests, LFT, UE, glucose • Collect blood cultures using an aseptic technique				
Commence fluid resuscitation as appropriate within 30 minutes				
Commence recommended antibiotics within 30 minutes (see table below)				
If clinical picture is suggestive of meningitis, follow **meningitis flowchart** (see page 2) (note contraindications to a lumbar puncture)				
If clinical picture is suggestive of meningococcal sepsis seek senior medical advice immediately				
For retrieval, contact RSQ (Retrieval Services Queensland) 1300 799 127				
Notify public health unit (PHU) within 6 hours (see PHU contact details below)				

For clinical advice

Child: If facility is level 6 contact ICU or ≤ level 5 call RSQ

Adult: Contact medical officer at relevant regional or tertiary facility. If unavailable and pt likely to require retrieval contact RSQ 1300 799 127

Recommended Early Empirical Antibiotic Treatment

- **Start antibiotic therapy within 30 minutes**
- **This should not be delayed awaiting results of diagnostic tests or fluid resuscitation**
- **Discuss antibiotic choice with senior clinician**

Age Group	Drug		Route	Dose / Frequency
Neonates and infants less than 3 months	Ampicillin	plus	IV	50mg/kg, 6 hourly
	cefOTAXIME		IV	50mg/kg, 6 hourly
Children 3 months or more	cefTRIAXONE	or	IV	50mg/kg (up to 2g), 12 hourly
	cefOTAXIME		IV	50mg/kg (up to 2g), 6 hourly
Adults	cefTRIAXONE	or	IV	2g, 12 hourly
	cefOTAXIME		IV	2g, 6 hourly

These recommendations are based on those in Therapeutic Guidelines: Antibiotic, along with recent state and national antibiotic sensitivity profiles of bacterial isolates

Signature Log

Every person documenting in this pathway must supply a sample of their initials and signature below

Initials	Signature	Print Name	Role	Initials	Signature	Print Name	Role

Public Health Unit Phone Numbers

Also available at http://www.health.qld.gov.au/publichealthact/notifiable/phucontacts.asp

Business hours only. After hours contact local hospital switchboard and ask for the public health physician on call.

Brisbane North	3624 1111	Darling Downs	4631 9888	Moreton Bay (Redcliffe)	3142 1800	Townsville	4753 9000
Brisbane South	3000 9148	Gold Coast	5668 3700	Mt Isa & Gulf	4744 9100	West Moreton (Ipswich)	3413 1200
Cairns	4226 5555	Logan	3412 2989	Rockhampton	4920 6989	Wide Bay (Hervey Bay)	4184 1800
Central Queensland (Rockhampton)	4920 6989	Longreach	4652 6000	South West	4856 8100	Wide Bay (Bundaberg)	4150 2780
		Mackay	4911 0400	Sunshine Coast	5409 6600		

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MENINGOCOCCAL DISEASE CLINICAL PATHWAY

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Emergency Management of Children with Meningitis

Assessment

Child presents to emergency service with clinical features suggesting meningitis

Assess Severity
Consider pre-hospital management given

Consider differential diagnoses:
- viral encephalitis
- intra-cranial collections
- eosinophilic meningitis
- acute disseminated encephalomyelitis (ADEM)
- "mimics" of meningitis, e.g. other infectious diseases.

STABLE

Is an LP contraindicated?* (Y / N)

***Contraindications for LP:**
- child unstable
- altered LOC or obtundation
- seizures
- suspicion of space occupying lesion or ↑ ICP
- localised infection in the lumbar region
- coagulopathy

Can LP be performed within 30 mins? (N / Y)

UNSTABLE
- altered level of consciousness or obtundation
- signs of shock
- coagulopathy
- refractory seizures

Emergency Management (Resuscitate using **ABCD**)
Call emergency &/or paediatric consultant
- **A** Provide high-flow oxygen
- **B** Support ventilation (BVM)
- **B** Consider ETT intubation if not responding
- **C** Obtain IV or IO access
- **C** Give IV fluid boluses 20mL/kg 0.9% NaCl as required
- **D** Check BSL and give IV 10% Dextrose (2mL/kg) as required

Other treatment:
- Blood cultures
- Meningococcal PCR (blood) if meningococcal disease suspected
- Administer Dexamethasone plus empirical IV antibiotics
- Add IV Acyclovir if clinical suspicion of HSV meningoencephalitis#

Investigation and treatment

Perform LP
- Add viral studies depending on clinical suspicion
- Blood cultures
- Meningococcal PCR (CSF + blood) if meningococcal disease suspected)

- Administer Dexamethasone plus empirical IV antibiotics
- Add IV Acyclovir if clinical suspicion of HSV meningoencephalitis#

Delay LP
Within 30 mins of assessment:
- Call emergency &/or paediatric senior doctor
- Blood cultures and if meningococcal disease suspected perform meningococcal PCR
- Administer Dexamethasone plus empirical IV antibiotics
- Add IV Acyclovir if clinical suspicion of HSV meningoencephalitis#

Review

Review CSF results
Negative / Positive

Is an LP contraindicated?* (Y)

Improvement?

***Contraindications for LP:**
- child unstable
- altered LOC or obtundation
- seizures
- suspicion of space occupying lesion or ↑ ICP
- localised infection in the lumbar region
- coagulopathy

Continue observation in ED or SSU

Disposition

Meets discharge criteria? (N / Y)

Discharge

Admit to children's inpatient service

Arrange transfer to PICU (Level ≤ 5 call RSQ)

Medications

Dexamethasone (IV)	**Children ≥ 3 months:** 0.15mg/kg (up to 10mg), 6 hourly	
Acyclovir (IV) If HSV meningoencephalitis suspected	**Neonates:**	20mg/kg, 8 hourly
	Children:	10mg/kg, 8 hourly
	Adults:	10mg/kg, 8 hourly

Clinical features of meningitis (at any age)
- Fever
- Vomiting and/or nausea
- Lethargy or irritability
- Photophobia and/or headaches
- Anorexia
- Nuchal rigidity (often not present, especially in young children and infants
- Positive Kernig's or Brudzinski's sign
- Altered mental status
- Shock
- Seizures
- Meningeal signs
- Focal neurological deficit
- Petechial rash

Additional clinical features of meningitis in infants less than 3 months
- Bulging fontanelle
- High pitched cry
- Poor feeding
- Apnoea
- Seizures

#Consider HSV meningoencephalitis if a history of maternal HSV infection and predominance of lymphocytes in the CSF

Reference: Children's Health Services Meningitis Clinical Procedure Working Group 2011

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Figure 25-12 Clinical pathway for suspected meningococcal infection.

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monitored for changes and signs of infection. Laboratory test results are reviewed; for example, leucocytes in the urine may indicate a UTI. The absence of signs or symptoms of infection is the optimal outcome of infection prevention and monitoring activities.

The patient at risk of infection must understand measures implemented to reduce or prevent microorganism growth and spread. Patients or family members should be provided with the opportunity to discuss infection control measures and their ability to comply with therapy. The nurse may determine whether patients require additional information or reinforcement of information given previously.

The nurse documents the patient's response to therapies implemented for infection control. A clear description of any signs and symptoms of systemic or localised infection is necessary to provide a baseline for comparative evaluation. The efficacy of interventions that reduce infection should be reported.

Key concepts

- Hand hygiene is the most important technique in preventing and controlling transmission of infection.
- The potential for microorganisms to cause disease depends on the number of organisms, their virulence, their ability to enter and survive in a host and susceptibility of the host.
- Nurses need to recognise the difference between signs of local inflammation and infection.
- Microorganisms are transmitted by direct and indirect contact, airborne spread, vectors and contaminated articles.
- Increasing age, poor nutrition, stress, inherited conditions, chronic disease, medical conditions and medical treatments can compromise the immune response and may increase a person's susceptibility to infection.
- The major sites for healthcare-associated infections (HAIs) include the urinary and respiratory tracts, bloodstream and surgical or traumatic wounds.
- Invasive procedures, medical therapies, long hospitalisation and contact with healthcare personnel increase a patient's risk of acquiring HAIs.
- Patients in an intensive care unit are at greater risk of infection compared with other patients because of the prevalent use of antibiotics and patients' increased exposure to invasive procedures.
- Isolation practices may prevent personnel and patients from acquiring infections and may prevent the transmission of microorganisms or cross-infection to others.
- Patients confined to their rooms are at risk of loneliness, anxiety and depression because of the restricted and socially isolated environment.
- Standard precautions are implemented for all patients, based on the assumption that all patients are potentially infectious. Hand hygiene and vigilant use of personal protective equipment is essential for standard precautions.
- Thorough cleansing requires mechanical removal of all foreign material from an object or area.
- If a procedure involves breaching the skin integrity or an invasive procedure entering a body cavity (normally free of microorganisms), aseptic practices must be followed.
- An infection control professional monitors the incidence of infection in an institution and provides both educational and consultative services to maintain infection prevention.

Online resources

Australian Commission on Safety and Quality in Healthcare (ACSQHC), The Healthcare Associated Infection (HAI) Prevention Program, www.safetyandquality.gov.au/our-work/healthcare-associated-infection/

Hand Hygiene Australia; Online Learning Packages, www.hha.org.au/learningpackage/olp-home.aspx

Hand Hygiene New Zealand; Online Learning Packages, www.handhygiene.org.nz/index.php?option=com_content&view=article&id=6:online-learning-packages&catid=9&Itemid=112

Infection Prevention and Control Nurses College, New Zealand Nurses Organisation (NZNO), www.infectioncontrol.co.nz/home/

National Health and Medical Research Council 2010 Australian guidelines for the prevention and control of infection in healthcare, www.nhmrc.gov.au/guidelines-publications/cd33

The Aseptic Non Touch Technique (ANTT) project, http://antt.org/ANTT_Site/Home.html

References

Abad C, Fearday A, Safdar N 2010 Adverse effects of isolation in hospitalised patients: a systematic review. J Hosp Infect 76:97–102.

Australian College of Operating Room Nurses (ACORN) 2014 Standards for perioperative nursing, including nursing roles, guidelines and position statements. ACORN, Adelaide.

Australian Commission on Safety and Quality in Health Care (ACSQHC) 2012 National Safety and Quality Health Service Standards, Standard 3 Preventing and Controlling Healthcare Associated Infections. ACSQHC, Sydney. Online. Available: http://www.safetyandquality.gov.au/our-work/national-standards-and-accreditation/; accessed 18 Mar 2014.

Boyce JM, Pittet D 2002 Guideline for hand hygiene in health-care settings. Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. MMWR Recommendations and Report: 51:1–45.

Gomez C, Nomellini V, Faunce DE et al 2008 Innate immunity and aging. Exper Gerontol 43:718–28.

Ghorbani A, Shahrokhi A, Soltani Z et al 2012 Comparison of surgical hand scrub and alcohol surgical hand rub on reducing hand microbial burden. J of Periop Prac 22(2):67-70.

Gould DJ, Moralejo D, Drey N et al 2010 Interventions to improve hand hygiene compliance in patient care. Cochrane Database Syst Rev (9): CD005186. DOI: 10.1002/14651858.CD005186.pub3.

Graf K, Ott E, Vonberg RP et al 2011 Surgical site infections – economic consequences for the health care system. Langenbeck's Arch Surg 396(4):453–9.

Graves N, Halton K, Paterson D, Whitby M 2009 Economic rationale for infection control in Australian hospitals. Healthcare Infection 14:81–8.

Graves N, Halton K, Robertus L 2008 Costs of health care associated infection. In Cruickshank M, Ferguson J (eds), 2008 Reducing harm to patients from health care associated infection: the role of surveillance. Australian Commission on Safety and Quality in Health Care, Canberra. Online. Available: www.safetyandquality.gov.au/wp-content/uploads/2008/01/Reducing-Harm-to-Patient-Role-of-Surveillance1.pdf; accessed 10 Jun 2012.

Grayson ML, Russo KR, Bellis K et al (eds) 2010 Hand hygiene Australian manual. Commonwealth of Australia, Canberra. Online. Available: www.hha.org.au/ForHealthcareWorkers/manual.aspx; accessed 20 Nov 2011.

Hand Hygiene Australia 2015 National Data for 2015 [Overall Compliance Rate]. HHA, Melbourne. Online. Available: www.hha.org.au/LatestNationalData/national-data-2015.aspx; accessed 15 Feb 2016.

Hand Hygiene Australia 2013 5 Moments for Hand Hygiene Manual. Online. Available: www.hha.org.au/ForHealthcareWorkers/manual.aspx; accessed 15 Feb 2016.

Hand Hygiene Australia (HHA) 2012 National Hand Hygiene Initiative. HHA, Melbourne. Online. Available: www.hha.org/home.aspx; accessed 12 Mar 2012.

Hand Hygiene New Zealand Ringa Horoia Aotearoa (HHNZ) 2009 Guidelines on hand hygiene for New Zealand hospitals. HHNZ, Auckland. Online. Available: www.infectioncontrol.org.nz/handhygiene/resources.htm; accessed 15 Feb 2016.

Howard JD, Jowett C, Faoagali J, McKenzie B 2014 New methods for assessing hand disinfection shows that pre-operative alcohol/chlorhexidine rub is as effective as a traditional scrub. J Hosp Infect 88:78–83.

Morgan DJ, Diekema DJ, Sepkowitz K et al 2009 Adverse outcomes associated with contact precautions: a review of the literature. Am J Infect Control 37:85–93.

National Health and Medical Research Council (NHMRC) 2010 Australian Guidelines for the Prevention and Control of Infection in Healthcare. Commonwealth of Australia. Available: www.nhmrc.gov.au/guidelines-publications/cd33; accessed 18 Feb 2015.

Parker D, Callan L, Harwood J et al 2009 Nursing interventions to reduce the risk of catheter-associated urinary tract infection. Part 1: catheter selection. J Wound Ostomy Continence Nurs 36(1):23–34.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Rothrock J 2007 Alexander's care of the patient in surgery, 13th edn. Mosby, Toronto.

Rowley S, Clare S, Macqueen S et al 2010 ANTT v2: an updated practice framework for aseptic technique. Br J Nurs 19(5): S5–S11.

Siegel JD, Rhinehart E, Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee 2007 Guideline for isolation precautions: preventing transmission of infectious agents in healthcare settings. Centers for Disease Control and Prevention, Atlanta, GA. Online. Available: www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.html; accessed 6 Jun 2012.

Standards Australia. AS/NZS 4187: 2014 Reprocessing of reusable medical devices in health service organisations. Prepared by Joint Technical Committee HE-023. Published 15 December 2014. Standards Australia, Canberra.

Standards Australia. AS/NZS 1716: 2012 Respiratory protective devices. Standards Australia, Canberra

Standards New Zealand 2008 Health and disability services (infection prevention and control) standards NZS 8134.3: 2008. Standards New Zealand, Wellington.

Stewardson A, Pittet D 2011 Ignaz Semmelweis – celebrating a flawed pioneer of patient safety. Lancet 378(9785):22–3.

Stone PW, Pogorzelska M, Kunches L et al 2008 Hospital staffing and healthcare-associated infections: a systematic review of the literature. Clin Infect Dis 47(7):937–44.

Struelens MJ 1998 The epidemiology of antimicrobial resistance in hospital acquired infections: problems and possible solutions. Br Med J 317:652–4.

Tanner J, Parkinson H 2009 (updated) Double gloving to reduce surgical cross-infection. Cochrane Database Syst Rev (3): CD003087. doi: 10.1002/14651858.CD003087.pub2.

Trautner BW 2010 Management of Catheter-Associated Urinary Tract Infection (CAUTI). Curr Opin in Infect Dis 23(1):76–82; doi:10.1097/QCO.0b013e328334dda8.

Weaver BA 2009 Herpes zoster overview: natural history and incidence. J Am Osteopath Assoc 109(suppl 2):S2–S6.

Weller B (ed) 1997 Encyclopedic dictionary of nursing and health care. Ballière Tindall, London, p. 81.

Weiskopf D, Weinberger B, Grubeck-Loebenstein B 2009 The aging of the immune system. Transplant Int 22:1041–50.

Widmer AF 2013 Surgical hand hygiene: Scrub or rub? J Hosp Infect 83(S1):535–9.

World Health Organization (WHO) 2009 WHO guidelines on hand hygiene in health care. WHO, Geneva. Online. Available: www.who.int/gpsc/tools/en; accessed 20 July 2016.

CHAPTER

26

Maintaining skin integrity and undertaking wound care

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Learning outcomes

Mastery of content will enable you to:

- describe the anatomy and physiology of the skin
- discuss normal phases of wound healing
- describe the modes of wound healing
- discuss abnormal wound healing
- outline the factors affecting wound healing
- conduct a head-to-toe skin assessment and pressure injury risk assessment
- describe the differences between nursing care of acute and chronic wounds
- describe the principles of wound assessment and management
- discuss the assessment, management and prevention strategies for common wound types.

KEY TERMS

Arterial leg ulcers, p. 738
Blanching, p. 724
Debridement, p. 704
Dehiscence, p. 693
Dermis, p. 682
Diabetic foot ulcer, p. 739
Epidermis, p. 682
Eschar, p. 705
Evisceration, p. 694
Exudate, p. 702
Fibroblasts, p. 683
Fistula, p. 694
Friction, p. 724
Granulation tissue, p. 692
Haematoma, p. 694
Haemorrhage, p. 694
Haemoserous, p. 702
Haemostasis, p. 691
Malignant wounds, p. 744
Moist wound environment, p. 705
Negative pressure wound therapy, p. 714
Pressure injury, p. 724
Primary intention, p. 693
Purulent, p. 702
Sanguineous, p. 702
Secondary intention, p. 693
Serous, p. 702
Shearing forces, p. 724
Skin tear, p. 715
Subcutaneous layer, p. 682
Venous leg ulcers, p. 737
Wound, p. 687

The skin, or the integumentary system, is the body's largest organ. It comprises 15% of the total bodyweight, has an area of approximately 7600 square centimetres and receives one-third of circulating blood volume in the average adult (Shores 2007).

Maintaining skin integrity is a complex process, one that is often taken for granted until damage occurs. As is shown in Table 26-1, the skin has to perform many different functions. Having a good understanding of the layers of the skin and the functions of normal skin is important so that you are able to recognise risk factors for poor skin integrity and undertake actions to prevent skin breakdown or to improve wound-healing outcomes.

The following *Clinical example* will be used throughout this chapter for you to reflect on the key concepts and how they apply to nursing practice.

• CRITICAL REFLECTION POINT

What factors in the *Clinical example* below might have contributed to the development of this skin tear?

CLINICAL EXAMPLE

Mr Bukowski, aged 78 years, is a widower who lives at home; his daughter lives nearby. Mr Bukowski usually uses a wheelie walker to mobilise because he often becomes unsteady on his feet. One day he decides to leave his wheelie walker inside when he goes to check his mailbox, feeling confident that he won't be walking very far. On his way to the mailbox he trips and falls, sustaining a large skin tear on his left arm.

When he gets back inside he applies some paper towel to stop the bleeding, knowing that his daughter is coming over for morning tea and can fix it up then. A few hours later, Mr Bukowski's daughter arrives and decides to take her father to his general practice clinic because she isn't sure what to do.

On arrival at the clinic Mr Bukowski is taken straight through to the treatment room to be seen by the practice nurse. This is not the first time that he has sustained skin tears. On examination, the registered nurse notices that Mr Bukowski has multiple skin tears on the left forearm with extensive bruising (see Figure 26-1 below). She helps Mr Bukowski to lie down on the examination couch and goes to collect equipment and to take a look at his health records.

Mr Bukowski has a past medical history of heart failure, chronic obstructive pulmonary disease and hypertension and he has had a deep vein thrombosis (DVT) of his left leg. His medications include aspirin, salbutamol inhaler, lisinopril, carvedilol, furosemide and a multivitamin. Mr Bukowski currently smokes 15 cigarettes a day and has done so ever since leaving school at the age of 16.

Normal integument

The thickness of the skin varies depending on location, with skin thickness ranging from 0.05 to 0.3 mm. The thickest skin is on the soles of the feet and the palms of the hands. The thicker the skin, the better it is able to withstand injury. The skin consists of three layers (see Figure 26-2):

- **epidermis** (outermost layer of the skin)
- **dermis** (middle layer)
- **subcutaneous layer** (bottom layer of the skin).

The epidermis and dermis are separated by a basement membrane, which is often referred to as the *dermal–epidermal junction*. The epidermis, or outer layer, is avascular and approximately 0.04 mm thick, and has several layers depending on the body location. The *stratum corneum* is the thin, outermost layer of the epidermis. It consists of flattened, dead, keratinised cells. The cells originate from the epidermal layer called the *stratum basale*. Cells in the stratum basale divide, proliferate and migrate towards the epidermal surface.

TABLE 26-1 Functions of the skin

Function of the skin	Explanation
Protection	The skin provides a covering that is designed to protect us from damage or injury
Temperature control (thermoregulation)	Sweat evaporates and cools the skin. Blood vessels also dilate and constrict to prevent heat loss and maintain a stable body temperature
Sensation and communication	Nerve endings and receptors are found in the skin and these help us to respond to touch, pain, heat or cold
Metabolism	The skin helps us to metabolise vitamin D through exposure of the skin to sunlight



Figure 26-1 Skin tear on Mr Bukowski's arm.

Courtesy Wound Healing Community Outreach Service, Queensland University of Technology.

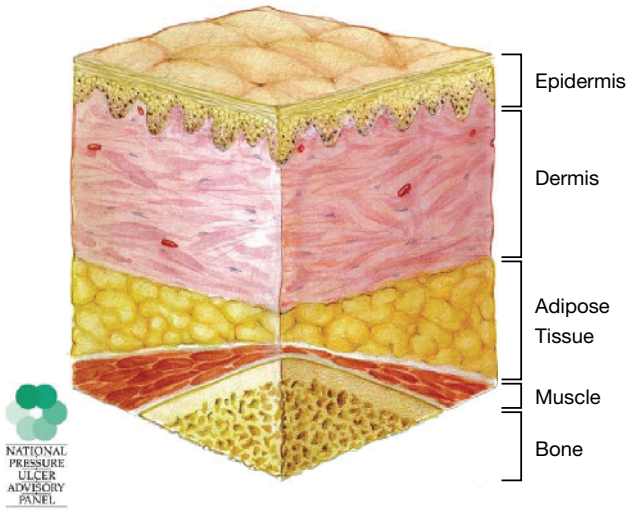

Figure 26-2 Layers of the skin.

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After cells reach the stratum corneum, they flatten and die. This constant movement ensures replacement of surface cells sloughed off during normal desquamation. The thin stratum corneum protects underlying cells and tissues from dehydration and prevents entrance of certain chemical agents. However, the stratum corneum does allow evaporation of water from the skin and permits absorption of certain topically applied medications.

The dermis is the middle layer of the skin, which provides the tensile strength, mechanical support and protection to the underlying muscles, bones and organs. It differs from the epidermis in that it contains connective tissue and few skin cells. Collagen (a tough, fibrous protein), blood vessels and nerves are composed of it. **Fibroblasts**, which are responsible for collagen formation, are the only distinctive cell type within the dermis.

The *subcutaneous layer* is the thickest layer of the skin; it provides a supporting framework for the skin and is an attachment and protective layer for underlying organs and structures. It is made up of adipose and connective tissue and blood vessels. The subcutaneous layer of the skin helps to regulate the temperature of the skin and store lipids.

Understanding the integument's layers is essential in order to identify factors affecting the wound-healing process. The epidermis functions to resurface wounds and restore the barrier against invading organisms. The dermis responds to restore the structural integrity (collagen) and the physical properties of the skin. Even though a wound may close in the upper epidermal layer, the patient is at risk of infection, circulatory impairment and tissue breakdown if the underlying dermis fails to heal.

Skin changes associated with ageing

Skin problems are common among older people, so it is important to be able to recognise the characteristics of ageing skin (Lawton 2007). There are two types of skin ageing: *intrinsic ageing* – alterations in the structure and function of the skin due to normal maturity which occurs in all people; and *extrinsic ageing* – due to constant or repeated exposure to environmental elements such as the sun. A summary of the normal intrinsic changes in ageing skin can be found in Table 26-2.

TABLE 26-2 Skin changes associated with ageing

Type of problem	Explanation	Example
Decreased sensory perception	This means when an older person injures their skin they may not be aware they have done so	When an older person gets a skin tear, they may not realise that they have injured their skin until they see the injured body part  Skin tear

continued

TABLE 26-2 ***continued***

Type of problem	Explanation	Example
Increased dryness	The skin becomes drier and less supple because sebaceous and sweat gland activity decreases as you age	This is why many older people complain of dry, itchy skin
The skin becomes thinner and less elastic	The skin decreases in turgor or thickness because of reduced collagen and elastic fibre production. The collagen present becomes thinner and, when combined with less adipose or fatty tissue, the skin support structure is compromised and skin wrinkling occurs. Such skin is subject to friction and shearing trauma The skin on the back of the hands becomes thin and transparent while the skin on the back of the neck has a furrowed appearance	Ageing skin has more risk of skin tears and bruises and lesions as a result of thinner, less flexible skin and a lifetime of exposure to the sun  Decreased tissue turgor.
Decreased vitamin D synthesis	This is often due to inadequate exposure to sunlight, decreased dietary intake or a medical condition	It may take longer for skin to repair and older people have an increased risk of fractures
Reduction in immune response	Cells which trigger the immune system are slower to respond and less effective	Increased risk of infection for even minor injuries to the skin
Decrease in temperature control or thermoregulatory functioning	Older people are less able to regulate their body temperature due to changes in environmental temperature	This is why some older people complain of being cold even on a hot day
Vascularity or blood supply of the skin is diminished	Blood vessels in the dermis become more fragile and there is decreased peripheral circulation	This is why older people bruise more easily and may explain why fingernails lose their lustre and toenails thicken
Hormonal changes	Facial hair in males decreases and yet increases in females. Pubic and axillary hair thins, straightens, greys and lessens because of reduced hormonal functioning. Both males and females experience overall hair loss from the trunk and extremities. Hair loss on the lower limbs may also occur when peripheral vascular disease is present Hormonal changes also lead to drier skin	
Changes in hair colour and balding	Scalp hair greys and balding occurs because of a reduction in the number and functioning of melanocytes, the cells which give hair and skin their colour The density and rate of scalp hair growth also declines and the size of hair follicles change leading to baldness	Hair colour and wrinkled skin
The amount of subcutaneous tissue decreases	The amount of subcutaneous tissue decreases, particularly in the extremities, giving joints and bony prominences a sharp, angular appearance. The hollows in the thoracic (chest), axillary (under the arms) and supraclavicular (collar bone) regions deepen	 Loss of subcutaneous tissue.

Principles of skin assessment

A comprehensive assessment of the skin is essential, as a wide range of health conditions manifest in changes in the skin and can provide valuable diagnostic clues to the underlying disease process. Furthermore, recognising the characteristics of normal skin helps you to identify those at risk for compromised skin integrity. When undertaking a skin assessment, there are three important steps, outlined below.

Step 1. Prepare the environment

First, you need to create an environment that is suitable for conducting an assessment by ensuring:

- that the room is quiet, private and has a stable temperature; this helps to reduce anxiety
- adequate lighting, so that you can see the colour of the skin or any skin changes
- adequate exposure of the skin, especially areas not usually inspected such as the buttocks, axillae, back of thighs and feet.

Step 2. Gather relevant information

Second, you need to explain carefully what you are going to do and the purpose of assessing the skin. Typically, you obtain a history using a framework such as that shown in Table 26-3.

Step 3. Observe and feel the skin

The final step is to look at the skin (*inspection*) and feel (*palpation*) if there are any changes (Table 26-4). When conducting the physical assessment, proceed from head-to-toe and compare each body region for symmetry

TABLE 26-3 Skin assessment

Information required	Questions the nurse might ask the patient
Past medical history	*Tell me what other health conditions you may have.* When conducting the health assessment and a problem with the skin is identified, it is important to determine usual skin conditions, onset of any problems, changes since onset, specific known causes, alleviating factors, psychological reaction to skin changes, previous trauma and if the patient has had any surgery or prior disease that involves the skin
Medications (topical, systemic, over-the-counter)	*Are you taking any medications that might affect your skin?* For example, medications might include anticoagulants or steroids (taken for conditions such as rheumatoid arthritis)
Exposure to environmental or occupational hazards	*What sort of work do you do?* *Were you exposed to the sun a lot when you were younger?*
Substance abuse	*Do you smoke or have you ever smoked? How much did you smoke? When did you stop smoking?* *How much alcohol do you drink daily?* *Have you ever used illicit drugs?* Example: Fingernails are often stained yellow by nicotine exposure
Recent physiological or psychological stress	*Have you experienced a recent stressful event? Have you been unwell recently? How does this affect you?*
Hair, nail and skin care habits	*What methods do you use for cleansing your skin? How often do you moisturise? How do you dry your skin?* Example: Many soaps, oils, lotions, cosmetics and home remedies have preservatives that can irritate the skin and make it itchy or inflamed
Skin self-examination	*How often do you look at your skin? Are you able to see your skin properly? Can you reach to dry between your toes?*
Problems with the skin	*Have you noticed any changes in your skin (e.g. dryness, rashes, lumps, amount of perspiration)? When did the symptoms occur? Are these symptoms new or an old problem? What area of the body is affected (i.e. skin folds, localised or generalised)?* *Are there any associated symptoms (e.g. fever, relationship to stress or leisure activities)? What have you been doing for the problem?* Example: Eczema is a common problem that is often made worse by some creams and may be a lifetime problem for that person. Careful questioning will help to determine what the person has been doing to treat the condition, what works for them and what doesn't work to treat the problem

TABLE 26-4 Observation of the skin

Observation	Explanation
Skin temperature	If the skin around a wound is very hot to touch compared with the surrounding skin, this may indicate an infection If the feet are abnormally cold to touch, this may indicate a problem with circulation
Skin texture	The texture of the skin may be described as *rough*, *coarse*, *fine*, *flaky*, *scaly* or *smooth*. Rough skin may indicate that the skin is very dry and may occur normally on exposed areas such as the elbows and soles of the feet
Skin colour	The colour of the skin can indicate a person's general wellbeing Changes in colour are best obtained from the lips, mucous membranes of the mouth, earlobes, finger and toe nails and the extremities The colour of the skin indicates the degree of blood supply and temperature of the skin, and oxygen and fluid supply to the skin. Colour of the skin varies depending on the amount of melanin in the cells and with blood supply. Skin colour can be masked by cosmetics or tattoos Colour changes associated with the skin can be described as: • *erythema* (redness) due to vasodilation associated with blushing, heat, inflammation, fever, alcohol ingestion, extreme cold and heat and hot flushes • *pallor* (whiteness) due to vasoconstriction associated with peripheral arterial disease, or due to decreased oxygenation of blood from decreased haemoglobin as seen in anaemia, or loss of melanin as in vitiligo • *cyanosis* (bluish) due to deoxygenated haemoglobin noticed in earlobes, lips, mucous membranes of the mouth, nail beds; may be seen in cardiac or respiratory disease • *jaundice* (yellow) due to increased bile pigment in the blood distributed in the skin and mucous membranes and sclera of the eye, as seen in liver disease, obstruction of bile ducts, chronic uraemia and rapid haemolysis • *brownish* due to increased melanin deposits, which is normal in darker-skin-toned individuals and is also found in ageing, sunburn, anterior pituitary, adrenal cortex and liver diseases
Skin changes	The presence of growths, discolouration or changes in pigmentation, infections, broken areas, old scars, tattoos, rashes, eczema, dermatitis, senile purpura, cherry angiomas or thickened skin may be normal changes associated with ageing, indicate a person's risk of a wound recurring or indicate the presence of a clinical condition For example, changes in pigmentation may indicate a condition such as vitiligo, Addison's disease, arsenic toxicity or uraemia. Fungal infections such as tinea versicolor can cause pigmentation changes in the affected area. Pigmentation changes in naevi or moles may indicate the presence of skin cancers
Oedema	Assessment of swelling in the tissues can be assessed by location and degree. Oedema is graded as: + slight indentation with normal anatomical contours ++ deeper indentation which lasts longer than + with fairly normal contours +++ deep indentation which remains after several seconds with obvious swelling ++++ deep indentation that remains for minutes with frank swelling
Turgor (resilience and elasticity of tissue)	Skin turgor can give an indication of the person's nutrition and hydration status When pinched between the thumb and index finger for a few seconds, normal well-hydrated skin will snap back into place when released Dehydrated skin, particularly in an elderly patient, will form a small tent shape before gradually resuming its normal position
Hair distribution, colour and quantity (thick, thin, balding)	Uneven hair loss may indicate a person's psychological state For example, a person may unconsciously pull their hair out if they are traumatised. Excessive hair growth may be related to hormonal changes
Nail length, colour, configuration, symmetry and cleanliness	The colour of a person's fingernails may indicate certain problems For example, fingernails stained yellow indicate nicotine use. Blue fingernails can indicate a problem with circulation such as cardiac or respiratory disease In addition to nail-bed colour, check for clubbing and assess capillary refill. Capillary refill time can be affected by environmental conditions, vasoconstriction from smoking or peripheral oedema. Finger clubbing can be an indication of chronic tissue hypoxia
Lesions of the skin	Lesions are classified by type, colour, size, shape and configuration, texture, effect of pressure, arrangement, distribution and variety

(i.e. right side with left side to differentiate structural from pathological changes). If lesions are identified, palpate them for density, induration (hardening or thickening of tissues) and tenderness.

Now that you have a better understanding of how to assess the skin, you are ready to learn more about some strategies you can use to maintain skin integrity and prevent many skin problems from occurring. Review the suggested evidence-based strategies summarised in Table 26-5.

• CRITICAL REFLECTION POINT

As you read the next section, think about Mr Bukowski's skin tear:

- **Is this an acute or a chronic wound?**
- **How would you classify this skin tear?**
- **What is the phase of wound healing?**
- **Is this wound healing by primary or secondary intention?**

Wound classification

A **wound** can be defined as an injury to the skin or underlying structures that may or may not result in a loss of skin integrity and whereby physiological function of the tissue is impaired (Carville 2007). Although at first a wound may look like any other, it is imperative to know that *all wounds are not the same*. Understanding the aetiology of a wound is important, because the treatment varies depending on the underlying disease process (Ratliff 2006). Common wound types are presented in Table 26-6.

There are many ways to classify wounds. Wound classification systems describe the status of skin integrity, the cause of the wound, severity or extent of tissue injury or damage, cleanliness of the wound or descriptive qualities of the wound, such as colour. Wound classifications help you to understand the risks associated with a wound and implications for its care.

Wounds can be classified as either *acute* (e.g. surgical incisions, lacerations, blisters, abrasions) or *chronic* (e.g. leg ulcers, pressure ulcers, malignant or fungating wounds). Acute wounds heal fairly quickly (usually within 14 days), without complications and with limited interventions. They follow the normal healing process in an orderly and timely way (Celik 2007). Examples of some acute wounds are those caused by trauma or surgery. A chronic wound is a wound that has failed to proceed through an orderly and timely process for healing and whereby healing is delayed, repair fails to occur, and return to normal function is slowed (Harvey 2005).

TABLE 26-5 Preserving skin integrity

Prevention strategies	Explanation
Assess skin regularly	The nurse should assess the skin regularly so that correct and suitable preventive measures can be put in place and evaluated
Use emollient soap substitutes for washing or cleansing	This reduces the drying effects of soap and water Emollients restore the natural barrier function of the skin by replacing lost water and provide a protective film over the surface of the skin. Emollients include creams, ointments, lotions, bath oils and soap substitutes
Avoid products that may irritate the skin	Products such as perfumes, bubble baths and talcum powder can irritate the skin and cause itching or discomfort
Dry the skin thoroughly	Drying should involve a light patting and not rubbing as this may lead to abrasion and/or weakening of the skin If skin is left damp, it is vulnerable to excess drying from the environment and at risk of fungal and bacterial contamination
Apply a pH-neutral moisturiser and/or barrier cream at least twice daily	This will help to prevent dry skin A pH-neutral moisturiser is one that is neither acid or alkaline; it has a pH between 6.5 and 7.5 A barrier preparation can be a cream, ointment or spray which contains substances that repel water, such as silicone or zinc oxide
When applying moisturiser and/or barrier cream, follow the direction of body hair and gently smooth into the skin	Rubbing can cause irritation. Rubbing moisturiser against the direction of hair growth increases the risk of an infection occurring in the hair follicles
Encourage patient to wear loose, cotton clothing where possible	This helps the skin to breathe better and reduces the risk of sweating from nylon fabrics The use of limb protectors can also protect fragile limbs

TABLE 26-6 Common wound types

Wound type	Causes	Examples
Traumatic wounds	*Bruise or contusion:* injury to the underlying tissue but the skin remains intact. Usually caused by a blunt force against a body part *Abrasion:* superficial damage to the epidermis and dermis involving scraping or rubbing of the skin's surface *Laceration:* the tissues are torn with irregular wound edges	 Blisters  Bruises  Abrasions  Lacerations Bites

continued

TABLE 26-6 *continued*

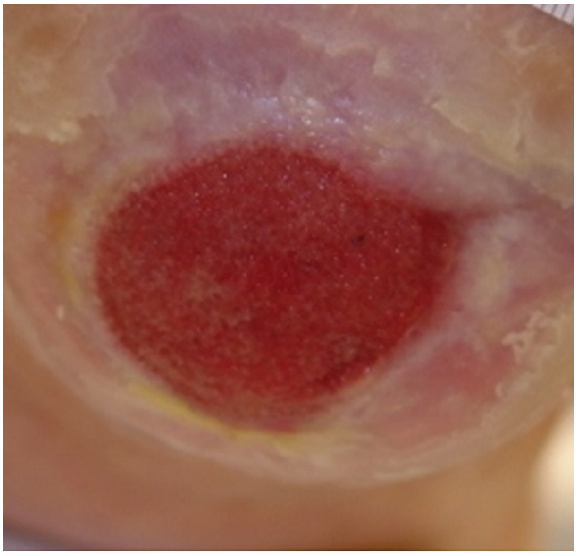
Wound type	Causes	Examples
Thermal injuries	*Burn:* an injury caused by thermal, electrical, chemical or radiation mechanism	 Scald
Wounds inadvertently caused by a clinician, medical treatment or diagnostic procedure (iatrogenic)	*Incision:* caused by a cutting instrument	 Surgical incisions Biopsies Split skin grafts Radiation injury
Wounds caused by disease	*Tumour:* a malignant or benign growth	

TABLE 26-7 Phases of wound healing

Phase	Explanation
Vascular response	Initial bleeding, which should stop within 10 minutes
Inflammation	This stage lasts for around 3 days and is a normal process of wound healing. Signs include redness, heat, swelling, pain and functional disturbance 

continued

TABLE 26-7 ***continued***

Proliferation	This phase lasts for around 28 days. During this phase, the wound bed tissue experiences these states: 1. Granulation or new tissue growth occurs. Granulation tissue is characterised by the appearance of red, bumpy, shiny, granular and slightly uneven tissue in the wound bed as new blood vessels start to grow 2. Wound edges come together (i.e. contraction) 3. Epithelial tissue covers the wound bed or appears in patches throughout the wound bed as it starts to heal  Bumpy granulation tissue  Granulation tissue  Contraction of wound edges and islands of new epithelial tissue
Maturation	This is the final phase of wound healing and describes the process of the healed tissue regaining its previous levels of functional ability. This phase can last for longer than 1 year. Full return of strength in that tissue is never quite achieved. Complications such as contractures or excessive scar formation may occur during this phase

Phases of wound healing

The wound-healing process involves a complex series of cellular and biochemical events that act upon damaged tissues. These are interlinked and dependent on one another in a continuing process of regeneration and repair (Schultz et al 2003). Wound healing tends to follow a well-defined process involving four main stages:

1. Haemostasis
2. Inflammation
3. Proliferation or reconstruction
4. Maturation or remodelling of the scar tissue.

These stages of wound healing overlap and the entire process can last for many months.

Haemostasis

Immediately after injury, platelets initiate the wound-healing process by releasing a number of growth factors that rapidly disperse from the wound, drawing inflammatory cells to the area of injury. **Haemostasis** is comprised of three components:

1. *Vasoconstriction*, whereby bleeding is arrested by constriction of the arteries, arterioles and capillaries in or close to the wound.
2. *Formation of a platelet plug*, whereby the damaged endothelium of vessels exposes collagen fibres causing the platelets to stick to the collagen fibres in the wall of the vessels and to each other, resulting in a mechanical plug by the process of aggregation. The platelets release chemicals, including serotonin and prostaglandins, which enhance the vascular constriction and further reduce blood flow. Phospholipids and adenosine diphosphate (ADP) are also released and attract more platelets to the area, which increases the size of the platelet plug.
3. *A biochemical response* is then activated, initiating the clotting cascade. This is a complex process which sees the development of a clot, the retraction and compaction of the clot which causes the wound edges to come together and the breakdown of the clot by fibrinolysis.

Inflammation (0–3 days)

The inflammation phase of wound healing is a vascular and cellular response that removes microbes, foreign bodies and dying tissue in preparation for wound healing (Flanagan 1997). The inflammatory phase is characterised by vasodilation, increased capillary permeability, complement activation and polymorphonuclear leucocytes (PMN) and macrophage migration to the wound (Flanagan 1997, Traversa & Sussman 2001). The increase in blood flow into the wounded area produces erythema, oedema, heat and discomfort such as a throbbing sensation.

Macrophages regulate the events in wound healing by attracting further macrophages and induce the

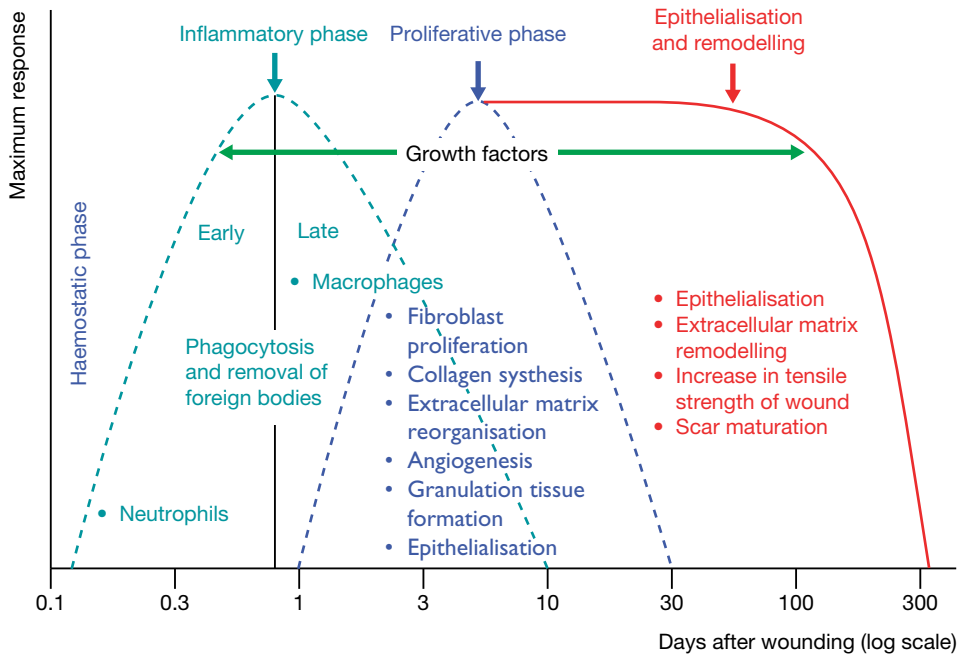


Figure 26-3 The four phases of wound healing.

Redrawn from Enoch S, Grey JE, Harding KG 2006 Recent advances and emerging treatments. Br Med J 332(7547):962–5.

proliferation of fibroblasts and endothelial cells. Macrophages release growth factors which stimulate endothelial cells lining the walls of capillaries to close the wounded area, and then divide and branch out to form new capillary loops (Flanagan 1997). Fibroblasts migrate along fibrin threads and synthesise collagen and other extracellular matrix (ECM) molecules to support new cells and fragile capillary buds which appear during angiogenesis. This continues until newly formed **granulation tissue** joins up with intact blood vessels (arterioles) to form a network of vessels that fill the wound bed (Flanagan 1997).

Proliferation (2–24 days)

The proliferation phase is characterised by extensive growth of epithelial cells, deposition by fibroblasts of collagen fibres in random patterns to form the ECM and ground substance and continued growth of blood vessels (Schulz et al 2003). Fibroblasts and endothelial cells proliferate in response to growth factors, including platelet-derived growth factor (PDGF) and transforming growth factor B (TGF-B), and cytokines which are released from macrophages, platelets and mesenchymal cells or have been stored in the fibrin clot (Krishnamoorthy et al 2001, Traversa & Sussman 2001). Macrophage-released growth factors produce glycosaminoglycans (GAGs). These include hyaluronic acid, chondroitin-4-sulfate, dermatan sulfate and heparin sulfate, which cross-link to protein and are termed proteoglycans. These form an amorphous gel where collagen fibres deposit and aggregate (Traversa & Sussman 2001). The ground substance secreted by fibroblasts determines the compliance, flexibility and integrity of the dermis. It provides compressive strength and support and density to tissue, reduces friction between collagen fibres during tissue stress or strain and protects tissue from invasion by microorganisms (McCulloch et al 1995).

During the proliferation phase, new capillary development is seen as ruddy, bumpy granulation tissue at the base of a wound, and wound contraction occurs. Epithelial cell migration occurs over the granulated wound bed. Epithelial cells migrate from surrounding wound edges or from hair follicles, sweat or sebaceous glands in the wound and appear as a thin, translucent film across the wound bed. At this stage, the epithelial tissue is very fragile and easily removed, even by gentle cleansing. Migration of epithelial cells ceases when the wound is covered; then mitosis thickens the epithelium to the four to five layers needed to form the epidermis.

Maturation (24 days to 1 year)

The combination of fibronectin and collagen forms the ECM essential for the development of granulation tissue that eventually fills the wound. The endothelial buds increase in vascularity in response to the large metabolic demand of the repair tissue (Traversa & Sussman 2001). The arrangement of collagen fibres in the wound is random, disorganised, and has a gel-like consistency that gradually matures to form cross-links which provide tensile strength to the wound (Flanagan 1997).

The remodelling of collagen fibres is regulated by growth factors including TGF-B, PDGF and fibroblast growth factor (FGF), interleukin-1 (IL-1) and interferon-gamma (INF-g). Depending on the type and severity of the wound, the maturation phase may take up to six months to a year (McCulloch et al 1995). Collagen synthesis continues after wound closure; but undergoes

RESEARCH HIGHLIGHT

Evidence-based practice

Much of our understanding of how wounds heal is derived from examination of the wound-healing process in acute wounds. It is widely accepted that acute wounds heal through an orderly process of haemostasis, inflammation, proliferation and maturation. However, chronic wounds such as leg ulcers and diabetic foot ulcers do not follow this trajectory and are often characterised by prolonged inflammation and, even if they do heal, frequently recur even with the highest standard of care.

The concept of wound-bed preparation has emerged as an important paradigm for the management of chronic wounds in order to identify factors that influence wound healing and to provide a framework for clinicians to maximise the potential for wound for healing. There are four main principles underpinning wound-bed preparation – TIME:

- Tissue management
- Inflammation and infection
- Moisture balance, and
- Epithelial (edge) advancement.

The TIME framework is a dynamic concept that can be translated into the practical management of different wound types by utilising a standardised framework.

Reference

Schultz G, Sibbald G, Falanga V et al 2003 Wound bed preparation: a systematic approach to wound management. Wound Repair Regen 11:1–28.

continual lysis to form a more organised lattice structure which gradually increases the tensile strength of scar tissue, fibroblast numbers decrease and blood vessels are restored to normal (Traversa & Sussman 2001). The tensile strength of scar tissue is never more than 80% of that of non-scar tissue (Flanagan 1997).

Modes of wound healing

Wounds can be broadly characterised into two groups: those with and without loss of tissue. A clean surgical incision is an example of a wound with little tissue loss and where the edges of the wound are held in close apposition by sutures, staples or tape. The surgical wound heals by **primary intention**. However, if a wound is infected or contains foreign bodies, primary wound closure may be delayed for three to five days. This is known as *delayed primary intention*. A wound that involves extensive loss of tissue, such as a pressure ulcer or severe laceration, heals through a process of granulation, contraction and epithelialisation, and scarring may result. This is known as healing by **secondary intention**.

Skin grafting is another method to achieve wound healing. A skin graft is a segment of epidermis and dermis which is surgically removed from one site (donor site) and transplanted to another site (recipient site) (Carville 2007). Skin grafts depend on the in-growth of capillaries from the recipient site for their survival. A skin graft is selected as a method of wound closure when healing by secondary intention or primary closure is not a suitable option, to speed up the healing process and reduce the risk of infection. There are two types of skin grafts: *full-thickness grafts* which consist of the epidermis and the full thickness of the dermis, and *split-skin grafts* consisting of the epidermis and a variable proportion of the dermis. Split-skin grafts are described as *thin*, *intermediate* or *thick* according to the thickness of the graft.

A wound may also be closed by the surgical relocation of tissue from one part of the body to another part in order to reconstruct a primary defect (*flap*). The relocation of tissue creates a secondary wound that will require skin grafting or primary closure.

Complications of wound healing

When a wound fails to heal properly, the layers of skin and tissue may separate. This most commonly occurs before collagen formation (3–11 days after injury). **Dehiscence** is the partial or total separation of wound layers. A patient who is at risk of poor wound healing (e.g. poor nutritional status, infection, obesity) is also at risk of wound dehiscence. However, obese patients have a higher risk because of the constant strain placed on their wounds and the poor healing qualities of fatty tissue. Dehiscence often involves abdominal surgical wounds and occurs after a sudden strain, such as coughing, vomiting or sitting up in bed. Patients often report feeling as though something has given way. An increase in the presence of haemoserous drainage from a wound may indicate wound dehiscence.

Hypergranulation

Hypergranulation is an accumulation of granulation tissue that extends beyond the wound surface and delays epithelialisation (Carville 2007). Hypergranulation tissue may bleed easily; it may be seen in surgical incisions or around tubes and devices and can occur in some malignant tumours. Biopsy of the tissue is essential if malignancy is suspected.

Hypertrophic scars

Hypertrophic scars are characterised by an overabundant deposition of collagen in healed skin wounds and present as a re-epithelialised, red, raised and firm scar that may be itchy (Carville 2007). Hypertrophic scars are usually contained within the original boundary of the wound, and are usually linear in appearance following a surgical scar or papular or nodular following inflammatory and ulcerating injuries (Gauglitz et al 2011). Hypertrophic scarring may occur if there is excess tension on a healing wound. It can occur within 4–8 weeks following a wound injury such as a burn injury, laceration, abrasion, surgery, piercing or vaccination and usually regresses spontaneously. Scarring grows rapidly for up to 6 months and then gradually regresses over a period of a few years, resulting in a raised, flat scar with no further symptoms (Gauglitz et al 2011).

Keloid scars

Keloid scars occur spontaneously to form firm, smooth, fibrous growths that result from abnormal connective tissue in response to trauma, inflammation, surgery or burns (Carville 2007). Similar to hypertrophic scars, they are characterised by an overabundant deposition of collagen in healed wounds where the scar extends beyond the boundary of the original wound margin. The wound margins are usually well demarcated but irregular in outline (Gauglitz et al 2011). They may be tender or painful with a shiny surface and sometimes have telangiectasia (commonly known as spider veins) and a pink or purple appearance accompanied by hyperpigmentation. Keloids occur more frequently in darkly pigmented individuals and may be associated with a family history of keloids. While they may form on any part of the body, keloids

appear more commonly on the upper chest and shoulders. Keloids may develop up to several years after even minor injuries and may even form spontaneously on the mid chest in the absence of any known injury (Gauglitz et al 2011). They usually persist for long periods of time and do not regress spontaneously.

Contractures

Contractures occur when soft tissue, such as muscles, become shortened and prevent the joint from moving through a normal range of movement. Contraction of the wound edges is a normal process of wound healing, but when contracture is excessive, it may cause cosmetic and functional deformity. The degree of contraction is influenced by the flexibility and mobility of the surrounding tissue structures.

Haemorrhage

Haemorrhage (bleeding) from a wound site is normal during and immediately after the initial trauma. Haemostasis occurs within several minutes unless large blood vessels are involved or the patient has poor clotting function. Haemorrhage occurring after haemostasis indicates a slipped surgical suture, a dislodged clot, an infection, or erosion of a blood vessel by a foreign object (e.g. a drain). Haemorrhage may occur externally or internally. For example, if a surgical suture slips off a blood vessel, bleeding occurs internally within the tissues and there are no visible signs of blood unless a surgical drain, which is inserted into tissues beneath a wound to remove fluid that collects in underlying tissues, is present. Internal bleeding may be detected by looking for distension or swelling of the affected body part, a change in the type and amount of drainage from a surgical drain or signs of hypovolaemic shock.

External haemorrhaging is obvious. If bleeding is extensive, the dressing soon becomes saturated, and often blood escapes along the sides of the dressing and pools beneath the patient. The risk of haemorrhage is greatest during the first 24–48 hours after surgery.

Haematoma

A **haematoma** is a localised collection of blood underneath the tissues. It appears as a swelling or mass that often takes on a bluish discolouration. A haematoma near a major artery or vein is dangerous because pressure from the expanding haematoma may obstruct blood flow.

Evisceration

Evisceration is when there is a total separation of wound layers or protrusion of visceral organs through a wound opening. The condition is a medical emergency that requires surgical repair and immediate patient support.

Fistula

A **fistula** is an abnormal passage between two organs or between an organ and the outside of the body. A surgeon may create a fistula for therapeutic purposes (e.g. making an opening between the stomach and the outer abdominal wall to insert a gastrostomy tube for feeding). Most fistulas, however, form as a result of poor wound healing or as a complication of diseases, such as Crohn's disease or regional enteritis. Trauma, infection, radiation exposure and diseases such as cancer prevent tissue layers from closing properly and allow the fistula tract to form. Fistulas increase the risk of infection and fluid and electrolyte imbalances from fluid loss. Chronic drainage of fluids through a fistula can also predispose a person to skin breakdown.

Wound infection

Wound infection is defined as the clinical syndrome of bacteria and other microbial organisms impairing wound healing (Australian Wound Management Association (AWMA) 2011). Wound infection is a serious problem in hospitals and the community. Clinically a wound can exhibit signs of local infection, but a wound swab may show 'no growth'. Furthermore, positive culture findings do not always indicate an infection because many wounds contain colonies of non-infective resident bacteria. In fact, all chronic wounds are considered contaminated with bacteria. What differentiates *contaminated wounds* from *infected wounds* is the number of bacteria present. There are several different classification systems used to categorise the impact of bacteria on a wound and the patient. Some clinicians use the concept that $> 10^5$ microorganisms per gram of tissue constitutes an infection (AWMA 2011), although this is not always an accurate indicator of the presence of an infection. The effect of bacteria on wound healing is best conceptualised by the following algorithm:

$$\frac{\text{Number of bacteria} \times \text{Virulence}}{\text{Patient resistance}}$$

Table 26-8 outlines a classification system that can be used to assist clinicians to understand how bacteria might be affecting the wound-healing process in wounds healing by secondary intention. This classification system considers the effect of bacteria on the wound and on the patient.

There are several broad indicators of infection available to assess the degree of bacterial impairment on wound healing. The clinical indicators of infection are outlined in Table 26-9.

TABLE 26-8 Bacterial impact on wounds healing by secondary intention

Level of bacterial impairment	Bacterial activity	Degree of impairment to wound healing and clinical signs
Contamination	Bacteria are on the wound surface No division is occurring	No impairment to healing No obvious clinical signs of infection
Colonisation	Bacteria are dividing	No impairment to healing No obvious clinical signs of infection (Clinical wound appearance does not usually differ from contamination)
Topical infection (critical colonisation)	Bacteria are dividing. Bacteria and/or their products have invaded the wound surface. There might be an increasing variety of bacteria present. Biofilm may be present	Impairment to healing Clinical signs of infection may not be obvious or are subtle (see Table 26-9)
Local infection	Bacteria and/or their products have invaded the local tissues	Impairment to healing Usually obvious clinical signs of infection localised to wound environment and immediate peri-wound tissue (see Table 26-9)
Regional/spreading infection/cellulitis	Bacteria and/or their products have invaded surrounding tissues	Impairment to healing Usually obvious clinical signs of infection. May have systemic signs
Sepsis	Bacteria and/or their products have entered the bloodstream and may spread to distant sites or organs	Impairment to healing Usually obvious systemic clinical signs: patient usually acutely unwell Damage to organs may occur

Position Document of the Australian Wound Management Association: Bacterial impact on wound healing: From contamination to infection. Australian Wound Management Association Inc, July 2009, p. 5. www.awma.com.au/publications/2009/bacterial_impact_position_document_V_1_0.pdf. Reproduced with permission of AWMA. All rights reserved.

TABLE 26-9 Indicators of infection

Level of bacterial impairment	Clinical indicators of bacterial impairment to wound healing
Topical infection/critical colonisation	Dull wound tissue – absence of vibrant granulation tissue Slough Failure of wound to decrease in size, or increase in wound size Increased exudate Hypergranulation/friable tissue Demarcated and/or rolled and/or raised wound margins
Local infection	Erythema – usually localised to periwound tissue Increased pain or unexplained pain Oedema – usually localised to periwound tissue Purulent or discoloured, viscous exudate Malodour Bridging and/or pocketing within the tissue Increased temperature of periwound tissue Increase in wound size
Regional/spreading infection	Spreading erythema – more than 2 cm from wound margin Cellulitis Induration of regional tissues Fever Oedema of regional tissues Malaise and/or general feeling of unwellness
Sepsis	High fever or hypothermia Lymphangitis and regional lymphadenopathy Delirium Organ compromise or failure Septic shock – hypotension, tachypnoea, tachycardia

Position Document of the Australian Wound Management Association: Bacterial impact on wound healing: From contamination to infection. Australian Wound Management Association Inc, July 2009, p. 7. www.awma.com.au/publications/2009/bacterial_impact_position_document_V_1_0.pdf. Reproduced with permission of AWMA. All rights reserved.

It must be remembered that bacterial impairment of wound healing is a continuum, and worsening of infection may or may not include some or all of the factors outlined in Table 26-9. In some people, the traditional clinical signs of inflammation – erythema, oedema, pain, heat – may not be present due to suppression of the immune response as a result of ischaemia, neuropathy or immunosuppression, which can result from age, poor nutrition, other comorbidities and medications.

The development of infection must be reported as a clinical indicator in most hospitals. Surgical site infections (SSIs) are defined as either:

- *a superficial incision SSI*, whereby infection involves only skin or subcutaneous tissue of the incision and occurs within 26 days after the operative procedure, or
- *a deep incisional/organ/space SSI*, whereby infection involves deep soft tissues (e.g. fascial and muscle layers) and/or organs or spaces opened or manipulated during an operation, and occurs within 26 days after the operative procedure if an implant is not present or within 1 year if an implant is in situ (AWMA 2011).

The chances of wound infection are greater when the wound contains dead or necrotic tissue, there are foreign bodies in or near the wound, and the blood supply and local tissue defences are reduced.

Bacterial wound infection inhibits wound healing. Now that you have a better understanding of how to recognise wound infection, you are ready to learn how to obtain a bacterial wound swab – see Skill 26-1.

SKILL 26-1

Performing a bacterial wound swab

Delegation considerations

A bacterial wound swab can be undertaken by all healthcare professionals if infection is suspected. Check organisational policies regarding which wound care interventions can be delegated to health workers. The assessment of wound infection requires the problem-solving and knowledge-application skills of a registered nurse.

Equipment

- Examination gloves
- Apron
- Face mask and protective eyewear
- Sheet or towel for draping
- Contaminated waste bag
- Normal saline or potable water
- Bacterial swab
- Specimen bag
- Dressing pack

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Assess wound for suspected clinical signs and symptoms of wound infection, including quantity and type of exudate, presence of malodour, wound deterioration, increasing wound size and deterioration of periwound skin.	Helps to determine need for wound swab. Clinical signs of infection may be overt or subtle, and may be indicated by wound deterioration, increasing wound size or wound that fails to make satisfactory progress.
2. Assess patient's level of comfort and offer analgesia if appropriate.	Removal of dressing and the presence of a wound infection may be associated with pain requiring analgesia.

STEPS	RATIONALE
3. Explain procedure to patient.	Decreases anxiety.
4. Close room or cubicle curtains and windows.	Provides privacy and reduces airborne microorganisms.
5. Position patient comfortably and drape with a sheet or towel to expose only wound site.	Provides access to wound while minimising unnecessary exposure.
6. Place disposable contaminated waste bag within reach of work area. Fold top of bag to make cuff.	Ensures easy disposal of soiled dressings.
7. Put on face mask and protective eyewear and wash hands thoroughly. Put on clean, disposable gloves.	Protects nurse from splashes and reduces risk of transfer of microorganisms.
8. Carefully remove dressings. If dressing is adhered, moisten to facilitate removal. Observe dressing for exudate, odour and colour. Remove gloves over contaminated dressings (see Skill 26-2) and discard into prepared bag. Perform hand hygiene.	Reduces transmission of microorganisms. Moistening dressing upon removal decreases pain and trauma to tissue. Glove removal prevents contact of nurse's hands with material on gloves.
9. Cleanse wound with Normal saline or potable tap water.	Removes exudate, slough, necrotic tissue or dressing product from the wound bed to ensure a more accurate result.
10. Avoid touching the wound surface, sterile swab surface or swab container opening.	Reduces transmission of microorganisms.
11. Move swab across the surface of the wound in a zig-zag motion at the same time as rotating the swab between the fingers. A representative area of the wound should be sampled, i.e. at least 1 cm^2 from the wound bed. Gentle downward pressure may be applied.	The Z-stroke technique involves rotating the swab in a 10-point zig-zag fashion (side to side across the wound without touching the wound edges or periwound skin). Downward pressure helps to release fluid from the wound surface.
12. Immediately following collection, return the swab carefully to the specimen container and accurately label as per laboratory guidelines.	The specimen must be labelled to provide laboratory staff with information required to process results. It is important to transport the specimen to the laboratory as soon as possible for processing.
13. Put on clean disposable gloves. Cover wound with appropriate dressing (see Skill 26-2).	Provides a moist wound environment to facilitate wound healing, absorbs exudate, reduces risk of bacterial colonisation and pain.
14. Remove gloves by pulling them inside out. Dispose of in prepared bag.	Reduces transmission of microorganisms.
15. Assist patient to a comfortable position.	Promotes patient comfort.

RECORDING AND REPORTING

Document all relevant information in patient's chart, including the location the specimen was taken from and the date and time. In most organisations a bacterial wound swab will require prescription from a medical professional.

Factors affecting wound healing

Being able to recognise factors that can affect the wound-healing process is essential so that you can take steps to either remove the factors slowing down this process or, if possible, minimise their impact. Some factors that may affect the wound-healing process are outlined in Table 26-10.

CRITICAL REFLECTION POINT

Refer to the photo of Mr Bukowski's skin tear on p. 682.

- **What characteristics would indicate whether or not this wound was infected?**
- **What is the predominant tissue type in the wound bed?**
- **How would you describe the wound edges?**
- **How would you describe the skin around the wound?**

Wound assessment

Knowledge of different types of wounds, the wound-healing process and factors that affect wound healing inform the nurse's wound assessment. Key elements of a wound assessment include those outlined below.

Wound history

This includes a history of the present wound or symptoms. You might like to ask:

- How and when did the wound start?

TABLE 26-10 Factors affecting wound healing

Factor	Explanation
Comorbidities	Illnesses such as renal failure, heart failure, stroke, diabetes, malignancy, rheumatoid arthritis and autoimmune disorders increase a person's risk of suffering impaired wound healing because of the way these diseases affect all body systems For example, poorly controlled diabetes can lead to neuropathy, ischaemia and infection, and anaemia reduces the supply of circulating red blood cells and the oxygen-carrying capacity of blood to the wound
Nutrition and hydration	Poor nutrition and hydration will slow down the wound-healing process because the body will not have enough nutrients to promote wound healing. A wound increases the body's need for nutrients, protein and energy Patients need to drink at least 6–8 glasses of fluid per day because a lack of fluids impairs the blood flow, which reduces oxygen and nutrients needed in the tissue to promote wound repair. Dry skin is less elastic and more likely to break down. Sources of fluid include water, juice, milk, jelly, ice cream, yoghurt, soup, tea and coffee
Medications	Some medications that make the blood less likely to clot (e.g. anticoagulants) or steroids (e.g. taken for conditions such as rheumatoid arthritis) make the skin thinner and more likely to tear and suppress the inflammatory phase of healing
Age	Blood flow decreases with age, and the older a person is, the more likely they are to have problems with their skin
Obesity	Adipose tissue is poorly vascularised and can delay wound healing or lead to dehiscence of the wound edges
Psychological state	There is a link between high levels of stress and impaired wound healing The presence of a wound can affect a person's body image, self-concept and sexuality
Decreased blood supply	Hardened, narrowed or blocked arteries reduce blood supply to the skin. This slows down wound healing because blood carries nutrients and oxygen
Infection	The presence of a wound infection slows down healing
Foreign bodies	A foreign body such as wound debris, sutures, dirt, hair, dressing products or infection in a wound delays wound healing
Pressure, friction, shear	Dry skin is more likely to tear due to friction, shearing or pressure
Temperature	Wounds need a stable temperature, approximately 37°C, to heal more rapidly
Exudate and moisture	High volumes of wound exudate can delay wound healing and increase the risk of wound infection and breakdown of periwound tissue Wounds need a moist wound environment to heal so that epithelial cells can migrate across the wound surface. Achieving optimal moisture balance in the wound bed is a key goal of wound healing Scab formation in the wound bed delays epithelialisation because epithelial cells have to migrate under the scab
Loss of sensation	Decreased sensation, loss of consciousness, an injury to the central nervous system, a stroke, major surgery, spinal cord injury or medications such as steroids or anticoagulants increase the risk of skin damage. This is because the patient may not be aware that an injury to the skin has occurred
Smoking	Cigarette smoking is a well-known risk factor for impaired wound healing because it leads to atherosclerosis and coronary heart disease

- How long have you had it for and what does the current treatment involve? (i.e. who is treating the wound, with what, and how often?)
- Is there any past history of wounds?
- Do you have any pain and how would you describe the pain?
- What provokes or relieves the pain?

It is also important to ask about any medical conditions the person may have, as well as their smoking history, mobility, medication and nutritional status.

Cause of the wound

It is important to determine the cause of the wound (e.g. due to an accident or surgery), the type of wound (e.g. skin tear, venous leg ulcer or pressure injury) and the classification of wound (e.g. the category of skin tear or the stage of pressure injury).

The extent of tissue loss can help to predict wound-healing outcomes. For example, a wound healing by primary intention, where there is minimal loss of tissue and the edges of the wound can be reapproximated by sutures or staples, will heal much more quickly than a wound healing by secondary intention.

The extent of tissue loss is often described using the following terminology.

- *superficial*: a wound involving the epidermis
- *partial-thickness*: a wound involving the epidermis and dermis
- *full-thickness*: a wound which involves the epidermis, dermis, subcutaneous tissue and may extend into the muscle, bone or tendon.

A wound may also be described using a classification system. Classification systems have been developed to assist clinicians identify appropriate information about the risk factors for certain wound types. A classification system is useful in promoting a consistent approach to clinical examination and provides a common language to facilitate communication between clinicians. Classification systems have been developed for burns, pressure injuries, leg ulcers, diabetic foot ulcers and skin tears. The various classification systems for each wound type will be discussed later in this chapter.

Wound size

The size of a wound should be assessed when it first occurs. Measurement of a wound enables you to track progress over time. It is recommended that chronic wounds should be assessed at least monthly or whenever there is any significant change in wound progress (Grey et al 2006). Wounds can be measured using two-dimensional methods such as by tracing the margins of the wound using a transparent acetate grid and marking pen. If a metric graph sheet is used for tracing the wound, the size can be determined by counting the number of squares on the graph paper. A ruler can also be used to measure the length and width of a wound. Assessment of the depth or length of a wound can be performed using a probe. It is preferable that wound depth is recorded using a probe with a rounded tip and measurement calibrations along the length of the probe. In a cavity wound with undermining, tracking or sinus formation occurring, record the direction of the sinuses or tracking by drawing the direction using times on a clock face. In recent years, a number of computerised wound measurement systems have been developed.

Wound photography

Digital photography is becoming increasingly used in wound management. Wound photography provides an accurate and objective means of assessment and evaluation of wound treatments, can aid in diagnosis of a wound, reduces the risk of misinterpretation of wound assessment and progress between clinicians, provides a documented record for medico-legal purposes and assists in teaching, research and publication. It is essential that written consent is obtained from the patient/relative or carer prior to taking photographs.

Wound edge

The wound edge or border can give important clues as to the type of wound that you are treating:

- venous leg ulcers are characterised by a sloping wound edge (Figure 26-4)
- arterial leg ulcers have a punched-out wound edge (Figure 26-5)
- undermining is a typical feature of a pressure injury (Figure 26-6)
- diabetic foot ulcers have a calloused wound edge (Figure 26-7)
- skin cancers have a raised wound edge (Figure 26-8).

Wound location

The location of the wound can aid diagnosis. For example:

- diabetic foot ulcers occur on the sole of the foot and toes
- venous ulcers occur on the lower third of the leg below the knee
- arterial leg ulcers occur on the top of the foot, toes or ankle bones



Figure 26-4 **Venous leg ulcer.**

Courtesy Wound Healing Community Outreach Service, Queensland University of Technology.



Figure 26-5 **Arterial leg ulcer.**

Courtesy Wound Healing Community Outreach Service, Queensland University of Technology.

- pressure injuries occur over bony prominences such as the sacrum, hips or heels
- skin cancers tend to occur in sun-exposed areas.

Clinical appearance

The colour of the tissue in the wound gives an indication of the health of the wound, and this guides treatment options. For example, healthy granulation tissue is beefy



Figure 26-6 **Pressure injury located on right ischium.**

Courtesy Wound Healing Community Outreach Service, Queensland University of Technology.



Figure 26-7 **Diabetic ulcer on foot.**

Courtesy Wound Healing Community Outreach Service, Queensland University of Technology.



Figure 26-8 **Skin cancer.**

Courtesy Wound Healing Community Outreach Service, Queensland University of Technology.

red in colour and is an indicator of healing. However, unhealthy granulation tissue appears darker in colour and bleeds easily, indicating that an infection may be present.

There are five main colours that you can use to describe the predominant type of tissue in the wound bed:

- black necrotic tissue (Figure 26-9)
- yellow sloughy tissue (Figure 26-10)
- red granulating tissue (Figure 26-11)
- pink epithelialising tissue (Figure 26-12)
- green infected tissue (Figure 26-13).



Figure 26-9 Necrotic tissue.

Courtesy Wound Healing Community Outreach Service, Queensland University of Technology.



Figure 26-10 Yellow sloughy tissue.

Courtesy Wound Healing Community Outreach Service, Queensland University of Technology.

Some wounds may have a component of each colour present (e.g. yellow sloughy and red granulating), but when doing a wound assessment, it is the predominant tissue colour present that you need to be concerned with.



Figure 26-11 Red granulating tissue.

Courtesy Wound Healing Community Outreach Service, Queensland University of Technology.



Figure 26-12 Pink epithelialising wound.

Courtesy Wound Healing Community Outreach Service, Queensland University of Technology.



Figure 26-13 **Green infected wound.**

Courtesy Wound Healing Community Outreach Service, Queensland University of Technology.



Figure 26-14 **Infected leg ulcer.**

Courtesy Wound Healing Community Outreach Service, Queensland University of Technology.

Wound exudate

The type, amount, colour, consistency and odour of wound leakage or exudate should be noted. Types of **exudate** include:

- **serous**: clear, straw-coloured fluid
- **haemoserous**: slightly blood-stained serous fluid
- **sanguineous**: frank or heavily blood-stained
- **purulent**: containing pus.

The amount of wound exudate is important to quantify, and is usually described as light, moderate or heavy. The colour relates to the type of exudate, but may also indicate the type of bacteria present in a wound. For example, the bacteria *Pseudomonas aeruginosa* has a blue-green colour. Consistency refers to the thickness or composition of exudate; for example, fistulae may produce a thick fluid. Odour emanating from a wound may indicate the presence of a wound infection or contamination by body fluids.

Surrounding skin

The condition of the surrounding skin is important to assess, because this can assist you when selecting an appropriate wound dressing. The wound margin and surrounding skin should be assessed for callous formation, maceration, oedema or erythema (Schultz et al 2003). In patients with diabetes, there may be a build-up of callus on the bottom of the foot, which indicates higher plantar pressures and is a barrier to wound healing. If the skin around the wound is white and boggy (maceration, see Figure 26-15), this indicates that the wound is producing moderate to large amounts of leakage (exudate) and you need to select an absorbent dressing.

Wound infection

If a patient has a wound, it may have the following clinical manifestations:

- heat in the skin around the wound or extending more than 2 cm beyond the wound margins
- redness (erythema) around the wound or extending more than 2 cm beyond the wound margins
- swelling (oedema) around the wound or extending more than 2 cm beyond the wound margins
- pain that has changed in intensity
- delayed healing



Figure 26-15 Maceration.

Courtesy Wound Healing Community Outreach Service, Queensland University of Technology.

- wound tissue that bleeds easily on contact
- an offensive odour
- abnormal granulation tissue.

Pain

Pain is a characteristic of all wounds and it is important to routinely assess pain and attempt to determine its cause. Pain is often related to dressing removal, or the result of an underlying condition such as infection or poor blood supply (World Union of Wound Healing Societies 2004).

The nature and type of pain should be identified and treated appropriately. Wound pain can be classified as *nociceptive* or *neuropathic*. Nociceptive pain is an appropriate physiological response to a painful stimulus and may involve acute or chronic inflammation. Acute nociceptive pain can occur as a result of tissue damage and is usually time-limited. In wounds that are slow to heal, prolonged inflammation may cause heightened sensitivity in the wound (primary hyperalgesia) and in the surrounding skin (secondary hyperalgesia).

Neuropathic pain is an inappropriate response caused by a primary lesion or dysfunction in the nervous system and can occur after surgical or traumatic wounds. Neuropathic pain is associated with altered or unpleasant sensations whereby any sensory stimulus such as light touch or pressure can cause intense pain (allodynia).

Chapter 41 provides an overview of useful pain assessment tools that should be incorporated into the nursing assessment to provide measures of pain and the success of wound and analgesic choices.

Psychosocial impact of wounds

The presence of a wound can have a significant impact on an individual's psychosocial functioning. Factors such as social isolation, gender, economic status and pain affect wound healing. Stress, anxiety and depression have been linked to alterations in immune function which can negatively affect wound healing (European Wound Management Association 2008).

Wound documentation

Recording the wound assessment and evaluating the effectiveness of the wound management plan is essential. The information captured from a wound assessment is commonly documented using a wound assessment tool. Wound assessment tools facilitate communication and continuity of care between clinicians and fulfil legal requirements (Hess 2005). Risk assessment tools are often used in wound management as a tool to predict a patient's level of risk of developing a wound such as a pressure injury or diabetic foot ulcer.

• CRITICAL REFLECTION POINT

As you read the next section, think about how you would decide on the management of Mr Bukowski's skin tear:

- **How would you cleanse this wound?**
- **What type of management strategies would you employ for a skin tear?**
- **What dressing regimen would you choose at this point, and why?**
- **How would you manage the skin around the wound?**

Principles of wound management

Many factors affect the wound-healing process. Therefore, wound management strategies must be tailored to meet the individual holistic needs of the patient, their wound and their environment.

Assess and correct cause of tissue damage

The health status of the patient has a significant impact on the wound-healing process; therefore, a general health history, including a medication history, is essential in order to identify factors that may affect wound healing.

There are many medications that can impair wound healing, including systemic steroids, immunosuppressive drugs and non-steroidal anti-inflammatories (Schultz et al 2003). Chronic diseases such as diabetes mellitus and rheumatoid arthritis and autoimmune disorders such as systemic lupus erythematosus, vasculitis and pyoderma gangrenosum also delay wound healing.

Assess wound history and characteristics

Ongoing assessment and evaluation of the wound is an essential step in promoting wound healing.

Ensure adequate tissue perfusion

It is essential that the tissue is well perfused, as a well-vascularised wound bed provides nutrients and oxygen to promote granulation tissue formation and to maintain active immunological response to bacteria. Decreased oxygen levels impair the ability of leucocytes to kill bacteria, lower production of collagen and reduce epithelialisation (Schultz et al 2003).

Wound-bed preparation

Wound-bed preparation is the management of the wound to promote wound healing or to facilitate the effectiveness of other therapeutic measures (Schultz et al 2003). Wound-bed preparation involves four fundamental principles which provide a systematic approach to the management of wounds by focusing on each stage of wound healing:

1. *Tissue*: removal of non-viable tissue or replacement of deficient tissue.
2. Control of *infection* or *inflammation*.
3. *Moisture imbalance*: correction of excessive moisture and prevention of desiccation.
4. Revision of the *edge of the wound* to stimulate healing.

These principles will now be explored in further detail.

Wound cleansing

Wounds should be cleaned with a neutral, non-irritating, non-toxic solution such as clean tap water or Normal saline (Whitney et al 2006). Cleaning should be undertaken with minimal chemical or mechanical trauma. The ultimate aim of wound cleansing is to remove both organic and inorganic debris while maintaining the optimum local environment to facilitate wound healing (Fernandez & Griffiths 2012). Before performing wound cleansing, consider the purpose of wound cleansing and whether the advantages of cleansing outweigh the disadvantages; the most appropriate method of wound cleansing; whether the wound requires cleansing at each dressing change; and the type of wound-cleansing product that is most appropriate.

Common reasons for cleansing a wound are to help prevent wound infection and remove excess debris or foreign bodies from the wound; to rehydrate the wound to provide a moist environment; to make wound assessment easier so that the size and extent of the wound can be visualised; before applying a dressing, to minimise trauma when removing adherent dressings; and to promote patient comfort and psychological wellbeing.

The decision to cleanse a wound should be based on the shape, size and location of the wound; condition of the wound bed and stage of healing; availability and effectiveness of different methods of cleansing; availability and effectiveness of different cleansing agents; and the patient's perceptions and needs.

Wound-cleansing solutions and techniques

The decision to use tap water to cleanse wounds should be based on clinical judgement and take into account the quality of water, the nature of the wound and the patient's general condition (Fernandez & Griffiths 2012). It is recommended that tap water should not be used if it is not suitable for drinking and the tap should be run for 15 seconds prior to use (Joanna Briggs Institute 2006). If potable tap water or Normal saline is not available, cooled boiled water is an effective wound-cleansing solution (Joanna Briggs Institute 2006). In wounds that are contaminated or infected, irrigation with 1% povidone–iodine is effective at reducing the infection rate, although there is no evidence of the optimal time that povidone–iodine should be left in situ (Joanna Briggs Institute 2006).

Gentle irrigation is effective at reducing infection and inflammation in patients with lacerations and traumatic wounds without causing tissue trauma (Joanna Briggs Institute 2006). There is no evidence to support or refute swabbing and scrubbing as effective wound-cleansing techniques (Fernandez & Griffiths 2012). When considering the method of wound cleansing, evidence suggests that showering patients does not affect infection and healing rates of postoperative wounds and may benefit patients with a feeling of wellbeing and health associated with cleanliness (Joanna Briggs Institute 2006). Showering for cleansing other wounds should be undertaken with caution.

Wound debridement

Wound debridement is an essential component of optimal wound management. **Debridement** describes any method that facilitates the removal of dead or devitalised tissue, metabolic waste, fibrin and foreign material from a

wound (Gethin et al 2010). Removal of necrotic and devitalised tissue can be undertaken through surgical, sharp, mechanical, autolytic, biological or enzymatic debridement techniques (Hopf et al 2006, World Union of Wound Healing Societies 2007). If dry gangrene or **eschar** (leathery brown or black necrotic tissue) is present, however, debridement should not be undertaken until arterial flow has been re-established (Whitney et al 2006). There is insufficient evidence to conclude that any one debriding agent is more effective than another (Gethin et al 2010, Williams et al 2005).

When selecting an appropriate method of debridement a number of factors must be considered, including the patient's individual wishes and concerns, medical history, factors affecting the wound-healing process, pain, wound characteristics, skill and knowledge of the clinician and available resources (Kirshen et al 2006). Specific wound characteristics that influence debridement decisions include size, depth and amount of exudate, as well as the characteristics of wound tissue, potential for bleeding, and infection. Methods of debridement that are selective are generally preferred because they remove only necrotic tissue.

- *Autolytic debridement* is the most frequently used method of debridement whereby there is breakdown and removal of devitalised tissue by the body's own cells and enzymes, and this is facilitated by the provision of a moist wound environment (Ayello & Cuddigan 2004, Royal College of Nursing 1998). Maceration of periwound tissue may be problematic. For autolytic debridement to be effective, the wound requires some level of exudate, and it is a slow method of debridement. It is not recommended for clinically infected wounds and in those with a high potential for anaerobic infection, or if there is ischaemia of the limb or digits (Gethin et al 2010).
- *Sharp debridement* may be performed at the bedside and involves selective removal of dead or devitalised tissue from within and around the wound to expose healthy tissue using sterile instruments such as a scalpel, scissors or curette. This procedure involves similar risk factors to surgical debridement, although it is less aggressive, and must be performed by a skilled and experienced clinician.
- *Surgical debridement* is performed in an operating theatre usually under regional or general anaesthetic. It is indicated if there is extensive necrotic tissue, advancing cellulitis, infected bone or sepsis. This method of debridement is the most rapid and highly selective; however, the number of personnel and degree of expertise required increase cost and limit the availability of the procedure. There is also an increased risk of pain, bleeding, transient bacteraemia, damage to vital structures, tendon sheaths and nerves and anaesthesia risks. Surgical debridement must be used with caution in patients with clotting disorders or on anticoagulant therapy and in patients with diabetes and peripheral vascular disease.
- *Mechanical debridement* is the process of physically removing debris from the wound bed. The most commonly used methods of mechanical debridement include wet-to-dry dressings, whirlpool therapy, pulsed lavage and ultrasound. Mechanical debridement is non-selective, time-consuming, frequently painful and associated with an increased risk of infection, damage to granulation tissue, prolonged inflammation and periwound maceration.
- *Biological debridement* involves the application of sterile maggots, specifically the larvae of the green bottle fly (*Luciliasericata*), to the wound bed.
- *Enzymatic debridement* is the topical application of an exogenous enzyme to the wound bed to facilitate a host response. Topical enzymatic agents may be plant-, animal- or microbe-derived. They are not commercially available in Australia or New Zealand at present.

When selecting the most appropriate method of debridement, the indications and contraindications for the different types of debridement options must be considered. Evidence supports that debridement is an important step in preparing the wound bed for healing (Ayello & Cuddigan 2004, Kirshen et al 2006, Moffatt et al 2008).

Provision of a moist wound environment

A **moist wound environment** is essential to promote wound healing because cells need moisture to be able to migrate across a wound bed. Extreme wetness or dryness may delay healing. Application of dressings to a wound may help to facilitate wound healing by providing the optimal wound environment. Wound dressings may also be applied to:

- provide rapid and cosmetically acceptable healing
- remove or contain odour
- reduce pain
- prevent or treat infection
- contain exudate
- cause minimum distress or disturbance to the patient.

Before applying a dressing, it is essential that you know:

- the action of the dressing
- when it should be used

- the limitations or contraindications to its use, and
- the correct method of application and removal.

There are two different categories of wound dressings: *primary dressings* – those in direct contact with a wound; and *secondary dressings* – those not in contact with a wound but covering the primary dressing (Xue 2008). When selecting a secondary dressing, it is important to ensure that it is compatible with the primary wound-contact layer.

Multiple factors inform the selection of a wound dressing: the type or aetiology of the wound, location or position of the wound, extent of tissue damage and size of the wound, phase of wound healing, presence of debris or infection, level of exudate, odour, pain, patient-centred concerns, cost-effectiveness, the indication/contraindication of the dressing, condition of the surrounding skin and desired patient outcomes (Xue 2008).

Evidence suggests that dressings should:

- maintain a moist wound-healing environment (Griggs 2008, Whitney et al 2006, Xue 2008)
- manage wound exudate and protect the skin surrounding the wound (Whitney et al 2006, Xue 2008)
- remain in place if possible and minimise shear, friction, skin irritation and pressure (Whitney et al 2006)
- be non-adherent to reduce trauma on removal (World Union of Wound Healing Societies 2004)
- be cost-effective, acceptable to the client and changed less often where possible (Hopf et al 2006, World Union of Wound Healing Societies 2004).

Topical antimicrobial dressings may be beneficial when wounds are infected (Hopf et al 2006).

Unfortunately, there is no one dressing that is ideal for every wound. Dressings are classified according to their properties into generic groups. The main classes of wound-dressing products and their properties are outlined in Table 26-11.

Now that you have a better understanding of the principles of wound assessment, wound cleansing and

TABLE 26-11 Wound dressings

Classification	Properties	Clinical considerations	Examples
Semi-permeable film	Made from a thin sheet of polyurethane coated with a layer of adhesive Permeable to moisture, vapour and gases but impermeable to liquids Different types of film dressings differ in their moisture/vapour permeability (MVP), method of application, extensibility, weight and thickness	Excessive exudate may pool under the dressing and result in maceration Care must be taken when removing film dressings. Many have a specific method to break the adhesive bond to ensure atraumatic removal Reaction/sensitivity to adhesive may occur If used on thin, fragile skin, damage can occur on removal	OpSite (Smith & Nephew) Tegaderm (3M)
Tulle gras non-medicated dressings and medicated dressings	Open mesh, cotton, rayon, viscose or gauze impregnated with white or yellow soft paraffin and/or medicated antiseptic	Few indications for use as a primary wound dressing – often fail to meet the criteria of an ideal dressing Low to moderate exuding wounds, i.e. clean superficial wounds, split-thickness skin grafts, minor burns Reduces adhesion and allows non-traumatic removal Provides a moist environment that facilitates epithelial cell migration Does not absorb exudate Requires a secondary dressing Cotton products can shed fibres into the wound Synthetic fabric or paraffin products can cause allergic reactions in sensitive people Requires frequent dressing changes to avoid drying out and damage to granulation tissue Ineffective release of antimicrobials from the paraffin base has been reported Antiseptic may cause allergic reaction in some people	Jelonet (Smith & Nephew) Adaptic (Johnson & Johnson) Xeroform (contains bismuth) (Kendall) Bactigras (contains chlorhexidine) (Smith & Nephew)

continued

TABLE 26-11 ***continued***

Classification	Properties	Clinical considerations	Examples
Alginate	Derived from seaweed Produce a moist gel in the presence of exudate Highly absorbent Facilitate autolytic debridement of moist slough and necrotic tissue Act as a haemostat Reduce pain by keeping nerve endings moist Mostly insoluble Available as a rope or pad Conformable	Useful for filling irregularly shaped wounds such as cavities, abscesses and sinuses Used on moderate to heavily exuding wounds – pressure sores, leg ulcers, graft donor sites Can be used on infected wounds Useful for debriding moist devitalised tissue Requires a secondary dressing	Kaltostat (ConvaTec) Algisite M (Smith & Nephew)
Hydrofibre	Synthetic fibre composed of 100% carboxymethylcellulose Available as sheet or ribbon Absorb exudate vertically, resulting in moisture being drawn up and away thus preventing its spread to surrounding skin Highly absorbent Conformable Facilitate autolytic debridement of slough and necrotic tissue Promote pain relief by keeping nerve endings moist	Moderate to heavily exuding wounds – pressure sores, leg ulcers Can be used on infected wounds Can be used at all stages of healing, from debridement to protection of granulation tissue Requires a secondary dressing	Aquacel (ConvaTec)
Hydrocolloid	Occlusive or semi-occlusive Contain gelatine, pectin and sodium carboxymethylcellulose in a polymer matrix Provide a moist healing environment and facilitate autolytic debridement Available in all shapes, sizes, adhesive properties and forms including wafers, pastes and powders Absorbent – low to high levels of exudate Promote pain relief by keeping nerve endings moist Impermeable to bacteria and other contaminants	May be used as a primary or secondary dressing to manage select pressure ulcers and wounds with necrosis or slough Produce a liquid that resembles pus and may have a strong smell Not recommended for wounds with heavy exudate, sinus tracts or infections, wounds surrounded by fragile skin or wounds with exposed tendon or bone May curl at the edges May injure fragile skin upon removal	Duoderm (ConvaTec) Comfeel (Coloplast) Replicare (Smith & Nephew)
Hydrogel	Have a high water content and contain insoluble polymers Designed to hydrate wounds and promote autolytic debridement Promote pain relief	*Sheet gels* have a solid shape and can be placed on top of the wound without being cut to size – low to moderately exuding flat wounds, i.e. pressure sores, leg ulcers, minor burns, traumatic wounds *Amorphous* (no shape) *gels* – low to moderately exuding wounds, necrotic or sloughy wounds, i.e. pressure sores, sinuses, cavity wounds *Hydrogel-impregnated dressings* are non-woven gauze impregnated with amorphous gel – good for packing low-exudate cavity wounds Useful for rapid debridement of both dry and moist devitalised tissue Sometimes associated with increased skin maceration at wound edges, especially if exudate levels are high Should not be used in blind sinuses where extent of tracking cannot be identified Some people have experienced sensitivity to the preservative agents in some products	*Amorphous gels:* Intrasite Gel (Smith and Nephew) SoloSite Gel (Smith and Nephew) *Gel sheets:* Aquaclear (Hartmann) Curagel (Kendall) *Gel-impregnated:* Curafil (Kendall) IntraSite Conformable (Smith and Nephew)

continued

TABLE 26-11 ***continued***

Classification	Properties	Clinical considerations	Examples
		Used for low to moderate levels of exudate and require a secondary dressing. As hydrogels release water to any dry surface, the use of secondary dressings that are dry or high-absorbency, such as polyurethane foam, is not recommended	
Low-adherent, absorbent dressings and non-absorbent dressings	Made from a variety of materials such as cotton/acrylic fibres and knitted viscose Some are coated with low-adherent materials, e.g. aluminium or perforated films Some have an absorbent layer Some are composed of non-adherent materials such as silicone and polyamide net	Dry to medium exuding wounds, i.e. surgical wounds healing by primary intention, superficial wounds Can be used to protect surgical incisions and recently healed wounds Remove carefully – low-adherent not non-adherent Skin maceration may occur Not suitable for highly exudating wounds unless specified	*Low-absorbent:* Melonin (Smith & Nephew) Release (Johnson & Johnson) *Absorbent:* Exu-Dry (Smith & Nephew) Mesorb (Mölnlycke)
Foam dressings	Mostly polyurethane foams with a hydrophilic action Low-adherent Absorbent dressings for low to high levels of exudate Good thermal insulating properties Permeable to water vapour, preventing the wound from drying out Available as non-adherent and adherent, occlusive and semi-occlusive Conform to body shape Protect and cushion	Low to heavily exuding wounds – pressure sores, leg ulcers, burns, graft donor sites Moist wound environment may not be enough to allow autolysis to occur May macerate periwound skin if they become saturated	Allevyn or Allevyn adhesive (Smith & Nephew) Biatain (Coloplast)
Silicone dressings	Polymer with a structure that consists of alternate atoms of silicon and oxygen with organic groups attached to the silicon atoms A soft silicone dressing is one coated with soft silicone as an adhesive or wound-contact layer The intrinsic properties of the soft silicone mean that they can be removed without causing trauma to the skin	Suitable where it is important to prevent trauma to the wound and the surrounding skin and pain to the patient There are a number of different types of soft silicone dressings that meet different clinical needs – skin grafts, skin tears, prophylaxis of skin during radiotherapy, burns, donor sites, leg ulcers, pressure ulcers, traumatic wounds All of the dressings help to maintain a moist environment May require a secondary dressing	Mepilex (Mölnlycke) Allevyn Gentle (Smith & Nephew) Biatain Silicone (Coloplast)
Hypertonic saline dressings	100% cotton gauze impregnated with crystalline (dry) or solution (wet) saline When placed into a wound the exudate releases the sodium chloride from the dressing, creating a hypertonic environment, absorbing exudate, bacteria and necrotic tissue, reducing oedema and permitting the formation of granulation tissue Technically hypertonic saline does not actually absorb exudate, but rather draws out fluid and debris via a steep osmotic gradient	Moist necrotic, draining and infected wounds Needs to be changed at least daily May cause discomfort or stinging Not recommended for wounds with actual or potential bleeding Not recommended on exposed tendon, muscle or bone Should be discontinued in the presence of healthy granulating or epithelialising wounds	Mesalt (Mölnlycke) Curasalt (Kendall)

continued

TABLE 26-11 ***continued***

Classification	Properties	Clinical considerations	Examples
Cadexomer iodine	Made up of starch micro-beads that contain 0.9% iodine The cadexomer base absorbs exudate, swells and forms a gel Iodine is released progressively into the wound Iodine exerts an antimicrobial effect and bacteria are removed from the wound surface by the process of capillary action Available as a powder, paste or ointment	Low to heavily exuding, sloughy wounds Can be used on infected wounds Changes colour from brown to white when the iodine has been absorbed, indicating the need for a dressing change Not for use during pregnancy or with thyroid disease or suspected iodine sensitivities owing to the risk of systemic absorption Some patients report slight discomfort when dressing first applied The maximum single application is 50 g and weekly maximum must not exceed 150 g Treatment duration should not exceed 3 months in a single course of treatment Will require a secondary dressing	Iodosorb powder, Iodosorb paste, Iodoflex (Smith & Nephew)
Silver dressings	All silver-based dressings, whether alginates, foams, films, hydrofibres or other materials, achieve their antimicrobial action by generating and releasing silver into the wound Silver is a potent antimicrobial; bactericidal mechanisms of action of silver are not fully understood Silver dressings are active against a variety of microorganisms including *Staphylococcus aureus*, methicillin-resistant *S. aureus* (MRSA), *Pseudomonas aeruginosa* and vancomycin-resistant enterococci (VRE)	To reduce the risk of wound infection and to treat infected wounds; provide sustained antimicrobial activity Can dry and adhere if minimal exudate Should not be used with other antimicrobials Do not dilute with saline (deactivates silver) Should not be used with zinc- or oil-based emollients Very expensive May mask host response to infection Should be used for short periods of time, i.e. 3–4 weeks, and the effectiveness re-evaluated Contraindicated in patients with known hypersensitivity to any of the components of the product. If signs of a sensitivity reaction develop during use, treatment should be discontinued	Acticoat (Smith & Nephew) Aquacel-Ag (ConvaTec) Biatain Ag (Coloplast) Actisorb Silver (Johnson & Johnson) Atraumann-Ag (Hartmann) Mepilex Ag (Mölnlycke)
Medicated honey	Comprised of 82% carbohydrate, enzymes and amino acids Acidic pH between 3.2 and 4.5; low enough to be inhibitory to many pathogens Possesses natural anti-inflammatory effects and stimulates granulation tissue Antimicrobial activity mainly through component of hydrogen peroxide Reduces odour Provides a moist environment and produces rapid tissue regeneration and debridement of non-viable tissue	For use on infected or highly contaminated wounds, malodorous wounds Apply honey liberally to either the surface of the wound or a dressing Frequency of dressing changes depends on how rapidly the gel is diluted by exudate Honey is not sterile and there is a perceived risk of wound contamination from the presence of *Clostridium botulinum* spores and *Bacillus* spp. in honey Only honey that has been sterilised/treated by gamma irradiation should be used on wounds Contraindications: Allergies to bees Hypersensitivity reactions Transient stinging/burning on application	Medihony (Comvita)
Odour-absorbing dressings	Contain activated charcoal to absorb odour, bacteria and exudate	Infected or malodorous wounds Malignant or fungating wounds May need a secondary dressing	Actisorb Plus (Johnson and Johnson) Carbonet (Smith and Nephew) CarboFlex (ConvaTec)

wound dressings, you are ready to learn how to perform a simple wound dressing – see Skill 26-2.

CRITICAL REFLECTION POINT

As you read the next section, consider the following questions:

- **What self-help advice would you give to Mr Bukowski?**
- **What strategies would you recommend to prevent skin tear recurrence in the future?**
- **Are there any other healthcare professionals you would liaise with in this case?**

SKILL 26-2

Performing a wound dressing

Delegation considerations

A wound dressing can be undertaken by all healthcare professionals. Check organisational policies regarding which wound care interventions can be delegated to health workers. The assessment of a wound requires the problem-solving and knowledge-application skills of a registered nurse.

Equipment

- Examination gloves
- Apron
- Face mask and protective eyewear
- Sheet or towel for draping
- Normal saline
- Contaminated waste bag
- Acetate grid for wound tracing
- Black fine-tip permanent marker
- Sterile wound probe
- Adhesive remover (optional)
- Wound dressing (choice is dependent on wound characteristics including level of exudate, condition of wound bed, location of wound, mobility, etc)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Assess size and location of wound.	Helps to plan for type and amount of supplies required.
2. Assess patient's level of comfort.	Removal of dressing may cause pain and discomfort requiring pain medication.
3. Explain procedure to patient.	Decreases anxiety.
4. Close room or cubicle curtains and windows.	Provides privacy and reduces airborne microorganisms.
5. Position patient comfortably and drape with sheet or towel to expose only wound site.	Provides access to wound while minimising unnecessary exposure.
6. Place disposable contaminated-waste bag within reach of work area. Fold top of bag to make cuff.	Ensures easy disposal of soiled dressings.
7. Put on face mask and protective eyewear, if required, and wash hands thoroughly. Put on clean, disposable gloves.	Protects nurse from splashes and reduces risk of transfer of infection between patients.

STEPS	RATIONALE
8. Carefully remove dressing. If dressing is adhered, moisten to facilitate removal. Note the amount of exudate present on the dressing removed, any odour and condition of periwound skin. Remove gloves over contaminated dressing (see illustration) and discard gloves and dressing into prepared bag.	Moistening dressing upon removal decreases pain and trauma to tissue. Observing the dressing as it is being removed helps to determine the capacity of the current dressing to contain exudate, odour and its impact on the periwound skin. Removal of gloves over dressing reduces transmission of pathogens.



Step 8 Remove gloves over contaminated dressing.

9. Cleanse wound with Normal saline or potable tap water. The decision to cleanse the wound should be based on the following: • The shape, size and location of the wound • Condition of the wound bed and stage of healing • Availability and effectiveness of different methods of cleansing • The patient's perceptions and needs.	The aim of wound cleansing is to remove both organic and inorganic debris from the wound and periwound skin to facilitate wound healing, and to make wound assessment easier so that the size and extent of the wound can be visualised.
10. Perform wound assessment. • Wound aetiology • Wound location • Wound dimensions and extent of tissue loss. Apply acetate grid to wound and trace the wound margin with the felt pen. If the wound is a cavity or there is undermining of the wound margins, gently insert a sterile wound probe to measure the depth of the wound • Evaluate the clinical appearance of the wound bed by estimating the percentages of tissue type in the wound bed (yellow/sloughy, red/granulating, black/necrotic, pink/epithelialising, green/infected tissue) • Wound edge (sloping, punched-out, undermining, calloused, raised or rolled) • Exudate (type, amount, colour, consistency and odour) • Condition of surrounding skin (maceration, erythema, oedema, warmth, capillary refill time) • Pain (amount, character, quality, relieving or exacerbating factors).	Provides a combination of subjective and objective data to assess effectiveness of wound management plan and to plan appropriate interventions.

STEPS	RATIONALE
11. Put on clean gloves. Cover wound with appropriate dressing to provide a moist wound healing environment. Dressing selection is based on the following factors: • Aetiology of the wound • Characteristics of the wound: – Location – Extent of tissue damage – Wound size – Phase of healing (epithelialising, granulating, sloughy, necrotic) – Level of exudate – Pain – Odour – Presence of infection • Factors affecting wound healing • Cost-effectiveness • Ease of application and removal • Dressing should cause minimum distress or disturbance to the patient • Awareness of the limitations/contraindications of dressings.	Provides a moist wound environment to facilitate wound healing, absorbs exudate, reduces risk of bacterial colonisation and pain.
12. Remove gloves by pulling them inside out. Dispose of in prepared bag.	Prevents contact of nurse's hands with material on gloves.
13. Assist patient to a comfortable position.	Promotes patient comfort.
14. Document all relevant information in patient's chart.	Provides relevant information about the patient and the wound, monitors healing process, guides wound management of the person as a whole, evaluates the success of management and fulfils legal requirements.

Assessment, management and prevention strategies for common wound types

Now that you have a better understanding of how to assess the skin and wounds, you are ready to learn more about assessing, managing and preventing conditions such as skin tears, leg ulcers, diabetic foot ulcers and pressure ulcers.

Acute wounds

Acute wounds are those that proceed through an orderly and timely reparative process to establish sustained anatomical and functional integrity (Franz et al 2008). Acute wounds are the most commonly encountered wound type, and healing of the acute wound is often taken for granted as it is expected to heal within a 'normal' wound-healing trajectory.

Acute surgical wounds healing by primary intention require minimal intervention apart from observation for complications as the wound edges are brought together (apposed) and then held in place by mechanical means (adhesive strips, staples or sutures). A wound dressing may be required in the first 24–48 hours postoperatively to protect the wound from physical or pathogenic invasion, to absorb exudate and to maintain wound temperature. Most incisions closed by primary intention are resurfaced within 2–3 days after surgery. A *healing ridge* is often palpable approximately 5–9 days after surgical incision; this is an area of induration beneath the skin extending to about 1 cm on either side of the wound. Lack of the healing ridge may indicate dehiscence.

Closure of surgical wounds

Surgical wounds are closed with staples or sutures. *Sutures* are available in a variety of materials, including silk, steel, cotton, linen, wire, nylon and Dacron. Sutures come with or without sharp surgical needles attached. Sutures are placed within tissue layers in deep wounds and superficially as the final means of wound closure. The deeper sutures are usually an absorbable material that disappears in several days. Sutures are foreign bodies and thus are capable of causing local inflammation. The surgeon can minimise tissue injury by using the finest suture possible and the smallest number necessary. Stainless-steel *staples* may also be used (Figure 26-16); these provide more strength than nylon or silk sutures and tends to cause less irritation to the skin.

Normally, for the first 2–3 days after surgery the skin around sutures or staples is swollen. Continued swelling may indicate that the closures are too tight. The skin can be cut by overly tight suture material, leading to wound separation. Sutures that are too tight are a common cause of wound dehiscence. Early suture removal reduces the formation of defects along the suture line and minimises chances of an unattractive scar formation.

Removal of wound closures

Policies vary within institutions as to who may remove sutures or staples, but usually a medical order is required. An order for suture removal is not written until the wound has closed (usually in 7–10 days). Usually, the number of sutures or staples to be removed is indicated. If the suture line appears to be healing in certain locations better than in others, only some sutures may be removed (e.g. every second one).



Figure 26-16 Incision closed by wire staples.

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To remove staples, the tip of the staple remover is inserted under each wire staple and then squeezed, freeing the staple from the skin (Figure 26-17).

To remove sutures, the type of suturing used must first be identified (Figure 26-18). With *intermittent suturing*, the surgeon ties each individual suture made in the skin. *Continuous suturing*, as the name implies, is a series of sutures with only two knots, one at the beginning and one at the end of the suture line. *Retention sutures* are placed more deeply than skin sutures and may or may not be removed by the nurse, depending on agency policy. The manner in which the suture crosses and penetrates the skin determines the method for removal.

The most important principle in suture removal is never to pull the visible portion of a suture through underlying tissue. Sutures on the skin's surface harbour microorganisms and debris; the portion of the suture beneath the skin is considered sterile. Pulling the contaminated (external) portion of the suture through tissues may lead to infection. The suture material is cut as

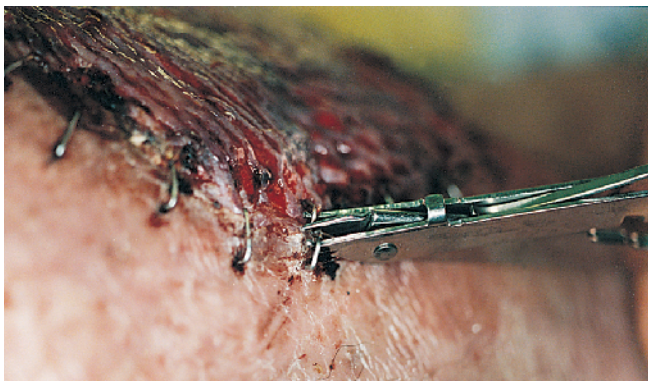

Figure 26-17 Staple remover.

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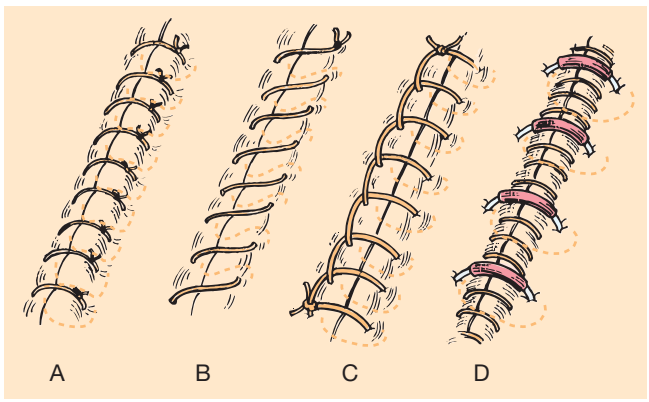

Figure 26-18 Examples of suturing methods.

A, Intermittent. B, Continuous. C, Blanket continuous. D, Retention.

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close to the skin edge on one side as possible and then the suture is pulled through from the other end.

Every second suture or staple is removed first, and the wound edges are then inspected for healing. The remaining sutures or staples are removed if the wound edges have adhered.

Drains

Drains may be inserted into a surgical wound if a large amount of drainage is expected and if keeping wound layers closed is especially important. Some drains are sutured in place. Caution should be exercised when changing the dressing over drains that are not sutured in place to prevent their being accidentally removed. A drain such as a Penrose drain may lie under a dressing, extend through a dressing or be connected to a drainage bag or a suction apparatus. The surgeon often places a pin or clip through the drain to prevent it from slipping further into a wound. It is usually a medical responsibility to pull or advance the drain as drainage decreases to permit healing deep within the drain site.

The nurse assesses the number of drains, drain placement, the character of drainage and the condition of collecting apparatus. The security of the drain and its location with respect to the wound are observed, and the character of the drainage noted. If there is a collecting device, the drainage volume is measured. Because a drainage system must be patent, drainage flow through the tubing as well as around the tubing should be looked for. A sudden decrease in drainage through the tubing may indicate a blocked drain, and the surgeon should be notified. When a drain is connected to suction, the system is assessed to ensure that the pressure ordered is being exerted. Evacuator units such as a Hemovac or Jackson-Pratt exert a constant low pressure as long as the suction device (bladder or bag) is fully compressed. These types of drainage devices are often referred to as *self-suction*. When the evacuator device is unable to maintain a vacuum on its own, the surgeon is notified, who can then order a secondary vacuum system (such as wall suction). If fluid is allowed to accumulate within the tissues, wound healing will not progress at an optimal rate, and the risk of infection is increased.

When drainage interferes with healing, drainage evacuation can be achieved by using either a drain alone or a drainage tube with continuous suction. Barrier preparations must be applied to protect the skin surrounding drain sites: drainage then flows on the barrier but not directly on the skin. Drainage evacuators are convenient, portable units that connect to tubular drains lying in a wound bed and exert a safe, constant, low-pressure vacuum to remove and collect drainage. The nurse ensures that suction is exerted and connection points between the evacuator and tubing are intact. The evacuator collects drainage, which is assessed for volume and character every shift and as needed. When the evacuator fills, the output is measured by emptying the contents into a graduated cylinder and immediately resetting the evacuator to apply suction.

Skin grafts

Ideally, wounds heal by primary intention. However, large, surgically created wounds and traumatic and chronic wounds can cause extensive tissue destruction, making primary intention healing impossible. Skin grafts may then be necessary to protect underlying structures or to reconstruct areas for cosmetic or functional purposes. Survival of skin grafts relies on revascularisation of the grafted skin (Beldon 2007).

Skin-graft take is the process by which the donor site is incorporated into a recipient or host bed. Successful graft take requires an unhindered process of restoration of vascular perfusion to the donor skin. A graft will take better if the donor site, the area from where the skin is harvested, is highly vascularised.

For a skin graft to take, it must be closely applied to the recipient bed. Any accumulation of oedema, haematoma or seroma between the skin graft and the recipient bed will prevent the skin graft from taking. Movement between the graft and the recipient bed damages the in-growth of capillaries and prevents revascularisation. When skin grafts are applied to movable body parts, splinting is used to immobilise adjacent joints. Bed rest and positioning of the patient to prevent distortion or tension and shearing forces between the graft and the wound bed is essential. Tie-over dressings that immobilise skin grafts, particularly on the face, may be sufficient to immobilise problematic areas.

Several methods are used to fixate the graft, including the open method, the closed method and topical **negative pressure wound therapy**. The *open method* is where the graft is laid onto the recipient site and left open to the air. Initially, the graft is pricked every hour with a sterile needle to express any seroma or haematoma that has built up under the graft. As the wound exudate decreases, the procedure is reduced to every few hours. The *closed method* of skin grafting is where a pressure dressing is applied over the skin to keep it well approximated to the recipient bed (Terrill 2003). There are many different techniques to achieve this; most involve using a non-adherent dressing on the surface of the graft, such as tulle gras or paraffin-impregnated gauze, and a stack of cotton gauze cut to

fit within the defect or a foam sutured/stapled onto the wound margins or a flexible polyamide net coated with soft silicone against the graft with a secondary absorbent dressing secured with sutures or staples (Terrill 2003, Young and Fowler 1998). Sutures or staples are not used if the skin graft is applied in the operating theatre. The fibrin that forms between the skin graft and the recipient bed binds the two surfaces together.

Topical negative-pressure wound therapy is utilised for skin grafts in complex anatomical areas where the base is irregular (Banwell & Teot 2003). A topical negative-pressure dressing achieves good apposition of the skin graft to the recipient site, absorbs exudate, reduces oedema, stimulates the formation of granulation tissue and decreases bacterial colonisation (Banwell & Teot 2003). Excellent graft take (> 95%) has been reported in the literature with this technique for graft fixation (Banwell & Teot 2003).

With the closed or topical negative-pressure wound therapy techniques, the skin grafts are usually reviewed after 5 days and assessed for graft take. A graft that has taken has a purple–pink hue and has adhered to the wound bed. The graft usually needs protection for at least 2 weeks or 3 months if located on the lower limbs. Any graft that has not taken is dressed using normal moist wound-healing principles. After 4–6 weeks, the graft is usually pale pink and the skin depression should be filling in. Further cosmetic improvement can continue with graft maturation over 6–12 months. Cosmesis can be improved using pressure therapy and silicone gel sheeting to soften scars and reduce erythema.

Skin flaps have their own blood supply, and the ability to monitor the status of the flap perfusion or its viability is essential in the prevention, recognition and treatment of complications. A healthy skin flap is similar in colour and texture to the donor site. The colour, temperature, capillary refill time, tissue turgor, dermal bleeding and quantity of exudate are techniques used to assess tissue flap viability.

Donor sites are frequently painful. Factors that affect the healing rate of donor sites are the site, size and depth of tissue excised (Beldon 2007). Healing of donor sites is primarily through re-epithelialisation of the exposed dermis. The sites tend to produce moderate amounts of exudate, and epithelial cells in the hair follicles, sebaceous and sweat glands migrate across the wound bed to form a new layer of epithelium. This process takes approximately 10–21 days. The ideal donor-site dressing should be easy to apply, reduce pain, minimise leakage of exudate, promote rapid wound healing and be inexpensive and acceptable to the patient (Beldon 2007).

Skin tears

A **skin tear** is a traumatic injury to the skin that occurs as a result of friction alone, or shearing and friction. It separates the epidermis from the dermis (known as a *partial-thickness wound*) or separates both the epidermis and the dermis from the underlying structures (known as a *full-thickness wound*). Most skin tears occur on the arms and hands. Other common sites are the lower legs, feet or the head, although they can occur anywhere on the body. Skin tears are the most common type of wound in older people, so it is important to understand why this is so and to be able to identify those most at risk. Most skin tears occur when the person accidentally bumps into an object such as a wheelchair or furniture when being transferred, or following a fall.

There are many risk factors for skin tears. These are explained in Table 26-12.

Classification of skin tears

Skin tears vary in size, location and the amount of tissue loss. It is important that you know how to classify the type of skin tear so that you can determine the appropriate management options.

The STAR Skin Tear Classification System (see Figure 26-19) was developed by the Silver Chain Nursing Association and the Curtin University of Technology (2007) to provide an evidence-based consensus on skin tear classification. This means that if you use this system, you are more likely to be able to identify the type of skin tear and be able to select the correct treatment and prevention strategies. Skill 26-3 explains the assessment and management of a skin tear.

Sinus

A sinus is a cavity or a track that extends from the skin surface to underlying tissue. A sinus may be the result of an infection, ulceration or necrosis of the dermis and underlying tissue, or a surgical wound dehiscence. The goal of management is to gently pack the sinus from the base upwards to eliminate dead space in the wound, prevent abscess formation and facilitate granulation tissue formation (Joanna Briggs Institute 2011).

Fistula

A fistula is an abnormal passage between two or more structures or spaces. This can involve a communication tract from one body cavity or organ to another organ or to the skin. The goal of management is the closure of the fistula, either spontaneously or surgically. Fistulae may be internal or external and are often associated with inflammatory diseases or a postoperative complication.

STAR Skin Tear Classification System

STAR Skin Tear Classification System Guidelines

1. Control bleeding and clean the wound according to protocol.
2. Realign (if possible) any skin or flap.
3. Assess degree of tissue loss and skin or flap colour using the STAR Classification System.
4. Assess the surrounding skin condition for fragility, swelling, discolouration or bruising.
5. Assess the person, their wound and their healing environment as per protocol.
6. If skin or flap colour is pale, dusky or darkened reassess in 24–48 hours or at the first dressing change.

STAR Classification System



Category 1a
A skin tear where the edges **can** be realigned to the normal anatomical position (without undue stretching) and the skin or flap colour **is not** pale, dusky or darkened.



Category 1b
A skin tear where the edges **can** be realigned to the normal anatomical position (without undue stretching) and the skin or flap colour **is** pale, dusky or darkened.



Category 2a
A skin tear where the edges **cannot** be realigned to the normal anatomical position and the skin or flap colour **is not** pale, dusky or darkened.



Category 2b
A skin tear where the edges **cannot** be realigned to the normal anatomical position and the skin or flap colour **is** pale, dusky or darkened.



Category 3
A skin tear where the skin flap is completely absent.

Skin Tear Audit Research (STAR). Silver Chain Nursing Association and School of Nursing and Midwifery, Curtin University of Technology. Revised 4/2/2010.

STAR Skin Tear Classification System Glossary

- ***Skin Tear:*** "a traumatic wound occurring principally on the extremities of older adults, as a result of friction alone or shearing and friction forces which separate the epidermis from the dermis (partial thickness wound) or which separate both the epidermis and the dermis from underlying structures (full thickness wound)"[1].
- ***Pale, dusky or darkened skin or flap colour:*** when compared to the individual's 'normal' surrounding skin, may indicate ischaemia or the presence of haematoma, which may affect skin or flap viability.
- ***Ischaemia:*** inadequate tissue perfusion as evidenced by pale, dusky or darkened tissue.
- ***Haematoma:*** a collection of blood or clot under the flap or realigned skin.
- ***Realign:*** to replace the skin or flap into the normal anatomical position without undue stretching.
- ***Linear skin tear:*** a skin split or the skin splitting in a straight line.
- ***Flap skin tear:*** a segment of skin or skin and underlying tissue that is separated from the underlying structures.

References:

1 Payne, R., & Martin, M. (1993). Defining and classifying skin tears: Need for a common language … a critique and revision of the Payne-Martin Classification system for skin tears. *Ostomy Wound Management, 39*(5), 16-20.
2 Photographs courtesy of the Skin Tear Audit Research (STAR) photographic library, Silver Chain Nursing Association and School of Nursing and Midwifery, Curtin University of Technology.
3 Carville, K., Lewin, G., Newall, N., Haslehurst, P., Michael, R., Santamaria, N., & Roberts, P. (2007). STAR: A consensus for skin tear classification. *Primary Intention, 15*(1), 18-28.

STAR Tool G 4/2/2010

Figure 26-19 STAR (Skin Tear Audit Research) skin tear classification system.

Skin Tear Audit Research (STAR). Silver Chain Group Limited, Curtin University. Revised 4 February 2010. Reprinted August 2012.

TABLE 26-12 Risk factors for skin tears

Risk factor	Explanation
History of previous skin tears	If an older person has had one skin tear, they are more likely to have another one because their skin is more fragile.
Presence of bruising or discoloured skin (i.e. ecchymosis)	Skin that is bruised or discoloured is likely to tear more easily. This is because the dermis is thinner and there is less connective tissue to support blood vessels. It then takes very little trauma to cause a tear in the skin.
Advanced age	With an increase in age, the skin becomes thinner and less elastic because of reduced collagen and elastic fibre production. Collagen provides the strength and structure to the skin. When the skin of an older person is put under pressure, such as when the person is being moved, the small force applied to the skin can cause the layers of the skin to separate or tear apart resulting in a skin flap with jagged edges.
Poor nutritional status	Older people are more likely to be malnourished and dehydrated because of reduced oral intake or other health conditions. Dehydrated skin is less elastic, more fragile and more likely to break down.
Cognitive impairment or dementia	Lack of awareness of the environment may mean that the person is more likely to bump into an object, resulting in a skin tear.
Dependency	Patients who are dependent (i.e. require care for all activities of daily living) are at greatest risk for skin tears. They tend to acquire frequent skin tears from the mechanical trauma involved from the routine activities of bathing, dressing, positioning and transferring.
Multiple medications	Some medications that make the blood less likely to clot (e.g. anticoagulants) or steroids (e.g. taken for conditions such as rheumatoid arthritis) make the skin thinner and more likely to tear.
Presence of friction or shearing	Dry skin is more likely to tear due to friction and shearing.
Impaired mobility	Poor mobility means that the person is more likely to fall and sustain a skin tear.
Disease processes	Illnesses such as renal failure, heart failure, a cerebral vascular accident and diabetes increase a person's risk of suffering a skin tear because of the way these diseases affect all body systems.

SKILL 26-3

Assessment, management and prevention of skin tears

Delegation considerations

The management and prevention of skin tears can be undertaken by all healthcare professionals. Check organisational policies regarding which wound care interventions can be delegated to health workers. The assessment of a person with or at risk of skin tears requires the problem-solving and knowledge-application skills of a registered nurse.

Equipment

- Examination gloves
- Apron
- Face mask and protective eyewear (optional)
- Normal saline
- Sterile cotton tip
- Contaminated-waste bag
- Black fine-tip permanent marker
- Limb protector
- Wound dressing (choice is dependent on wound characteristics including level of exudate, condition of wound bed, location and size of wound, condition of periwound skin, mobility, etc)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Explain procedure to patient.	Decreases anxiety.
2. Assess size and location of wound.	Helps to plan for type and amount of supplies required.
3. Position patient comfortably.	
4. Place disposable contaminated-waste bag within reach of work area. Fold top of bag to make cuff.	Ensures easy disposal of soiled dressings.
5. Put on face mask and protective eyewear, if required, and wash hands thoroughly.	Protects nurse from splashes and reduces risk of transfer of infection between patients.
6. Control bleeding and clean the wound: a. Stop bleeding by applying firm pressure. Elevate the limb, if applicable, above heart level. b. Clean the wound by gently irrigating with warm Normal saline. Carefully clean under the skin flap to remove foreign debris or blood clots. c. Pat dry the surrounding skin.	The aim of wound cleansing is to remove both organic and inorganic debris from the wound and periwound skin to facilitate wound healing, and to make wound assessment easier so that the size and extent of the wound can be visualised.
7. Realign (if possible) any skin or flap. a. Carefully realign by rolling the skin flap with a moist, sterile cotton bud. The use of a moistened cotton bud assists with approximation of the flap edge. b. Do not stretch the skin to 'make it fit'. Otherwise, the skin flap will shrink back on itself or it may tear off completely. c. If the skin flap cannot be realigned, apply moist wound dressing principles to promote wound healing.	
8. Assess the degree of tissue loss and skin or flap colour: a. Using the STAR Skin Tear Classification System (see Figure 26-19), select the skin tear category that best describes the type of skin tear you are treating. b. Note the colour of the skin flap. If the skin or flap colour is pale, dusky or darkened when compared with the person's normal surrounding skin, this may indicate reduced blood flow (ischaemia) or the presence of a blood clot (haematoma), which may affect the skin or flap viability. c. If the skin or flap colour is pale, dusky or darkened, reassess in 24–48 hours or during the first dressing change.	Provides a combination of subjective and objective data to assess effectiveness of wound management plan and to plan appropriate interventions.
9. Assess the surrounding skin condition for fragility, swelling, discolouration or bruising. This information will assist you when selecting an appropriate dressing.	

STEPS	RATIONALE
10. Assess the person, their wound and their healing environment.	A person's overall medical condition may affect how quickly the wound is likely to heal. This will guide the management and preventive strategies you decide to use.
11. Apply a dressing. Regardless of what type of dressing you select, you should follow these principles:	
• Ensure the dressing extends over the wound edge by at least 1.5–2 cm.	Reduces the risk of trauma on removal of the dressing and increases the ability of the dressing to absorb any leakage from the wound.
• Before applying the dressing, draw arrows on top of the dressing with a felt pen to indicate the direction of the skin flap and write the due date for removal. When removing the dressing, ensure that you remove it in the direction of the arrow to avoid pulling back the skin flap. • Leave in place for 5–7 days. Change earlier only if there is 75% leakage on the dressing. • Reapply a new dressing if healing is not established and leave the dressing intact for 5–7 days. • If the wound is healed, leave it open and moisturise twice daily with a pH-neutral emollient.	
12. Protect limbs: Apply a limb protector or tubular retention bandage to prevent further damage or to hold any dressing in situ.	
13. Document the skin tear: a. Document the skin tear category and location in the patient's record and wound care assessment chart. b. Submit an incident report as required.	Provides relevant information about the patient and the wound, monitors healing process, guides wound management of the person as a whole, evaluates the success of management and fulfils legal requirements.
14. Monitor the healing of the wound: a. Check the dressing and surrounding skin regularly for signs of complications or infection, but leave the dressing intact unless an inspection is clinically indicated. b. Educate the patient about the signs and symptoms of complications or infection. Advise them to report problems, especially any increase in pain, warmth, odour, redness, purulent exudate or fever.	
15. Implement skin-tear prevention strategies, including the following:	

STEPS	RATIONALE
• Assess and recognise risk.	People with fragile, thin, bruised or discoloured skin are at a high risk for further skin tears.
• Use extreme caution and a gentle touch. • Avoid direct contact with the skin: use slide sheets where possible to reduce the risk of friction or shearing forces on the skin, especially when transferring someone. • Protect fragile skin: if a person has fragile skin or has had repeated skin tears, encourage them to wear long sleeves and long trousers to protect their skin. • Apply a pH-neutral moisturiser and/or barrier cream at least twice daily. This will help to prevent dry skin. • Use soap-free alternatives; avoid using soaps and perfumed lotions as these can dry the skin. Instead, use a pH-neutral cleanser or moisturiser. • Avoid using adhesives. Adhesives may increase the risk of tearing the skin when they are removed. It is advisable to use a limb protector instead. • Use protective padding on furniture and equipment: pad bed rails, wheelchair arms and leg supports to reduce the risk of skin injuries. • Ensure adequate lighting. A well-lit environment helps to reduce risk of people bumping into furniture, doors or equipment.	Many skin tears occur when performing normal daily activities such as bathing, dressing and transferring individuals at risk. Avoid wearing jewellery or a watch.
16. Provide continuing education: Help other staff members, patients and their family members understand the importance of identifying those at risk for skin tears, appropriate treatment and prevention strategies.	
17. Document all relevant information in patient's chart.	Provides relevant information about the patient and the wound, monitors healing process, guides wound management of the person as a whole, evaluates the success of management and fulfils legal requirements.

External fistulae may be the result of trauma, infection, malignancy, obstruction, surgery or radiation damage. Management of patients with a fistula requires complex, multidisciplinary care.

Burns

The initial assessment of a burn injury informs the plan of care. Burn injury assessment is notoriously difficult, and therefore access to specialist services for guidance to appropriate assessment, definition/classification and treatment is essential. Types of burn injury include damage to the skin caused by heat (thermal), chemical, electrical or radiation sources. *Thermal burns* are the most frequent type of burn; severity is related to temperature and duration of contact. *Chemical burns* are more likely to be full-thickness in depth and it may take several days for the severity of burn injury to develop or 'declare' the extent of tissue injury. The severity depends on the manner and

duration of contact, the amount of skin and area of the body involved, the concentration of the chemical and how the incidence occurred. *Electrical burn injury* is most commonly caused by alternating current; severity is due to the voltage (force) and amperage (strength). Tissue injury occurs when electrical energy is converted to heat. Electrical burns have a point of entrance and exit, and the depth of injury can be difficult to determine.

Burn injury is classified according to the mechanism of injury, depth of injury and extent of total body surface area involved (see Table 26-13 and Figure 26-20).

There are several techniques for assessing the amount of tissue damage in relation to total body surface area (TBSA), which is important for clinical management (Joanna Briggs Institute 2010). Wallace's 'rule of nines' tool divides the body surface of adults into areas of 9% (or multiples of 9%), with the exception that the perineum is estimated at 1% (Figure 26-21). This allows the extent of the burn to be estimated with reproducible accuracy. Children have different body surface area (BSA) proportions, and the paediatric rule of nines is adjusted for age by taking 1% BSA from the head and adding 0.5% BSA to each leg for each year of life after 1 year of age, until age 10 years where adult proportions are reached.

Age-dependent burn graphs such as the Lund and Browder chart is the preferred method to estimate BSA burn, especially in children and neonates (Figure 26-22) (Joanna Briggs Institute 2010).

Small burns may be estimated using the area of the palmar surface (fingers and palm) of the patient's hand, which approximates to 1% BSA.

Chronic wounds

In Australia, it is estimated that more than 433,000 people suffer from chronic wounds such as leg ulcers, pressure ulcers or non-healing surgical wounds at any one time, although the actual incidence is unknown as many people never seek treatment for their wound problems (Australian Institute of Health and Welfare 2008). Chronic wounds are frequently long-term, painful and debilitating, resulting in reduced quality of life for sufferers. They can affect people of any age, although prevalence increases with age and wounds are estimated to affect up to 5–10% of people aged over 80 years in Australia (ABS 2008). Studies on individuals with chronic leg ulcers reveal the average duration is approximately 1 year, 60–70% have recurrent ulcers and most people suffer from the condition for an average of 15 years or more (Araujo 2003, Bergqvist et al 1999, Lindholm et al 1992). Studies with residents in aged care facilities have reported that 25% suffer from a wound (ABS 2008).

Pressure injuries are considered to be largely preventable and yet they are a significant health problem. The prevalence of pressure ulcers in Australia in the acute care hospital setting ranges from 5.4% to 15.6% (AWMA 2001). Foot ulceration affects 15–20% of all individuals with diabetes and precedes up to 85% of amputations in this patient group, and is the most common cause of non-traumatic lower-limb amputation (Australian Centre for Diabetes Strategies 2005). The annual incidence of foot ulcers in people with diabetes is estimated to be 2.5–10.7% in Australia, Finland, the United Kingdom and the United States, and the average age for lower-limb amputation in

TABLE 26-13 Classification of burn injury

Classification	Degree of tissue loss
Superficial	Involves the epidermis and is red in appearance with no blisters Usually heals within 7 days with no scarring
Superficial partial-thickness	Involves the epidermis and extends into the papillary or superficial layer of the dermis, and is red or pale pink in appearance with small blisters Usually heals within 14 days with no scarring, but there may be slight pigmentation changes
Deep partial-thickness	Extends into the reticular or deeper layer of the dermis and is dark pink in appearance with blisters present Usually takes 2–3 weeks to heal and grafting may be required; scarring may result
Full-thickness	Involves the epidermis, dermis and subcutaneous tissue and appears blotchy red or white in colour with or without blisters Grafting is required and scarring is likely
Subdermal	Involves the muscle, bone, tendon and interstitial tissue Appears as white, brown, black (charred) or deep red with no blisters. Grafting is required and scarring will occur.

Carville K 2012 Wound care manual. Silver Chain Foundation, Osborne Park, WA.

Recognising Burn Depths

Epidermal Burn
(Erythema)



- Skin intact, blanch to pressure
- **Erythema not included in % TBSA assessment**
- Heal spontaneously within 3–7 days with moisturiser or protective dressing

Superficial Dermal Burn
(Superficial Partial Thickness)



- Blisters present or denuded
- Blanch to pressure (under blister)
- Should heal within 7–10 days with minimal dressing requirements

Mid Dermal Burn
(Mid Partial Thickness)



- Heterogeneous, variable depths
- Blanches to pressure may have slow capillary return
- Should heal within 14 days
- Deeper areas or over a joint may need surgical intervention and referral to a specialist unit

Deep Dermal Burn
(Deep Partial Thickness)



- Heterogeneous, variable depths
- Deeper areas may not blanch
- Generally need surgical intervention
- Refer to specialist unit

Full Thickness Burn



- Outer skin, and some underlying tissue dead
- Present as white, brick red, brown/black, **non-blanching**
- Surgical intervention and long-term scar management required
- Refer to specialist unit

For transfer criteria to a Severe Burn Unit and further information see NSW Burn Transfer Guidelines
http://www.health.nsw.gov.au/policies/gl/2008/GL2008_012.html

Contacts for NSW Burn Units:

CHW	RNSH	CRGH
9845 1114	9926 8940	9767 7776
kidsburns@chw.edu.au	burnsconsult@nsccahs.health.nsw.gov.au	crghburns@email.cs.nsw.gov.au

ACI Statewide Burn Injury Service Website
www.aci.health.nsw.gov.au

Figure 26-20 Recognising burn depths.

New South Wales Agency for Clinical Innovation (ACI) n.d. Recognising burns depths. ACI, Sydney. Online. Available: www.aci.health.nsw.gov.au/__data/assets/pdf_file/0006/162636/Recognising_Burn_Depths_Chart_A3_11_10_28.pdf; accessed 7 Jun 2012.

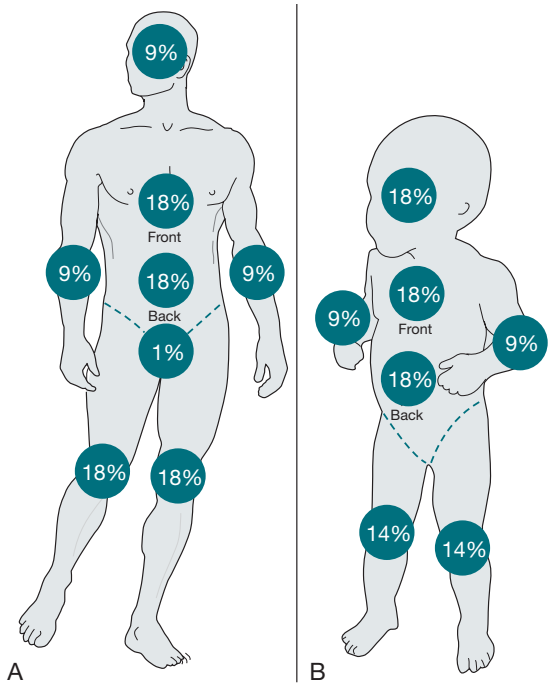


Figure 26-21 Wallace's rule of nines tool.

A, Adult; B, Child.

Elliot D, Aitken L, Chaboyer W (eds) 2006 ACCCN's Critical care nursing. Elsevier, Sydney.

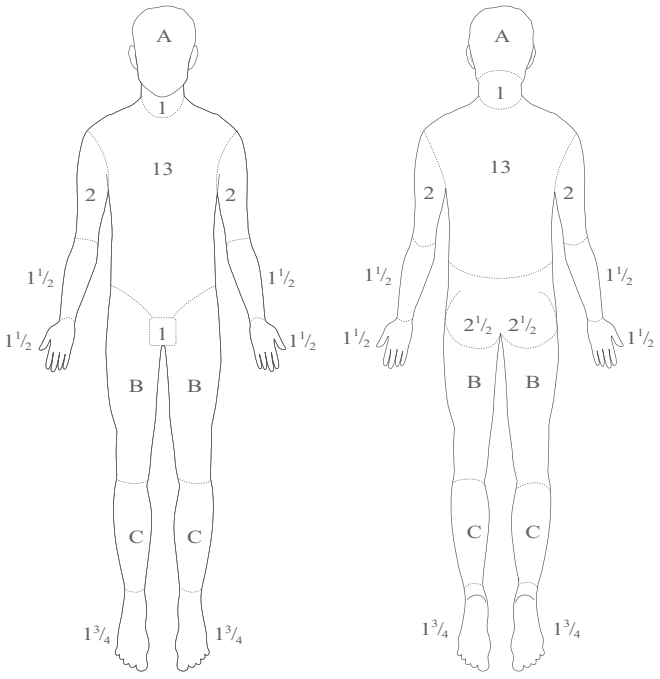
Australia is 65–79 years (Australian Centre for Diabetes Strategies 2005). The 5-year recurrence rate for ulceration is 70%, and for those undergoing a lower-limb amputation there is a 50% chance of losing the remaining limb within 3 years (Australian Centre for Diabetes Strategies 2005).

Wounds commonly affect disadvantaged groups with the least resources to deal with the condition, such as the elderly, disabled and those in lower socioeconomic groups and with poor social support. Unfortunately, the burden of chronic wounds is rapidly growing globally (Harding 2010). In Australia, it is conservatively estimated that the problem of wounds costs the healthcare system more than $2.6 billion per year (Australian Institute of Health and Welfare 2008).

Assessment is the key to effective prevention and management of chronic wounds. Studies demonstrate that significant improvements in healing rates can occur when assessments are rationalised and based on research-based protocols (Carville & Smith 2004, Mulligan et al 2009). However, many patients have never been referred for specialist opinion despite suffering from ulceration for many years, and consequently may not have had the aetiology of the wound correctly diagnosed.

It must be recognised that there are many factors which need to be considered when caring for patients with

Lund and Browder chart for calculating the percentage of total body surface area burnt



Region	Partial thickness (%) [NB1]	Full thickness (%)
head		
neck		
anterior trunk		
posterior trunk		
right arm		
left arm		
buttocks		
genitalia		
right leg		
left leg		
Total burn		
NB1: Do not include erythema		

Area	Age 0	1	5	10	15	Adult
A = half of head	9½	8½	6½	5½	4½	3½
B = half of one thigh	2¾	3¼	4	4½	4½	4¾
C = half of one lower leg	2½	2½	2¾	3	3¼	3½

Figure 26-22 Lund and Browder chart for estimating and documenting the severity and extent of burn wounds in adults and children.

or at risk of a chronic wound, including other long-term, chronic health conditions affecting many wound sufferers, and psychosocial and quality-of-life issues affecting many individuals.

Pressure injuries

Pressure ulcer, pressure sore, decubitus ulcer and bed sore are terms commonly used to describe pressure injuries. A **pressure injury** is an injury to the skin and/or underlying tissue, usually over a bony prominence. It occurs as a result of pressure alone, or pressure in combination with shear and/or friction.

Shearing forces usually occur as a result of sliding or dragging the skin across a support surface such as a mattress. **Friction** is the abrasion of the epithelial surface of the skin by rubbing against an abrasive or resistant surface. Friction may occur if the patient repeatedly rubs their heels on their mattress or on wheelchair foot plates. The presence of constant moisture from perspiration, urinary and/or faecal incontinence or wound leakage affects the ability of the skin to resist this type of damage.

Pressure injuries can occur in any location, but are most commonly found on the sacrum or coccyx and heels. They may also occur on other bony prominences, including the ischium, toes, elbows, ears, ankles, nose or other areas of the body. All patients are at risk of developing a pressure injury. Table 26-14 reviews some key risk factors for the development of pressure injuries.

Pressure is the major cause of tissue injury and is related to the intensity and duration of pressure and the ability of the tissue to tolerate pressure. Sustained pressure on a localised area of tissue results in occlusion of blood flow to the vascular and lymph vessels that supply oxygen and nutrients to the tissues. This results in tissue ischaemia and reperfusion injury, leading to cell destruction and tissue death (Queensland Health 2009).

The likelihood of developing a pressure injury is dependent on a number of factors which affect tissue tolerance (see Table 26-12). The intensity and duration of pressure in combination with other risk factors determine a patient's capacity to tolerate pressure (Queensland Health 2009).

Stages of pressure injuries

Pressure injuries are staged to help determine how severe the damage to the skin and underlying tissue structures might be. The *Pan Pacific clinical practice guidelines for the prevention and management of pressure injury* (AWMA 2012) recommend the use of a pressure injury classification system to provide a consistent and accurate means by which the severity of a pressure injury can be communicated and documented. Presently there are four stages of pressure damage. The higher the stage, the deeper the tissue involvement.

STAGE 1 pressure injuries present as areas of persistent, non-blanchable redness when compared with the surrounding skin. The skin around the wound may be painful or itchy, firm or boggy, and warmer or cooler to the touch when compared to the surrounding skin.

Stage 1 pressure injury may be difficult to detect in individuals with dark skin tones. In lighter skin-toned individuals, if you press on the skin for a few seconds, normal skin typically goes white in colour (**blanching**) and then returns to a normal pink colour when the pressure is released. However, patients with more darkly pigmented skin may not have visible blanching and skin colour may differ from the surrounding area. This means

TABLE 26-14 Risk factors for pressure injuries

Risk factor	Explanation
Alteration in mobility or physical activity	Reduced mobility or physical activity due to contractures, fractures, injury, neurological disease or pain increase the risk of pressure injury developing. This is because the patient is unable to independently reposition themselves to off-load or relieve pressure
Malnutrition and dehydration	Malnutrition and dehydration increase the risk of pressure injury. The skin is much drier and less able to withstand the effects of pressure damage
Moisture	The presence of constant moisture from wound leakage, urinary or faecal incontinence and perspiration increases the risk of pressure damage. This is because the skin is less able to resist friction or shearing forces
Alteration in sensation and consciousness	Decreased sensation or loss of consciousness because of cognitive impairment such as a central nervous system injury, a cerebrovascular accident, degeneration, major surgery, spinal cord injury or medications which increase the risk of pressure damage. This is because the patient may not be aware that an injury to the skin has occurred
Other health conditions	Health conditions such as heart disease, diabetes, circulation disorders and a history of smoking can increase the risk of pressure injury

RESEARCH HIGHLIGHT

Research focus

Venous leg ulcers are slow to heal, frequently recur and are associated with pain, restricted mobility and decreased quality of life. Although chronic wound care consumes a large proportion of community nursing time and healthcare resources, there is little evidence available on the effectiveness of differing models of community care for this population.

Research abstract

The aim of this study was to determine the effectiveness of a new community nursing model of care on quality of life, morale, depression, self-esteem, social support, healing, pain and functional ability of clients with chronic venous leg ulcers. The investigators recruited a sample of 67 participants with venous leg ulcers referred for care to a community nursing organisation in Queensland, Australia, after obtaining informed consent. Participants were randomised to either the Lindsay Leg Club model of care (n = 34), emphasising socialisation and peer support; or the traditional community nursing model (n = 33) consisting of individual home visits by a registered nurse. Participants in both groups were treated by a core team of nurses using identical research protocols based on short-stretch compression bandage treatment. Data were collected at baseline, at 12 and at 24 weeks from commencement. Participants who received care under the Leg Club model demonstrated significantly improved outcomes in quality of life (p = 0.014), morale (p < 0.001), self-esteem (p = 0.006), healing (p = 0.004), pain (p = 0.003) and functional ability (p = 0.044).

Evidence-based practice

In this sample, the evaluation of the Leg Club model of care shows potential to improve the health and wellbeing of clients who have chronic leg ulcers. These results suggest that further evaluation and implementation of this model is warranted by community health organisations involved in the care of this population.

Reference

Edwards H, Courtney M, Finlayson K et al 2009
A randomised controlled trial of a community nursing intervention: improved quality of life and healing for patients with chronic leg ulcers. J ClinNurs 18:1541–9.

BOX 26-1 Skin assessment for pressure injury

Inspect the skin of all patients on admission and at each repositioning to identify indications of pressure injury including:

- erythema
- blanching response
- localised heat
- oedema
- induration
- skin breakdown.

Australian Wound Management Association (AWMA) 2012 Pan Pacific clinical practice guideline for the prevention and management of pressure injury. Cambridge Media, Osborne Park, WA.

that when you press on the skin, changes in skin colour are difficult to detect.

STAGE 2 pressure injuries represent a partial-thickness loss of the dermis, and present as shallow open ulcers with a red or pink wound bed; they may also present as an intact or open/ruptured fluid-filled blister. If a blister is found with clear fluid present and the epidermis is clearly separated from the dermis, this is recorded as a Stage 2 pressure injury.

Stage 2 pressure injuries present as shiny or dry shallow ulcers without any bruising present, since bruising represents suspected deep-tissue damage.

STAGE 3 pressure injuries represent full-thickness skin loss. Subcutaneous fat may be visible, but bone, tendons or muscle are not exposed. Thick yellow tissue (slough) may be present, but this does not obscure the depth of tissue loss. There may be undermining and tunnelling of the wound (i.e. the wound is deeper than it appears on the surface of the skin).

The depth of a Stage 3 pressure injury varies depending on where it is located anatomically. A pressure injury on the bridge of the nose, ear, scalp and ankle does not have subcutaneous tissue and Stage 3 pressure injuries can be shallow. In contrast, areas of significant adiposity or fatty tissue can develop extremely deep Stage 3 pressure injuries, although bone and/or tendon is not visible or directly palpable.

STAGE 4 pressure injuries are the most severe and represent full-thickness tissue loss with exposed bone, tendon or muscle. Thick yellow tissue (slough) or black necrotic tissue may be present in some parts of the wound bed. Often there is undermining and tunnelling of the adjacent tissue.

The depth of a Stage 4 pressure injury varies by anatomical location. The bridge of the nose, ear, scalp

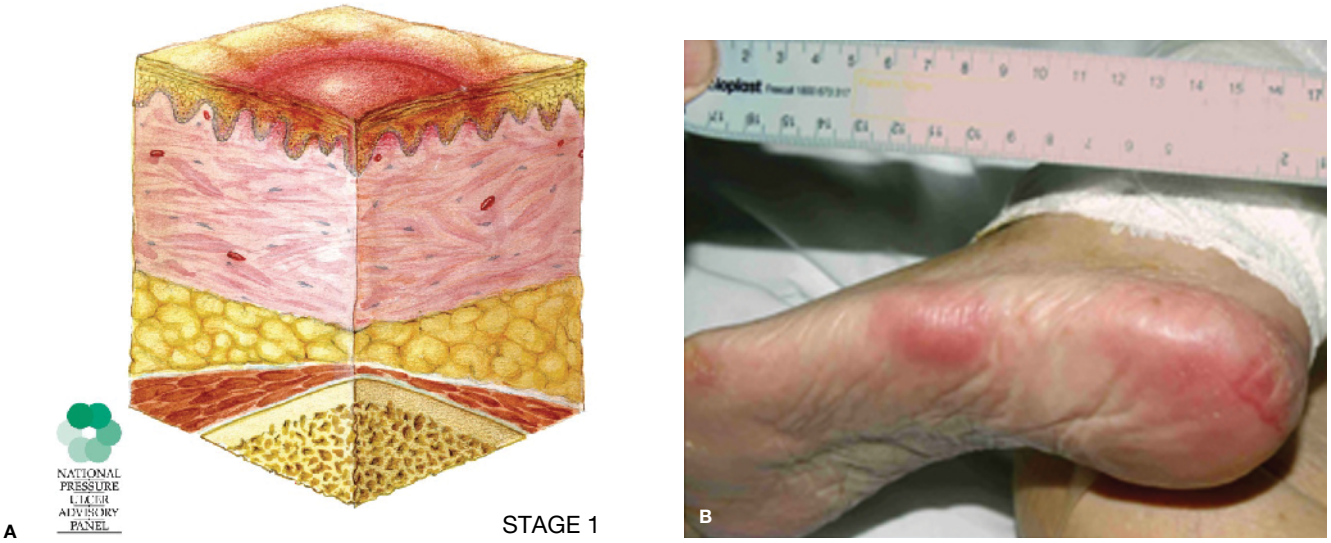


Figure 26-23 Stage 1 pressure injury.

© National Pressure Ulcer Advisory Panel (NPUAP). Used with permission. Image courtesy Wound Healing Community Outreach Service, Queensland University of Technology.

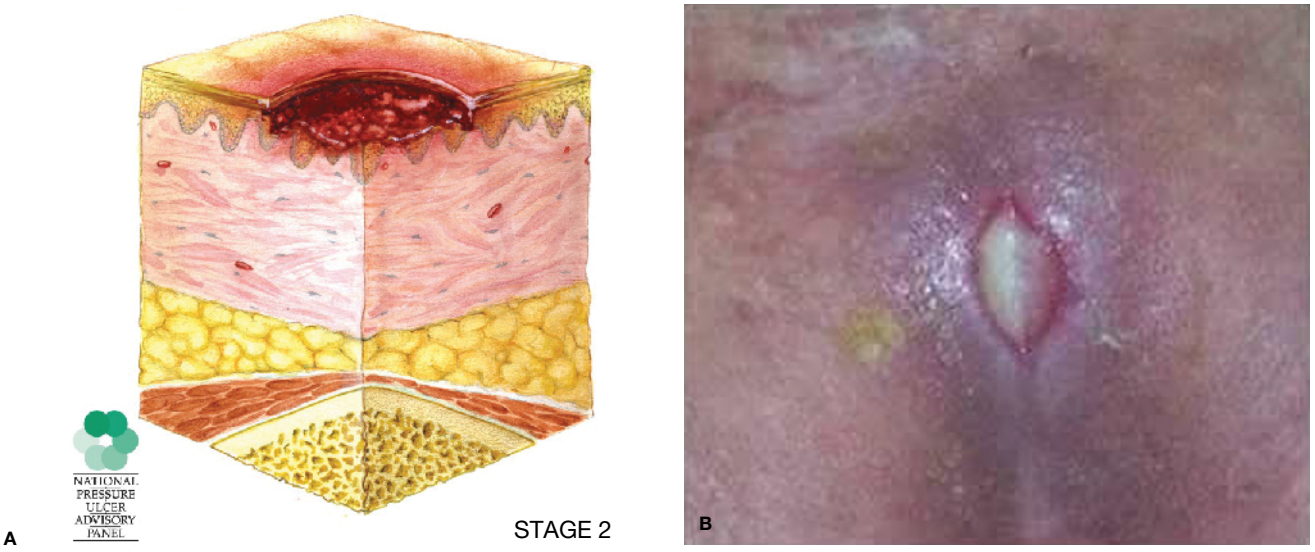


Figure 26-24 Stage 2 pressure injury.

© National Pressure Ulcer Advisory Panel (NPUAP). Used with permission. Image courtesy Wound Healing Community Outreach Service, Queensland University of Technology.

and ankles do not have subcutaneous tissue, so ulcers in these locations can be shallow. Stage 4 pressure injuries can extend into muscle and/or supporting structures (e.g. fascia, tendon or joint capsule), making osteomyelitis (infection in the bone) possible. Exposed bone/tendon is visible or directly palpable.

In addition to the above stages of pressure injuries, there are two other categories of tissue damage. *Suspected deep tissue injury* presents as purple or maroon discoloured intact skin or a blood-filled blister due to damage of the underlying soft tissue from pressure and/or shear. The area may be preceded by tissue that is painful, firm, mushy, boggy, or warmer or cooler as compared with adjacent tissue.

Deep-tissue injury may be difficult to detect in individuals with dark skin tones. The tissue injury may develop into a thin blister over a dark wound bed. The wound may further evolve and become covered by thin eschar. Changes may develop rapidly, exposing additional layers of tissue, even with optimal treatment.

Unstageable pressure injuries present as full-thickness tissue loss in which the base of the wound is covered

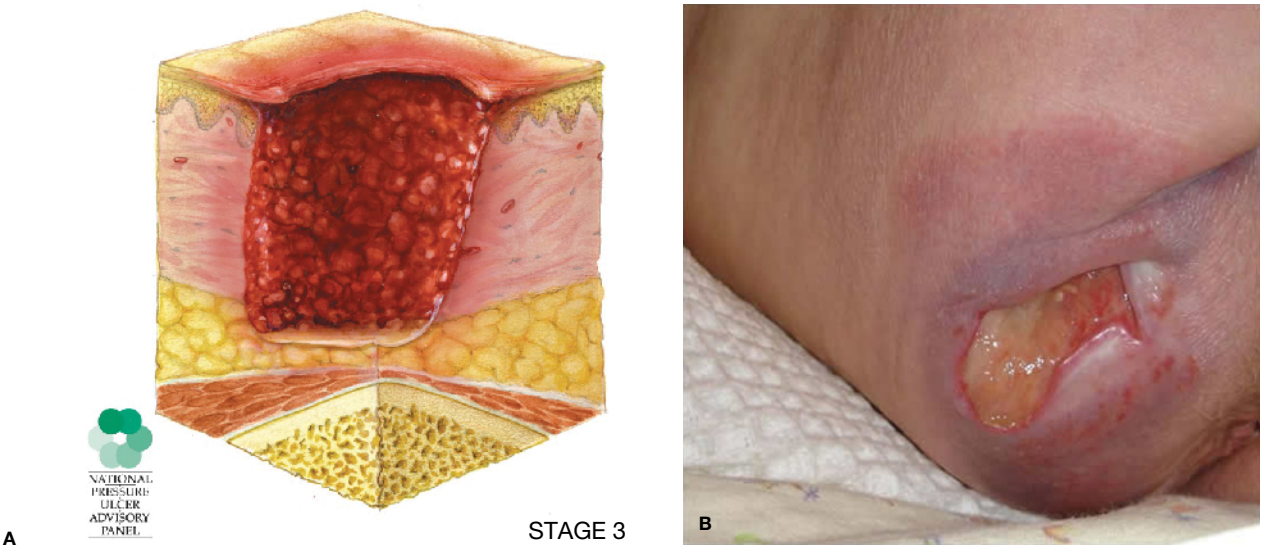


Figure 26-25 **Stage 3 pressure injury.**

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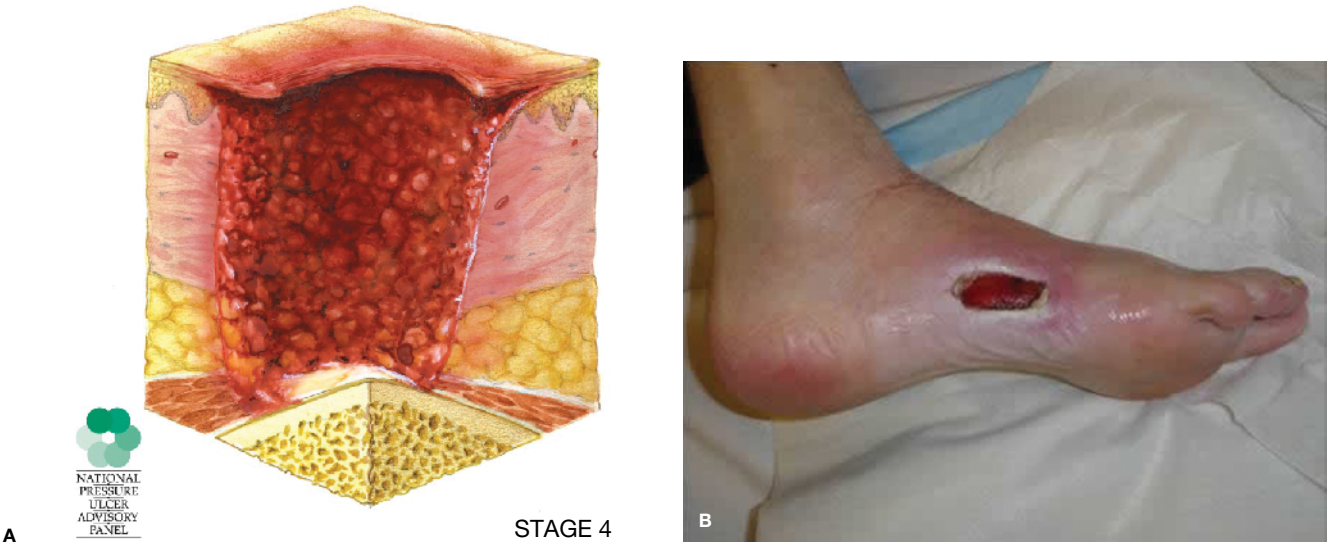

Figure 26-26 **Stage 4 pressure injury.**

© National Pressure Ulcer Advisory Panel (NPUAP). Used with permission. Image courtesy Wound Healing Community Outreach Service, Queensland University of Technology.

by thick yellow, tan, grey, green or brown tissue and/or eschar (tan, brown or black) in the wound bed. Until enough slough and/or eschar is removed to expose the base of the wound, the true depth, and therefore stage, cannot be determined. Stable (i.e. dry, adherent, intact without erythema/redness) eschar on the heels serves as 'the body's natural (biological) cover' and should not be removed.

There are limitations to the staging system for pressure injuries, including the following:

- Reactive hyperaemia may be mistaken for a Stage 1 pressure injury. The presence of non-blanching erythema requires the patient to be repositioned off the area of redness and reassessed in 26 minutes before diagnosing a Stage 1 pressure injury (Queensland Health 2009).
- Stage 1 pressure injury can be difficult to identify in patients with dark-coloured skin (see Figure 26-29).

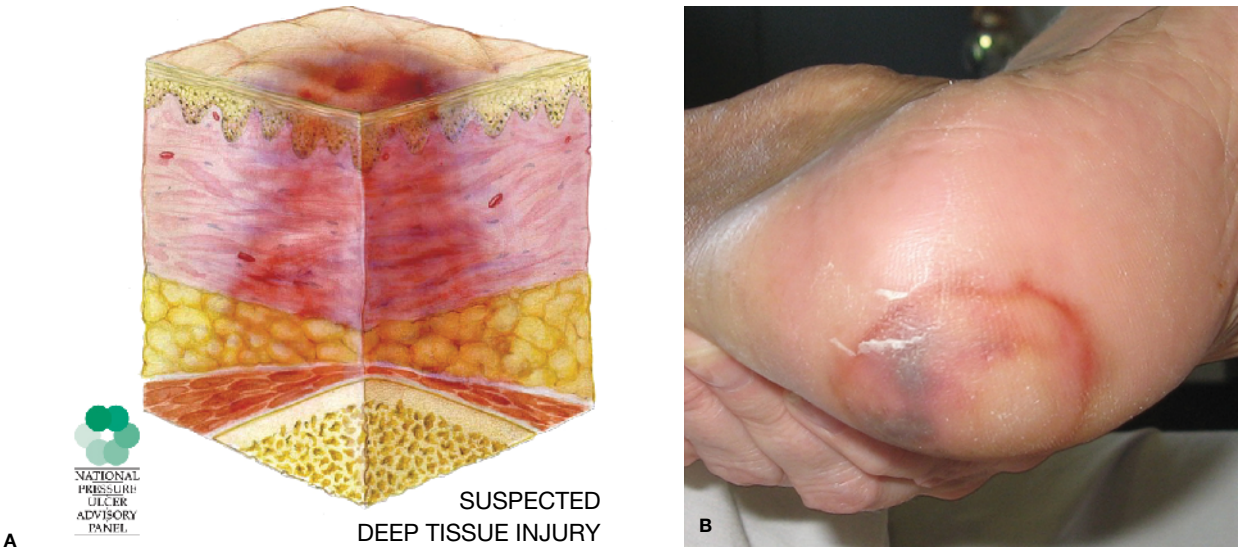

Figure 26-27 Suspected deep-tissue injury.

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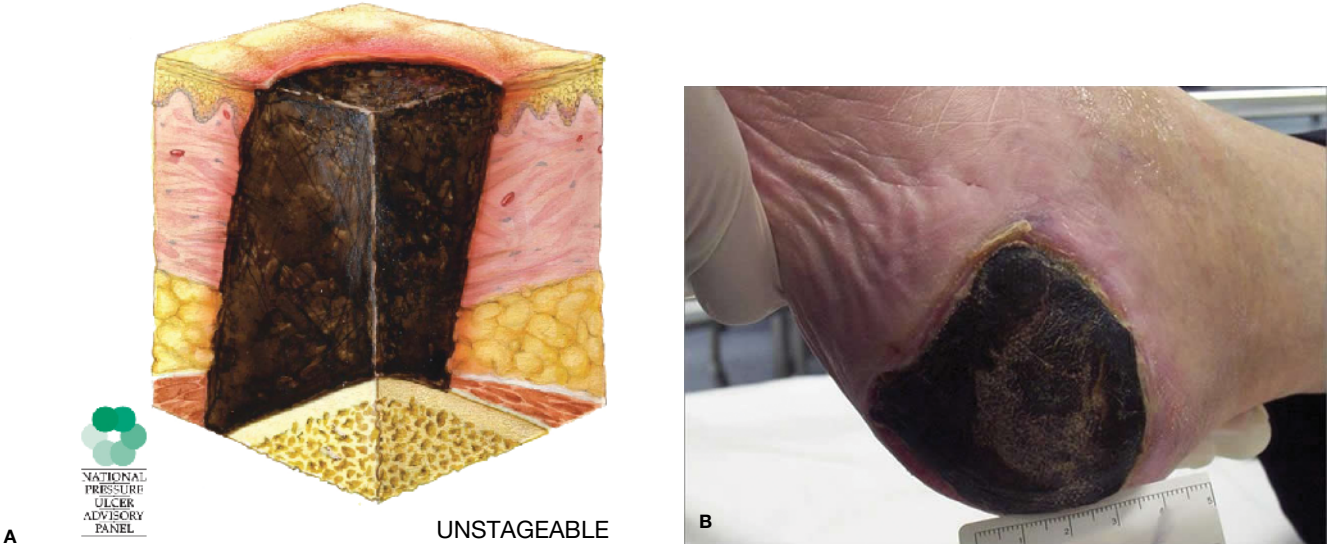

Figure 26-28 Unstageable pressure injury.

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- Necrotic tissue (eschar or slough) can conceal the extent of tissue injury, so should be debrided where possible to stage the degree of pressure injury correctly and then be reclassified once debridement has occurred.
- Reverse staging of a healing injury is not generally acceptable.
- The progress of pressure injury healing should be documented using objective parameters such as size, depth, amount of necrotic tissue, the amount of exudate and presence of granulation and epithelial tissue.
- The staging system depends on visual observation of tissue involvement. Factors such as location, wound dimensions, description of wound bed, edge of the wound, condition of periwound skin, pain and other factors which may delay wound healing should also be assessed (Australian Wound Management Association 2012).

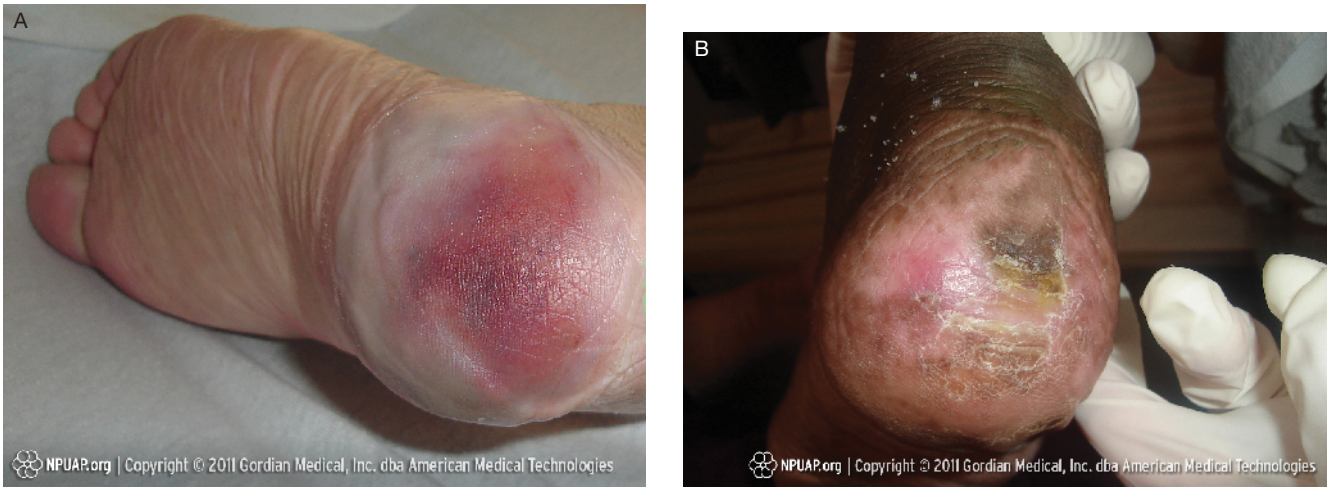

Figure 26-29 Comparison of Stage I pressure sores in patients with lightly and darkly pigmented skin.

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Sites of pressure injuries

All parts of the body are at risk of pressure injury. The most common sites are those over bony prominences, as shown in Figure 26-30.

Risk assessment

In order to identify patients at risk of pressure injury, patients must all be screened for risk using an acceptable pressure ulcer risk assessment tool, on admission and regularly throughout their episode of care (Queensland Health 2009). Pressure ulcer risk assessment tools have

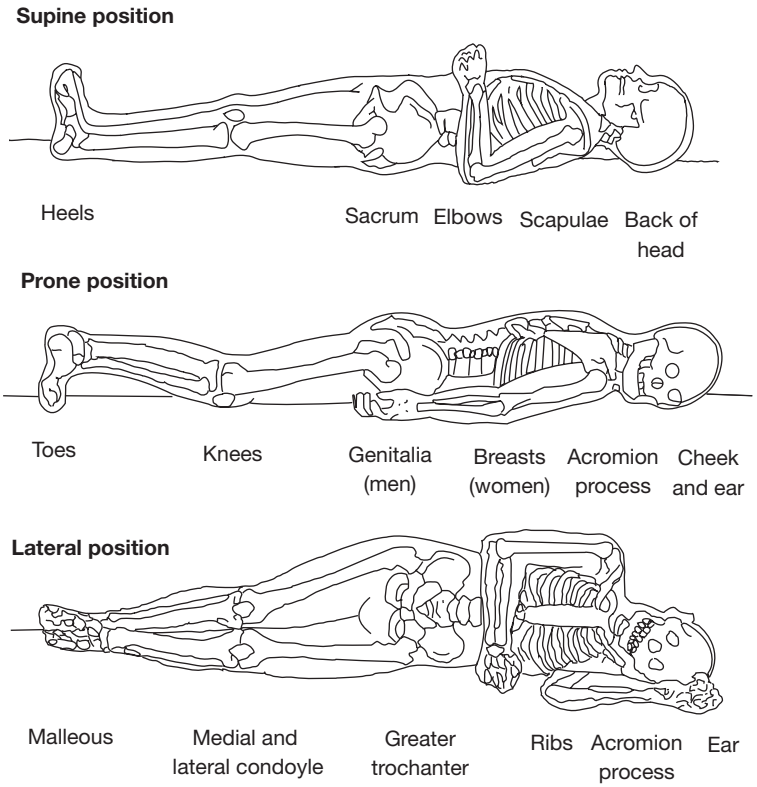

Figure 26-30 Bony prominences most frequently underlying pressure ulcer.

Grey J, Enoch S 2006 Pressure ulcers. Br Med J 332(7539):472–75.

been developed to assist in the identification and assessment of patients at risk for pressure injury. Examples of risk assessment tools include the Waterlow, Braden and Norton tools (copies of each of these tools are available from the Australian Wound Management Association guidelines; see *Online resources*). Risk assessment tools commonly use a rating scale to weight the severity of risk as *no risk*, *low*, *medium* or *high risk* (Queensland Health 2009). Risk assessment tools also commonly address risk factors such as mobility, nutritional status, sensory impairment, the level of consciousness, neurological status and incontinence (Queensland Health 2009). The presence of any condition that limits mobility to the point where a patient is unable to move independently or change position to relieve pressure means that the patient is automatically 'at risk'.

Skill 26-4 demonstrates how to perform an assessment to identify patients at risk of pressure injury; this risk assessment is part of the admission process and ongoing preventative management for each patient (AWMA 2012).

SKILL 26-4

Assessment for risk of pressure injury

Delegation considerations

The management and prevention of pressure injuries can be undertaken by all healthcare professionals. Check organisational policies regarding which wound care interventions can be delegated to health workers. The assessment of a person at risk for or with a pressure injury requires the problem-solving and knowledge-application skills of a registered nurse.

Equipment

- Pressure injury risk assessment tool

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. A comprehensive risk assessment for pressure injuries should be completed on admission for every patient using a risk assessment tool. Reassessment should be performed at the following intervals: • Acute care – at least every 24 hours or sooner if the patient's health condition changes • Long-term care – weekly for 4 weeks, then monthly in high care and quarterly in low care or whenever the patient's condition changes • Home care – weekly or at every nurse visit (if visiting less than weekly) and in response to changes in the patient's condition.	Document all skin assessments using a validated risk assessment tool to aid communication between professionals. Ongoing assessment of the skin is necessary to detect early signs of pressure damage.
2. Identify patient's risk of pressure injury including: • Alteration in mobility and activity – Contractures – Fractures – Injury – Neurological disease/deficit – Pain	

STEPS	RATIONALE
• Malnutrition – Dehydration – Oedema – Protein insufficiency – Weight loss – Obesity • Moisture – Drainage (fistulae, wounds) – Incontinence (urine, faeces) – Perspiration • Alteration in sensation and consciousness – Central nervous system injury – Cerebrovascular disease – Degenerative neurological disease – Drugs e.g. steroids, cytotoxics – Major surgery – Spinal cord injury • Comorbid conditions – Chronic heart failure – Chronic respiratory disease – Circulatory disease – Diabetes – Immune deficiency states – Impaired tissue oxygenation e.g. anaemia, smoking – Metastatic carcinoma – Peripheral arterial disease. Record the patient's level of risk (no risk/at risk/high risk/very high risk) on the risk assessment chart, patient's care plan and in the medical record.	
3. Skin assessment includes:	
a. Prepare the environment, e.g. close curtains.	Ensures privacy and patient comfort.
b. Explain procedure to patient.	Reduces anxiety.
c. Begin assessment with questioning and inspection to identify any existing wounds (refer to Table 26-4).	
d. Position patient comfortably to enable inspection of skin and ensure adequate lighting. Remove clothing as necessary to fully expose each area of skin being inspected.	

STEPS	RATIONALE
e. Conduct a head-to-toe skin assessment with particular focus on skin covering bony prominences, e.g. sacrum, heels and greater trochanters (hips). Inspection involves observation of the skin and palpation with hands to detect the presence of moisture and colour changes and temperature differences in areas of the skin being inspected.	
Check parts of the body covered by anti-embolic stockings, areas of the body where pressure, friction and shearing is exerted in the course of daily activities and other areas affected by equipment, footwear and clothing, i.e. skin around or under prosthetics, orthotics, skin traction, oxygen appliances, intravenous access, tapes and other objects in contact with the skin.	Many different types of medical devices have been reported as having caused pressure injury.
Look for the following characteristics: • Reactive hyperaemia: when a red mark is found, relieve the pressure, check for blanching (the skin whitens under light finger pressure, which indicates the microcirculation is intact). Review in 26 minutes and the redness should have faded substantially. If the skin does not blanch or the hyperaemia (redness) does not fade, then a stage 1 pressure injury has been identified. • Localised heat, oedema and induration.	Localised heat, oedema or induration (hardness), especially in darkly pigmented individuals, are early warning signs for pressure injury development.
f. Ask patient to identify any area of discomfort or pain.	A number of studies have identified pain as a major factor for patients with pressure injuries, and pain over the site is a precursor to tissue breakdown.
4. Reposition patient comfortably following procedure.	Promotes patient comfort.
5. Document all skin assessments using a validated risk assessment tool.	Documentation and communication allows for the timely intervention of preventive and therapeutic measures. This minimises the frequency of occurrence and the severity of pressure damage.
6. If evidence of pressure damage is noted, implement appropriate pressure off-loading and management strategies.	Timely implementation of pressure off-loading and management strategies is essential. Patients identified at risk for or with a pressure injury benefit from pressure off-loading strategies and a pressure injury prevention plan to reduce the risk of further tissue damage.
7. Document all relevant information in patient's chart.	Provides relevant information about the patient and the wound, monitors healing process, guides wound management of the person as a whole, evaluates the success of management and fulfils legal requirements.

An assessment to determine risk for pressure injury should be performed (Queensland Health 2009):

- on admission to the healthcare facility and regularly throughout the length of stay or episode of care. For patients in acute care, it is recommended that assessment is performed on admission and at least every 24 hours, or sooner if a patient's condition changes. In long-term care, assessment should be performed on admission, weekly for 4 weeks, and then quarterly and whenever the patient's condition changes. Patients in the community should be assessed on admission and at every nurse visit
- following any changes in a patient's condition that places that person at risk, for example, a sudden deterioration in health condition
- prior to, during and following prolonged procedures which involve reduced mobility and hardened surfaces.

All patients identified at risk of developing a pressure injury should have a comprehensive preventative management plan in place which aims to maintain tissue tolerance to pressure and protect the individual against the forces of pressure, shear and friction.

Prevention strategies

The Australian Wound Management Association (AWMA 2012) has recently released clinical guidelines to guide clinicians in identifying patients at risk and in selecting appropriate preventive interventions (see Figure 26-31). These guidelines are freely available online (see *Online resources*).

BOX 26-2 The Braden Scale for predicting pressure sore risk

Patient's name		**Evaluator's name**		**Date of assessment**
Sensory perception Ability to respond meaningfully to pressure-related discomfort	*1. Completely limited* Unresponsive (does not moan, flinch or grasp) to painful stimuli due to diminished level of consciousness or sedation OR Limited ability to feel pain over most of body surface	*2. Very limited* Responds only to painful stimuli Cannot communicate discomfort except by moaning or restlessness OR Has a sensory impairment which limits the ability to feel pain or discomfort over half of body	*3. Slightly limited* Responds to verbal commands, but cannot always communicate discomfort or need to be turned OR Has some sensory impairment that limits ability to feel pain or discomfort in 1 or 2 extremities	*4. No impairment* Responds to verbal commands Has no sensory deficit that would limit ability to feel or voice pain or discomfort
Moisture Degree to which skin is exposed to moisture	*1. Constantly moist* Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned	*2. Very moist* Skin is often, but not always, moist Sheets must be changed at least once a shift	*3. Occasionally moist* Skin is occasionally moist, requiring an extra sheet change approximately once a day	*4. Rarely moist* Skin is usually dry, sheets require changing only at routine intervals
Activity Degree of physical activity	*1. Bedfast* Confined to bed	*2. Chairfast* Ability to walk severely limited or non-existent. Cannot bear own weight and/or must be assisted into chair or wheelchair	*3. Walks occasionally* Walks occasionally during the day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair	*4. Walks frequently* Walks outside the room at least twice a day and inside room at least once every 2 hours during waking hours

Patient's name		**Evaluator's name**		**Date of assessment**	
Mobility Ability to change and control body position	*1. Completely immobile* Does not make even slight changes in body or extremity position without assistance	*2. Very limited* Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently	*3. Slightly limited* Makes frequent though slight changes in body or extremity position independently	*4. No limitations* Makes major and frequent changes in position without assistance	
Nutrition Usual food intake pattern	*1. Very poor* Never eats a complete meal. Rarely eats more than one-third of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement OR Is nil by mouth and/or maintained on clear liquids or intravenous fluids for more than 5 days.	*2. Probably inadequate* Rarely eats a complete meal and generally eats only about half of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement OR Receives less than optimum amount of liquid diet or tube feeding	*3. Adequate* Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) each day. Occasionally will refuse a meal, but will usually take a supplement if offered OR Is on a tube feeding or total parenteral nutrition regimen that probably meets most nutritional needs	*4. Excellent* Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation	
Friction and shear	*1. Problem* Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures or agitation leads to almost constant friction	*2. Potential problem* Moves feebly or requires minimum assistance. During a move, skin probably slides to some extent against sheets, chair, restraints or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down	*3. No apparent problem* Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during the move. Maintains good position in bed or chair at all times		
				TOTAL SCORE	

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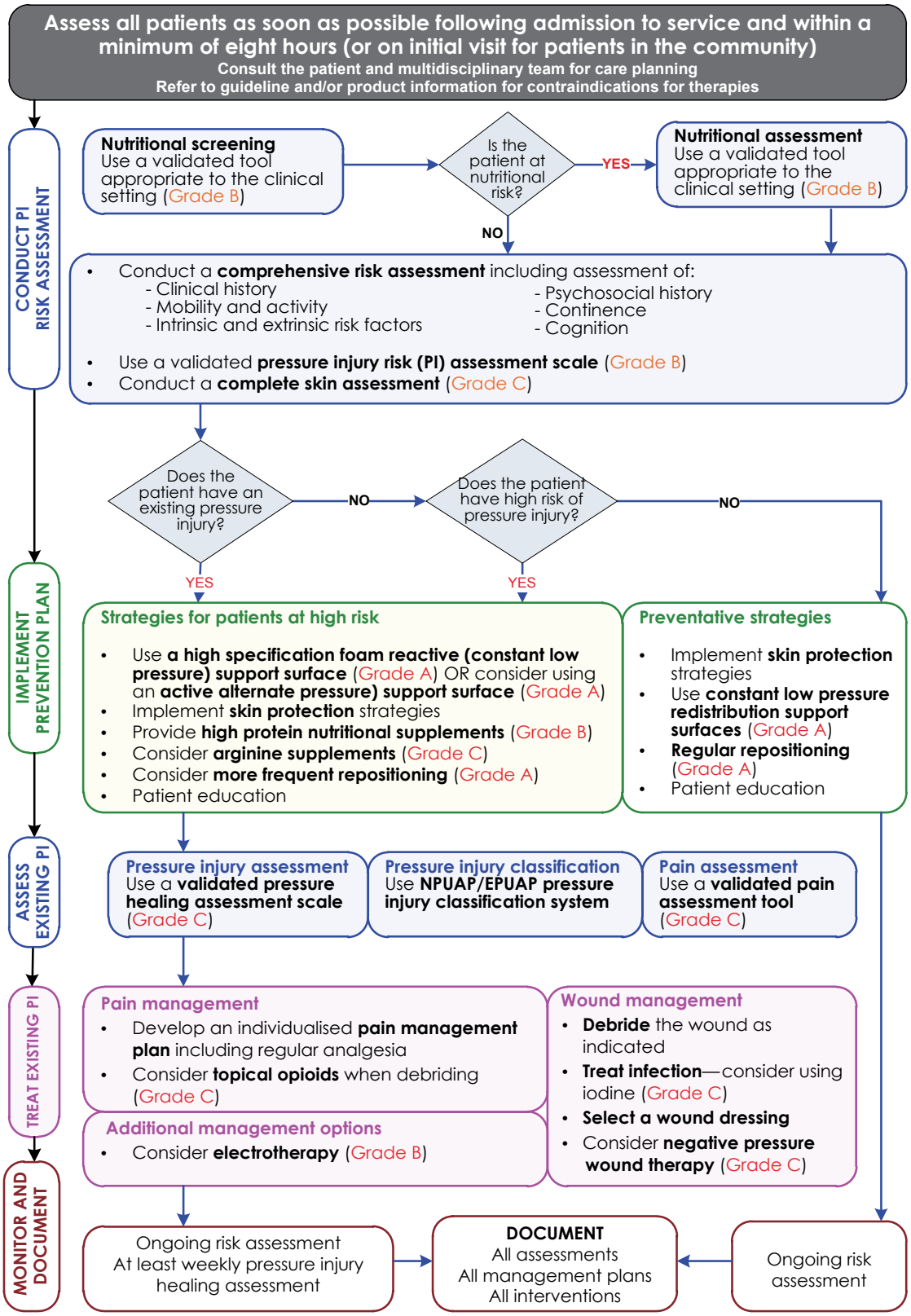


Figure 26-31 **Flow chart for the prevention and management of pressure injury.**

Australian Wound Management Association 2012 Pan Pacific clinical practice guideline for the prevention and management of pressure injury. Cambridge Media, Osborne Park, WA, p. 12. Online. Available: www.awma.com.au/publications/2012_AWMA_Pan_Pacific_Guidelines.pdf; accessed 4 Jul 2012. Reproduced with the permission of the AWMA. All rights reserved.

There are many strategies that can be implemented to prevent pressure injuries.

- *Maintain regular skin inspections every day and with each repositioning or turn for signs of pressure injury.* On inspection, particular attention should be given to skin over bony prominences, for example, the sacral area, heels and greater trochanters, areas of the body where pressure, friction and shearing is exerted during normal daily activities and areas affected by equipment, footwear and clothing.
- *Skin hygiene should be maintained to preserve skin integrity.* The normal pH of the skin is between 4 and 6.8; maintaining a stable skin pH reduces the risk of infection and skin breakdown. Use of soap-free, pH-neutral cleansers and emollients keep the skin in better condition. Skin that is dry is less likely to be able to withstand the effects of friction and shear. Providing a stable environmental temperature and avoiding extremes of hot and cold decreases the risk of pressure injuries. Limit the patient's exposure to moisture. Ensure limited or no exposure to excessive moisture such as perspiration, urinary and/or faecal incontinence or wound fluid.
- *Avoid rubbing or massaging bony prominences.* Massaging or rubbing bony prominences increases the risk of tissue damage. Pillows and foam wedges can be used to reduce pressure on bony prominences if positioned correctly. Avoid using foam rings or donuts, as these increase the risk of pressure damage by pushing or forcing the tissue through a narrow opening. Discourage patients from sitting or lying in one position. Repositioning should occur every 15 to 60 minutes if possible. Use positioning and turning schedules where possible, and consider the patient's medical condition, comfort and overall plan of care as well as the support surface used.
- *Prevent shear and friction.* Elevate the foot of the bed 20 degrees when sitting to prevent the patient from sliding; also, limit the amount of time patients spend with the head of the bed elevated. Use of correct manual handling techniques, including slide sheets or equipment to transfer patients, reduces the risk of friction and shear.
- *Monitor the patient's nutrition and hydration.* Refer to a dietitian if you are concerned about the patient's nutritional status.

Working as part of a team is important to ensure that appropriate pressure ulcer-prevention strategies are implemented. Your team includes the patient, family members, general practitioner, nurses, care staff and allied health professionals. Education of the patient, family members and other healthcare professionals is essential so that they understand the causes of skin damage.

Support surfaces

The optimal support surface is one that relieves pressure, shear and friction and maintains a stable skin temperature (AWMA 2012). Support surfaces should distribute bodyweight over a large surface area or totally remove pressure from the body surface, thereby reducing point pressure and tissue damage. Support surfaces alone do not eliminate the risk of pressure injury, as pressure injury prevention requires comprehensive clinical care, regular repositioning and ongoing assessment.

There are many support surfaces available, such as mattresses, overlays or chair cushions, made up of a variety of different fabrics, including foam, gel or air. *Comfort equipment* includes overlays, pads, cushions and sheepskins; these are mostly used for comfort and in combination with existing mattresses or chairs that a patient is using. They may provide a degree of pressure reduction and reduce shearing and friction because of their low-resistance or non-abrasive properties. Comfort devices are suitable for low-risk patients who are relatively mobile and require minimal intervention.

Constant low-pressure devices conform to body contours and aim to redistribute weight over a wider area, thereby reducing tissue interface pressure (AWMA 2012). These devices include foam- or fibre-filled mattresses and overlays, water beds, gel pads, air overlays and mattresses with both static/constant air and low-air-loss devices (AWMA 2012). These devices may be powered, mechanical devices or non-powered, non-mechanical devices. Constant low-pressure devices may be appropriate for medium-risk patients who are able to reposition themselves or who receive frequent repositioning.

Alternating-pressure devices generate alternating high and low pressure between the body and the support surface by periodically deflating air cells under the body and redistributing the pressure on the tissue, which encourages reperfusion of previously supported areas (Queensland Health 2009). These devices are available as overlays or single or multi-layered mattress replacements. They are suitable for high-risk patients who are immobile or obese.

Specialty beds combine a bed and sleeping surface and are designed for patients at very high risk for pressure injury.

Pressure injury prevention and management requires a collaborative approach. The patient's risk status and risk factors provide the basis for the formation of an individualised prevention and management plan. The management plan should provide specific details of what

CLINICAL EXAMPLE

Mr Bukowski re-presents 6 months after the skin tear on his left arm with a new wound located on his left lateral leg (gaiter region). The wound is failing to heal despite using the strategies that were recommended to treat his skin tears. Mr Bukowski states that the wound has been present for approximately 4 months and started as a minor skin tear. The wound has gradually been increasing in size and it has been leaking a lot. He says that sometimes he has to change the dressings every day because it leaks that much. Mr Bukowski has noticed that his skin is very dry and scaly and that his skin looks like it is going rusty. He reports that the wound is sometimes painful, particularly after he has been standing for a while, and that the pain is worse when he first gets out of bed in the morning and by late in the afternoon. He has also noticed that his ankles have become quite swollen and finds that elevating his legs can help to reduce his pain and swelling. Mr Bukowski reports feeling a bit 'out of sorts'; he can't go out like he used to because he is worried that others can smell his wound, he is fearful that the leakage will ruin his good clothes and his wound might get worse. He hasn't told his daughter about his wound because he doesn't want to worry her.



Figure 26-32 **Mr Bukowski's leg ulcer.**

Courtesy Wound Healing Community Outreach Service, Queensland University of Technology.

care is required, who is responsible for that care, frequency of turning, equipment required, referrals and expected outcomes (AWMA 2012). Clinical interventions must be monitored regularly and documented and communicated to staff, patients, families and carers.

• CRITICAL REFLECTION POINT

Based on the clinical scenario above, consider the following questions:

- **What factors are likely to have led to the development of this leg ulcer?**
- **Based on the history and clinical examination data, what type of leg ulcer might this be?**
- **Is this wound healing by primary or secondary intention?**
- **What characteristics would indicate if this wound was infected?**
- **What is the predominant tissue type in the wound bed?**
- **How would you describe the wound edges?**

Ulcers

Leg ulcers

A leg ulcer is a wound that occurs between the knee and ankle which takes more than 4 weeks to heal. There are two common types of leg ulcers: *venous* and *arterial* leg ulcers. Assessment is the key to effective management of leg ulcers, yet many people with leg ulcers have never had a specialist assessment to identify the type of leg ulcer they are suffering from. Hence, leg ulcers may last for many years and, even if they heal, may soon break out again if the correct treatment and prevention strategies have not been followed.

Every leg ulcer has key features or characteristics that help determine the type of leg ulcer the person is suffering from. The key characteristics for the most common types of leg ulcers are outlined in Table 26-17 on p. 740.

VENOUS LEG ULCERS are the most common type of leg ulcer. They occur because of high blood pressure in the veins in the lower limb (known as *venous hypertension*). Veins carry blood from the legs back to the heart. Veins in the lower leg have one-way valves to prevent blood from running backwards, and when the calf muscles contract, blood is moved along the veins back towards the heart.

However, sometimes the valves in the veins or the calf muscles fail to work properly, for a number of different reasons (e.g. damage from a past clot in the vein), leading to chronic venous insufficiency or venous disease. The constant high pressure in the veins eventually causes fluid to leak out of the veins and into the surrounding tissues and skin. Although the reason for ulcer formation is not fully understood, the combination of high pressure in the veins and particles in the fluid forced into the tissues causes inflammation. This results in the skin easily breaking down and forming an ulcer. Table 26-15 highlights some of the risk factors for venous leg ulcers.

Once you have identified the signs and symptoms of a venous leg ulcer, you then need to determine the appropriate treatment. Key evidence-based management strategies for venous leg ulcers are summarised here.

- *Dressings* used to treat venous leg ulcers vary depending on the condition of the ulcer and the goals of treatment. Dressings should maintain a moist wound-healing environment, manage wound leakage (exudate), protect the skin around the ulcer, be non-adherent to reduce trauma on removal, and be cost-effective, acceptable to the patient and able to be changed less often where possible.

TABLE 26-15 Risk factors for venous leg ulcers

Risk factor	Explanation
Age	Blood flow decreases as a person ages, and decreased mobility leads to the calf muscles becoming less effective and not being used as much as they should be
Obesity	Excess weight, particularly around the waist and thighs, puts extra pressure on the veins and they have to work harder to move blood flow back towards the heart. Note that multiple pregnancies may also be a cause of excess weight
Varicose veins	The one-way valves that stop blood from travelling backwards in the veins stop working and this leads to pooling of blood in the lower legs
Past deep-vein thrombosis or trauma to lower limbs	A history of deep-vein thrombosis (i.e. blood clot) or trauma may result in permanent damage to the veins
Jobs that involve sitting or standing for long periods of time	Occupations that involve sitting or standing for long periods of time may result in less-effective blood flow through the veins and pooling of blood in the lower legs
Family history or congenital valvular incompetence	There is a strong link between family history and leg ulcers. In addition, in rare cases some people are born with problems that affect their veins, placing them at higher risk of venous disease
Health conditions	Disorders such as congestive cardiac failure lead to swelling of the lower limbs because the heart is not able to process blood flow effectively

- *Apply graduated compression bandaging.* The key to healing a venous leg ulcer is to treat the underlying cause (i.e. reduce the high blood pressure in the veins). Graduated compression bandaging works by improving venous return, reducing swelling in the lower limb and improving foot- and calf-muscle pump action. Bandages are applied from the base of the toes to just below the knee. The bandage is said to be graduated because the *ankle* is smaller than the calf. Therefore, the pressure exerted by the bandage at the ankle is higher than that applied at the calf. You need special training in how to apply graduated compression bandages correctly because if they are applied incorrectly they can cause significant damage to the patient's circulation and may even make the ulceration worse.
- *Apply compression stockings.* Graduated compression stockings for life after wound healing help to prevent venous leg ulcers from recurring, because they continue to provide compression to treat the underlying cause of the leg ulcers (i.e. poor circulation). A venous leg ulcer is really a symptom of an underlying disease process. Compression stockings can also be used to prevent venous leg ulcers.

Failure to reach an accurate diagnosis and/or to recognise the signs and symptoms of venous disease may result in the unsafe application of the graduated compression bandaging.

ARTERIAL LEG ULCERS are less common than venous leg ulcers and are the result of peripheral arterial disease. Arteries supply blood and oxygen to the lower limbs; arterial leg ulcers result from inadequate blood supply and oxygen in the arteries. If the blood supply to the lower legs is poor, the leg is starved of oxygen and nutrients; the skin fails to function normally and an ulcer may develop. A patient with arterial disease may have very cool or cold feet, the skin may be pale, blue (cyanosed) or dusky red in colour and they may complain of pain in the foot or calf muscle. Pain is often worse at night when the lower leg is elevated in bed and pain is only relieved when the legs are lowered. During exercise, the muscles in the lower leg need more oxygen; when a person has arterial disease, the blood supply is decreased and pain occurs in the foot or calf muscle on exercising. This pain is known as *intermittent claudication*. Table 26-16 outlines the patient risk factors for developing arterial leg ulcers.

Patients with arterial leg ulcers may benefit from a review by a specialist. This is because restoring blood flow by revascularisation is the intervention most likely to heal arterial leg ulcers.

Improving oxygenation of the wound environment promotes healing. Steps to improve oxygen supply to the tissues include avoidance of dehydration, cold, stress and pain. Dressings used to treat arterial leg ulcers vary depending on the condition of the ulcer and goals of the treatment. Topical antimicrobial dressings may be helpful to prevent infection.

Controlling risk factors known to affect the arteries is essential. For example, the healthcare professional should try to ensure that blood glucose levels are kept within normal ranges, blood pressure is controlled, cholesterol levels are reduced, medications are reviewed and the

TABLE 26-16 Risk factors for arterial leg ulcers

Risk factor	Explanation
Atherosclerosis	Hardening, narrowing or blockage of the arteries because fatty deposits (plaques) or cholesterol reduces blood supply to the lower leg
Smoking	Cigarette smoking is a well-known risk factor for atherosclerosis and heart disease
Hypertension	High blood pressure leads to hardening of the arteries
Diabetes	Poorly controlled diabetes leads to high cholesterol levels in the blood and increased the risk of hardening of the arteries. There is also an increased risk of strokes, heart disease and ulceration of the lower limbs
High cholesterol	High cholesterol is a major risk factor for hardening of the arteries
Stress	There is a link between high levels of stress and arterial disease
A history of heart disease, heart attack or stroke	These conditions increase the risk of further problems with the peripheral arteries
Obesity	Excess weight, particularly around the waist and thighs, puts extra pressure on the arteries and the heart has to work harder to move blood flow around the body

patient has a healthy and balanced diet, stops smoking and is encouraged to maintain a healthy weight relative to their height.

Diabetic foot ulcers

A **diabetic foot ulcer** is an ulcer located on the foot and is associated with a loss of protective sensation (neuropathy) and/or the presence of ischaemia in a patient with diabetes. Diabetic foot ulcers are more likely to occur if the patient has uncontrolled or prolonged high blood-sugar levels (hyperglycaemia).

Once you have identified the signs and symptoms of a diabetic foot ulcer, you then need to determine the correct treatment. Key evidence-based management strategies for diabetic foot ulcers may include the following:

- *Recommend a medical review*: patients with diabetic foot ulcers may benefit from review by a specialist.
- *Use a team approach to care*: care of diabetic foot ulcers should be undertaken by a multidisciplinary team including podiatrists, orthotists, wound-care specialists, the patient's doctor, an endocrinologist, a dietitian and a diabetic educator.
- *Ensure adequate oxygenation*: improving oxygenation of the wound environment promotes healing. Steps to improve oxygen supply to the tissues include avoidance of dehydration, cold, stress and pain.
- *Ensure off-loading of pressure points*: it is essential to review the patient's footwear and ensure that pressure is relieved. Otherwise, the wound will fail to heal. Areas of abnormal pressure distribution on the diabetic foot are usually located on the plantar aspect of the foot under the hallux, first and fifth metatarsal heads and under the heel (Grey et al 2006).
- *Apply suitable dressings*: dressings used to treat diabetic foot ulcers vary depending on the condition of the ulcer and goals of treatment. Topical antimicrobial dressings may be helpful at preventing infection.
- *Control risk factors:* controlling risk factors known to affect the arteries is essential. For example, try to ensure that blood glucose levels are kept within normal ranges, the blood pressure is controlled, cholesterol is reduced, medications are reviewed, and the patient has a healthy and balanced diet, stops smoking and is encouraged to maintain a healthy weight relative to their height.

Assessment and management

Being able to recognise the key signs and symptoms of the different types of ulcers is very important to help obtain an accurate diagnosis. The following steps may assist during clinical examinations to determine the aetiology of ulceration. Table 26-17 compares the key characteristics of venous, arterial and diabetic ulcers. Assessing these characteristics can assist you to determine the aetiology of ulceration.

Prevention strategies

Once you have learned how to assess and manage venous, arterial and diabetic foot ulcers, there are some important evidence-based strategies that can be put in place to reduce the risk of the ulcer recurring. Box 26-3 highlights some of the key prevention strategies.

TABLE 26-17 Characteristics of leg ulcers

Characteristic	Venous	Arterial	Diabetic
Location	Above the ankle bones, on the lower third of the leg in the calf muscle region 	Toes, shin or over pressure points (i.e. sites subjected to trauma, the rubbing of footwear and ankle bones) 	Sole of the foot, the toes or over pressure points such as the ball of the foot 
Depth	Shallow, affecting the epidermis and dermis	Usually shallow but may be deep	Usually shallow but may be deep and may have tracking or undermining (i.e. probes to tendon or bone)
Appearance	Ruddy or beefy red, granular appearance	Pale grey or yellow in colour with no evidence of new tissue growth. May also be black (necrotic) and tendons may be exposed	Red granular, pale grey or yellow in colour. May also be black (necrotic) and tendons may be exposed
Wound shape and margins	Flat and irregular, often resembling the shape of a cartoon figure or country 	Smooth, even or punched-out appearance. The shape of the wound may conform to injury if caused by trauma 	Calloused wound margins
Exudate	Moderate to heavy	Low to moderate	Low to heavy. An infected ulcer may have purulent, foul-smelling leakage
Surrounding skin	Ankle flare or small veins concentrated around the ankles 	Pale, shiny, taut skin Cold legs and feet even in a warm environment Absence of hair on the legs or toes Legs dusky red or blue (cyanosed) Blackened toe nails Tendon exposed in wound bed	Dry, calloused skin around wound margins Cold legs and feet, even in a warm environment Absence of hair on the legs or toes Evidence of previous foot ulcers or amputation

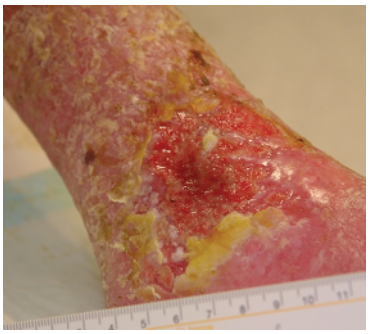
continued

TABLE 26-17 ***continued***

Characteristic	Venous	Arterial	Diabetic
	Varicose veins 		
	Oedema or swelling around the ankle or calf muscle region  Atrophie blanche or absence of pigmentation in the tissue (sometimes indicating a history of previous ulcers) 		Foot deformities such as Charcot's foot, hammer toes or clawed toes Thickened toenails Redness of the affected area when the legs are dependent or 'dangled' and pallor when the foot is elevated

continued

TABLE 26-17 ***continued***

Characteristic	Venous	Arterial	Diabetic
	Hyperpigmentation or discolouration of lower limb 		
	Hyperkeratosis (dry, flaky skin) 		
	Venous stasis eczema 		

continued

TABLE 26-17 ***continued***

Characteristic	Venous	Arterial	Diabetic
	Haemosiderin staining, or red blood cells which have died and then build up under the skin, staining the skin a brown colour 		
Pain	Ranges from no pain to severe, constant pain Pain is often worse after standing for long periods May be described as an achy, dull pain or a feeling of pressure Pain is usually relieved by elevating the limb above heart level because this relieves the pressure on the veins and reduces swelling	Often accompanied by severe cramping pain in the foot or calf muscle at rest when the legs are elevated Pain may also increase when walking short distances (known as intermittent claudication)	Often painless
Referral criteria	Uncertainty in the diagnosis Low or high ankle–brachial pressure Index (ABPI) (i.e. less than 0.9 or greater than 1.2) The ulcer is complicated (e.g. multiple aetiology such as arterial or rheumatoid disease) There are signs of infection, the ulcer or lower limb appears ischaemic and/or the wound can be probed to bone The ulcer deteriorates or fails to improve after 3 months The patient has symptoms which limit their lifestyle and quality of life (e.g. rest pain) and would benefit from surgical revascularisation		

• CRITICAL REFLECTION POINT

Think about how you would decide on the management of Mr Bukowski's leg ulcer:

- **How would you cleanse this wound?**
- **What type of management strategies would you employ for this type of leg ulcer? What dressing regimen would you choose at this point, and why? How would you manage the skin around the wound?**
- **What self-help advice would you give to Mr Bukowski? What strategies would you recommend to prevent leg ulcer recurrence in the future?**
- **Are there any other healthcare professionals that you would liaise with in this case?**

Malignant/fungating wounds

Malignant fungating or cancerous wounds are those that affect people with cancer. Fortunately, they occur infrequently, but are typically described as a devastating, overwhelming and distressing experience (Alexander 2010). They are caused by the infiltration of the skin by a local tumour such as a squamous-cell carcinoma or melanoma; haematological malignancy such as cutaneous T-cell lymphoma; or metastatic spread from a primary tumour, for example, breast cancer where metastasis occurs along tissue planes, capillaries or lymph vessels (Adderley & Smith 2007, Naylor 2002). Lesions are characterised by a process of both *ulcerative* (crater-like) and *proliferative* (nodular or cauliflower-shaped) growth that can cause extensive damage to the skin and surrounding structures (Lewellyn et al 2002).

Although rare, malignant changes may develop in chronic wounds (Marjolin's ulcer) and are most commonly associated with burn-scar ulcers, pressure or venous ulcers (Naylor 2002). This type of malignancy is usually aggressive and has a high rate of metastatic spread

BOX 26-3 Leg ulcer prevention strategies

- Follow up and check the skin regularly.
- Apply a pH-neutral moisturiser to the skin at least twice daily.
- Ensure shoes are well-fitting, soft and comfortable.
- Be extremely careful when cutting toenails. Preferably, a podiatrist should do this.
- Avoid soaking the feet in hot water, using heating pads and applying harsh topical skin cleansers.
- Protect the toes and heels of patients with decreased mobility by using effective pressure-relief devices such as foam or gel pads.
- Use leg-protection devices to avoid injury (e.g. limb protectors or long trousers).
- Keep the lower legs warm. Passive warming of the lower legs and feet, such as covering the legs with a blanket, improves blood supply (perfusion). However, do not use hot water bottles, electric blankets or foot spas, or position the feet close to heating devices. This is because the person may not be able to feel if damage is occurring, which risks burning of their skin.
- Encourage lower-limb exercises, at least every hour. Simple exercises may include drawing figures with the toes, pushing the toes towards the floor and then pointing them up towards the nose, standing on the balls of the feet, tiptoeing up and down, walking or swimming. Any movement of the calf muscle helps to move blood back to the heart. Also discourage crossing of the legs, which reduces arterial blood flow.
- Elevate the affected limb at least 3–4 times every day for at least 15 minutes each time, to help reduce high blood pressure in the lower legs and reduce swelling. Elevation means placing the patient's legs on pillows, a chair or another object so that the feet are above the level of the knees, and the knees are above the level of the hips. Try to discourage patients from sitting with their legs down and stationary for more than an hour at a time. Patients should put their feet up while performing sit-down tasks. Elevating the legs to the level of the hips doesn't reduce swelling, but it keeps the swelling from getting worse. Elevating the legs above the level of the heart is needed to reduce swelling.
- Smoking cessation interventions are an important part of the treatment plan.
- Ensure the patient maintains a healthy weight relative to their height. A well-balanced diet and healthy weight reduce the risk of arterial disease.
- Manage any underlying diseases; ensuring that underlying diseases such as diabetes, heart disease or hypertension are well controlled helps to prevent complications such as arterial leg ulcers.
- Education of patients, family members and other staff helps to ensure that problems are identified early and strategies are implemented to reduce risk. It is especially important that the patient does not walk barefoot if they have diabetes or arterial disease, as they might tread on something and damage their skin and not be aware they have done so.
- For patients with venous leg ulcers, use of graduated compression stockings for life reduces ulcer recurrence rates. Compression stockings should be measured and fitted by a trained practitioner to ensure that they are the correct size for the person. Compression hosiery should be replaced at least every 6 months. Compression stockings must be worn every day except while in bed, bathing or swimming. Stockings should be applied as early in the day as possible to prevent the legs from swelling. Remove hosiery as close to bed-time as possible.

and local recurrence (Naylor 2002). Diagnosis can only be confirmed following biopsy of the wound, although signs of malignant change in a chronic wound are typically characterised by onset of pain or a change in the type or intensity of pain, malodour and change in character, volume or appearance of exudate.

Malignant wounds can have a significant impact on the patient and their family and greatly affect the quality of life. Wound management priorities vary considerably for each patient and strategies should be targeted according to the patient's preferences. Most patients with a malignant wound will be in the terminal stages of their illness and wound healing is unlikely to occur. The main aim of wound management is aimed at controlling or eliminating the distressing symptoms associated with these wounds.

Malignant wounds often produce copious amounts of exudate, which can be difficult to manage (Naylor 2002). Exudate production is secondary to increased permeability of blood vessels in the tumour and secretion of vascular permeability factor by tumour cells, or increased exudate due to the presence of infection (Naylor 2002). High volumes of exudate may result in maceration and irritation of the skin. There are many dressings available for the management of exudate (e.g. foams and alginates), and selecting a dressing that will absorb exudate but still maintain a moist environment is essential (Adderley & Smith 2007).

An offensive malodour caused by bacterial infection and/or the presence of devitalised tissue within the wound bed is frequently the most distressing aspect of a malignant wound; it can be socially isolating and cause loss of appetite and nausea (Alexander 2010). Debridement of necrotic or devitalised tissue is the main method of treatment for malodorous fungating wounds (Naylor 2002). However,

surgical sharp debridement is not recommended due to the high risk of bleeding; autolytic debridement is the preferred method of debridement (Naylor 2002). The use of antimicrobials (e.g. metronidazole gel) can help to reduce the amount of bacteria present in the wound, thereby reducing malodour. The use of topical activated-charcoal dressings and occlusive dressings may help to control odour, and environmental agents such as room deodorants and fragrances for control of odour may also assist (Carville 2007).

Bleeding can occur secondary to the erosion of blood vessels by malignant cells and may be exacerbated by decreased platelet function within the tumour (Naylor 2002). Profuse, spontaneous bleeding can be very distressing and careful management of the wound during dressing changes is essential to minimise the risk of bleeding. Preventative measures to reduce the risk of bleeding, such as the use of non-adherent dressings, maintaining a moist environment, haemostatic dressings (e.g. alginates or haemostatic sponges) and wound cleansing by irrigation, will help to reduce the risk of trauma and bleeding (Naylor 2002).

Pain is caused by a number of mechanisms, including pressure on nerves and blood vessels and exposure of the dermis (Naylor 2002). Pain frequently results in loss of sleep, distress and anxiety and may be exacerbated by wound-dressing changes. Pain should be assessed before, during and after wound-dressing changes and analgesia should be prescribed using the World Health Organization (WHO) guidelines (see Chapter 41) for the control of cancer pain and in accordance with local prescribing guidelines (Naylor 2002). The use of non-adherent dressings and dressings which maintain a moist environment may help to reduce pain associated with wound-dressing changes.

The position of the wound may be a significant source of distress for the patient, particularly if in a highly visible area such as the breast or face. Wound management strategies aimed at devising a cosmetically acceptable dressing may help to promote self-esteem and minimise distress.

The skin around the fungating wound is susceptible to breakdown and must be assessed for signs of bacterial infection, fungal infection, maceration and excoriation. The use of non-traumatic adhesives, skin sealants and creams or ointment barriers can help to provide protection to the periwound skin.

Palliative treatment may include radiotherapy and systemic or topical chemotherapy to reduce tumour size, exudate and malodour (Adderley & Smith 2007). *Radiotherapy* in the form of X-rays or radioactive substances is used as a localised cancer treatment or in combination with other treatments such as surgery or chemotherapy, and is used to reduce the size of a tumour, to control the spread of disease or to relieve symptoms of advanced disease (Regan 2007). Radiotherapy is unable to differentiate between normal and abnormal cancer cells, and the radiation can damage healthy tissue and may result in skin atrophy, soft-tissue fibrosis and microvascular damage or burn injury (Regan 2007). Skin reactions to radiotherapy typically occur 2 weeks into treatment; the likelihood of developing a reaction depends on a number of factors including the patient's age, skin integrity, type of radiation and amount of energy used, chemical and skin irritants used by the patient, nutritional status, presence of skin folds and concurrent chemotherapy (Regan 2007). Skin reactions may be mild such as dry skin or may lead to moist desquamation.

Strategies that can be taken to minimise the effects of radiation include preventing mechanical trauma caused by shaving, friction, pressure, adhesive tapes or constrictive clothing; avoiding the use of chemical trauma from soaps, deodorants, shaving creams, astringents or make-up; avoiding extremes of heat and cold to prevent thermal trauma; avoiding skin products that contain metallic substances, including zinc cream and talcum powder; avoiding exposure to the sun; moisturising the skin frequently with a pH-neutral emollient; and ensuring adequate nutrition and hydration (Carville 2007).

Chemotherapy may be used to reduce the size of a malignant wound; it involves the use of systemic or localised cytotoxic drugs (Regan 2007). Chemotherapy can cause skin reactions including transient erythema, hyper-pigmentation, photosensitivity, nail changes, palmar/plantar syndrome and inflammatory reactions in tissue that has been previously irradiated, resulting in blisters, vesicle formation, exfoliation and ulceration (Regan 2007). Chemotherapy can decrease the size of a malignant wound by destroying malignant cells, and reduce pressure on nerves and blood or lymph vessels, thereby reducing exudate production and potential to bleed (Regan 2007).

Extravasation of the skin can occur secondary to the use of chemotherapy drugs, resulting in ulceration of the skin, nerve damage, significant pain, disfigurement and potential limb loss (Regan 2007). Extravasation occurs over a few days with maximum severity over 2–3 weeks. The degree of tissue damage is secondary to the amount of drug extravasated, drug concentration, site, needle insertion device and technique (Regan 2007). The affected tissue may appear swollen, tender and red and progressively worsen into ulceration, and may involve tendons and nerves. Severe tissue damage may require surgical intervention (Regan 2007). Prevention of extravasation injuries includes a thorough assessment of the patient, venous access, related risk factors,

knowledge of the drug and early recognition of the signs of extravasation injury including burning pain, erythema and oedema at injection site.

Malignant fungating wounds are a significant problem and are challenging for both patients and healthcare professionals. The key to effective management is accurate assessment to improve quality of life through symptom control; however, there is insufficient evidence to provide clear direction for practice with regard to improving quality of life or managing wound symptoms associated with fungating wounds (Adderley & Smith 2007, Lo et al 2008, 2012).

Adjunct wound therapies

Hyperbaric oxygen therapy (HBOT) is a treatment designed to increase the supply of oxygen to wounds that are not responding to other measures to treat them. HBOT involves people breathing pure oxygen in a specially designed chamber (such as that used for deep-sea divers suffering pressure problems after resurfacing). Evidence suggests that HBOT seems to reduce the number of major amputations in people with diabetes who have chronic foot ulcers, and may reduce the size of wounds caused by venous disease, but at this stage there is no evidence to confirm or refute any effect on other wounds caused by lack of blood supply due to arterial disease or pressure injury (Goldman 2009, Kaur et al 2012, Kranke et al 2004).

Key concepts

- Having a good understanding of the anatomy and physiology of the skin is essential in order to determine whether a patient is at risk of compromised skin integrity.
- Wound healing is achieved through the process of vasodilation, inflammation, proliferation and maturation.
- There are various modes of wound healing, including primary intention or secondary intention.
- Wounds are classified as either acute or chronic depending on the duration of injury.
- There are many factors that affect the wound-healing process.
- Assessment is essential in order to recognise those at risk of skin breakdown and to aid in implementing appropriate wound management and prevention strategies.
- Regular evaluation of the effectiveness of the wound management plan is essential.

Acknowledgements

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Online resources

Australian Wound Management Association provides a number of important clinical guidelines such as the Australian and New Zealand clinical practice guideline for prevention and management of venous leg ulcers and The Pan Pacific clinical practice guideline for the prevention and management of pressure injury, www.awma.com.au/publications/publications.php

STAR Skin Tear Classification System, www.silverchain.org.au/shared-content/assets/documents/research-publications/star-skin-tear-tool-04022010-pdf.pdf/view

References

Adderley U, Smith R 2007 Topical agents and dressings for fungating wounds. Cochrane Database Syst Rev (2):CD003948. DOI: 10.1002/14651858. CD003948.pub2.

Alexander S 2010 An intense and unforgettable experience: the lived experience of malignant wounds from the perspectives of patients, caregivers and nurses. Int Wound J 7:456–65.

Araujo T 2003 Managing the patient with venous ulcers. Ann Int Med 138:326.

Australian Bureau of Statistics (ABS) 2008 Cat no. 3222.0 Population projections, Australia, Table B9. ABS, Canberra.

Australian Centre for Diabetes Strategies (Prince of Wales Hospital, Sydney) for the Diabetes Australia Guideline Development Consortium 2005 Detection and prevention of foot problems in type 2 diabetes, part 6. National Health and Medical Research Council, Canberra. Online. Available: www.nhmrc.gov.au/_files_nhmrc/publications/attachments/di12.pdf?q=publications/synopses/_files/di12.pdf; accessed 8 Jun 2012.

Australian Institute of Health and Welfare (AIHW) 2008 Australia's health 2008, Cat. no. AUS 99. AIHW, Canberra.

Australian Wound Management Association 2012 Pan Pacific clinical practice guideline for the prevention and management of pressure injury. Cambridge Media, Osborne Park, WA, p. 12. Online. Available: www.awma.com.au/journal/2001_01.pdf; accessed 4 Jul 2012.

Australian Wound Management Association (AWMA) 2011 Bacterial impact on wound healing: from contamination to infection. AWMA, Perth. Online. Available: www.awma.com.au/publications/2011_bacterial_impact_position_1.5.pdf; accessed 20 Nov 2011.

Australian Wound Management Association (AWMA) 2001 Clinical practice guidelines for the prediction and prevention of pressure ulcers. Cambridge Publishing, Perth.

Ayello E, Cuddigan J 2004 Debridement: controlling the necrotic/cellular burden. Wound Repair Regen 17:66–78.

Banwell P, Teot L 2003 Topical negative pressure: the evolution of a novel wound therapy. J Wound Care 12:22–8.

Beldon P 2007 What you need to know about skin grafts and donor site wounds. Wound Essentials 2:149–55.

Bergqvist D, Lindholm C, Nelzen O 1999 Chronic leg ulcers: the impact of venous disease. J Vasc Surg 29:752–5.

Carville K 2007 Wound care manual, 5th edn. Silver Chain Foundation, Osborne Park, WA.

Carville K, Smith J 2004 A report on the effectiveness of comprehensive wound assessment and documentation in the community. Primary Intention 12:41–4, 46–8.

Celik S 2007 Surgical wound infections in the intensive care unit: the nurse's role. J Wound Ostomy Cont Nurs 34:499–504.

European Wound Management Association (EWMA) 2008 Position document: hard-to-heal wounds – an approach. MEP Ltd, London.

Fernandez R, Griffiths R 2012 Water for wound cleansing. Cochrane Database Syst Rev 15(2):CD003861.

Flanagan M 1997 Wound management. Churchill Livingstone, New York.

Franz M, Robson M, Steed D et al 2008 Guidelines to aid healing of acute wounds by decreasing impediments of healing. Wound Repair Regen 16:723–48.

Gauglitz G, Korting H, Pavicic T et al 2011 Hypertrophic scarring and keloids: pathomechanisms and current and emerging treatment strategies. Molec Med17:113–25. Online. Available: http://molmed.org/pdfstore/09_153_Gauglitz.pdf; accessed 20 Apr 2011.

Gethin G, Cowman S, Kolbach DN 2010 Debridement for venous leg ulcers. Cochrane Database Syst Rev (7):CD008599. DOI: 10.1002/14651858.CD008599.

Goldman R 2009 Hyperbaric oxygen therapy for wound healing and limb salvage: a systematic review. Phys Med Rehab 1(5):471–89.

Grey J, Enoch S, Harding K 2006 Wound assessment. Br Med J 332:285–8.

Griggs K 2008 Evidence summary: chronic wound management. JBI CONNECT.

Harding K 2010 Chronic wounds and their management and prevention is a significant public health issue. Wounds Int 7:125–6.

Harvey C 2005 Wound healing. Orthopaed Nurs 24:143–57.

Hess C 2005 The art of skin and wound care documentation. Adv Skin Wound Care 18:43–53.

Hopf H, Ueno C, Aslam R 2006 Guidelines for the treatment of arterial insufficiency ulcers. Wound Repair Regen 14:693–710.

Joanna Briggs Institute (JBI) 2011 Cavity wounds: evidence summary. JBI, Adelaide.

Joanna Briggs Institute (JBI) 2010 Burn wound management: primary care facility; evidence summary. JBI, Adelaide.

Joanna Briggs Institute (JBI) 2006 Solutions, techniques and pressure in wound cleansing. Best practice 10. JBI, Adelaide

Kaur S, Pawar M, Banerjee N et al 2012 Evaluation of the efficacy of hyperbaric oxygen therapy in the management of chronic nonhealing ulcer and role of periwound transcutaneous oximetry as a predictor of wound healing response: a randomised prospective controlled trial. J Anaesth Clin Pharm 28(1):70–5.

Kirshen C, Woo K, Ayello E et al 2006 Debridement: a vital component of wound bed preparation. Adv Skin Wound Care 19:506–17.

Kranke P, Bennett MH, Debus SE et al 2004 Hyperbaric oxygen therapy for chronic wounds. Cochrane Database Syst Rev (1): CD004123. DOI: 10.1002/14651858.CD004123.pub2.

Krishnamoorthy L, Morris H, Harding K 2001 A dynamic regulator: the role of growth factors in tissue repair. J Wound Care 10:99–101.

Lawton S 2007 Addressing the skin-care needs of the older person. Br J Commun Nurs 12:203–10.

Lewellyn M, Jones J, Hopkins A et al 2002 Challenging wounds. In Harding K, Harker J (eds), Essential wound management for day-to-day practice. Medical Education Partnership, London.

Lindholm C, Bjellerup M, Christensen O 1992 A demographic survey of leg and foot ulcer patients in a defined population. Acta Dermatol Venereol 72:227–30.

Lo S, Hayter M, Hu W et al 2012 Symptom burden and quality of life in patients with malignant fungating wounds. J Adv Nurs 68(6):1312–21.

Lo S, Hu W, Hayter M et al 2008 Experiences of living with a malignant fungating wound: a qualitative study. J Clin Nurs 17(20):2699–708.

McCulloch J, Kloth L, Feedar J 1995 Wound healing: alternatives in management, 2nd edn. FA Davis, Philadelphia.

Moffatt C, Morrison M, Pina E 2008 Wound bed preparation for venous leg ulcers. In European Wound Management Association (EWMA) position document: wound bed preparation in practice. Medical Education Partnership, London, pp. 12–15.

Mulligan S, Scott L, Prentice J et al 2009 WoundsWest wound prevalence survey 2009: state-wide report overview. Ambulatory Care Services, Department of Health, Perth. Online. Available: www.whia.com.au/whwp/wp-content/uploads/2015/05/WWWPS09-State-Report-Final.pdf; accessed 8 Jun 2012.

Naylor W 2002 Part 1: symptom control in the management of fungating wounds. World Wide Wounds. Online. Available: www.worldwidewounds.com/2002/march/Naylor/Symptom-Control-Fungating-Wounds.html; accessed 20 Apr 2011.

Queensland Health 2009 Pressure ulcer prevention and management resource guidelines 2009. Queensland Health Patient Safety Centre, Brisbane.

Ratliff C 2006 Under pressure: get current on best practices for wound care. Nurs Crit Care 1:37–43.

Regan P 2007 The impact of cancer and its treatment on wound healing. Wounds UK 3:87–95.

Royal College of Nursing (RCN) 1998 Clinical practice guidelines: the nursing management of patients with venous leg ulcers: recommendations. Royal College of Nursing, London.

Schultz G, Sibbald G, Falanga V et al 2003 Wound bed preparation: a systematic approach to wound management. Wound Repair Regen 11:1–28.

Shores J 2007 Skin substitutes and alternatives: a review. Adv Skin Wound Care 20:493–508.

Silver Chain Nursing Association and Curtin University of Technology (School of Nursing and Midwifery) 2007 (rev. 2010) STAR (Skin Tear Audit Research) skin tear classification system. Online. Available: www.silverchain.org.au/shared-content/assets/documents/research-publications/star-skin-tear-tool-04022010-pdf.pdf;; accessed 20 Apr 2011.

Terrill P 2003 Management of skin grafts and donor sites. Woundcare Network 11:1–5.

Traversa B, Sussman G 2001 The role of growth factors, cytokines and proteases in wound management. Primary Intention 9:161–7.

Whitney A, Phillips L, Aslam R 2006 Guidelines for the treatment of pressure ulcers. Wound Repair Regen 14:663–79.

Williams D, Enoch S, Miller D et al 2005 Effect of sharp debridement using curette on recalcitrant nonhealing venous leg ulcers: a concurrently controlled, prospective cohort study. Wound Repair Regen 13:131–7.

World Union of Wound Healing Societies (WUWHS) 2007 Principles of best practice: wound exudate and the role of dressings. A consensus document. Medical Education Partnerships, London.

World Union of Wound Healing Societies (WUWHS) 2004 Principles of best practice: minimising pain at wound-dressing-related procedures. A consensus document. Medical Education Partnerships, London.

Xue Y 2008 Evidence summary: wound dressings. JBI CONNECT.

Young T, Fowler A 1998 Nursing management of skin grafts and donor sites. Br J Nurs 7:324–34.

CHAPTER

27

Administering medications

Vanessa Brotto

Learning outcomes

Mastery of content will enable you to:

- discuss the principles of quality use of medications
- identify members of the medication team and describe their role
- discuss the nurse's role and responsibilities in medication administration
- describe the physiological mechanisms of medication action, including absorption, distribution, metabolism and excretion
- differentiate between different types of medication actions
- discuss developmental factors that influence pharmacokinetics
- discuss factors that influence medication actions
- discuss methods for educating a client about prescribed medications
- describe factors to consider when choosing routes and times of medication administration
- calculate a prescribed medication dosage correctly
- discuss criteria for assessing a client's needs for and response to medication therapy
- apply the seven rights of safe medication administration
- explain the procedures for the correct preparation and administration of: subcutaneous, intramuscular and intradermal injections; intravenous medications; oral and topical skin preparations; eye, ear and nose drops; vaginal instillations; rectal suppositories; and inhalants.

KEY TERMS

Absorption, p. 755
Adverse effects, p. 757
Anaphylactic reactions, p. 758
Blood–brain barrier, p. 756
Bolus, p. 762
Buccal administration, p. 760
Enteric-coated, p. 755
Generic name, p. 751
Infusion, p. 762
Inhalation, p. 763
Instillation, p. 763
Intradermal (ID), p. 760
Intramuscular (IM), p. 760
Intravenous (IV), p. 760
Medication allergy, p. 758
Medication error, p. 770
Medication interaction, p. 758
Oral administration, p. 780
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Parenteral administration, p. 807
Plasma concentration, p. 759
Pharmacodynamics, p. 751
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Prescriptions, p. 768
prn order, p. 766
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Seven rights of medication administration, p. 771
Standing orders, p. 766
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Subcutaneous (subcut), p. 760
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Tandem infusion, p. 841
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Trade name, p. 751
Verbal order, p. 766
Z-track method of injection, p. 825

A *medication* is a substance used in the diagnosis, treatment, cure, relief or prevention of health alterations. The medication may be a prescription, non-prescription (over-the-counter) or complementary/herbal preparation. Other terms which may be used to describe medications include 'medicines' and 'drugs', although medications and medicines are the currently preferred terms.

Administration of medications is a fundamental part of nursing practice and nurses draw on their scientific knowledge base to ensure safe, effective and appropriate medication outcomes for the client. Regardless of whether clients receive their health care in hospitals, clinics or the home, the nurse plays an essential role in medication therapy.

In the acute care setting the nurse also ensures that clients are adequately prepared to administer their medications when they leave hospital. In addition, a nurse teaches clients about their medications and any side effects, encourages clients to adhere to their medication regimen and oversees client self-administration of medications. The nurse assesses the effects of medications in restoring or maintaining health.

CLINICAL EXAMPLE

'A lesson for all nurses' by Vanessa Brotto, RN

Emergency nurses administer many different types of medications via numerous routes. Clients can present with various problems that may require urgent replacement of electrolytes. One oncology client presented in atrial fibrillation (AF) whose pathology results showed a dangerously low potassium (K+) level. The client had a PICC line (peripherally inserted cardiac catheter) for their chemotherapy treatment and had been vomiting so much that their electrolytes had dropped markedly, causing the rapid and irregular AF heart rhythm.

The doctor asked the nurse (a graduate nurse) to administer 10 mmol of KCl intravenously via the PICC line and wrote this up in the 'stat' order section of the medication chart. The graduate nurse had not given this before and although the department was very busy, she took the time to ask the nurse in charge if this was appropriate. The nurse in charge confirmed it was and she then prepared the potassium in a syringe before checking it with another senior nurse, who checked the medication ampule and the syringe and went through the medication order and confirmed the client's pathology results. They did the 'seven rights' together and then the graduate nurse took the medication to the client.

When she got there, another nurse stopped her to ask if she had prepared the KCl as it was 'urgent' so she confirmed it again with the other nurse as well. They again went through all the information and pathology results and checked all the seven rights together. She then went into the client room and administered the medication … and the client immediately went into cardiac arrest!!!!

The error??? She had given it as a bolus (i.e. rapidly injected it all into the intravenous line at one time) rather than infuse it over 60 minutes as is safely required. She didn't realise that a bolus of potassium like this is inherently dangerous and can cause the heart to immediately stop (in fact this is one of the medications administered in countries that execute prisoners with the death penalty by lethal injection i.e. some states in the USA).

This graduate nurse had checked the medication thoroughly with three senior nurses and they all went through the seven rights with her, except no one checked how she planned to actually administer the medication. They assumed she would realise the danger of intravenous potassium and she assumed they would tell her if there was something she should know. The client was eventually resuscitated and survived; however, the lesson should be learnt by all – checks must be thorough and not assume anything. It also reinforces that nurses should never administer unfamiliar medications and always look them up thoroughly.

Quality use of medications

The concept of 'quality use of medicines' stems from the 1985 World Health Organization (WHO) Rational Use of Medicines policy. The WHO found that a significant proportion of the global community were prescribing or using medicines inappropriately, and so it called for healthcare professionals and governments to do something about this (WHO 2010). Australia's response was the 1999 launch of the National Medicines Policy (Department of Health 2015a), which has 'quality use of medicines' (QUM) as a core objective.

Australia's National Medicines Policy aims to maximise an individual's benefit from a medication regimen, achieve safe, effective and appropriate use of medications, and optimise medicinal use of prescription and over-the-counter/complementary preparations to improve the health outcomes. Quality use of medications involves selection of a medication that is (Department of Health 2015b):

- *wise*: ensuring the best possible treatment plan is chosen
- *necessary*: ensuring that when medicines are needed they are carefully selected, managed, monitored and reviewed
- *safe and effective*: minimising misuse, overuse and underuse of medicines while ensuring that medicines achieve the goals of therapy by delivering beneficial changes in actual health outcomes.

Nurses have an important role to play in QUM. Nurses can help assess clients' use of medicines and their responses to them, to ensure they are being used appropriately and that the best possible treatment plan is in effect. In order to do this properly, nurses must have readily accessible resources on medicines and be able to share these with clients. Various health resources are available to help nurses learn about medicines and educate clients. The consumer medication information (CMI) leaflets which are produced by pharmaceutical companies (found in the packaging of medicines) are provided to help with this role. Nurses must also recognise the need to access evidence-based drug resources that have unbiased information, such as the *Australian Medicines Handbook* and *Therapeutic Guidelines* (which are often available online via universities and clinical agencies/hospitals).

Quality use of medicines is aimed more broadly than at healthcare professionals alone. The government and policy-makers are integral to QUM, as they make key decisions about the supply and subsidy of different medicines. Partnerships between all members of the 'medication team' are required for QUM to be in effect, as well as to improve/maintain best health. This team includes those who take medicines (consumers), those who prescribe medications (medical practitioners, nurse practitioners, eligible midwives and, in some cases, other nurses and other healthcare professionals), those who dispense medications (pharmacists) and those who administer and monitor the use of medications (nurses, family and other health workers).

• CRITICAL REFLECTION POINT

You are caring for a client who is admitted for a gastroscopy as a day procedure. While you are admitting her, she tells you that she doesn't take one of the 'little blue digoxin tablets' as directed by her general practitioner. Rather she takes half a tablet to make the prescription last twice as long so it is not as expensive. Is this quality use of medicines? How would you respond to this client?

WORKING WITH DIVERSITY

Focus on children

One of the difficulties facing the application of quality use of medicines (QUM) is in the area of paediatrics, where there is often 'off-label' use of medicines (meaning that they are prescribed for conditions or at doses other than as advertised in the prescribing information from the manufacturer). It has been reported that 3.3–100% of prescriptions in paediatric clients may use medicines in this way (Bellis et al 2013). This is due to a lack of research data on the effects of different medicines in children; as a result, prescribers working with children need to use medicines to treat them, but often do not have research data to support their use.

This is a challenge for QUM, as nurses working with paediatric clients may not find data supporting the use of medicines in some clinical cases. It is not prudent to say that these medicines should not be used 'off-label' at all, as their use may be life-saving, but it does present a challenge to QUM in paediatrics. Examples of this include giving meropenem to a neonate when it has been approved for use in children over 3 months of age (Kling 2011), or the use of psychotropic medicines when their effects in children have not been specifically investigated.

References

Bellis J, Kirkham JJ et al 2013 Adverse drug reactions and off-label and unlicensed medicines in children: a prospective cohort study of unplanned admissions to a paediatric hospital Br J Clin Pharmacol 77(3):L545–53.

Kling S 2011 Off-label drug use in childhood asthma. Curr Allerg Clin Immunol 24(1):38–41.

• CRITICAL REFLECTION POINT

Off-label prescribing is often required in children, but what are some of the ethical implications of using a medicine in the way described in *Working with diversity*?

The medication team

Quality use of medications relies on cooperation and collaboration of all members of the medication team.

The prescriber's role

Medical practitioners are by far the main prescribers of medications. Increasingly, however, nurses working as nurse practitioners (NPs) or Eligible Midwives prescribe within a specific scope of practice and associated formulary. In addition, it is not uncommon to find some settings where registered nurses (RNs) initiate medications for a specific client and from an approved list of medications (e.g. a nurse-initiated opioid analgesia protocol in emergency departments). The prescriber writes a medication order on a medication chart in the client's health record, on a legal prescription pad or through a computer terminal.

The nurse's role

The nurse prescribing or administering medications is accountable for knowing the medications prescribed, their therapeutic and non-therapeutic effects and the client's need for the medication.

The nurse supervises the administration of the medication and provides education to the client and family about the medication and its effects. The nurse is responsible for assessing the client and their need for the medication before the dose, and then evaluating the

effects of the medication after the dose and evaluating the outcome of this therapy.

The nurse, as and when appropriate, assesses the client's ability to self-administer medications and provides client and family education about proper medication administration and monitoring. It is also important to note that different nursing roles may affect what a nurse can prescribe/administer. For example, NPs are able to prescribe certain medicines specifically relevant to their area of practice while enrolled nurses (ENs) may be limited in what they are able to administer by their agency's policy.

The pharmacist's role

The pharmacist prepares and dispenses prescribed medications. The pharmacist may also assess the medication plan, conduct 'medication-reconciliation' assessments (i.e. comparing medicines used at home with those prescribed in hospital) and evaluate the client's general medication-related needs. The pharmacist is responsible for filling prescriptions accurately and ensuring that prescriptions are valid. The pharmacist in a healthcare agency rarely has to mix compounds or solutions, except in the case of some intravenous additive solutions. Most pharmaceutical companies deliver medications in a form ready for use. Dispensing the correct medication, in the proper dosage and amount and with an accurate label is the pharmacist's responsibility. The pharmacist acts as a valuable community and professional resource, providing information about medication action, side effects, toxicity, interactions and incompatibilities.

Medications administered to clients are used, almost exclusively, to prevent, diagnose or treat disease. Nurses need to be familiar with the actions and effects of medications they administer to clients. Moreover, to administer medications safely and accurately to clients, nurses draw on an understanding of physiology, pharmacology including **pharmacokinetics** (the movement of drugs in the human body), **pharmacodynamics** (the biochemical and physiological effect of drugs on the body), human growth and development, human anatomy and physiology, nutrition and mathematics.

Application of pharmacology in nursing practice

Names

A medication may have as many as three different names – the chemical name, a generic (non-proprietary) name and a trade name. A medication's *chemical name* provides an exact description of the medication's composition and molecular structure; chemical names are rarely used in clinical practice. An example of a chemical name is 7-chloro-1,3-dihydro-1-methyl-5-phenyl-3H-1,4-benzodiazepin-2-one. The **generic name**, for example, diazepam, is given by the manufacturer that first develops the medication. The generic name (written with a lowercase initial letter) is the name listed in official publications, such as the *British Pharmacopoeia* and the *MIMS Annual*. The **trade name**, brand name or proprietary name (written with an uppercase initial letter) is the name under which a manufacturer markets a medication. The trade name has the symbol ® at the upper right of the name on the packaging, indicating that the manufacturer has registered the medication's name (e.g. Valium®). A drug may have several trade names. The following illustrates the three-name system:

- Chemical name: 7-chloro-1,3-dihydro-1-methyl-5-phenyl-3H-1,4-benzodiazepin-2-one
- Generic name: diazepam
- Trade names: Antenex, Diastat, Ducene, Valium.

Manufacturers choose trade names that are easy to pronounce, spell and remember so that the general public will recognise them and ask for specific brands. Many different companies may produce the same medication. It is best practice for medications to be prescribed and dispensed using the generic name to avoid confusion. The nurse finds medications documented under a variety of different names, however, and must be careful to obtain the exact name and spelling for a particular medication and check all trade names against the generic name to be sure the correct drug is given.

Nurses also need to be aware that some trade brands of the same generic medication may be able to be substituted safely (referred to as 'brand name substitution'); for example, Febridol (trade name) can usually be substituted for Panadol (trade name) when a client is ordered paracetamol (generic name). However, in some situations not all trade brands of the same generic drug are equal, and so the prescriber/pharmacist should be consulted before a nurse substitutes trade brands. For example, when a client is prescribed the medication warfarin (generic name) it is important that Coumadin (trade name) is not substituted for Marevan (trade name), as they are not deemed to be bioequivalent (i.e. warfarin 5 mg of Coumadin may not be the same as warfarin 5 mg of Marevan).

• CRITICAL REFLECTION POINT

A prescriber has ordered a number of prn (as required) medicines for a client postoperatively. Which of the following medicines should not be given together as they contain the same active ingredient: Fentanyl, Herron, Morphine, Panamax, Dymadon Co, Panadeine Forte?

Classification

Nurses must recognise the *category* or *class* to which medications with similar characteristics are allocated. Medication classification indicates the effect of the medication on a body system, the symptoms the medication relieves or the medication's desired effect. For example, clients who have type 2 diabetes often take oral hypoglycaemic agents to help control their blood glucose levels. Usually, each class contains more than one medication that can be prescribed for the type of health problem. For example, there are more than five different classes of oral hypoglycaemic agents. The physical and chemical composition of medications within a class may be slightly different. For example, two of the oral hypoglycaemic agents, a sulfonylurea and a biguanide, have different functions and are often prescribed together. A sulfonylurea stimulates the release of insulin from the pancreas, whereas a biguanide decreases the rate of hepatic glucose production. A prescriber chooses a particular oral hypoglycaemic medication based on how it works with the client's symptoms or the client characteristics, cost, efficacy and dosing frequency. The prescriber may also choose based upon their own experience with the medication in other clients. It is expected that prescribers will also consult with evidence-based guidelines to decide which medications to use. These guidelines may be found through various sources such as the 'Therapeutic Guidelines' and other specialty bodies such as the Royal Australian College of General Practitioners and eviQ from the Cancer Institute of NSW.

A medication may also be part of more than one class. For example, aspirin is an analgesic, an antipyretic, an anti-inflammatory and an anti-platelet medication. Often, the dose administered determines the class or action of the medication. An example of this is where a client may be prescribed antidepressants for neuropathic pain or the use of antihypertensive medicines for the treatment of heart failure.

Medications are available in a variety of forms or preparations (see Figure 27-1 and Box 27-1). The form of the medication determines its route of administration and speed of absorption. The composition of a medication is designed to enhance its absorption and metabolism. When administering a medication, the nurse must be certain to use the proper form that is appropriate to the client's condition (e.g. liquid if swallowing tablets is difficult).

Medication legislation and standards

The role of Australian governments in regulation of the pharmaceutical industry is to protect the health of the public by ensuring that medications are safe and effective.



Figure 27-1 Forms of oral medications.

Top row: Uniquely shaped tablet, capsule, scored caplet. Bottom row: Gelatin-coated liquid capsule, extended-release capsule, enteric-coated tablet.

Potter PA, Perry AG 2004 Fundamentals of nursing, 6th edn. Mosby, St Louis.

BOX 27-1 Forms of medication

Caplet: solid dosage form for oral use; shaped like capsule and coated for ease of swallowing.

Capsule: solid dosage form for oral use; medication in powder, liquid or oil form and encased in gelatin shell; capsule coloured to aid in product identification.

Elixir: clear fluid containing water and/or alcohol; designed for oral use; usually has sweetener added.

Enteric-coated tablet: tablet for oral use coated with materials that do not dissolve in the stomach; coatings dissolve in the intestine, where medication is absorbed.

Extract: concentrated medication form made by removing active portion of medication from its other components (e.g. fluid extract is medication made into solution from vegetable source).

Glycerite: solution of medication combined with glycerin for external use; contains at least 50% glycerin.

Intraocular disk: a small flexible oval consisting of two soft outer layers and a middle layer containing medication; when moistened by ocular fluid, releases medication for up to 1 week.

Liniment: preparation usually containing alcohol, oil or soapy emollient that is applied to skin.

Lotion: medication in liquid suspension applied externally to protect skin.

Ointment (salve): semi-solid, externally applied preparation, usually containing one or more medications.

Paste: semi-solid preparation, thicker and stiffer than ointment; absorbed through skin more slowly than ointment.

continued

Pessary: solid dosage form mixed with gelatin and shaped into form of pellet for insertion into the vagina; melts when it reaches body temperature, releasing medication for absorption.

Pill: solid dosage form containing one or more medications, in globule, ovoid or oblong shape; true pills are rarely used because they have been replaced by tablets.

Solution: liquid preparation that may be used orally, parenterally or externally; can also be instilled into body organ or cavity (e.g. bladder irrigations); contains water with one or more dissolved compounds; must be sterile for parenteral use.

Suppository: solid dosage form mixed commonly with gelatin or wax and shaped into form of pellet for insertion into the rectum; melts when it reaches body temperature, releasing medication for absorption.

Suspension: finely divided drug particles dispersed in liquid medium; when suspension is left standing, particles settle to bottom of container; commonly an oral medication and not given intravenously.

Syrup: medication dissolved in concentrated sugar solution; may contain flavouring to make medication more palatable.

Tablet: powdered dosage form compressed into hard disks or cylinders; in addition to primary medication, contains binders (adhesive to allow powder to stick together), disintegrators (to promote tablet dissolution), lubricants (for ease of manufacturing) and fillers (for convenient tablet size).

Tincture: alcohol or water–alcohol medication solution.

Transdermal disk or patch: medication contained within semi-permeable membrane disk or patch, which allows medications to be absorbed through the skin slowly over long period.

Troche (lozenge): flat, round dosage form containing medication, flavouring, sugar and mucilage; dissolves in the mouth to release medication.

Control is exercised at three levels. The Therapeutic Goods Act 1989 (amendments made often, last updated 2015; see www.tga.gov.au) regulates all drugs developed in or imported into Australia. It controls medication manufacture, sales and distribution, medication testing, naming and labelling, and the regulation of controlled substances. Advertising of some poisons to the public is also regulated by this Act.

The National Health Act 1953 applies to the Pharmaceutical Benefits Scheme that provides subsidised drugs to Australian residents. It also limits the amount of medicines that may be supplied, and the number of times and frequency the supply can be repeated. Not all medicines are available at subsidised rates. Administration of medications by nurses is subject to further control by various regulations; some of the most important are listed in Box 27-2.

Poisons (including medicines) are listed in schedules (Box 27-3) that detail their availability to the public. For example, medicines listed in Schedule 4 are restricted to medical, dental or veterinary prescription (also includes NP prescription in some states). Official publications, such

BOX 27-2 Drug use control in Australia and New Zealand

AUSTRALIA

Australian Capital Territory

Drugs of Dependence Act 1989

Drugs of Dependence Regulation 2009

Medicines, Poisons and Therapeutic Goods Act 2008

Medicines, Poisons and Therapeutic Goods Regulation 2008

New South Wales

Poisons and Therapeutic Goods Act 1966 No 27

Poisons and Therapeutic Goods Regulation 2008

Northern Territory

Medicines, Poisons and Therapeutic Goods Act 2014

Medicines, Poisons and Therapeutic Goods Regulations

Queensland

Health Act 1937

Health (Drugs and Poisons) Regulation 1996

South Australia

Controlled Substances Act 1984

Controlled Substances (Controlled Drugs, Precursors and Plants) Regulations 2014

Controlled Substances (Poisons) Regulations 2011

Tasmania

Poisons Act 1971

Poisons Regulations 2008

Victoria

Drugs, Poisons and Controlled Substances Act 1981

Drugs, Poisons and Controlled Substances Regulations (2006)

Western Australia

Poisons Act 1964

Poisons Regulations (1965)

NEW ZEALAND

Medicines Act 1981

Medicines Regulations (1984)

Dietary Supplement Regulations 1985

Misuse of Drugs Act 1975

Misuse of Drugs Regulations (1977)

BOX 27-3 Standard for the uniform scheduling of drugs and poisons in Australia

Schedule 1
This Schedule is intentionally blank.

Schedule 2
Pharmacy Medicine – substances, the safe use of which may require advice from a pharmacist and which should be available from a pharmacy or, where a pharmacy service is not available, from a licensed person.

Schedule 3
Pharmacist Only Medicine – substances, the safe use of which requires professional advice but which should be available to the public from a pharmacist without a prescription.

Schedule 4
Prescription Only Medicine – substances, the use or supply of which should be by or on the order of persons permitted by state or territory legislation to prescribe and should be available from a pharmacist on prescription.

Schedule 5
Caution – substances with a low potential for causing harm, the extent of which can be reduced through the use of appropriate packaging with simple warnings and safety directions on the label.

Schedule 6
Poison – substances with a moderate potential for causing harm, the extent of which can be reduced through the use of distinctive packaging with strong warnings and safety directions on the label.

Schedule 7
Dangerous Poison – substances with a high potential for causing harm at low exposure and which require special precautions during manufacture, handling or use. These poisons should be available only to specialised or authorised users who have the skills necessary to handle them safely. Special regulations restricting their availability, possession, storage or use may apply.

Schedule 8
Controlled Drug – substances which should be available for use but require restriction of manufacture, supply, distribution, possession and use to reduce abuse, misuse and physical or psychological dependence.

Schedule 9
Prohibited Substance – substances which may be abused or misused, the manufacture, possession, sale or use of which should be prohibited by law except when required for medical or scientific research, or for analytical, teaching or training purposes with approval of Commonwealth and/or state or territory health authorities.

Schedule 10/Appendix C
Substances of such danger to health as to warrant prohibition of sale, supply and use – Substances which are prohibited for the purpose or purposes listed for each poison.

Based on content from the Federal Register of Legislation at 06.04.16. For the latest information on Australian Government law please go to www.legislation.gov.au.

as the *British Pharmacopoeia*, set standards for medication strength, quality, purity, packaging, safety, labelling and dose form.

Healthcare institutions and medication laws

Healthcare institutions establish individual policies that must meet national, state and local government laws and regulations. The size of an institution, the type of service it provides and the type of professional personnel employed all influence policy development. Institutional policies are often more restrictive than government controls. An institution is concerned mainly with preventing health problems that may result from medication use. For example, a common institutional policy is the automatic discontinuation of antibiotic therapy after a set number of days. Although the prescriber may reorder the antibiotic, this policy helps to control unnecessarily prolonged medication therapy.

Medication regulations and nursing practice

The nurse is responsible for following legal provisions when administering controlled substances or opioids (e.g. as listed under Schedule 8 of the Australian Poison Classification Schedule), which are carefully controlled through national and state regulations (see Chapters 10 and 11). Violations of the relevant Acts are punishable by fines or imprisonment and may lead to loss of nursing registration. Hospitals and other healthcare institutions have policies for the proper storage and distribution of controlled medicines (Box 27-4).

• CRITICAL REFLECTION POINT

Many healthcare professionals believe that the law dictates that two nurses need to double-check controlled substances from the medication safe to the bedside, but this is not the case. There are a number of hospitals and clinical agencies that have a single-checking policy, requiring the nurse to be both competent and accountable for their checking of these medicines.

What can a nurse do when single-checking medicines to ensure that medicines are administered safely?

BOX 27-4 Guidelines for safe administration of controlled drugs

In addition to the mandatory requirements set out under various state and federal legislation as well as those required by agency policy, it is good practice for the following guidelines to be instituted in clinical care:

- Store all controlled drugs in a locked, secured cabinet (computerised locked cabinets are available).
- A registered nurse carries a set of keys (or a special computer entry code) for the controlled drug cabinet.
- During an institution's change of shift, the nurse going off-duty counts all controlled drugs with the nurse coming on duty. Both nurses sign the controlled drug record to indicate that the count is correct.
- Discrepancies in drug counts are to be reported immediately to the department managers, pharmacy and on the incident reporting system.
- A special inventory record is used each time a controlled drug is dispensed.
- The record is used to document the client's name, date, time of drug administration, name of drug, dose and signature of nurse or medical practitioner administering the drug.
- The form provides an accurate ongoing count of controlled drugs used and what is remaining in the locked cupboard.
- If only one part of a pre-measured dose of a controlled drug is administered, a second nurse witnesses disposal of the unused portion and documents it on the record form.

Pharmacokinetics as the basis of medication actions

To be therapeutically useful, medications must be taken into the body, be absorbed and distributed to cells, tissues or a specific organ and alter the body's physiological functions. Pharmacokinetics is the study of how medications enter the body, reach their site of action in sufficient concentration and are metabolised and excreted from the body. Pharmacodynamics is the study of how a drug acts in the body to exert its action and side effects. The nurse uses knowledge of pharmacokinetics and pharmacodynamics when timing medication administration, selecting the route of administration, judging the client's risk of alterations in medication action and observing the client's response.

Absorption

Absorption refers to passage of medication molecules into the blood from the site of administration. Factors influencing medication absorption are the route of administration, ability of the medication to dissolve, blood flow to the site of administration, body surface area, pH and lipid solubility of the medication.

Route of administration

Medications can be administered by various routes. Each route has a different rate of absorption, as discussed in more depth later in the chapter.

Ability of the medication to dissolve

The ability of an oral medication to dissolve depends largely on its form or preparation. Solutions and suspensions, being already in a liquid state, are often absorbed more readily than tablets or capsules. The pH of a medication often determines whether absorption occurs via the gastric mucosa or the small intestine. Absorption can be delayed by the use of **enteric-coated** tablets, which are not dissolved in the acidic environment of the stomach, ensuring that the drug is absorbed in the alkaline environment of the small intestine. The degree of gastric motility determines the length of time the medication is in contact with the gastrointestinal (GI) mucosa and so will alter both the speed and the amount of medication absorbed.

Blood flow to the area of absorption

When the tissue in the area for absorption contains many blood vessels, medications are absorbed more rapidly. This occurs because blood is constantly moving in these vessels. This facilitates movement of the drug around the body.

Body surface area

When a medication is in contact with a large surface area, it will be absorbed at a faster rate as there are more sites where the drug can be absorbed. This explains why the majority of medications are absorbed in the small intestine rather than in the stomach, as the surface area of the small intestine is much greater than that of the stomach.

Lipid solubility of a medication

Highly lipid-soluble medications are absorbed more easily as they more readily cross the cell membrane. This is because the cell membrane is made of a lipid layer and will thus allow lipid-soluble medications to pass more readily than non-lipid-soluble medications.

Presence of food

Food may delay the passage of the medication through the GI system, and so absorption may be impaired. Some

oral medications are therefore absorbed more easily when administered between or before meals. In some cases, medications administered together may interfere with each other and impair the absorption of one or both.

Nurses use knowledge of factors that may alter or impair absorption of prescribed medications to ensure all medications are administered correctly for their clients. This information is based on an understanding of drug pharmacokinetics, the nursing history, physical examination and daily interactions with clients. The nurse consults and collaborates with the healthcare team to ensure the best therapeutic effect is achievable. Before administering any unfamiliar medication, pharmacology texts, E-MIMS, package inserts and the pharmacist or prescriber should be consulted. This identifies medication actions, interactions, medication–nutrient interactions or indications, contraindications, or indications that a medicine should not be given because of the client's current medical condition (e.g. oral medication if the client is nauseated or vomiting). The nurse may also use this knowledge in explaining to clients that enteric-coated medicines (protective coating) may not be crushed/halved as this would render the medicine unprotected in the GI tract.

Distribution

After a medication is absorbed, it is distributed in the body to tissues and organs and ultimately to its specific site of action. The rate and extent of distribution depend on the physical and chemical properties of medications and the physiology of the person taking the medication.

Blood circulation

Once a medication enters the bloodstream it is carried throughout the tissue and organs of the body. The speed of drug distribution depends on the vascularity of the various tissues and organs. Distribution will be enhanced in tissues with extensive blood supply (e.g. heart, liver and kidneys), and slower in less-well-perfused tissue (e.g. skin and fat). When conditions limit blood flow (e.g. hypovolaemic shock, peripheral vascular disease or solid tumours which have a poor blood supply), then distribution is inhibited.

Membrane permeability

To be distributed to an organ, a medication must pass through all of the biological membranes of that organ or tissue. Some membranes serve as protective barriers to the passage of medications. For example, the **blood–brain barrier** allows only fat-soluble medications to pass into the brain and cerebral spinal fluid. A disruption in the biological membrane barrier by disease or trauma allows drugs to cross the protective barrier. This situation may be used to advantage when treating infection of the central nervous system, but may also give rise to serious adverse effects. Older clients, for example, may experience adverse effects such as confusion as a result of the change in the permeability of the blood–brain barrier, and consequently easier passage of fat-soluble and water-soluble medications.

The placental membrane is an example of a non-selective barrier to medications. Fat-soluble and non-fat-soluble agents may cross the placenta and produce fetal deformities, respiratory depression and, in cases of maternal opioid abuse, withdrawal symptoms in the newborn. For example, if a mother is administered an opioid late in labour, then this may cross the placental membrane resulting in a sedated newborn with respiratory depression.

Protein binding

The degree to which medications bind to serum proteins (in the blood), such as albumin or globulin, affects medication distribution. Most medications bind to these proteins to some extent. When medications bind to these proteins, they cannot exert any pharmacological activity. Protein binding can therefore be regarded as a drug storage mechanism. The unbound or 'free' medication is the active form of the medication. Older adults have decreased levels of albumin in the bloodstream, probably caused by change in liver function; the same is true for clients with liver disease or malnutrition. Because of the potential for more unbound medication, these clients may be at risk of an increase in medication activity or toxicity, or both. There are commonly one or two protein-binding sites for a particular medication. When two medicines with the same common binding sites are given together, they will compete and the concentration of free drugs will change which could result in more or less of this medicine being available to the body. This could result in toxicity (if there is too much available) or inefficacy (if there is not enough available to work as intended).

Metabolism

Many medicines are metabolised into a less active or inactive form that is more easily excreted, either at the site of action or before the medication reaches its destination (hence the need for increased doses in some cases). This *biotransformation* occurs under the influence of enzymes that detoxify, degrade (break down) and remove biologically active chemicals. Most biotransformation occurs within the liver, although the lungs, kidneys, blood and intestines also metabolise medications. The liver is especially important, because its specialised structure oxidises and transforms many toxic substances

and degrades many harmful chemicals before they become distributed to the tissues. If a decrease in liver function occurs, a medication may be eliminated more slowly, resulting in an accumulation of the medication and increasing a client's risk of medication toxicity. For example, a small sedative dose of a barbiturate may cause a client with liver disease to lapse into a coma.

Excretion

After medications are metabolised, they exit the body through the kidneys, liver, bowel, lungs and exocrine glands.

The kidneys are the main organs for medication excretion. Some medications escape extensive metabolism and exit unchanged in the urine. Other medications must undergo biotransformation in the liver before being excreted by the kidneys. If renal function declines, then a client is at risk of medication toxicity. If the kidneys cannot adequately excrete a medication, it may be necessary to reduce the dose. Maintenance of an adequate fluid intake (50 mL/kg/day) promotes proper elimination of medications for the average adult.

The GI tract is another route for medication excretion. Many medications enter the hepatic circulation to be broken down by the liver and excreted into the bile. After chemicals enter the intestines through the biliary tract, the intestines may reabsorb them. Factors increasing peristalsis (e.g. laxatives and enemas) accelerate medication excretion through the faeces, whereas factors that slow peristalsis (e.g. inactivity and improper diet) may prolong a medication's effects.

Gaseous and volatile compounds, such as anaesthetic gases and alcohol, exit through the lungs. Deep-breathing and coughing helps the postoperative client eliminate anaesthetic gases more rapidly. The exocrine glands excrete lipid-soluble medications. Good hygiene to promote cleanliness and skin integrity can prevent skin irritation when medications exit through sweat glands.

Nurses and mothers should check the safety of medications used while breastfeeding, as medications excreted through the mammary glands increase risk that a nursing infant will ingest the chemicals.

• CRITICAL REFLECTION POINT

What would happen to the absorption of a medicine if a client is also on metoclopramide (an antiemetic medicine that speeds up gastric emptying)?

Types of medication action

Medications vary considerably in the way they act and the types of action. Factors other than characteristics of the medication also influence medication actions. These include therapeutic effects, adverse effects, idiosyncratic reactions, toxic reactions and allergic reactions.

Therapeutic effects

The **therapeutic effect** is the expected or predictable physiological response a medication causes. Each medication has a desired therapeutic effect for which it is prescribed. For example, glyceryl trinitrate (Anginine) is used to reduce the cardiac workload and increase myocardial oxygen supply. A single medication may have many therapeutic effects. For example, morphine is an opioid analgesic, a vasodilator and releases antidiuretic hormone. The nurse must know the therapeutic effect of each prescribed medication so they can monitor the response of the medication and teach the client about the medication's intended effect.

Adverse effects

Adverse effects are generally unexpected effects of the medication. These may be related to the pharmacological effect, the way an individual takes the medication or the individual's response to the medication. When adverse responses to medications occur, the prescriber may modify the therapy or discontinue the medication. These effects may be called 'side effects' by consumers and non-healthcare professionals; however, it is important to note that these are *unwanted effects* rather than 'allergic effects'. For example, a client may say they are 'allergic' to codeine as it makes them constipated. This is an adverse effect (i.e. unwanted effect), but it is not an allergic reaction.

Idiosyncratic reactions

Idiosyncratic reactions are adverse effects to which the client under- or over-reacts, or has a reaction which is different from that expected. For example, a child receiving an antihistamine (e.g. Phenergan) may become extremely agitated or excited instead of drowsy. Other medicines can have effects ranging from a mild skin rash to a life-threatening reaction. Although it is impossible to assess clients for idiosyncratic responses when they first take a medication, the nurse must always assess the client's response to a medicine if it has been previously prescribed. For example, if a client is ordered penicillin (an antibiotic), the nurse must ask if the client has taken the medicine before and, if so, what was the outcome (i.e. did they have any reaction?), because many people have allergic reactions to this group of medicines. Healthcare providers are encouraged to report adverse effects to the authorities so that information can be used in predicting and preventing adverse drug effects. The risk of adverse drug effects increases with multiple drug regimens (polypharmacy).

• CRITICAL REFLECTION POINT

Polypharmacy is defined as the concurrent use of five or more medicines by a client at one time. These may be prescription, over-the-counter or complementary medicines. The risk of dangerous adverse effects and interactions increases when more than one medicine is used, as the medicines may interact with each other and produce toxic effects. The problem is that polypharmacy is often necessary for clients with chronic health conditions and sometimes it is important to use medicines to treat symptoms caused by other drugs the client is taking. For example, a client who requires a diuretic (e.g. frusemide) for heart failure may then require a potassium supplement in response to the excess loss of potassium through diuresis.

Polypharmacy can make it difficult to take a medication history from a client (who may have trouble remembering all the different medicines they have used), and it can be costly for the client. Nurses should be aware of the risks of polypharmacy and should actively work to try to implement quality use of medicines (i.e. assessing the use of medicines and their appropriateness) for their clients.

What would you do if a client you are admitting spoke of taking many medicines for various health complaints? Is it enough to document these alone? What else could you do?

Adverse drug reactions (ADRs)

The most recent report on medication safety in Australia from the Australian Commission on Safety and Quality in Health Care suggests that 10% of clients who see a general practitioner will have experienced an adverse medication event within the past 6 months (Roughhead et al 2013).

The WHO defined an ADR as 'a response to a medicine which is noxious and unintended, and which occurs at doses normally used in man' (Thong & Tan 2011:684). These may be 'Type A' which are predictable and dose dependent or they may be 'Type B' which are unpredictable and not usually related to the dose administered (i.e. allergic reactions).

Adverse drug reactions (ADRs) are different to 'adverse drug events' (ADEs) in that ADEs is a broader term that can also include medication errors or interactions between medicines (Thong & Tan 2011).

Predictable reactions: toxicity

An example of a predictable adverse effect of a medication is a toxic reaction. These reactions are related to the pharmacological properties of the medication. **Toxic effects** may develop after prolonged intake of a medication or when a medication accumulates in the blood because of impaired metabolism or excretion. Lethal effects depend on the medication's action. For example, toxic levels of digoxin (an anti-arrhythmic medicine used to slow down heart rate) may cause severe bradycardia and death. Antidotes are available to treat specific types of medication toxicity; for example, naloxone (Narcan) is used to reverse the effects of opioid toxicity.

Unpredictable reactions: allergic reactions

Allergic reactions are an unpredictable response to a medication, and may represent as many as 24% of reported adverse drug reactions (Lazarou et al 1998) though current research suggests the true number is hard to establish since many studies look at all adverse drug events (ADRs) versus focusing on true allergic reactions (Thong & Tan, 2011). A client can become immunologically sensitised to the initial dose of a medication. With repeated administration, the client develops an allergic response to the medication, its chemical preservatives or a metabolite. The medication or chemical acts as an antigen, triggering the release of the body's antibodies. Allergic symptoms vary from mild (Box 27-5) to severe, depending on the individual and the medication. Antibiotics cause a high incidence of allergic reactions.

Severe or **anaphylactic reactions** are characterised by sudden constriction of bronchiolar muscles, oedema of the pharynx and larynx, severe wheezing and shortness of breath. The client may also become severely hypotensive, necessitating emergency resuscitation measures. Adrenaline, antihistamines and bronchodilators may be used to treat anaphylactic reactions. A client with a known history of a **medication allergy** should avoid re-exposure and wear an identification bracelet or medal (Figure 27-2) which alerts nurses, medical staff and emergency personnel to the allergy.

Medication interactions

When one medication modifies the action of another medication, a **medication interaction** occurs. These interactions are common in people taking several medications. A medication may increase or diminish the action of other medications, and may alter the way another medication is absorbed, metabolised or eliminated from the body. When two medications have a *synergistic effect*,

BOX 27-5 Mild allergic reactions

Urticaria: raised, irregularly shaped skin eruptions with varying sizes and shapes; eruptions have reddened margins and pale centres.

Rash: small, raised vesicles that are usually reddened; often distributed over entire body.

Pruritus: itching of skin; accompanies most rashes.

Rhinitis: inflammation of mucous membranes lining nose; causes swelling and clear, watery discharge.



Figure 27-2 Allergy identification bracelet and medal.

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that is, work together, the effect of the two medications combined is greater than the effect of the medications when given separately. For example, alcohol is a central nervous system depressant that has a synergistic effect on antihistamines, antidepressants, barbiturates and opioid analgesics, making the client more sedated and lowering blood pressure/consciousness further.

A medication interaction is not always undesirable. Often the prescriber orders a combination of medications to create an interaction that will have a beneficial effect on the client's condition. For example, where hypertension cannot be controlled with one medication, the client typically receives several medications that act together to control the blood pressure (e.g. diuretics and vasodilators). Multimodal analgesia is another good example of this (see Chapter 36).

Medication dose responses

After a medication is administered, it undergoes absorption, distribution, metabolism and excretion. The quantity and distribution of a medication in different body compartments change constantly. When a medication is prescribed, the goal is to maintain a constant and safe therapeutic serum level and take into account peaks, troughs, duration of action and plateaus (Box 27-6). Repeated doses are required to achieve this constant *therapeutic plasma concentration* of a medication because a part of a medication is always being excreted. The highest serum concentration (peak concentration) of the medication occurs when the rate of administration equals the rate of excretion. After peaking, the serum medication concentration falls progressively. With intravenous administration, the peak concentration occurs quickly but the serum level also begins to fall immediately (Figure 27-3).

BOX 27-6 Terms associated with medication actions

Duration of action: time during which the medication is present in concentration great enough to produce a response.

Half-life: time taken for the **plasma concentration** of a drug to fall to half of its original value.

Onset: time it takes after a medication is administered for it to produce a response.

Peak: time it takes for a medication to reach its highest effective concentration.

Plateau: blood serum concentration of a medication reached and maintained after repeated fixed doses.

Trough: minimum blood serum concentration of medication reached just before the next scheduled dose.

All medications have a **serum half-life**, which is the time it takes for excretion processes to lower the serum medication concentration by half. This half-life is different for each medication. To maintain a therapeutic plateau, the client must receive regular fixed doses, the timing of which is based on the serum half-life. For example, analgesia is most effective when given on a regular around-the-clock basis, rather than a prn (as needed) basis in response to a client's report of pain. In this way, an almost constant level of analgesia is maintained. After an initial loading dose,

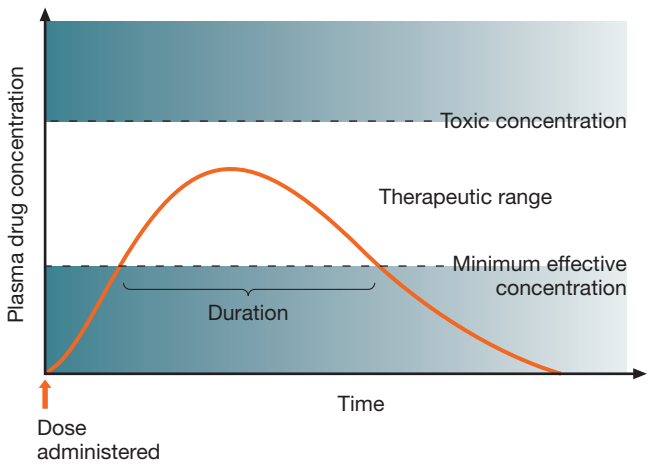

Figure 27-3 The therapeutic range of a medication occurs between the minimum effective concentration and the toxic concentration.

Lehne RA 2010 Pharmacology for nursing care, 7th edn. Saunders, St Louis.

the client receives each successive dose when the previous dose reaches its half-life.

The client and nurse must follow regular dosage schedules and adhere to prescribed doses and dosage intervals. The prescriber, or the agency in which the nurse is employed, will often set the dosage schedules. When teaching clients about dosage schedules, the nurse should use language that is familiar to the client, for example, 'Take a dose in the morning and again in the evening'. Knowledge of the time of medication action also helps the nurse and client to anticipate a medication's effect and the time of a therapeutic response. For example, when administering oral frusemide (Lasix), the nurse is aware a diuresis should occur in 1–2 hours; whereas when administering IV frusemide, a diuresis is expected in 20 minutes.

• CRITICAL REFLECTION POINT

1. **How can knowledge of a medication's serum half-life be used to determine the frequency of drug administration?**
2. **Do nurses need to understand how a dosing schedule is calculated or should they rely on the knowledge of the prescriber?**

Routes of administration

The route prescribed for administering a medication depends on the medication's properties and desired effect and on the client's physical and mental condition (Table 27-1). A nurse collaborates with the prescriber in determining the best route for a client's medication, as in the following *Clinical example*.

CLINICAL EXAMPLE

Mr Jensen has progressively deteriorated over your shift. His oral temperature is 39.5°C. He complains of nausea and is unable to tolerate oral fluids. You check Mr Jensen's medication chart, which contains the order 'Paracetamol 1 g orally PRN for temperature above 38.5°C'. On the basis of your assessment that Mr Jensen is nauseous, you consider that he will not be able to tolerate an oral dose of paracetamol. You decide to contact the medical officer to request an order for intravenous paracetamol instead. This enables you to administer the medicine to decrease fever without increasing the client's symptoms of nausea.

Oral routes

Oral administration

The oral route is the easiest and the most commonly used. Medications are given by mouth and swallowed with fluid. Oral medications usually have a slower onset of action and a more prolonged effect than parenteral (injected) medications, and their effect may be more unpredictable than other routes as many factors can affect GI absorption. Oral medicines enter the hepatic circulation once absorbed from the GI tract, and then travel to the liver where they need to 'clear' the liver before travelling on throughout the body. Some medicines are nearly totally destroyed by the liver (i.e. there is nothing left to travel throughout the body to act on their target cells) and so these medicines cannot be given orally (e.g. glyceryl trinitrate (GTN) or insulin). This situation is called the 'first-pass effect'. Clients generally prefer the oral route, which is suitable for tablet or liquid forms of medications.

Sublingual administration

Some medications are designed to be readily absorbed after being placed under the tongue to dissolve (Figure 27-4). A medication given by the **sublingual (subling)** route should not be swallowed, as the desired effect will not be achieved (i.e. it will not be absorbed into the bloodstream under the tongue where it can work immediately, but will travel to the stomach where it may be destroyed by the acidic environment or by the extensive liver metabolism). Glyceryl trinitrate is commonly given this way, by tablet or spray. The client should not take a drink until the medication is completely dissolved.

Buccal administration

Administration of a medication by the buccal route – **buccal administration** – involves placing the solid medication in the mouth against the mucous membranes of the cheek, where it stays until it dissolves (Figure 27-5). Clients should be taught to alternate cheeks with each dose to avoid mucosal irritation. Clients are also warned not to chew or swallow the medication or to take it with any liquids, for the same reason as the sublingual route above. A buccal medication acts locally on the mucosa or systemically as it is swallowed in a person's saliva.

Parenteral routes

Parenteral administration

Parenteral administration involves injecting a medication into body tissues. The major sites of injection are:

- **subcutaneous (subcut)**: injection into tissues just below the dermis of the skin
- **intramuscular (IM)**: injection into a muscle
- **intravenous (IV)**: injection into a vein
- **intradermal (ID)**: injection into the dermis immediately below the epidermis

Some medications are administered into body cavities other than the types listed above. Institutions vary regarding whether nurses are responsible for the administration

TABLE 27-1 Factors influencing choice of administration routes

Advantages	Disadvantages or contraindications
Oral, buccal, sublingual routes	
Routes are convenient and comfortable for client Routes are economical Medications may produce local or systemic effects Routes rarely cause anxiety for client	These routes are avoided when client has alterations in gastrointestinal function (e.g. nausea, vomiting), reduced motility (after general anaesthesia or bowel inflammation) and surgical resection of part of gastrointestinal tract Some medications are destroyed by gastric secretions. Oral administration is contraindicated in clients unable to swallow (e.g. clients with neuromuscular disorders, oesophageal strictures, mouth lesions) Oral medications cannot be given when client has gastric suction and are contraindicated in clients before some tests or surgery Unconscious or confused client is unable or unwilling to swallow or hold medication under tongue Oral medications may irritate lining of gastrointestinal tract, discolour teeth or have unpleasant taste
Subcutaneous (subcut), intramuscular (IM), intravenous (IV), intradermal (ID) routes	
Routes provide means of administration when oral medications are contraindicated More-rapid absorption occurs than with topical or oral routes IV infusion provides medication delivery when client is critically ill or long-term therapy is required. If peripheral perfusion is poor, IV route is preferred over injections	There is risk of introducing infection, and some medications are expensive. Clients must experience repeated needle-sticks. The subcut, IM and ID routes are avoided in clients with bleeding tendencies There is risk of tissue damage with subcut injections IM and IV routes are dangerous because of rapid absorption These routes cause considerable anxiety in many clients, especially children
Skin	
Topical	
Topical skin applications mainly provide local effect Route is painless Limited side effects occur	Clients with skin abrasions are at risk of rapid medication absorption and systemic effects
Transdermal	
Transdermal applications provide prolonged systemic effects, with limited side effects	Application leaves oily or pasty substance on skin and may soil clothing
*Mucous membranes**	
Therapeutic effects are provided by local application to involved sites Aqueous solutions are readily absorbed and capable of causing systemic effects Mucous membranes provide route of administration when oral medications are contraindicated	Mucous membranes are highly sensitive to some medication concentrations Insertion of rectal and vaginal medication often causes embarrassment Client with ruptured eardrum cannot receive irrigations Rectal suppositories are contraindicated if client has had rectal surgery or if active rectal bleeding is present
Inhalation	
Inhalation provides rapid relief for local respiratory problems Route provides easy access for introduction of general anaesthetic gases	Some local agents can cause serious systemic effects

* Includes eyes, ears, nose, vagina, rectum, buccal and sublingual routes.

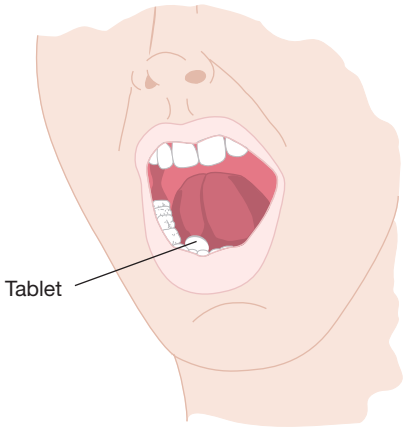

Figure 27-4 Sublingual administration of a tablet.

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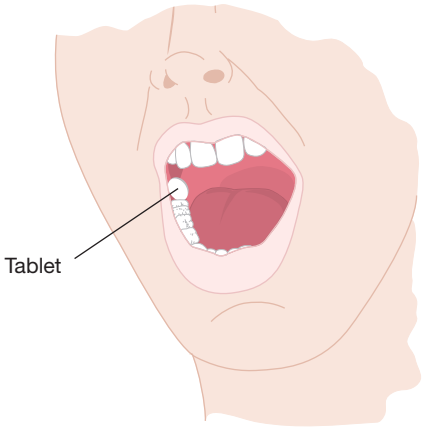

Figure 27-5 Buccal administration of a tablet.

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of medications through these advanced techniques. The nurse often remains responsible for monitoring the integrity of advanced systems of medication delivery, for understanding the therapeutic value of the medication and for evaluating the client's response to it, even when they do not administer the medication.

Epidural

A common body cavity route is into the epidural space via a catheter placed by an anaesthetist. The epidural route is most commonly used for the administration of analgesia peri- and postoperatively (see Chapter 41). Nurses and midwives working in specialised areas (e.g. acute pain nurses, recovery room nurses) may administer medicines in **bolus** form (a small dose) or by continuous **infusion**.

Intrathecal

Intrathecal medicines are administered by an anaesthetist through a catheter placed into the subarachnoid space or into one of the ventricles of the brain. Intrathecal administration is often associated with long-term medicine administration through surgically implanted catheters.

Intraperitoneal

In the intraperitoneal technique, medicines (chemotherapeutics and antibiotics) are administered into the peritoneal cavity where they are absorbed into the circulation. One method of dialysis also uses the peritoneal route for the removal of fluid, electrolytes and waste products.

Intrapleural

In the intrapleural method, medicines are administered by a medical practitioner either directly through the chest wall or through a chest tube. Chemotherapeutics are the most common medications administered via this method. Medical staff also instil medicines that help resolve persistent pleural effusion to promote adhesion between the visceral and parietal pleura (*pleurodesis*).

Intra-arterial

Intra-arterial infusions are administered directly into the arteries, and are used in clients with arterial clots. The nurse manages a continuous infusion of fibrinolytic (clot-dissolving) agents. The nurse must carefully monitor the integrity of this infusion to prevent inadvertent disconnection of the system and subsequent bleeding. It is important to note that nurses are not usually required to administer medicines intra-arterially and that inadvertent administration via this route will often result in severe tissue damage and amputation (in the cases of intra-arterial injections into limbs).

Intraosseous

Intraosseous infusions are commonly given via the anterior surface of the tibia or alternatively into the iliac crest or spinal processes. They allow delivery of fluids, medication or blood into the bone marrow. Medication absorption is similar to the IV route.

Other parenteral routes

Other methods of medicine administration that are usually limited to medical staff are intracardiac (injection of a medicine directly into the cardiac tissue) and intra-articular (injection of a medicine into a joint).

Topical administration

Medications applied to the skin and mucous membranes generally have local effects.

Skin

Topical medications are applied to the skin by painting or spreading them over an area, applying moist dressings,

soaking body parts in a solution or giving medicated baths. Systemic effects can occur if a client's skin is thin, if the medication concentration is high or if contact with the skin is prolonged. Some medications (e.g. GTN and oestrogens) have systemic effects (i.e. work throughout the body, not just in the area where the medicine is applied) when applied topically by a transdermal disc or patch. The disc secures the medicated ointment to the skin. These topical applications may be applied for as little as 24 hours or as long as 7 days.

Mucous membranes

Medications can be applied to mucous membranes in a variety of ways:

- application of a liquid or ointment (e.g. eye drops, gargling, swabbing the throat)
- insertion of a medication into a body cavity (e.g. rectal suppository, vaginal pessary or medicated packing)
- **instillation** of fluid into a body cavity (e.g. ear drops, nose drops, or bladder and rectal instillation where fluid is retained)
- irrigation of a body cavity (e.g. flushing eye, ear, vagina, bladder or rectum with medicated fluid where fluid is not retained)
- spraying (e.g. instillation into nose and throat).

Inhalation

The deeper passages of the respiratory tract provide a large surface area for medication absorption. Medications can be administered through the nasal passages, oral passage or less frequently via endotracheal tubes via the client's mouth or nose into the trachea (Figure 27-6). Medications administered by the **inhalation** route are readily absorbed into the bloodstream and work rapidly (they have local as well as systemic effects) because of the rich vascular alveolar–capillary network present in the pulmonary tissue.

Intraocular

Intraocular medication delivery involves inserting a medication similar to a contact lens into the client's eye. The eye medication disc (usually an ocular lubricant) has two soft outer layers in which the medication is enclosed. The disc can remain in the client's eye for up to a week.

• CRITICAL REFLECTION POINT

You are caring for a client taking a medicine via the sublingual route. She admits that sometimes it is easier to swallow the tablet rather than wait for it to dissolve. She says it is 'mostly dissolved' anyway. What is the risk with this? What could you do?

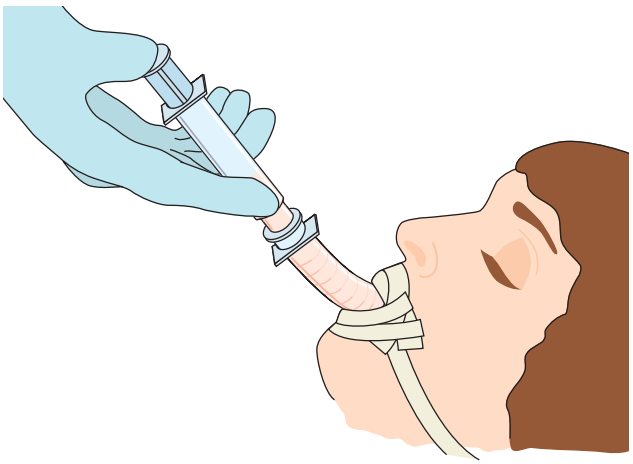

Figure 27-6 Medication being instilled through endotracheal tube.

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System of medication measurement

The proper and safe administration of a medication depends on the nurse's ability to calculate and measure medication doses accurately. Placing a decimal point or adding a zero to a dose can lead to a fatal error. The nurse is responsible for checking the correctness and appropriateness of a dose before administration. In Australia and New Zealand, the metric system is the standard of measurement.

Metric system

The metric system has the advantage of being logically organised. Metric units can easily be converted and calculated through simple multiplication and division, as each basic unit of measurement is organised into units of 10.

Multiplying or dividing by 10 produces secondary units. In multiplication, the decimal point moves to the right; in division, the decimal moves to the left. For example:

$$10.0 \text{ mg} \times 10 = 100 \text{ mg}$$
$$10.0 \text{ mg} \div 10 = 1.0 \text{ mg}$$

The basic units of measurement in the metric system are the *litre* (volume) and the *gram* (weight). The basic unit symbols are:

gram = g
litre = L

Symbols for derived units include:

milligram = mg
millilitre = mL
microgram = microg, mcg or µg (the latter two abbreviations are avoided, as they can be confused with mg)

Latin prefixes designate subdivision of the basic units: *deci-* (1⁄10 or 0.1), *centi-* (1⁄100 or 0.01) and *milli-* (1⁄1000 or 0.001). Greek prefixes designate multiples of the basic units: *deca-* (10), *hecto-* (100) and *kilo-* (1000). Medicines which require very small doses are usually written in micrograms (1000 micrograms = 1 milligram). Fractions or multiples of a unit are used when writing medication doses; fractions are always in *decimal form*. A zero is always placed in front of the decimal point to prevent error:

500 mg or 0.5 g, not ½ g
10 mL or 0.01 L, not 1⁄100 L
1 microgram (mcg or μg) = 0.000 001 g
1 milligram (mg) = 0.001 g
1000 micrograms (mcg or μg) = 1000 × 0.000 001 g
= 0.001 g or 1 mg

Solutions

The nurse uses solutions of various concentrations for injections, irrigations and infusions. A solution is a *given mass* of substance (often solids, but may be liquids or even gases) dissolved in a *known volume* of fluid.

When a solid is dissolved in a fluid, the concentration is in units of mass per units of volume, for example, g/mL, g/L or mg/mL. When a liquid is dissolved in a fluid, the concentration may be in units of volume, with the dissolved liquid written first: for example, mL/L. The concentration of a solution may also be expressed as a percentage. A 10% solution, for example, is 10 g of solid dissolved in 100 mL of solution. A proportion or ratio also expresses concentrations: a 1⁄1000 solution represents a solution containing 1 g of solid in 1000 mL of liquid or 1 mL of liquid mixed with 1000 mL of another liquid.

Clinical calculations

The nurse must possess an understanding of basic arithmetic to calculate medication dosages, mix solutions and perform a variety of other activities. This skill is important because a medication is not always dispensed in the unit of measure in which it is ordered. This occurs because pharmaceutical companies package and bottle certain standard equivalents. For example, the prescriber may order 250 mg of a medication that is available only in grams. The nurse is responsible for converting available units of volume and weight to the desired doses. Therefore, the nurse should be aware of approximate equivalents in all major measurement systems.

Conversions

Converting measurements is relatively easy. To change milligrams to grams, divide by 1000, moving the decimal point three places to the left:

1000 mg = 1 g
350 mg = 0.35 g

To convert litres to millilitres, multiply by 1000 or move the decimal point three places to the right:

1 L = 1000 mL
0.25 L = 250 mL

Dosage calculations

Many formulae can be used to calculate medication dosages. The following basic formulae can be applied when preparing solid or liquid forms.

Tablets:

$$\text{Amount to be administered} = \frac{\text{Dose required}}{\text{Stock strength}}$$

Mixtures and injectables:

$$\text{Amount to be administered} = \frac{\text{Dose required}}{\text{Stock strength}} \times \text{Volume}$$

- 'Dose required' is the amount of pure medication prescribed.
- 'Stock strength' is the weight or volume of medication supplied by the pharmacy; it may be expressed on the medication label as the contents of a tablet or capsule or as the amount of medication dissolved per unit volume of liquid.
- 'Volume' is the basic unit or quantity of the medication that contains the dose on hand. The volume of a liquid may be in millilitres or litres, depending on the container.
- 'Amount to be administered' is the actual amount of available medication the nurse will administer.

Examples

The following example illustrates how to apply the formula. The prescriber orders the client to receive pethidine 75 mg IM. Thus the dose required is 75 mg. The medication is available only in ampoules containing 100 mg per 2 mL. Thus the stock strength is 100 mg in a volume of 2 mL. The formula is applied as follows:

$$\text{Amount to be administered} = \frac{\text{Dose required}}{\text{Stock strength}} \times \text{Volume}$$

$$\text{mL to be administered} = \frac{75 \text{ mg}}{100 \text{ mg}} \times 2 \text{ mL}$$

Answer: The easiest approach involves using a calculator to do 75 divided by 100 multiplied by 2 which gives 1.5mL; however, another approach is shown in steps A to D below.

A. To simplify the 75⁄100 fraction, divide both numerator and denominator by 25:
¾ × 2 mL = mL to be administered

B. Multiply the numerators:
6⁄4 = mL to be administered

C. Divide the numerator (6) by the denominator (4):
6 ÷ 4 = 1½ mL to be administered

D. Since syringes are calibrated in decimals, the nurse must convert the fraction 1½ mL to 1.5 mL to accurately draw up the correct dose.

Solids

The following example demonstrates how the formula applies to solid dose forms. The prescriber orders 0.125 mg PO of digoxin. The medication is available in tablets containing 0.25 mg.

$$\text{Amount to be administered} = \frac{\text{Dose required}}{\text{Stock strength}}$$

$$\text{Tablets to be administered} = \frac{0.125 \text{ mg}}{0.25 \text{ mg}}$$

= ½ or 0.5 tablet to be administered

Many tablets come with scores or indentations across the centre of the tablet (Figure 27-7). A scored tablet is easy to break in half for divided doses. Unscored tablets should not be broken because of the potential for giving an incorrect dosage. Evidence-based reference guides such as 'Don't rush to crush' by the Society of Hospital Pharmacists of Australia (www.shpa.org.au, 2015) are available to help deduce if a tablet may be broken or crushed.

Liquids

Often, liquid medications come prepared in volumes greater than 1 mL. The formula still applies. For example, the order is erythromycin suspension 250 mg PO. The pharmacy delivers bottles containing 100 mL with the labels stating '5 mL contains 125 mg of erythromycin'.

$$\text{Amount to be administered} = \frac{\text{Dose required}}{\text{Stock strength}} \times \text{Volume}$$

$$\text{Volume to be administered} = \frac{250 \text{ mg}}{125 \text{ mg}} \times 5 \text{ mL}$$

2 × 5 mL = 10 mL to be administered

Here the nurse may disregard the total volume available and instead uses the values (i.e. '5 mL contains …') noted on the label. If the nurse calculated the dose on the basis of 100 mL available, the following error would occur:

$$\frac{250 \text{ mg}}{125 \text{ mg}} \times 100 \text{ mL} = 200 \text{ mL to be administered [incorrect]}$$

On the basis of this calculation, the client would receive 20 times the desired dose.



Figure 27-7 Scored medication.
Dreamstime/Invisibleviva.

Paediatric dosages

Children are unable to metabolise many medications as readily as adults, as their liver and kidneys are not fully developed (WHO 2007). Children also have a higher body water content than adults (WHO 2007). These factors combine to make the accurate calculation of paediatric doses very important. In most cases, the prescriber will calculate the dose for a child before ordering the medication. However, nurses should be aware of the formulae used to calculate paediatric dosages and should recheck all dosages before administration. Most medication references list the normal ranges of paediatric dosages.

The most common way of calculating medicine doses for children is in milligrams/grams per kilogram (otherwise referred to as 'weight per kilo'). This is where the child's weight (in kilograms) is multiplied by the recommended dose for that medicine.

Another accurate method of calculating paediatric dosages is based on a child's body surface area. Body surface area is estimated on the basis of the child's height and/or weight. A standard *nomogram* is used to estimate a child's body surface area (Figure 27-8). To calculate a paediatric dose, the nurse uses the formula below. The formula is a ratio of the child's body surface area compared with the body surface area of an average adult (1.7 square metres, or 1.7 m^2):

$$\text{Child's dose} = \frac{\text{Surface area of child} \times \text{Normal adult dose}}{1.7 \text{ m}^2}$$

CLINICAL EXAMPLE

A child is prescribed oral ibuprofen (Nurofen) at a dose of 10 mg/kg every 6 hours for pain. The child weighs 9 kilograms.

Child's dose = 10 mg (recommended dose per kilo) × 9 kg (child's weight)
= 90 mg every 6 hours.

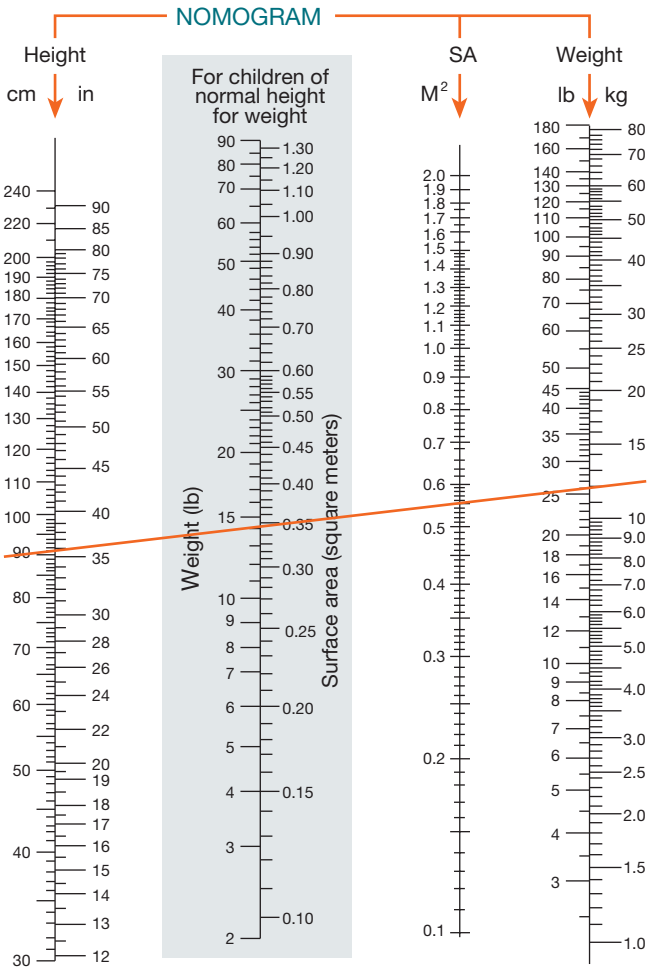


Figure 27-8 **West nomogram for estimation of surface areas in children. A straight line is drawn between height and weight. The point where the line crosses the surface area is the estimated body surface area.**

Behrman RE, Vaughan VC (eds), 1987 Nelson textbook of pediatrics, 13th edn. Saunders, Philadelphia; modified from data of Boyd E, by West CD.

CLINICAL EXAMPLE

A prescriber orders ampicillin for a child weighing 12 kg. The normal adult dose for ampicillin is 250 mg. Using the nomogram shown in Figure 27-8, the nurse calculates that a child who is 12 kg and 92 cm tall has a surface area of 0.54 m^2. Using this information, the nurse can then calculate the appropriate child's dosage:

$$\text{Child's dose} = \frac{0.54\ m^2 \times 250\ mg}{1.7\ m^2}$$
$$= 0.3 \times 250\ mg$$
$$= 75\ mg$$

Medication administration

Generally, in a hospital environment it is the NP or medical practitioner who prescribes medications. Where allowed, a prescriber may also order a medication by talking to the nurse in person or by telephone (**verbal order**). There is a very real possibility of a verbal order being misunderstood and it is difficult to verify a verbal order after the event. When the nurse receives a verbal order, it is usually repeated to the prescriber with a second nurse also confirming the order with the prescriber (according to agency policy). The order should be entered into the client's healthcare record immediately and signed by the nurse and the checking nurse, indicating the time and the name of the prescriber. It is a statutory and institutional requirement that a prescriber confirm the order by signing it within 24 hours. Institutional policies vary regarding the personnel who can take verbal or telephone orders. Generally, nursing students may not take these types of medication orders without proper direct supervision from a qualified nurse or midwife.

Common abbreviations and symbols are used when writing orders to indicate dosage frequencies or times, routes of administration and special information for giving the medication (see Table 27-2). Administering medications to infants and children can be particularly challenging, and the nurse needs to consider the best approach in each circumstance (see *Working with diversity*).

Orders in acute care agencies

Four common types of medication orders are based on the frequency and/or urgency of medication administration.

Standing orders or routine medication orders

A **standing order** is carried out until cancelled by the prescriber, or until a prescribed number of days elapse. A standing order is usually written up in the client's chart by the nurse who administers it and is countersigned by another nurse. A standing order may indicate a final date or a number of treatments or dosages. Many institutions have policies for automatically discontinuing standing orders. It may be practice for oncology medical staff to have standing orders with regard to their clients' nausea treatment. In these cases, all of these clients will be given a particular antiemetic unless instructions to the contrary are given. Routine medication orders are written up by the medical officer and continue for the prescribed time, or number of doses, or until cancelled.

prn orders

A medication may be ordered to be given when required by a client. This is a *pro re nata* order (**prn order**). The

TABLE 27-2 Acceptable terms and abbreviations

The following table lists the terms and abbreviations that are commonly used and understood and therefore considered acceptable for use; where there is more than one acceptable term, the preferred term is shown first in the right-hand column.

Intended meaning	Acceptable terms or abbreviations
Dose frequency or timing	
(in the) morning	morning, mane
(at) midday	midday
(at) night	night, nocte
twice a day	bd
three times a day	tds
four times a day	qid
every 4 hours	every 4 hrs, 4 hourly, 4 hrly
every 6 hours	every 6 hrs, 6 hourly, 6 hrly
every 8 hours	every 8 hrs, 8 hourly, 8 hrly
once a week	once a week and specify the day in full, e.g. 'once a week on Tuesdays'
three times a week	three times a week and specify the exact days in full, e.g. 'three times a week on Mondays, Wednesdays and Saturdays'
when required	prn
immediately	stat
before food	before food
after food	after food
with food	with food
Route of administration	
epidural	epidural
inhale, inhalation	inhale, inhalation
intraarticular	intraarticular
intramuscular	IM
intrathecal	intrathecal
intranasal	intranasal
intravenous	IV
irrigation	irrigation
left	left
nebulised	NEB
nasogastric	NG
oral	PO
percutaneous enteral gastrostomy	PEG
per vagina	PV
per rectum	PR
peripherally inserted central catheter	PICC
right	right
subcutaneous	subcut
sublingual	subling
topical	topical
Units of measure and concentration	
gram(s)	g
International unit(s)	International unit(s) (IU)
unit(s)	unit(s)
litre(s)	L
milligram(s)	mg
millilitre(s)	mL
microgram(s)	microgram, microg
percentage	%
millimole(s)	mmol
Dose forms	
capsule	cap
cream	cream
ear drops	ear drops
ear ointment	ear ointment
eye drops	eye drops
eye ointment	eye ointment
injection	inj
metered dose inhaler	metered dose inhaler, inhaler, MDI
mixture	mixture
ointment	ointment, oint
pessary	pess
powder	powder
suppository	supp
tablet	tablet, tab
patient controlled analgesia	PCA

The Australian Commission on Safety and Quality in Health Care, Table 2 from Acceptable terms and abbreviations in Recommendation for terminology, abbreviations and symbols used in the prescribing and administration of medicines (2011). Sydney. ACSQHC. Please see www.safetyandquality.gov.au/our-work/medication-safety/electronic-medication-management-systems/

WORKING WITH DIVERSITY

Focus on infants and children

Oral medications

- Liquid forms are safer to swallow to avoid aspiration.
- Juice, a soft drink or a frozen juice bar may be offered after a medication is swallowed.
- Carbonated beverages poured over finely crushed ice may reduce nausea.
- When mixing medications with palatable flavourings such as syrup or honey, the nurse uses only a small amount. The child may refuse to take all of a larger mixture. The nurse avoids mixing a medication with foods or liquids that the child is taking well because the child may in turn refuse them.
- A plastic disposable syringe is the most accurate device for preparing liquid doses, especially those less than 10 mL. (Cups, teaspoons and droppers are inaccurate.)
- When administering liquid medications, a spoon, plastic cup or oral syringe (without needle) is useful.

Injections

- The nurse is very careful when selecting intramuscular injection sites. Infants and small children have underdeveloped muscles.
- Children can be unpredictable and uncooperative. Someone should be available to comfort and physically support the child if needed.
- The nurse always wakes a sleeping child before giving an injection.
- Distracting the child with conversation, blowing bubbles or a toy may reduce pain perception.
- Play therapists may be able to help reduce a child's anxiety.
- The nurse gives the injection quickly and does not fight with the child.

Overpowering and restraining a child is unnecessarily traumatic and often constitutes poor practice. Enlist the aid of a play therapist or use injection aids such as a 'buzzy bee' (http://buzzy4shots.com/what-is-buzzy/), local anaesthetic creams, an icepack or even light sedation under medical supervision.

nurse uses assessment skills and clinical judgement in determining whether a client needs the medication. Often, minimum intervals are set for the time of administration. This means the medication cannot be given more often than prescribed. Examples of prn orders are: 'morphine sulfate 2 mg IV 4 hrly prn for pain' or 'metoclopramide 20 mg IM 8 hrly prn for nausea'.

When medications are administered, the nurse documents the assessment made and the time of medication administration. The nurse should frequently evaluate the effectiveness of the medication and record findings in the appropriate record. Often, prn orders include a *range order* (e.g. 7.5–10 mg) where nurses decide on the actual dose.

Single (one-time) orders

A prescriber may order a medication to be given only once at a specified time. This is common for preoperative medications or medications given before diagnostic examinations. An example is 'temazepam 10 mg at 0900' (preoperative medication).

Stat (statim) orders

A **stat order** signifies the immediate and once-only administration of a single dose of a medication. Stat orders are often written for emergencies when the client's condition changes suddenly. For example: 'Give hydralazine 10 mg IV stat' (antihypertensive medication).

Some conditions change the status of a client's medication orders. For example, surgery may necessitate a review of all of a client's preoperative medications. Because the client's condition changes after surgery, the prescriber may write new orders. When a client is transferred to another healthcare agency or to a different service within a hospital, or is discharged, the prescriber should review the medications and write new orders as indicated.

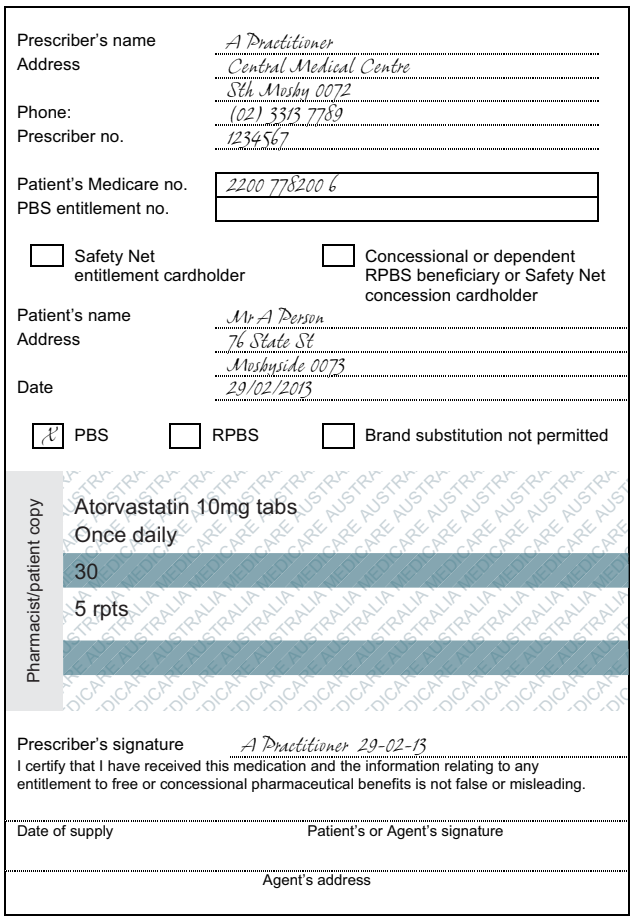
Prescriptions

The prescriber writes **prescriptions** (a prescription order) for clients who are to take medications outside the hospital. The prescription includes more-detailed information than a regular order because the client must understand how to take the medication and when to refill the prescription if necessary. The information contained in a prescription is regulated under national or state poison laws. Mandatory information includes at least two identifiers with client information (name and address), date, medication name and dosage strength, frequency, dispensing information, directions for the client and the prescriber's name and signature (Figure 27-9). The prescription must be legible and written in ink.

• CRITICAL REFLECTION POINT

A prescription on a medication chart is unclear. You ask the prescriber to clarify and they tell you that it clearly says 'amoxycillin', but you cannot read it. They refuse to rewrite it, saying it is 'clear enough' and you should 'just give the medicine now'.

What should you do? What are the risks here?


Prescriber's name A Practitioner
Address Central Medical Centre
5th Mosby 0072
Phone: (02) 3313 7789
Prescriber no. 1234567

Patient's Medicare no. 2200 778200 6
PBS entitlement no.

☐ Safety Net entitlement cardholder
☐ Concessional or dependent RPBS beneficiary or Safety Net concession cardholder

Patient's name Mr A Person
Address 76 State St
Mosbyside 0073
Date 29/02/2013

☒ PBS ☐ RPBS ☐ Brand substitution not permitted

Pharmacist/patient copy

Atorvastatin 10mg tabs
Once daily
30
5 rpts

Prescriber's signature A Practitioner 29-02-13
I certify that I have received this medication and the information relating to any entitlement to free or concessional pharmaceutical benefits is not false or misleading.

Date of supply
Patient's or Agent's signature
Agent's address

Figure 27-9 **A prescription completed and signed by a medical practitioner.**

Distribution systems

Systems for storing and distributing medications vary. Pharmacists supply the medications, but nurses administer medications to clients. Institutions have special areas for stocking and dispensing medications, including dedicated medication rooms, portable locked medication trolleys, and individual storage units next to clients' rooms or in a bedside locker. Nurses must make sure that storage areas are locked when unattended.

Stock supply system

With a stock system, medications are available in quantity in large multidose containers. This system is time-consuming and costly because a nurse must dispense each medication separately for a client. The stock system has been associated with a high rate of medication errors, and for this reason its use has declined. Opioids are often provided in stock supply and kept in a secure cupboard (for controlled or dangerous medicines) that complies with statutory requirements.

Unit-dose system

The unit-dose system uses portable medication trolleys containing a drawer with a 24-hour supply of medications for each client. The *unit dose* is the ordered dose of medication the client receives at one time. Each tablet or capsule is wrapped in a foil or paper container. At a designated time (daily, or in some cases weekly), the pharmacist refills the drawers in the trolley with a fresh supply. The trolley also contains limited amounts of prn stock medications for special situations. The unit-dose system is designed to reduce medication errors and saves steps in dispensing medications.

Client bedside storage system

In many clinical settings, medications are stored and dispensed from a locked cupboard at the client's bedside. The nurse administers the medication at the required time. This system reduces the possibility of incorrect medication being given to the client, because only medicines required by the client are kept in the locked cupboard. Opioids and other Schedule 8 medicines are not legally able to be stored in this way.

Clinical reasoning in administering medications

Accountability and responsibility

Nurses accept full responsibility for all actions performed while caring for clients, including the administration of medications. If the nurse administers a medication incorrectly or administers the wrong medication, the nurse is held responsible for that action and its consequence. The nurse accepts the responsibility of ensuring that the medication and associated nursing actions will not harm the client. Therefore, the nurse must not assume that the medication ordered for the client is the correct medication or the correct dose. Nurses must be familiar with the therapeutic effect, usual dosage, laboratory results and side effects of all medications administered.

Nurses are also responsible for ensuring that clients who will self-administer medications have been properly informed and monitored.

Demonstrating accountability and acting responsibly in professional practice includes acknowledging errors in professional practice. Most of the errors made by nurses are medication errors. A **medication error** is any event that could cause or lead to incorrect administration according to the prescriber's orders as written on the client's chart. Medication errors may occur when a nurse fails to follow routine procedures, such as checking dosage calculations, deciphering handwriting that is illegible or administering medications with which the nurse is unfamiliar (see Table 27-3). All medication errors can be linked, in some way, to an inconsistency in adhering to the 'seven rights' (see below) of medication administration. Hospital medication delivery systems should be designed so that there is a system of checks and balances, which helps to reduce medication errors. Consider the following *Clinical example*.

CLINICAL EXAMPLE

The medical officer writes an order for a medication. The nurse receives the order and checks it for completeness and appropriateness. The nurse may question the order; for example, if the written order is illegible, the dose seems unusually low or high, or the medication seems inappropriate for the client's condition. The order is sent to the pharmacy, where it may be read by a pharmacy technician and may be prepared by the technician. The pharmacist checks the technician's work, that the medication is the appropriate dosage, and for medication interactions and medication allergies. When a medication order seems inappropriate, e.g. a medication order written for 2000 mg when the proper dosage calls for 200 mg, the pharmacist may call the prescriber for clarification. When the order is appropriate, the medications are sent

continued

TABLE 27-3 Ways to prevent medication administration errors

Precaution	Rationale
Read medication labels carefully	Many products come in similar containers, colours and shapes
Question administration of multiple tablets or vials for single dose	Most doses are one or two tablets or capsules or one single-dose vial. Incorrect interpretation of order may result in excessively high dose
Be aware of medications with similar names	Many medication names sound alike
Check decimal point	Some medications come in quantities that are multiples of one another
Question abrupt and excessive increases in dosages	Most dosages are increased gradually so that prescriber can monitor therapeutic effect and response
When new or unfamiliar medication is ordered, consult resource	If prescriber is also unfamiliar with drug, there is greater risk of inaccurate dosages being ordered
Do not administer medication ordered by nickname or unofficial abbreviation	Many prescribers refer to commonly ordered medications by nicknames or unofficial abbreviations. If nurse or pharmacist is unfamiliar with name, wrong medication may be dispensed and administered
Do not attempt to decipher illegible writing	When in doubt, ask prescriber. Unless the nurse questions an order that is difficult to read, the chance of misinterpretation is great
Know clients with same last names. Also have clients state their full names Check name bands carefully	It is common to have two or more clients with same or similar last names. Special labels on client's record and medication order can warn of potential problem
Do not confuse equivalents or units of measurement	When in a hurry, it may be easy to misread equivalents (e.g. milligram instead of millilitre)

to the nursing unit. The nurse receives the medication and checks the administration record against what the pharmacy has sent and what the prescriber ordered. Before administration, the nurse performs the seven rights of medication administration. The nurse allows the client to be the final check by reviewing the name of the medication, the dosage and why the client is receiving the medication.

The *Clinical example* above illustrates that the nurse is the essential link in the prevention of medication errors. Unfortunately, many medication errors are never identified or reported. When an error is recognised it should be acknowledged immediately and reported to the appropriate hospital personnel, for example, the nurse manager, and documented according to institutional policy (usually including a report in the incident management system). Measures to counteract the effects of the error may be necessary. The nurse is also responsible for completing an incident report describing the nature of the error. Incident reports help administrative personnel identify problems in the hospital system that contribute to medication errors.

Nurses may be asked to administer medications of which they have limited knowledge. They should recognise their knowledge limits and consult more-expert nurses, a pharmacist or pharmacology texts.

Institutional policy may place limitations on the nurse's ability to administer certain types of medications, by certain routes or in certain clinical units. For example, in most agencies, only nurses with specialised training can administer chemotherapeutic medications. Not all prescribers are aware of all the limitations and may prescribe these medications in ward areas where these are not usually administered. Nurses must recognise the limitations, and ensure that the prescriber is informed and that appropriate actions are taken to ensure the client receives the medications as prescribed and within the time prescribed.

Safe medication administration

As a nursing student, you may read about the 'five', 'six' or 'seven' rights of medication administration, which refer to the steps involved in checking a medicine for administration to a client. However, the most important point is to use this as a prompt to think through the principles of safe medication administration in clinical practice; not simply rote-learning a sequence of steps. The well-known 'five rights of medication administration' have been expanded upon in order to ensure safe medication administration; these **seven rights of medication administration** are (Brotto & Rafferty 2015):

1. The right medication
2. The right dose
3. The right client (three identifiers)
4. The right route
5. The right time
6. The right reason
7. The right documentation.

Right medication

When administering medications, the nurse compares the label of the medication container with the medication chart. The nurse does this three times: once before removing the container from the drawer or shelf; once as the amount of medication ordered is removed from the container; and again before returning the container to storage. With unit-dose prepackaged medications, the nurse checks the label with the medication order a third time even though there is no permanent container. Unit-dose medications must be checked before being opened at the client's bedside.

Nurses should only administer the medications they prepare. If an error occurs, the nurse who administers the medication is responsible for its effects. If a client questions the medication a nurse prepares, it is important not to ignore these concerns, as an alert client will know whether a medication is different from those received before. In most cases, the client's medication order may have been changed, but the client's questions might reveal an error. An alert client or carer can play an important role in the safe administration of medications and should not be underestimated. The nurse should withhold the medication until the preparation can be rechecked against the prescriber's orders to ensure the medication ordered is congruent with the client's condition.

Clients who self-administer medications should keep them in their original labelled containers, separate from other medications, to avoid confusion. The nurse should never prepare medications from unmarked containers or from containers with illegible labels. If a client refuses a medication, the nurse must discard it rather than return it to the original container. Unit-dose packaged medications can be saved if they are unopened.

Right dose

The unit-dose system is designed to minimise errors. When a medication must be prepared from a larger volume or strength than needed, or when the prescriber orders a system of measurement that is different from that supplied by the pharmacist, the chance of error increases. When performing medication calculations or conversions, the nurse should have another qualified nurse

check the calculated doses if unsure. After calculating dosages, the nurse prepares the medication using standard measurement devices. Graduated cups, syringes and scaled droppers can be used to measure medications accurately. At home, clients should use kitchen measuring spoons or calibrated measures rather than ordinary teaspoons and tablespoons, which vary in volume.

When it is necessary to break a scored tablet, the break should be even. A tablet may be cut in half by using a knife edge or by using a cutting device. Tablets that are not scored must not be cut, as they rarely break evenly and the correct dose cannot be guaranteed. Discard tablets that do not break evenly. The two halves are given in successive doses if the second half is repackaged and labelled.

Preparing a tablet by crushing is not always safe or appropriate. Consultation with the pharmacy is essential to determine whether a medication can be crushed and if it can be mixed with very small amounts of food or liquid. The client's favourite foods or liquids should not be used, because a medication may alter their taste and thus change the client's desire for them. The nurse should use a more suitable form of the medication (such as a liquid). If an alternative form is unavailable, the crushing device should always be completely cleaned, as remnants of previously crushed medications may increase a medication's concentration or result in the client receiving a portion of an unprescribed medication. Not all medications are suitable for crushing; those with enteric coatings or hard shells should be given whole, as crushing them may cause inadvertent side effects or overdose. In all cases, it is preferable to request that the medication be supplied in the correct dose format rather than breaking tablets, which may result in the administration of an incomplete or uneven dose.

Right client

An important step in administering medications safely is being sure the medication is given to the right client. It is difficult to remember every client's name and face, and so the nurse should not rely on memory to identify the client. Rather, the nurse checks the medication order form (also called a 'drug chart') against the client's identification bracelet (Figure 27-10) and asks the client to state their name. The client is also asked if they have any medication allergies. If an identification bracelet is smudged or illegible or is missing, the nurse must get a new one for the client. When identifying a client verbally, the nurse should not merely say the name and assume that the client's response indicates that they are the right person. Instead, the nurse asks the client to state their full name, explaining that the question is routine when giving medication.



Figure 27-10 **Before administering any medications, the nurse checks the client's identification and allergy bracelet.**

In aged care or residential facilities, residents might not wear an identification band. It is important that the nurse uses some other reliable method for resident identification. If residents are unable to identify themselves (due to confusion or dementia), a photographic ID is necessary.

Right route

If orders do not designate a route of administration, the specified route is not recommended or the route is inappropriate for the specified client, the nurse consults the prescriber. When the nurse administers injections, precautions are necessary to ensure that the medications are given correctly. The injection of a liquid designed for oral use can produce local complications such as a sterile abscess, or fatal systemic effects. Medication companies label parenteral medications 'for injection only'. Care must be taken to ensure that an injectable medication is prepared according to the manufacturer's instructions and administered with appropriate technique by the recommended route.

Right time

The nurse must know why a medication is ordered for certain times of the day and whether the time schedule can be altered. For example, two medications are ordered, one 8 hrly (every 8 hours) and the other tds (3 times a day). Thus both medications are to be given 3 times within a 24-hour period. The prescriber intends the 8 hrly medication to be given around the clock to maintain therapeutic blood levels of the medication, whereas the tds medication may sometimes be given only during the waking hours. Each institution has a recommended time schedule for medications ordered at frequent intervals. Selection of the time of administration must also consider the absorption of the medication, for example, whether it needs to be given with food.

The prescriber often gives specific instructions about when to administer a medication. A preoperative medication to be given on call means the nurse is to administer the medication when the operating room notifies the ward or unit. A medication ordered PC (after food) is to be given within half an hour after a meal, when the client has a full stomach. A stat medication is to be given immediately.

Medications that must act at certain times are given priority. For example, insulin should be given at a precise interval before a meal. All routinely ordered medications should be given within 30 minutes of the times ordered (30 minutes before or after the prescribed time).

Some medications require the nurse's clinical judgement in determining the proper time for administration. A prn sleeping medication should be administered when the client is prepared for bed or at a time appropriate for maximum benefit. A nurse also uses judgement when administering prn analgesics. For example, the nurse may need to obtain a stat order from the prescriber if the client requires a medication before the prn interval has elapsed.

The nurse helps clients to plan post-discharge schedules based on preferred medication intervals, taking into account their usual daily activities at home. For clients who have difficulty remembering when to take medications, the nurse can make a chart that lists the administration times or prepare a special container to hold each timed dose.

Right reason

This is where the nurse must assess if the reason for the medicine is valid. This links with QUM where the medicine needs to be assessed as being appropriate for the client in their current state. The nurse must assess the client and their need for this particular medicine, and evaluate if this medicine is being given for the right reason. If no reason for this medicine is apparent, then they should contact the prescriber.

Right documentation

The nurse must check the medication chart to ensure that the prescription is legal and clearly written. If anything is unclear, then they must check with the prescriber and have the documentation made clear. The nurse must also check to see if the medicine has already been given or if there is anything else wrong with the documentation before administering the medicine and signing the necessary documentation themselves.

• CRITICAL REFLECTION POINT

You receive a prescription for a medication with which you are very familiar. It does not seem clear to you, however, why this medication was ordered for your client, as she does not have a condition for which this medication is commonly used.

How would you proceed in this case? Reflect upon the 'seven rights' and think of what could happen to cause a medication error if these are not considered. What factors could increase your chances of making a medication error?



CLINICAL REASONING PROCESS

GATHERING RELEVANT INFORMATION AND DATA

To determine the need for and potential response to medication therapy, the nurse assesses many factors.

History

Before administering medications, the nurse obtains or reviews the client's medical history, which may provide indications or contraindications for medication therapy. Disease or illness may place clients at risk of adverse medication effects. For example, if a client has a gastric ulcer, compounds containing aspirin will increase the likelihood of bleeding. Long-term health problems such as diabetes or arthritis, which require medications, suggest to the nurse the type of medications a client is taking. A client's surgical history may indicate use of medications; for example, after a thyroidectomy a client may require thyroid hormone replacement.

If the client has a history of allergies to medication, the nurse documents this to inform other members of the healthcare team. Food allergies should also be carefully documented because many medications have ingredients also found in food sources. For example, a client allergic to shellfish may be sensitive to any product containing iodine, such as Betadine (povidone–iodine topical antiseptic) or dyes used in radiological testing. All allergies should be noted on the nurse's admission notes, medication records and medical history, and the client's file should carry a medication alert warning of allergies. The client should also wear an allergy armband.

Medication data

The nurse assesses information about each medication the client takes, including length of time the medicine has been taken, the current dosage and whether the client has experienced adverse effects from the medication. In addition, the nurse reviews medicine data, including action, purpose, normal dosages, routes, side effects and nursing implications for administration and monitoring. Useful questions to ask are: 'What is the smallest possible dose that can be ordered?' (a question pertinent to older adults); 'Can a certain medication interact with other medications being used?'; and 'Are there special instructions for administering the medication?' Often, several resources must be consulted to gather the information. Pharmacology textbooks, nursing medicine reference guides, the *MIMS Annual*, medication package inserts and the pharmacist are valuable resources. The nurse is responsible for knowing as much as possible about each medication given.

As well as taking note of any prescribed medication, the nurse must ask clients if they are currently or have recently taken any **over-the-counter (OTC) medications** or complementary

preparations. Many commonly available preparations (e.g. from a supermarket) have the potential to interact with prescribed medications and must be identified.

Diet history

A diet history reveals usual eating patterns and food preferences. With this knowledge, the nurse can plan the dosage schedule more effectively and advise the client to avoid foods that may interact with medications.

Client's perceptual or coordination problems

For a client with perceptual or coordination limitations, self-administration may be difficult. The nurse must assess the client's ability to prepare doses and take medications correctly. If the client is unable to self-administer medications, the nurse needs to assess whether family or friends are available to help, or arrange community services as required.

Client's current condition

The ongoing physical or mental status of a client may affect whether a medication is given or how it is administered. The nurse should assess a client carefully before giving any medication. For example, the nurse may check blood pressure before giving an antihypertensive, or respiratory rate before administering an opioid. A client with nausea may be unable to swallow a tablet. Assessment findings also serve as a baseline in evaluating the effects of medication therapy.

Client's attitude to medication use

The client's attitude to medications may reveal a level of medication dependence or drug avoidance. Clients may not express their feelings about taking a particular medication, particularly if dependence or fear of dependence is a problem. The client's behaviour should be observed for evidence or indicators of medication dependence or avoidance. The nurse should also be aware of the influence of a client's cultural beliefs on medication compliance (see Chapter 17).

Client's knowledge and understanding of medication therapy

The client's knowledge and understanding of medication therapy influence the willingness or ability to follow a medication regimen. Unless a client understands a medication's purpose, the importance of regular dosage schedules and proper administration methods, and the possible side effects, compliance is unlikely. When assessing knowledge of a medication, the nurse asks: 'What is it for? How is it taken? When is it taken? What side effects have there been? Has the client ever stopped taking doses? Is there anything else the client does not understand and would like to know about the medication?' When the client has a history of poor compliance, the nurse should also review resources available for purchase of medications.

Client's learning needs

By assessing the client's level of knowledge about a medication and ability to take medications regularly, the nurse determines the need for education. It may be necessary for the nurse to explain the action and purpose of the medication, expected side effects, correct administration techniques and ways to help the client remember the medication regimen. If a client has been placed on a newly prescribed medication, more-comprehensive education may be required.

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

Assessment provides data about the client's condition, ability to self-administer medications and medication-use patterns, which can be used to determine actual or potential problems with medication therapy. Certain data are defining characteristics which, when clustered together, reveal nursing diagnoses (Box 27-7). For example, if a client admits missing a dose and there is evidence a medication has not decreased symptoms or there is limited clinical improvement, this may indicate non-adherence with a medication regimen. Once the diagnosis is selected, the nurse identifies influencing factors. Different interventions will be required for different factors, for example, inadequate finances versus lack of knowledge. In the community, the nurse ensures that the client knows where and how to obtain medications. The nurse also assesses the client's ability to read medication labels.

SETTING PRIORITIES AND ESTABLISHING GOALS

The nurse organises care activities to ensure the safe administration of medications. Hurrying to give clients medications can lead to errors. The nurse can also plan to use time during medication administration to teach clients about their medications. It is important to collaborate with the client's family or support persons when instruction is given. Family members will often reinforce the importance of medication regimens in the home setting.

When clients are hospitalised, it is important to complete any education well before the day of discharge. Early planning is critical to allow time for questions and discussion so that the client understands medications and self-administration guidelines.

Whether a client self-administers or the nurse assumes responsibility for administering medications, the following goals and expected outcomes must be met:

- Client and family understand medication therapy.
- Client gains therapeutic effect from the prescribed medications without discomfort or complications.
- Client has no complications related to the route of administration.
- Client safely self-administers medications.

BOX 27-7 Priority problems associated with people requiring medication therapy for anxiety

Knowledge deficit regarding a medication regimen
Mobility, impaired physical
Non-adherence regarding a medication regimen
Sensory/perceptual alterations, visual
Swallowing, impaired

• CRITICAL REFLECTION POINT

There has been much debate in Australia and in the United Kingdom over nurses wearing 'Do not disturb – nurse administering medications' signs during medication rounds in an attempt to reduce medication errors caused by constant interruptions. Many of the comments in the media about this say it encourages nurses to ignore their clients/families. What are the pros and cons of this strategy?

PREPARING FOR AND TAKING ACTION

Health promotion activities

The nurse, in promoting or maintaining the client's health, identifies factors that may improve or diminish wellbeing. Health beliefs, personal motivations, socioeconomic factors and habits (e.g. smoking) can influence the client's compliance with a medication regimen. Teaching the client and family about the benefit of a medication and the knowledge needed to take it correctly can promote adherence to the regimen and foster independence. Integrating the client's health beliefs and cultural practices into the treatment plan can help the nurse establish a schedule or routine with the client. The nurse may make referrals to community resources if the client is unable to afford, or is not sufficiently mobile to obtain, necessary medications or requires special assistance. Nurses need to incorporate health promotion into their approach to medicines, as otherwise (for example) valuable time spent teaching a client how to use their insulin injector is less meaningful if the client's poor diet is not addressed!

Client and family education

Unless clients are properly informed about medications, they may take the medications incorrectly or not at all. The nurse provides information about the purpose of medications and their actions and effects. Many healthcare facilities offer easy-to-read leaflets on specific types of medications. Clients must know how to take a medication properly and the consequences of failing to do so. For example, after receiving a prescription for an antibiotic, a client must understand the importance of taking the full prescription. Failure to do this can lead to a worsening of the condition, as well as the development of bacteria resistant to the medication.

Nurses teach proper self-administration of medications to clients who depend on daily injections. Clients learn to prepare and administer injections correctly using aseptic technique. Family members or friends should be taught to give injections in case the client becomes ill or is physically unable to handle a syringe.

Clients must be aware of the symptoms of medication side effects or toxicity. For example, clients taking anti-coagulants learn to notify their primary care providers immediately when signs of bleeding or bruising develop. Family members or friends should be informed of medication side effects, such as changes in behaviour, because they are often the first people to recognise such effects. Clients are better able to cope with problems caused by medications if they understand how and when to act.

All clients should learn the basic guidelines for medication safety. These guidelines ensure the proper use and storage of medications in the home (Box 27-8).

BOX 27-8 Teaching for safe medication administration

- Keep each medication in its original labelled container.
- Protect medication from exposure to heat and light, as required.
- Check that labels are legible.
- Discard outdated medications.
- Always finish a prescribed medication unless otherwise instructed, and never save a medication for future illnesses.
- Dispose of medications in a sink or toilet or take them to a chemist/pharmacy, and never place medications in the rubbish bin within reach of children.
- Never give a family member a medication prescribed for another.
- Refrigerate medications that require it.
- Read labels carefully and follow all instructions.
- Notify prescriber of side effects.

Acute care activities

When a nurse receives a medication order, several nursing interventions are essential for safe and effective medication administration.

Receiving medication orders

A medication order is required for almost all medications to be administered by a nurse. Before any other interventions, the nurse ensures that the medication order contains all of the elements in Box 27-9. If the medication order is incomplete, the nurse should inform the prescriber and ensure completion before carrying out any orders. Some medication or treatment orders can be given verbally or by telephone by the prescriber to the nurse.

Correct transcription and communication of orders

Generally, nurses in Australia and New Zealand are not responsible for the transcription of medication orders. If orders need reviewing or transferring to a new medication order sheet, it is the responsibility of the prescriber. There may be some exceptions in remote and rural practice and in specialist units, or in the role of the NP.

Accurate dosage calculation and measurement

When measuring liquid medications, the nurse uses standard measuring containers. The procedure for medication measurement is systematic to reduce the chance of error. The nurse calculates each dose when preparing the medication, pays close attention to the process of calculation and avoids any distractions.

Correct administration

For safe administration, the nurse washes hands and uses non-touch or aseptic techniques and proper procedures when handling and giving medications. Certain medications require the nurse to perform assessments, for example, assessing heart rate before giving antidysrhythmic medications. It is also essential that the nurse witnesses the client taking the medication.

BOX 27-9 Components of medication orders

A medication order is incomplete unless it has the following parts:

- *Client's full name.* The client's full name distinguishes the client from other persons with the same last name. Two identifiers are legally required (i.e. full name and address or date of birth), but it is best practice to use more than two with some agencies requiring the nurse to check three or four identifiers.
- *Date the order is written.* The day, month, year and time must be included. Designating the time an order is written helps clarify when certain orders are to stop automatically. If an incident occurs involving a medication error, it is easier to document what happened when this information is available.
- *Medication name.* The prescriber will order a generic or trade-name medication. Correct spelling is essential in preventing confusion with medications with similar spelling.
- *Dose.* The amount or strength of the medication is included.
- *Route of administration.* The prescriber uses common abbreviations for medication routes. Accuracy is important because some medications are administered by more than one route.
- *Time and frequency of administration.* The nurse needs to know when to initiate medication therapy. Orders for multiple doses establish a routine schedule for medication administration.
- *Signature and name of medical officer or nurse practitioner.* Signature makes the order a legal request and the name enables the other staff to know who has ordered this medicine for the client.

Recording medication administration

After administering a medication, the nurse records it immediately on the appropriate record form (Figure 27-11). The nurse never charts a medication before its administration – recording immediately after administration prevents errors, especially if the client refused the medication. The nurse needs only to record the time and initial the medication chart which already has the name of the medication, dosage, route, exact time of administration. Agency policies may also require the nurse to record the location of an injection.

If a client refuses a medication or is undergoing tests or procedures that result in a missed dose, the nurse explains in the client's progress notes the reason the medication was not given. Most agencies require the nurse to circle the prescribed administration time on the medication record when a dose is missed and, using the correct abbreviation, document the reason for the missed dose; for example, the client may be fasting before going to the operating theatre. It is also important to notify the prescriber, as missing some medicines may cause the client harm (e.g. refusing insulin when a blood-glucose level is high).

• CRITICAL REFLECTION POINT

It is a client's right to refuse treatment or medication. Should a nurse try to cajole or manipulate a client into taking their medicine? When might you be tempted to do this, and what should you do?

Restorative/rehabilitation care activities

Because of the numerous types of restorative and rehabilitation care settings, medication administration activities vary. Clients with functional limitations may require the nurse to administer all medications, whereas in the home healthcare setting clients usually administer their own medications. Regardless of the type of medication activity, the nurse remains responsible for instructing clients and families in medication action, administration and side effects. The nurse is also responsible for monitoring compliance with medication regimens and determining the effectiveness of medications that have been prescribed.

Administering medications to specific age groups

A client's developmental level is a factor in how nurses administer medications. Knowledge of a client's developmental needs helps the nurse anticipate responses to medication therapy.

Infants and children

Children vary in age, weight, surface area and the ability to absorb, metabolise and excrete medications (see *Working with diversity*). Children's medication dosages are generally lower than those of adults, so special caution is needed when preparing medications for them. Medications are usually not prepared and packaged in standardised dose ranges for children, so preparing an ordered dosage from an available amount requires careful calculation. A child's parents/caregivers are valuable resources for learning the best way to give medication to the child. Sometimes it is less traumatic for the child if a parent gives the medication and the nurse supervises.

All children require special psychological preparation before receiving medications. The nurse explains the procedure to the child using language appropriate to the child's level of comprehension. Long explanations may increase a child's anxiety, especially for painful procedures such as an injection. The young child who consistently refuses to cooperate, or resists despite explanation and encouragement, may require physical coercion. If so, it is carried out quickly and carefully. If possible, involve the child in decision-making by saying, 'It's time to take your tablet now. Do you want it with water or fruit juice?' Never give the child the option of not taking a medication. After a medication is given, the nurse praises the child and may even offer a simple reward such as a sticker or token. It is important to check that the child has swallowed the medication.

Box 27-7 contains some useful tips for administering medication effectively to children.

Older adults

Older adults also require special consideration during medication administration (see *Working with diversity*).

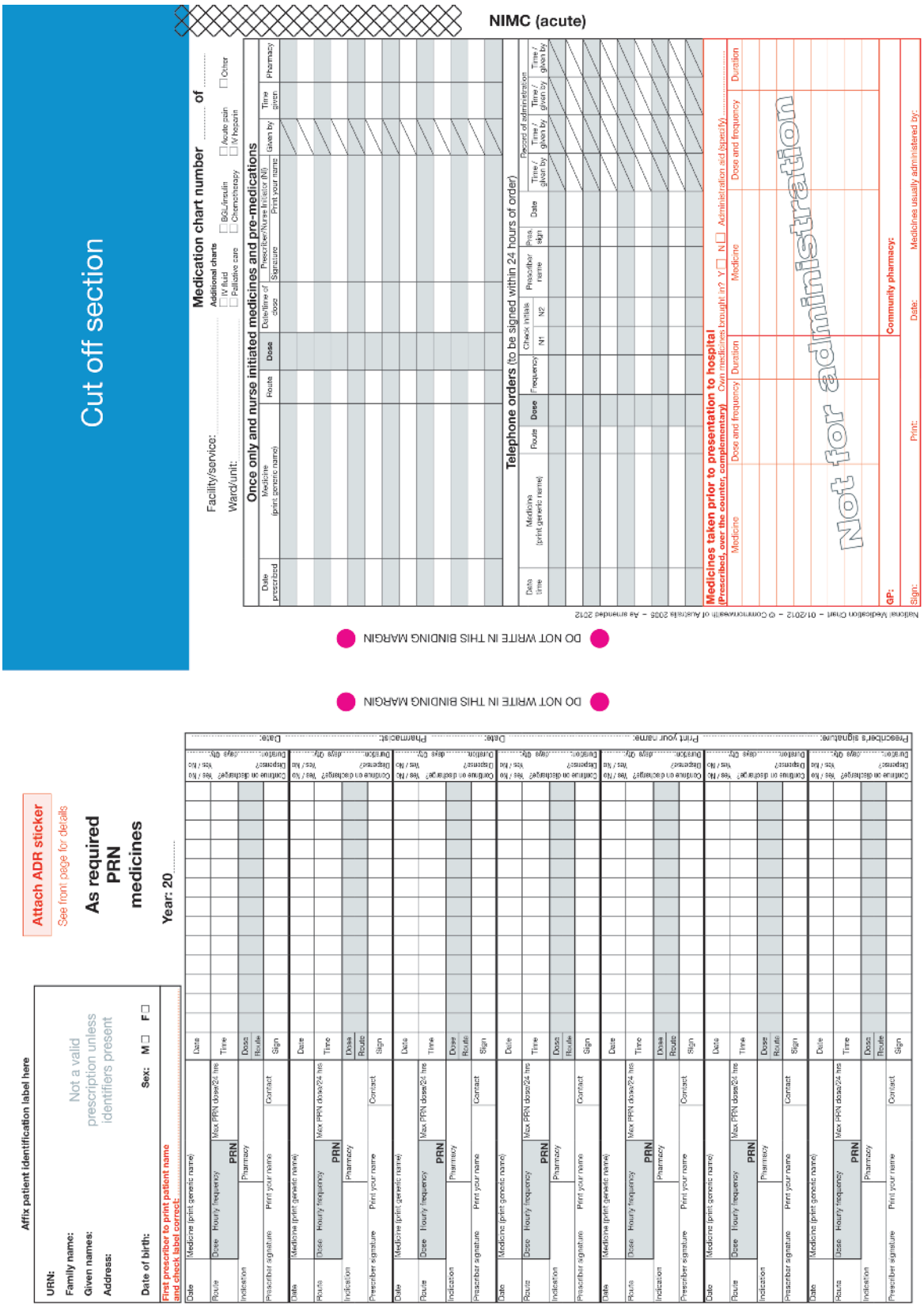


Figure 27-11 National Inpatient Medication Chart (NIMC).

The Australian Commission on Safety and Quality in Health Care, National Impatient Medication Chart (NIMC) 2012 ACSQHC , Sydney. For the most current version of the chart please see www.safetyandquality.gov.au/our-work/medication-safety/medication-chart/nimc/

continued

Figure 27-11 *continued*

Cut off section

Attach ADR sticker

Allergies and adverse drug reactions (ADR)
☐ Nil known ☐ Unknown (tick appropriate box or complete details below)

Medicine (or other)	Reaction / type / date	Initials

Sign ..... Print ..... Date .....

Affix patient identification label here and overleaf

URN:
Family name:
Given names:
Address:
Date of birth: Sex: M☐ F☐

Not a valid prescription unless identifiers present

First prescriber to print patient name and check label correct:

Weight (kg): ..... Height (cm): .....

Regular medicines

Year 20 ..... Date and month →

Variable dose medicine

Date | Medicine (print generic name) | Drug level | Time level taken | Dose | Route | Frequency | Prescriber to enter dose times and individual dose | Prescriber | Indication | Pharmacy | Time to be given: | Prescriber signature | Print your name | Contact | Time given

VTE risk assessed: Yes ☐ Prophylaxis not required ☐ Contraindicated ☐ Signature: Date:

Date | Medicine (print generic name) | Route | Dose | Frequency and NOW enter times | Indication | Pharmacy | **VTE prophylaxis** | Prescriber signature | Print your name | Contact

Mechanical prophylaxis | Prescriber/NI signature | Print your name | Contact | AM check | PM check

Date | **Warfarin** | **Marevan / Coumadin** select brand | Route | Prescriber to enter individual doses | Target INR Range | Indication | Pharmacy | Prescriber signature | Print your name | Contact | INR Result | **Dose** mg mg mg mg mg mg mg mg mg mg mg | Prescriber | 1600 Initial 1 | Initial 2

PRESCRIBER MUST ENTER administration times

Date | Medicine (print generic name) | Tick if slow release | Route | Dose | Frequency and NOW enter times | Indication | Pharmacy | Prescriber signature | Print your name | Contact

(repeated)

Pharmaceutical review:

Continue on discharge? Yes / No | Dispense? Yes / No | Duration: ..... days Qty: .....

Date: | Pharmacist: | Print your name: | Prescriber's signature:

Recommended administration times
Guidelines only

Morning	Mane	0800			
Night	Nocte				1800 or 2000
Twice a day	BD	0800			2000
Three times a day	TDS	0800	1400	2000	
Regular 6 hourly	6 hrly	0600	1200	1800	2400
Regular 8 hourly	8 hrly	0600	1400	2200	
Four times a day	QID	0600	1200	1800	2200

SR = Sustained, modified or controlled release formulation.
Tick if slow release
If scored tablet, then half can be given.
Dose must be swallowed without crushing.

Warfarin education record
Patient educated by: .....
Sign: .....
Date: .....
Given warfarin book: .....
Sign: .....
Date: .....

Reason for not administering
Codes MUST be circled

Absent	(A)
Fasting	(F)
Refused – notify prescriber	(R)
Vomiting	(V)
On leave	(L)
Not available – obtain supply or contact prescriber	(N)
Withheld – enter reason in clinical record	(W)
Self administered	(S)

Regular medicines

Year 20 ..... Date and month →

PRESCRIBER MUST ENTER administration times

Date | Medicine (print generic name) | Tick if slow release | Route | Dose | Frequency and NOW enter times | Indication | Pharmacy | Prescriber signature | Print your name | Contact

(repeated)

Pharmaceutical review:

Continue on discharge? Yes / No | Dispense? Yes / No | Duration: ..... days Qty: .....

Date: | Pharmacist: | Print your name: | Prescriber's signature:

WORKING WITH DIVERSITY

Focus on children and adolescents

From birth to adolescence, the paediatric client undergoes continuous physical growth and psychosocial development, much of which influences the outcomes of medication therapy.

Physical considerations

- *Absorption* – gastrointestinal tract may decrease the bioavailability of some drugs and the absorption of others. Absorption from intramuscular injection sites can produce widely differing responses due to the size of the muscle mass and the blood flow to the injected area. Topical administration may produce variable results because the immature and relatively thin epidermis of infants and young children enables quick absorption of topically applied drugs.
- *Distribution* – body fat and water content vary widely with age, e.g. water as a percentage of bodyweight varies from 80% at birth to 56% at 12 months; it is 55% for adults. This variation determines absorption and distribution of the drug.
- *Metabolism* – immature liver function may affect drug metabolism and the half-life of a drug.
- *Excretion* – renal development reaches adult level at around 12 months of age. Immaturity and relative lack of renal excretion can prolong the action of drugs.

Accuracy in paediatric dose calculation is essential to avoid possibly fatal errors.

WORKING WITH DIVERSITY

Focus on older adults

Physical considerations

- *Absorption* – may be increased by age-related slowing of peristalsis, decreased gastrointestinal blood supply and decreased pepsin.
- *Distribution* – increased duration and magnitude of action may occur as a result of decreased body water and an increase in fatty tissue. Decreased plasma protein may also increase the activity of the drug.
- *Elimination* – impaired renal and hepatic functioning may alter the elimination of the drug and lead to increased effect.
- *Failing sight* – may make it difficult for clients to read the labels on medication containers. This may lead to dosage errors.

Sociocultural aspects

- Use of over-the-counter (OTC) medications is common in the elderly. This may put them at increased risk of drug interactions, adverse effects and side effects.
- Many elderly clients attend more than one prescriber, e.g. hospital outpatient departments and their personal general practitioner. It is important that each prescriber is aware of all the medications the client is taking in order to avoid interactions, overuse and duplication.
- Multiple suppliers may lead to confusion between the use of generic and trade names and may result in the client taking extra doses, not realising they are the same drug.
- Financial considerations can result in the client not taking a drug or reducing the amount taken in order to reduce costs.

Psychological and behavioural factors

- Memory loss is common in the elderly and the client may miss doses or take the drug again.
- Dementia may affect compliance with medication regimens.

In addition to the physiological changes of ageing (Figure 27-12), behavioural, cultural and economic factors influence an older person's use of medications. In 2004, Ebersole and Hess described five behavioural patterns characteristic of the older client in relation to medication use. These are still relevant today:

- *Polypharmacy*. The client takes several prescribed or over-the-counter (OTC) preparations to treat several disorders/symptoms simultaneously. There exists a high risk of medication interactions with other medications and with foods, and an increased risk of adverse medication reactions.
- *Self-prescribing of medications*. A variety of symptoms experienced by elderly clients, such as pain, constipation, insomnia and indigestion, are amenable to OTC medications. Older adults often seek relief from problems by OTC preparations and/or complementary medicines and herbs.
- *Over-the-counter medications*. These medications, which can be purchased without a prescription, are available from pharmacies, supermarkets and health shops. It is known that OTC medications are widely used by older people to relieve symptoms. Many of these preparations have ingredients which, when used inappropriately, may cause undesirable side effects, adverse reactions or may be contraindicated for the client's condition. Clients should be asked specifically about 'other things you are taking'.
- *Misuse of medications*. Forms of misuse by older clients include overuse, underuse, erratic use, contraindicated use and using medication prescribed for others.
- *Non-adherence (non-compliance)*. Non-adherence is defined as a deliberate misuse of medication. Many older adults intentionally do not adhere to their medication regimen; they often alter the dose because of cost, ineffectiveness or uncomfortable side effects. Non-adherence may also be a result of poor eyesight, cognitive factors or inadequate education.

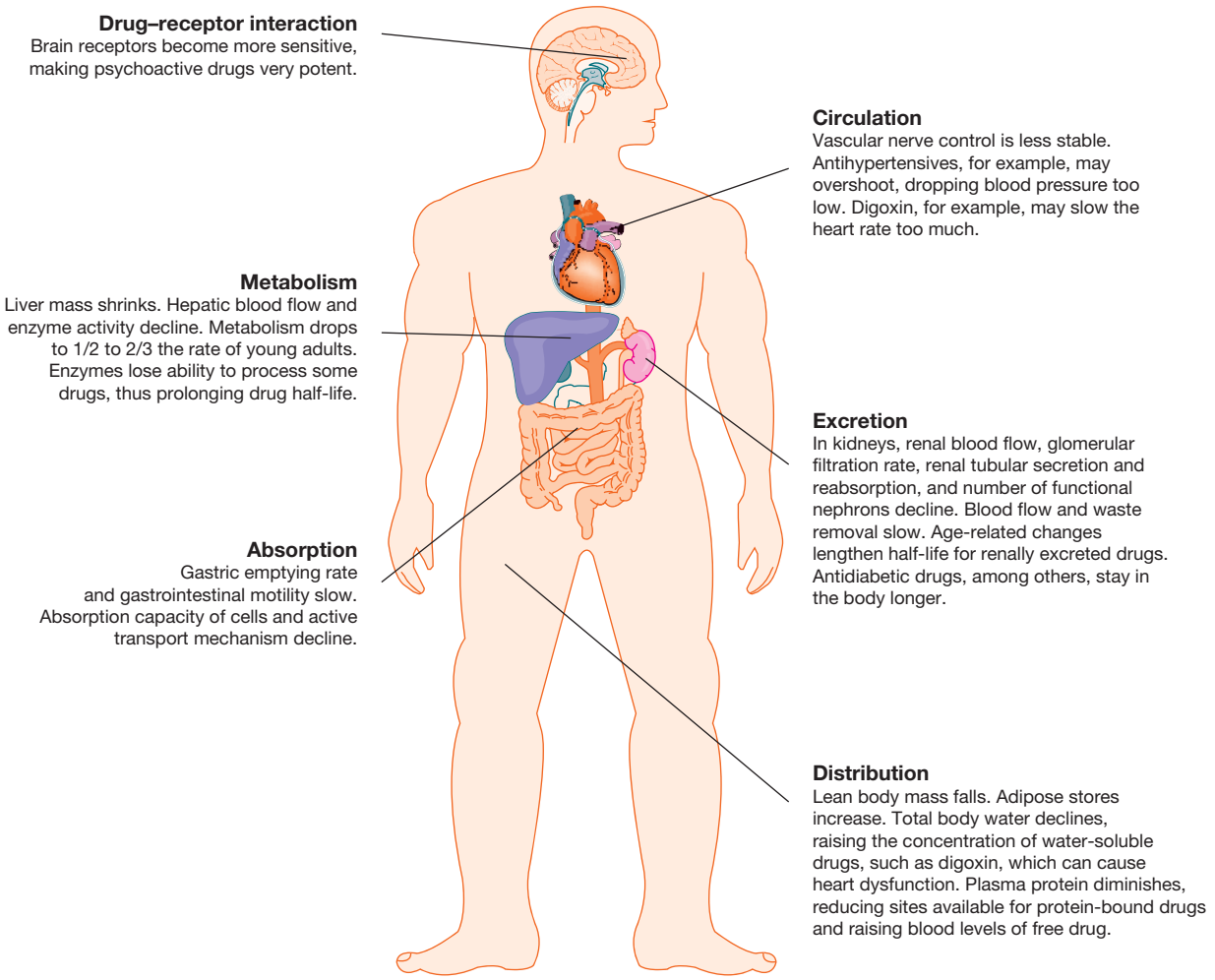


Figure 27-12 Ageing body and drug use.

Lewis SM et al 2003 Medical–surgical nursing, 6th edn. Mosby, St Louis.

EVALUATING IMPACTS AND OUTCOMES

The nurse monitors a client's response to medications on an ongoing basis, so must know the therapeutic action and common side effects of each medication. A change in a client's condition can be physiologically related to health status or may result from medications, or both. The nurse must be alert for reactions in a client taking several medications. The goal of safe and effective medication administration involves a careful evaluation of technique, as well as the client's response to therapy and ability to assume responsibility for self-care.

To evaluate the effectiveness of nursing interventions, the nurse identifies whether nominated client outcomes were met using evaluative measures (Table 27-4). Direct observation of behaviour or response, rating scales (e.g. the numerical pain rating scale), checklists and oral questioning are all of use when evaluating the outcome of medication administration. The reading skill and knowledge level of the client, and cognitive and psychomotor ability, must also be considered. Physiological measures (e.g. blood pressure, heart rate and visual acuity) are the most common type of measurement used by the nurse. Client statements can also be used as evaluative measures. The findings of an evaluation should be measured against baseline information gained before the medication was given (e.g. pain scores before and after the administration of analgesics).

Methods of administration

Oral administration

The easiest and most desirable way to administer medications is by mouth, known as **oral administration** (Skill 27-1). Clients are usually able to ingest or self-administer oral medications with few problems. Most tablets and capsules should be swallowed and administered with approximately 60–100 mL of fluid (as allowed). There may, however, be times when receiving medications by mouth is contraindicated for a client, such as the presence of GI alterations (e.g. nausea), the inability of a client to swallow food or fluids and the use of nasogastric tubes on free drainage or suction.

TABLE 27-4 Example evaluation of goals

Goal	Expected outcomes	Evaluative measure with example
Client and family understand medication therapy	Client and family describe information about medication, dosage, schedule, purpose and adverse effects	Written measurement: Have client write out medication schedule for a 24-hour period Oral questioning: Ask client to describe purpose, dosage and adverse effects of each prescribed medication
	Client and family identify situations that require medical intervention	Oral questioning: Have family describe what to do when a client has adverse effects from a medication
	Client and family demonstrate appropriate administration technique	Direct observation: Have client demonstrate filling of an insulin syringe and self-injection
Client safely self-administers medications	Client follows prescribed treatment regimen	Anecdotal notes: Have family keep log of client's use of medicines for 1 week
	Client performs techniques correctly	Direct observation: Observe client instil eye drops
	Client identifies available resources for obtaining necessary medication	Oral questioning: Ask family to identify how to contact local pharmacy, community clinic, etc

SKILL 27-1

Administering oral medications

Delegation considerations

Administering medications by the oral route requires the problem-solving and knowledge-application abilities of professional nurses. In some states of Australia and New Zealand, client care attendants or enrolled nurses may legally be able to administer medications via this route. For this procedure, client assessment by the registered nurse is required as delegation may be inappropriate.

Equipment

- Medication trolley (if applicable)
- Disposable medication cups
- Glass of water, juice or preferred liquid
- Drinking straw
- Clean pill-crusher (if required)
- Paper towels (for liquid medicines)
- Medication administration record (MAR)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Assess for any contraindications to client receiving oral medication: Is client able to swallow? Is client suffering from nausea/vomiting? Is client diagnosed as having bowel inflammation or reduced peristalsis? Has client had recent gastrointestinal (GI) surgery? Does client have a nasogastric tube in situ on gastric drainage/suction?	Alterations in GI function interfere with medication distribution, absorption and excretion. Clients with GI suction might not receive benefit from the medication because it may be suctioned from the GI tract before it can be absorbed.

STEPS	RATIONALE
a. Check the client's swallow, cough and gag reflexes if in doubt about client's ability to manage oral medications. Withhold medication if swallow, cough or gag is impaired and notify prescriber.	
2. Assess client's medical history, history of allergies, medication history and diet history.	These factors can influence how certain medications act. Information also reflects client's need for medications.
Critical decision point: Drug allergies should be listed on each page of the MAR, on an identification armband and prominently displayed on the client's medical record.	
3. Gather physical examination and laboratory data that may influence medication administration (e.g. checking blood pressure before administering antihypertensives).	Physical examination or laboratory data may contraindicate medication administration.
Critical decision point: If contraindications exist, withhold medication and inform prescriber.	
4. Assess client's knowledge of health and medication use.	Determines client's need for medication education. Also helps to identify adherence to medication therapy at home. Assessment may reveal medication problems such as medication tolerance (where medication fails to achieve the desired effect), non-compliance, abuse, addiction or dependence.
5. Assess client's preferences for fluids.	Fluids ease swallowing and facilitate absorption from the GI tract. Fluid restrictions must be maintained.
6. Check accuracy and completeness of each MAR or computer printout with prescriber's written medication order. Check client's name, medication name and dose, route of administration and time for administration.	The medication order sheet is the most reliable source and only legal record of medications client is to receive.
7. **Prepare medications:**	
a. Perform hand hygiene.	Reduces transfer of microorganisms.
b. Arrange medication tray and cups in medication preparation area (medication room or at the client's bedside if medicines are stored in a locked drawer there) or move medication trolley to outside client's room.	Organisation of equipment saves time and reduces error.
c. Unlock medicine drawer or trolley.	Medications are safeguarded when locked in cabinet or trolley.
d. Prepare medication for one client at a time. Keep all pages of MARs for one client together.	Prevents preparation error.
e. Select correct medication. Compare label of medication with MAR.	Reading label and comparing it with order reduces error.

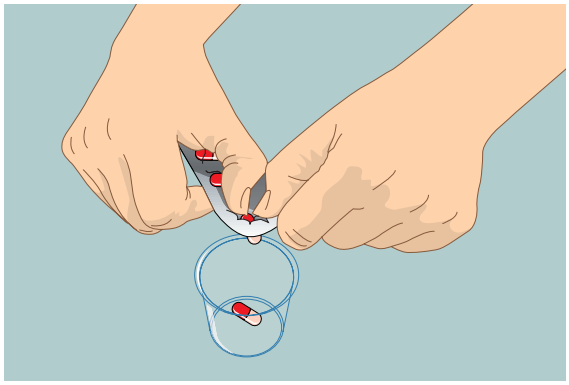
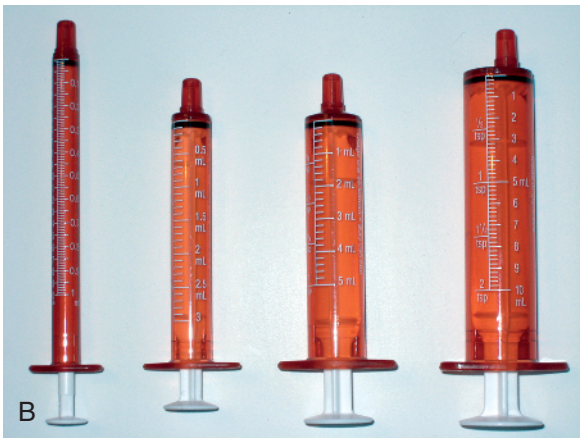
STEPS	RATIONALE
f. Calculate medication dose as necessary. Double-check calculation.	Double-checking will help reduce risk of error.
g. To prepare tablets or capsules, pour required number into bottle cap and transfer medication to medication cap. Do not touch medication with fingers. Extra tablets or capsules may be returned to bottle. For medications that need to be broken, use a gloved hand, or cut with a clean pill-cutting device (see illustration). Tablets that are to be broken in half must be pre-scored (identified by a manufactured line across the centre of the tablet).	Medications are very expensive; avoid waste. Some medicines may degrade if touched or may be harmful to the nurse (i.e. cytotoxic drugs).



Step 7g Pill-cutting device.

h. To prepare unit-dose tablets or capsules, place packaged tablet or capsule directly over medicine cup and compress the wrapper to release medication (see illustration).	
i. If the client has difficulty swallowing, ask prescriber to substitute with liquid or dissolvable preparation. If liquid medications are not an option, use a clean pill-crushing device such as a mortar and pestle to grind tablets. Mix ground tablet in small amount of soft food.	Large tablets can be difficult to swallow. Ground tablet mixed with palatable soft food is usually easier to swallow. Note that not all tablets are safe to break up or crush, so this must be checked beforehand. Pill-crushing devices should be clean to prevent inadvertent exposure to other medicines that may have been in the pill-crusher previously.

■ **Critical decision point: Not all medications can be crushed (e.g. capsules, enteric-coated drugs). Consult with pharmacist when in doubt. Choking or aspiration of particles of medication can also occur.**

STEPS	RATIONALE
 Step 7h Placing medications packaged in blister packs in medicine cup.	 Step 7i Pill-crushing device.
j. Prepare liquids:	
(1) Remove bottle cap from container and place cap upside down.	Prevents contamination of inside of cap.
(2) Hold bottle with label against palm of hand while pouring.	Spilled liquid will not soil or fade label.
(3) Hold medication cup at eye level and fill to desired level on scale (see illustration). Scale should be even with fluid level at its surface or base of meniscus, not edges.	Ensures accuracy of measurement.
(4) Discard any excess liquid into sink. Wipe lip and neck of bottle with paper towel.	Prevents contamination of bottle's contents and prevents bottle cap from sticking.
(5) Some liquid medications are in unit-dose containers. Draw up volumes of less than 10 mL in syringe without needle (see illustration).	
 Step 7j(3) Pouring liquid medication into medication cup; base of meniscus should be level with line on scale.	 Step 7j(5) Liquid-medication syringes for preparing small amounts.

STEPS	RATIONALE
k. When preparing Schedule 8 medicines, check drug record for previous medication count and compare with supply available. Note that some clinical agencies require two staff to check controlled drugs at the bedside, but this is agency policy and is not regulated by law (except for blood products).	Controlled substance laws require careful monitoring of dispensed controlled drugs.
l. Check expiration date on all medications.	Medications used past expiration date may be inactive or harmful to client.
m. Compare MAR with prepared medication and container.	Reading label second time reduces error.
n. Return stock containers or unused unit-dose medications to shelf or drawer and read label again.	Third check of label reduces administration errors.
o. Do not leave medications unattended.	Nurse is responsible for safekeeping of drugs.
8. **Administering medications:**	
a. Take medications to client at correct time. All tablets or capsules to be given to client at same time may be placed in one medicine cup except for those requiring pre-administration assessments (e.g. pulse rate or blood pressure).	Medications are administered within 30 minutes before or after prescribed time to ensure intended therapeutic effect. Stat or single-order medications should be given at time ordered. Keeping medications that require pre-administration assessments separate from others makes it easier for the nurse to withhold medications as necessary.
b. Identify client by comparing name on MAR with name on client's identification bracelet. Ask client to state name and any known allergies.	Identification bracelets are made at time of client's admission and are the most reliable source of identification. Replace any missing or faded identification bracelets.
c. Explain purpose of each medication and its action to client. Allow client to ask any questions about drugs.	Client has right to be informed, and client's understanding of purpose of each medication improves compliance with medication therapy.
d. Help client to sit or to lie on the side if sitting is contraindicated.	Sitting position prevents aspiration during swallowing.
e. Administer medications properly:	
(1) Client may wish to hold solid medications in hand or cup before placing in mouth.	Client can become familiar with medications by seeing each drug.
(2) Offer water or juice to help client swallow medications. You may offer cold carbonated water if available and not contraindicated.	Choice of fluid promotes client's comfort and can improve fluid intake. Carbonated water helps passage of tablet through oesophagus.

STEPS	RATIONALE
(3) For sublingually administered medications, have client place medication under tongue and allow it to dissolve completely. Caution client against swallowing tablet.	Medication is absorbed through blood vessels of undersurface of tongue. If swallowed, medication is destroyed by gastric juices or so rapidly detoxified by liver that therapeutic blood levels are not attained.
(4) For bucally administered drugs, have client place medication in mouth against mucous membranes of the cheek until it dissolves (see Figure 27-5). Avoid administering liquids until buccal medication has dissolved.	Buccal medications act locally on mucosa or systemically as they are swallowed in saliva.
(5) Mix powdered medications with liquids at bedside and give to client to drink.	When prepared in advance, powdered medications may thicken and even harden, making swallowing difficult.
(6) Caution client against chewing or swallowing lozenges.	Medication acts through slow absorption through oral mucosa, not gastric mucosa.
(7) Give effervescent powders and tablets immediately after dissolving.	Effervescence improves unpleasant taste of medication and often relieves GI problems.
f. If client is unable to hold medications, place medication cup to the lips and gently introduce each drug into the mouth, one at a time. Do not rush.	Administering single tablet or capsule eases swallowing and decreases risk of aspiration.
g. If tablet or capsule falls to the floor, discard it appropriately and repeat preparation.	Medication is contaminated when it touches floor.
h. Stay until client has completely swallowed each medication.	Nurse is responsible for ensuring that client receives ordered dosage. If left unattended, client may not take dose or may save medications, causing risk to health.
i. For highly acidic medications (e.g. aspirin), offer client non-fat snack (e.g. crackers) if not contraindicated by client's condition. (Check medication reference resource first to ensure the medication can be administered with food.)	Reduces gastric irritation.
j. Help client return to comfortable position.	Maintains client's comfort.
k. Dispose of soiled supplies and perform hand hygiene.	Reduces transmission of microorganisms.
9. Return within 30 minutes to evaluate client's response to medications.	Evaluates medication's therapeutic benefit and can detect onset of side effects or allergic reactions.
10. Ask client or family member to identify medication name and explain purpose, action, dosage schedule and potential side effects of drug.	Determines level of knowledge gained by client and family.
11. Always notify prescriber when the client exhibits an adverse effect or allergic reaction, or with the onset of side effects. Withhold further doses.	Notification alerts prescriber to modify or discontinue medication.

RECORDING AND REPORTING

- Record administration of oral medications on MAR, and add nurse's initials or signature.
- Record the reason any drug is withheld and follow agency's policy for proper recording.

HOME CARE CONSIDERATIONS

- All clients should learn the basic guidelines for medication safety:
  - Keep each medication in its original, labelled container.
  - Be sure labels are legible.
  - Discard any outdated medications.
  - Always finish a prescribed medication unless otherwise instructed. Never save a medication for future illnesses.
  - Dispose of medications by taking them to the pharmacy. Do not place drugs in the bin within reach of children.
  - Do not give a family member a medication prescribed for another.
- Refrigerate medications that require it.
- Read labels carefully and follow all instructions.

Preparation for tests or surgery may mean that the client is fasting (nil by mouth).

It is important to protect clients from aspiration. Aspiration occurs when medication intended for GI administration is inadvertently administered or inhaled into the respiratory tract. The nurse protects the client from aspiration (Box 27-10) by evaluating the client's ability to manage/swallow oral medications. In this regard, proper positioning of the client is essential. If not contraindicated by a client's condition, the nurse positions the client in a seated position when administering oral medications.

A client who has difficulty swallowing should be evaluated by appropriate personnel (e.g. speech therapist) before receiving oral preparations. For clients with naso-gastric feeding tubes, liquid medications are preferred so they can be easily injected through the tube, but some tablets can be crushed and capsules opened to mix in a solution with water for administration via the tube (Box 27-11).

Topical medication applications

Topical medications are applied locally, most often to intact skin.

Skin applications

Many locally applied medications such as lotions, pastes and ointments (see Box 27-1) can create systemic and local effects. Nurses should wear gloves or use an applicator when applying these medications to avoid absorbing the medication through their own skin. Aseptic technique may be appropriate if the client has an open wound.

BOX 27-10 Assessments to protect the client from aspiration

Determine the client's ability to swallow

- Ask the client to repeat certain sounds that require the same muscle movements as swallowing: 'me-me-me' (for the lips); 'la-la-la' (for the tongue); 'ga-ga-ga' (for the soft palate and pharynx).
- Assess the swallowing reflex by having the client slide the tongue backwards along the palate.
- Position your thumb and index finger on the client's larynx, and ask the client to swallow. Normally the larynx will elevate.

Assess the client's cough

See Chapter 40 on proper techniques of coughing.

Determine the presence of a gag reflex

- Assess the gag reflex by stroking the posterior pharyngeal wall with a tongue blade. Never check the gag reflex in a client who does not exhibit an intact cough or swallow reflex.
- To protect the airway the client must have all three of: a positive cough, gag and swallow reflex.

Note: Prescriber and/or speech therapist should be consulted if there is any question of a client's ability to swallow safely.

Modified from Gauwitz DG 1995 How to protect the dysphagic stroke client. Am J Nurs 95:34. For further information see www2.health.vic.gov.au/hospitals-and-health-services/patient-care/older-people/nutrition-swallowing/swallowing/swallowing-identifying.

BOX 27-11 Guidelines for giving medications through a nasogastric tube, I-tube, G-tube or small-bore feeding tube

- Administer medications in a liquid form (suspension, elixir or solution) when possible to prevent tube obstruction.
- Read medication labels carefully before crushing a tablet or opening a capsule. (Crushed medications may obstruct small-bore tube. Check agency policy.)
- Do not crush buccal or sublingual tablets. Do not crush enteric-coated or sustained-action medications.
- Dissolve crushed tablets and powders in warm water.
- Dissolve soft gelatin capsules in warm water.
- Irrigate the tube before and after all medication is given with 50–150 mL of water.
- Do not use pigtail vent for irrigation or instillation of fluid.
- Avoid giving syrups or medications with a pH of less than 4.
- Do not attempt to give whole or undissolved medications.

Simply applying new medications over previously applied medications does little to prevent infection or offer therapeutic benefit. Before applying medications, the nurse thoroughly cleans and assesses the skin. When applying ointments or pastes, the nurse spreads the medication evenly and thinly over the involved surface and covers the area well. Opaque ointments prevent the underlying skin from being seen. Prescribers may order a light dressing to be applied over the medication to prevent soiling of clothes and wiping away of the medication.

Each type of medication, whether an ointment, lotion or powder, should be applied in a specific way to ensure proper penetration and absorption. Lotions and creams are applied by lightly smearing onto the specified skin's surface; the lotion or cream should not be rubbed in, as rubbing may cause irritation. A liniment is applied by rubbing it gently but firmly into the skin. A powder is dusted lightly to cover the affected area with a thin layer.

Recording of the treatment should include the type of administration, the area concerned, the name of the medication and the condition of the skin. Care must be taken to apply the treatment only to the affected area, as some medications can damage or irritate normal skin.

Nasal instillation

Clients with nasal (allergic rhinitis) or sinus (sinus infection) alterations may receive medications by spray, drops or packing (Skill 27-2). Another example is intranasal fentanyl, which is used for analgesia in children older than 12 months for moderate to severe pain. The most commonly administered form of nasal instillation is decongestant spray or drops, used to relieve symptoms of sinus congestion and colds. Clients must be cautioned to avoid overuse of such medications, because a rebound effect may cause increased nasal congestion. When excess decongestant solution is swallowed, serious systemic effects may also develop, especially in children. Saline drops are safer as a decongestant for children than nasal preparations that contain sympathomimetics, for example, pseudoephedrine.

It is easier for clients to self-administer sprays, since they can control the spray and inhale as it enters the nasal passages. For clients who use nasal sprays repeatedly, the nurse checks the nares for irritation. The nurse learns the proper way of positioning clients to permit the medication to reach the affected sinus.

SKILL 27-2

Administering nasal instillations

Delegation considerations

Administration of nasal drops and ointments requires the problem-solving and knowledge-application abilities of professional nurses. In some states of Australia and New Zealand, client care attendants or enrolled nurses may legally be able to administer medications via this route. For this procedure, client assessment by the registered nurse is required as delegation may not be appropriate.

Equipment

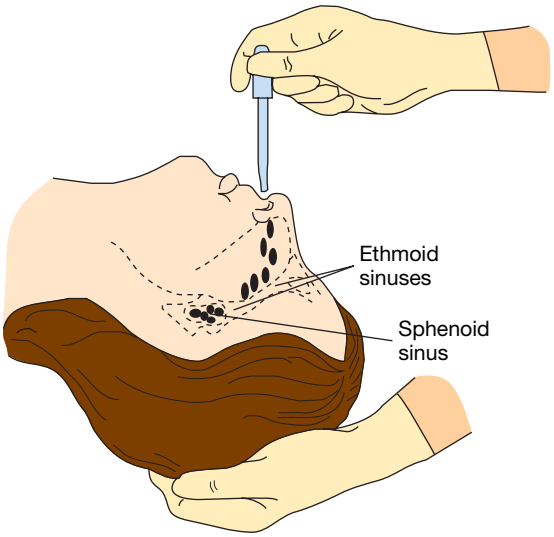
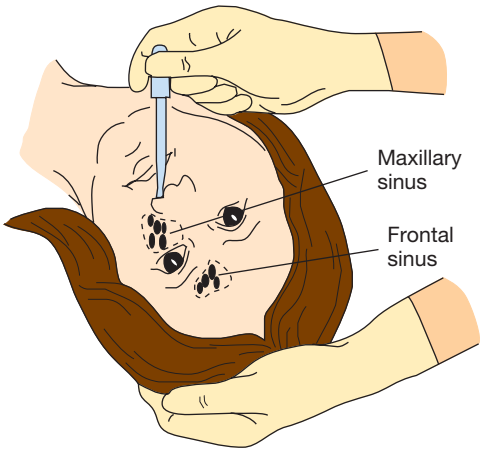
- Prepared medication with clean dropper or spray container
- Facial tissue
- Disposable gloves (optional, only if client has extensive nasal drainage)
- Medication administration record (MAR)
- Penlight (to inspect nares; if ointment is to be applied to a specific lesion inside the nares)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent

- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. For nasal drops, determine which sinus is affected by referring to healthcare record.	Affects client's position during drug instillation.
2. Assess client's history of hypertension, heart disease, diabetes mellitus and hyperthyroidism.	These conditions can contraindicate use of decongestants that stimulate central nervous system (CNS). Side effects of transient hypertension, tachycardia, palpitations and headache may occur.
3. Identify client; compare name on MAR with client's ID bracelet. Ask client to state name.	Ensures that correct client receives medication.
4. Using a penlight, inspect condition of nose and sinuses. Palpate sinuses for tenderness.	Provides baseline to monitor effects of medication. Presence of discharge interferes with medication absorption.
5. Assess client's knowledge regarding use of nasal instillations and technique for instillation and willingness to learn self-administration.	May necessitate health teaching regarding use of medications. Motivation influences teaching approach.
6. Explain procedure to client regarding positioning and sensations to expect, such as burning or stinging of mucosa or choking sensation as medication trickles into throat.	Helps client anticipate experience of procedure to reduce anxiety.
7. Perform hand hygiene. Arrange supplies and medications at bedside.	Reduces transmission of microorganisms; ensures smooth, orderly procedure.
8. Instruct client to clear or blow nose gently unless contraindicated (e.g. risk of increased intracranial pressure or nosebleeds).	Removes mucous and secretions that can block distribution of medication.
9. **Administer nasal drops:**	
a. Help client to supine position.	Position provides access to nasal passages.
b. Position head properly:	
■ **Critical decision point: Do not hyperextend the neck of a client with a known neck problem or suspected cervical spine injury.**	
(1) For access to posterior pharynx, tilt client's head backwards. (2) For access to ethmoid or sphenoid sinus, tilt head back over edge of bed or place small pillow under client's shoulder and tilt head back (see illustration).	Position allows medication to drain into affected sinus.

STEPS	RATIONALE
(3) For access to frontal and maxillary sinus, tilt head back over edge of bed or pillow with head turned towards side to be treated (see illustration).	
 Step 9b(2) Patient position for medication administration to ethmoid or sphenoid sinus.	 Step 9b(3) Patient position for medication administration to frontal and maxillary sinus.
c. Support client's head with non-dominant hand.	Prevents straining of neck muscles.
d. Instruct client to breathe through mouth.	Mouth breathing reduces chance of aspirating nasal drops into trachea and lungs.
e. Hold dropper 1 cm above nares and instil prescribed number of drops towards midline of ethmoid bone.	Avoids contamination of dropper. Instilling towards ethmoid bone facilitates distribution of medication over nasal mucosa.
f. Have client remain in supine position for 5 minutes.	Prevents premature loss of medication through nares.
g. Offer facial tissue to blot runny nose, but caution client against blowing nose for several minutes.	Allows maximal amount of medication to be absorbed.
10. Help client into a comfortable position after medication is absorbed.	Restores comfort.
11. Dispose of soiled supplies in appropriate container and wash hands.	Maintains neat, orderly environment. Reduces spread of microorganisms.
12. Observe client for onset of side effects 15–30 minutes after administration.	Drugs absorbed through mucosa can cause systemic reaction.
13. Ask if client is able to breathe through nose after decongestant administration. May be necessary to have client occlude one nostril at a time and breathe deeply.	Determines effectiveness of decongestant medication.

STEPS	RATIONALE
14. Inspect condition of nasal passages between instillations.	Condition of mucosa reveals response to medication.
15. Ask client to review risks of overuse of decongestants and methods for administration.	Feedback ensures that client can self-administer medications properly.
16. Have client demonstrate self-medication.	Feedback demonstrates learning.

RECORDING AND REPORTING

- Record medication name, concentration, number of drops, nostril into which medication was instilled and time of administration on MAR.
- Record client's response in nurses' notes.
- Report any unusual systemic effects to nurse in charge or medical officer.

HOME CARE CONSIDERATIONS

- Instruct client to expect timely resolution of problems. Instruct client on signs to observe of persistent or worsening problem. Clear nasal discharge indicates sinus problem. Yellow or greenish discharge indicates infection.
- Use OTC nasal sprays or nose drops for only one client; bottles become easily contaminated with bacteria.

Eye instillation

Eye drops and ointments are common medications used by clients, including OTC preparations such as artificial tears. Many clients receive prescribed ophthalmic medications for glaucoma and after cataract extraction. A large percentage of clients receiving eye medications are older people. Age-related problems, including poor vision, hand tremors and difficulty grasping or manipulating containers, affect the ease with which the older person can self-administer eye medications. The nurse instructs clients and family members about the proper techniques for administering eye medications (Skill 27-3). The nurse may determine the client and family's ability to self-administer through a return demonstration of the procedure. Showing clients each step of the procedure for instilling eye drops can improve their compliance.

The following principles should be followed when administering eye medications:

- The cornea of the eye is richly supplied with pain fibres and is thus very sensitive to anything applied to it. Avoid instilling any form of eye medication directly onto the cornea.
- The risk of transmitting infection from one eye to the other is high. Avoid touching the eyelids or other eye structures with eye droppers or ointment tubes.
- Use eye medication only for the client's affected eye unless ordered otherwise.
- Never allow a client to use another client's eye medications.

Some medications are administered intraocularly. Medications delivered this way resemble a contact lens. The nurse places the medication disc into the conjunctival sac, where it remains in place for up to 1 week. The client receiving intraocular medications requires teaching about monitoring for adverse reactions to the disc. Clients will also need to be taught how to insert and remove the disc.

SKILL 27-3

Administering ophthalmic medications

Delegation considerations

Administration of eye drops and ointments requires the problem-solving and knowledge-application abilities of professional nurses. In some states of Australia and New Zealand, client care attendants or enrolled nurses may legally be able to administer medications via this route. For this procedure, client assessment by the registered nurse is required as delegation may not be appropriate.

Equipment

- Medication bottle with sterile eye dropper or ointment tube
- Medicated intraocular disc
- Cotton ball or tissue
- Washbasin filled with warm water, and washcloth
- Eye patch and tape (optional)
- Disposable gloves
- Medication administration record (MAR)

Therapeutic relationship and patient considerations

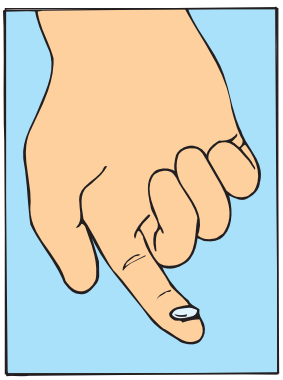
- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

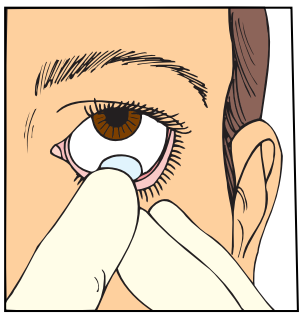
STEPS	RATIONALE
1. Review prescriber's medication order for number of drops (if a liquid) and eye/s to receive medication.	Ensures correct administration of medication.
2. Identify client. Compare name on MAR with client ID band. Ask client to state name.	Ensures that correct client receives medication.
3. Assess condition of external eye structures. (May also be done just before drug instillation.)	Provides baseline data with which to compare response to medications. Indicates need to clean eye before medication.
4. Determine known allergies to any medications or to latex.	Protects client from risk of allergic medication response. May require use of non-latex gloves.
5. Determine whether client has any symptoms of visual alterations.	Certain eye medications act to either lessen or increase these symptoms.
6. Assess client's level of consciousness and ability to follow directions.	Restlessness during procedure increases risk of accidental eye injury.
7. Assess client's knowledge regarding medication therapy and desire to self-administer medication.	Client's level of understanding may indicate need for health teaching.
8. Assess client's ability to manipulate and hold dropper.	Reflects client's ability to learn to self-administer medication.
9. Explain procedure to client.	Relieves anxiety about medication being instilled into eye.
10. Perform hand hygiene and arrange supplies at bedside; put on disposable gloves.	Reduces transmission of microorganisms; ensures a smooth, orderly procedure.
11. Ask client to lie supine or sit back in chair with head slightly hyperextended.	Position provides easy access to eye for medication instillation and minimises drainage of medication through tear duct.

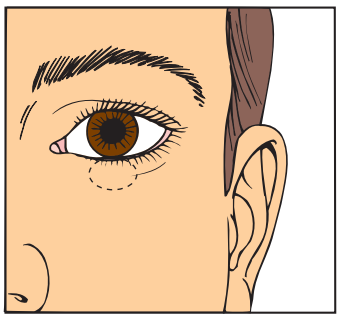
■ **Critical decision point: Do not hyperextend the neck of a client with a known neck problem or suspected cervical spine injury.**

STEPS	RATIONALE
12. If crusts or drainage are present along eyelid margins or inner canthus, gently wash away. Soak any crusts that are dried and difficult to remove by applying damp washcloth or cotton ball over eye for a few minutes. Always wipe from inner to outer canthus.	Crusts or drainage harbour microorganisms. Soaking allows easy removal and prevents pressure from being applied directly over eye. Cleaning from inner to outer canthus avoids entry of microorganism into lacrimal duct.
13. Hold cotton ball or clean tissue in non-dominant hand on client's cheekbone just below lower eyelid.	Cotton or tissue absorbs medication that escapes eye.
14. With the tissue or cotton ball resting below lower lid, gently press downwards with thumb or forefinger against bony orbit.	Technique exposes lower conjunctival sac. Retraction against bony orbit prevents pressure and trauma to eyeball and prevents fingers from touching eye.
15. Ask client to look at ceiling and explain steps to client.	Action retracts sensitive cornea up and away from conjunctival sac and reduces stimulation of blink reflex.
A. Instil eye drops:	
(1) With dominant hand resting on client's forehead, hold filled medication eye dropper or ophthalmic solution approximately 1–2 cm above conjunctival sac (see illustration).	Helps prevent accidental contact of eye dropper with eye structures, thus reducing risk of injury to eye and transfer of infection to dropper. Ophthalmic medications are sterile.
(2) Drop prescribed number of medication drops into conjunctival sac.	Conjunctival sac normally holds 1 or 2 drops. Provides even distribution of medication across eye.
(3) If client blinks or closes eye or if drops land on outer lid margins, repeat procedure.	Therapeutic effect of drug is obtained only when drops enter conjunctival sac.
(4) After instilling drops, ask client to close eye gently.	Helps to distribute medication. Squinting or squeezing of eyelids forces medication from conjunctival sac.
(5) When administering medications that cause systemic effects, apply gentle pressure with finger and clean tissue on the client's nasolacrimal duct for 30–60 seconds.	Prevents overflow of medication into nasal and pharyngeal passages. Prevents absorption into systemic circulation.
B. Instil eye ointment:	
(1) Holding ointment applicator above lower lid margin, apply thin stream of ointment evenly along inner edge of lower eyelid on conjunctiva (see illustration) from the inner canthus to the outer canthus.	Distributes medication evenly across eye and lid margin.
(2) Have client close eye and rub lid lightly in circular motion with cotton ball, if rubbing is not contraindicated.	Further distributes medication without traumatising eye.

STEPS	RATIONALE
 Step 15A(1) Instilling eye drops.	 Step 15B(1) Instilling eye ointment.
C. Intraocular disc (1) Application:	
(a) Open package containing the disc. Gently press your fingertip against the disc so that it adheres to your finger. Position the convex side of the disc on your fingertip (see illustration).	Allows nurse to inspect disc for damage or deformity.
(b) With your other hand, gently pull the client's lower eyelid away from the eye. Ask client to look up.	Prepares conjunctival sac for receiving medicated disc.
(c) Place the disc in the conjunctival sac, so that it floats on the sclera between the iris and lower eyelid (see illustration).	Ensures delivery of medication.
(d) Pull the client's lower eyelid out and over the disc (see illustration).	Ensures accurate medication delivery.

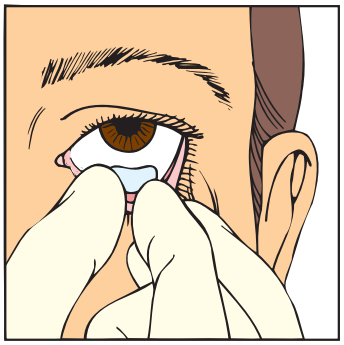

Step 15C(1)(a) Positioning intraocular disk on finger.


Step 15C(1)(c) Placing disc in conjunctival sac.


Step 15C(1)(d) Disc in position underneath lower eyelid.

■ **Critical decision point: You should not be able to see the disc at this time. Repeat Step 15C(1)(d) if you can see the disc.**

STEPS	RATIONALE
(2) Removal: (a) Wash hands and put on gloves. (b) Explain procedure to client. (c) Gently pull on the client's lower eyelid to expose the disc. (d) Using your forefinger and thumb of your opposite hand, pinch the disc gently and lift it out of the client's eye (see illustration).	



Step 15C(2)(d) Pinching disc to remove it from patient's eye.

16. If excess medication is on eyelid, gently wipe it from inner to outer canthus.	Promotes comfort and prevents trauma to eye.
17. If client had eye patch, apply clean one by placing it over affected eye so entire eye is covered. Tape securely without applying pressure to eye.	Clean eye patch reduces chance of infection.
18. Remove gloves, dispose of soiled supplies in proper receptacle, and wash hands.	Maintains neat environment at bedside and reduces transmission of microorganisms.
19. Note client's response to instillation; ask if any discomfort was felt.	Determines whether procedure was performed correctly and safely.
20. Observe response to medication by assessing visual changes and noting any side effects.	Evaluates effects of medication.
21. Ask client to discuss medication's purpose, action, side effects and technique of administration.	Determines client's level of understanding.
22. Have client demonstrate self-administration of next dose.	Provides feedback regarding competency with skill.

RECORDING AND REPORTING

- Record medication, concentration, number of drops, time of administration and eye (left, right or both) that received medication on MAR.
- Record appearance of eye in nurses' notes.

HOME CARE CONSIDERATIONS

- If eye drops are stored in refrigerator, re-warm to room temperature before administering.
- Many clients lack confidence in their ability to instil drops without supervision. The nurse teaches others, such as a family member, to instil drops into the client's eye.

Ear instillation

Internal ear structures are very sensitive to temperature extremes. Failure to instil ear drops or irrigating fluid at room temperature may cause vertigo (severe dizziness) or nausea. Although the structures of the outer ear are not sterile, it is wise to use sterile drops and solutions in case the eardrum is ruptured. The entry of non-sterile solutions into middle-ear structures could result in infection. If any ear drainage is present, the nurse should check with the prescriber to be sure the client does not have a ruptured tympanic membrane (eardrum). A nurse should never occlude the ear canal with the dropper or irrigating syringe. Also, forcing medication into an occluded ear canal creates pressure that may injure the eardrum. Box 27-12 reviews guidelines for administering ear drops.

The external ear structures of children differ from those of adults. When instilling drops or irrigating solutions in infants and young children, the nurse must straighten the cartilaginous canal by grasping the auricle of the ear and pulling it gently *down and back*. In adults the ear canal is longer and composed of underlying bone, and is straightened by pulling the auricle *up and back*. Failure to straighten the canal properly may prevent medicinal solutions from reaching the deeper external ear structures.

• CRITICAL REFLECTION POINT

Sometimes when administering ear drops it is possible that the medicine does not go into the ear but, rather, drips out of the ear without entering. Should you administer the drop again? What should you do?

Vaginal instillation

Vaginal medications are available as pessaries (vaginal suppositories), foam, jellies or creams. Pessaries come individually packaged in foil wrappers. Storage in a refrigerator prevents the solid oval-shaped pessaries from melting. After a suppository is inserted into the vaginal cavity, body temperature causes it to melt so that it can be absorbed and distributed. Foam, jellies and creams are administered with an applicator inserter (Skill 27-4). A pessary is given with an applicator inserter in accordance with standard precautions. Clients often prefer administering their own vaginal medications and should be given privacy. After instillation of the medication, a client may wish to wear a perineal pad to collect drainage. Vaginal medications are often given to treat infection; discharge may be foul-smelling. Aseptic technique should be followed and the client should be offered frequent opportunities to maintain perineal hygiene.

BOX 27-12 Procedural guidelines for administering ear medications

Ear drops

1. Have client assume side-lying position (if not contraindicated by client's condition) with ear to be treated facing up, or client may sit in chair or at the bedside.
2. Straighten ear canal by pulling auricle down and back (children) or upwards and outwards (adult).
3. Instil prescribed drops holding dropper 1 cm above ear canal (see illustration).
4. Ask client to remain in side-lying position for 2–3 minutes. Apply gentle massage or pressure to tragus of ear with finger unless contraindicated due to pain.
5. At times the prescriber orders insertion of portion of cotton ball into outermost part of canal. Do not press cotton into canal. Remove cotton after 15 minutes.



Ear irrigations

1. Assess the tympanic membrane or review medical record for history of eardrum perforation, which would contraindicate ear irrigation.
2. Help client assume sitting or lying position with head tilted or turned towards affected ear. Place towel under client's head and shoulder and have client hold basin under affected ear.
3. Fill irrigating syringe with solution (approximately 50 mL).
4. Gently grasp auricle and straighten ear canal by pulling it down and back (children) or upwards and outwards (adult).
5. Slowly instil irrigating solution by holding tip of syringe 1 cm above opening of ear canal. Allow fluid to drain out during instillation. Continue until canal is cleansed or all solution is used.

Adapted from Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

SKILL 27-4

Administering vaginal medications

Delegation considerations

Administering medications by the vaginal route requires the problem-solving and knowledge-application abilities of professional nurses. Although in some states of Australia and New Zealand client care attendants or enrolled nurses are legally able to administer medications via this route, delegation may be inappropriate and client assessment by registered nurses is essential.

Equipment

- Vaginal creams, foam, jelly or suppositories or irrigating solutions
- Applicators
- Disposable gloves
- Tissues
- Paper towel
- Perineal pad
- Drape
- Water-soluble lubricants
- Medication administration record (MAR)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Review prescriber's order, including client's name, medication name, form (cream or suppository), route, dosage and time of administration.	Ensures safe and correct administration of medication.
2. Perform hand hygiene.	Reduces transfer of microorganisms.

■ **Critical decision point: Rectal and vaginal suppositories may be stored near one another in the refrigerator. Vaginal suppositories are larger and more oval.**

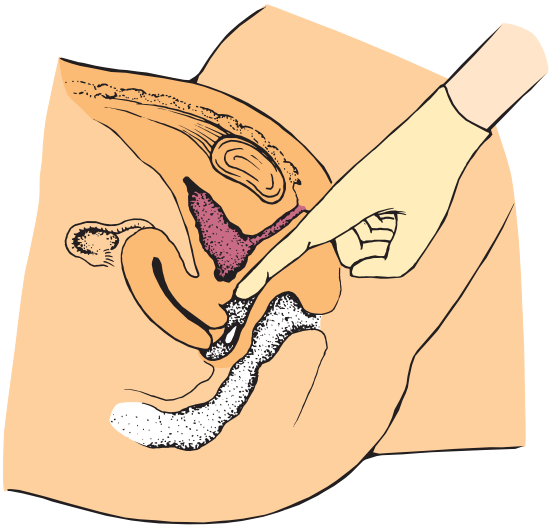
3. Identify client; compare name on MAR with identification bracelet and ask name.	Ensures that correct client receives medication.
4. Inspect condition of external genitalia and vaginal canal (see Chapter 21).	Findings provide baseline data for monitoring effect of medication.

■ **Critical decision point: Avoid using during the menstrual cycle. If vaginal medication is to be administered during the menstrual period, sanitary pads should be used, not tampons.**

5. Assess client's ability to manipulate applicator or suppository and to position self to insert medication.	Mobility restriction indicates level of assistance required from nurse.
6. Explain procedure to client and gain their consent. Be specific if client plans to self-administer medication. (e.g. 'Please remove the foil covering before insertion'.)	Promotes understanding. Will enable client to self-administer medication if physically able.

STEPS	RATIONALE
7. Arrange supplies at bedside.	Ensures smooth procedure.
8. Close room curtain or door.	Provides privacy.
9. Assist client to lie in dorsal recumbent position.	Provides easy access to and good exposure of vaginal canal. Also allows suppository to dissolve without escaping through orifice.
10. Keep abdomen and lower extremities draped.	Minimises embarrassment.
11. Put on disposable gloves.	Prevents transmission of microorganisms between nurse and client.
12. Be sure vaginal orifice is well illuminated by room light or gooseneck lamp.	Proper insertion requires external genitalia to be seen.
13. Insert suppository with applicator:	
a. Remove suppository from foil wrapper and place suppository into the tip of the applicator; apply liberal amount of lubricant to smooth or rounded end. Lubricate applicator.	Lubrication reduces friction against mucosal surfaces during insertion.
b. With non-dominant gloved hand, gently retract labial folds.	Exposes vaginal orifice.
c. Hold the applicator by the cylinder and direct applicator initially down (towards the spine) and then back and up (towards the cervix). The aim is to insert the applicator along the posterior wall of vaginal canal 5 cm into vaginal canal.	Correct placement ensures equal distribution of medication along walls of vaginal cavity.
d. When the applicator is in the appropriate position depress the plunger, remove the applicator with the plunger depressed and wipe away remaining lubricant from around orifice and labia.	Maintains comfort.
14. Apply cream or foam:	
a. Fill cream or foam applicator following package directions.	Dose is prescribed by volume in applicator.
b. With non-dominant gloved hand, gently retract labial folds.	Exposes vaginal orifice.
c. With dominant gloved hand, insert applicator approximately 5–7.5 cm. Push applicator plunger to deposit medication into vagina (see illustration).	Allows equal distribution of medication along vaginal walls.
d. Withdraw applicator and place on paper towel. Wipe off residual cream from labia or vaginal orifice.	Residual cream on applicator may contain microorganisms.

STEPS	RATIONALE



Step 14c Instillation of medication into vaginal canal.

15. Remove gloves by pulling them inside out and discard in appropriate receptacle. Perform hand hygiene.	Reduces transfer of microorganisms.
16. Instruct client to remain on back for at least 10 minutes.	Medication will be distributed and absorbed evenly throughout vaginal cavity and not be lost through orifice.
17. If reusable applicator is used, wash with soap and warm water, rinse and store for this client's future use.	Vaginal cavity is not sterile. Soap and water help remove bacteria and residual cream.
18. Offer client perineal pad when client resumes mobility.	Prevents vaginal discharge from spreading to clothing.
19. Inspect appearance of discharge of vaginal canal and condition of external genitalia between applications.	Evaluates whether vaginal medication effectively reduced irritation or inflammation of tissues.

RECORDING AND REPORTING

- Record medication name, dose, route and time of administration on MAR.
- Record character of discharge on nurses' notes.

HOME CARE CONSIDERATIONS

- Suppositories should be kept refrigerated but in a container away from children.

Rectal instillation

Rectal suppositories are thin and bullet-shaped with a rounded end which prevents anal trauma during insertion. Rectal suppositories contain medications that exert local effects such as promoting defecation, or systemic effects such as reducing nausea. Rectal suppositories often need to be refrigerated.

The client should usually be positioned in the left lateral position (Sims' position) and the suppository placed past the internal anal sphincter and against the rectal mucosa (Skill 27-5), otherwise the suppository might be expelled before it can dissolve and be absorbed into the mucosa. With practice, a nurse learns to recognise the sensation of the sphincter relaxing around the finger. The suppository should not be forced into a mass of faecal material. It may be necessary to clear the rectum with a small cleansing enema before a suppository can be inserted.

SKILL 27-5

Administering rectal suppositories

Delegation considerations

Administering medications by the rectal route requires the problem-solving and knowledge-application abilities of professional nurses. In some states of Australia and New Zealand, client care attendants or enrolled nurses may legally be able to administer medications via this route. For this procedure, client assessment by the registered nurse is required as delegation may not be appropriate.

Equipment

- Rectal suppository
- Lubricating jelly (water soluble)
- Disposable gloves
- Tissue
- Drape
- Medication administration record (MAR)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

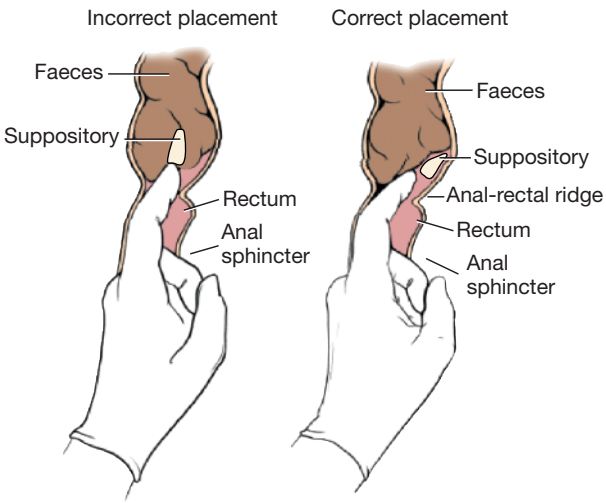
STEPS	RATIONALE
1. Review prescriber's order, including client's name, medication name, form, route and time of administration.	Ensures safe and correct administration of medication.
2. Review healthcare record for relevant contraindications such as rectal surgery or bleeding.	Conditions contraindicate use of suppository.
3. Perform hand hygiene.	Reduces transfer of microorganisms.
4. Put on disposable gloves.	Prevents contact with infected faecal material.
5. Identify client; check name on MAR with client's identification bracelet and ask client's name.	Ensures that correct client receives medication.
6. Explain procedure to the client and gain their consent. Be specific if client wishes to self-administer medication.	Promotes understanding and cooperation. Will enable client to self-administer medication if physically able.
7. Arrange supplies at bedside.	Ensures smooth procedure.
8. Close room curtain or door.	Maintains privacy and minimises embarrassment.
9. Help assume left lateral (Sims') position. Keep client draped with only anal area exposed.	Exposes anus and helps client relax external anal sphincter. Maintains privacy and facilitates relaxation.
10. Examine condition of anus externally and palpate rectal walls as needed (see Chapter 24). If gloves become soiled, dispose of them by turning them inside out and placing them in appropriate receptacle.	Determines presence of active rectal bleeding. Palpation determines whether rectum is filled with faeces, which may interfere with suppository placement. Reduces transmission of infection.

STEPS	RATIONALE
Critical decision point: Generally, rectal suppository is contraindicated in the presence of active rectal bleeding. Unless suppository is for constipation, medication placed in a rectum filled with faeces may be poorly absorbed or prematurely expelled with defecation.	
11. Put on disposable gloves (if previous gloves were discarded).	Minimises contact with faecal material and reduces transmission of microorganisms.
12. Remove suppository from wrapper and lubricate rounded end (see illustration). Lubricate index finger of dominant hand.	Lubrication reduces friction as suppository enters rectal canal.



Step 12 Lubricating rounded end of suppository.

13. Ask client to take slow deep breaths through mouth and relax anal sphincter.	Forcing suppository through constricted sphincter causes pain.
14. Retract buttocks with non-dominant hand. Insert suppository gently through anus, past internal sphincter and against rectal wall, 10 cm in adults, 5 cm in children and infants. May need to apply gentle pressure to hold buttocks together momentarily.	Suppository must be placed against rectal mucosa for eventual absorption and therapeutic action.



Step 14 Inserting rectal suppository.

15. Withdraw finger and wipe anal area with tissue.	Provides comfort.

STEPS	RATIONALE
16. Discard gloves by turning them inside out, and dispose of them in appropriate receptacle.	Reduces transfer of microorganisms.
17. Ask client to remain flat or on side for 5 minutes.	Prevents expulsion of suppository.
18. If suppository contains laxative or faecal softener, place call light within reach.	Provides client with sense of control over elimination. Allows client to obtain assistance to bed pan or toilet.
19. Perform hand hygiene.	Reduces risk of transfer of infection.
20. Return within 5 minutes to determine whether suppository was expelled.	Reinsertion may be necessary.
21. Observe for effects of suppository (e.g. bowel movement, relief of nausea) 30 minutes after administration.	Evaluates effectiveness of medication and relief of client's symptoms.

RECORDING AND REPORTING

- Report occurrence of rectal bleeding to medical officer.

CRITICAL REFLECTION POINT

It is *very* important to ask clients to explain in their own words how they take their prescribed medications. For example, there have been instances of clients being prescribed suppositories and then inserting them into their rectum still wrapped in their foil packaging! What teaching points would you include when instructing a client how to administer their own suppository?

Administering medications by inhalation

Medications administered by handheld inhalers are dispersed through an aerosol spray, mist or powder via a metered-dose inhaler or by nebulisation so that the medication is delivered directly to the membranes of the airways. The alveolar–capillary network absorbs medications rapidly.

Metered-dose inhalers

Metered-dose inhalers (MDIs) are usually designed to produce local effects such as bronchodilation. Clients who have chronic respiratory disease such as asthma, emphysema or bronchitis often receive medications by inhalation. Such medications can help control airway obstruction. Because the clients depend on medications for disease control, their knowledge must include ways to administer them safely (Skill 27-6), as some medications can have serious systemic side effects.

SKILL 27-6

Using metered-dose inhalers (MDIs)

Delegation considerations

Administering MDI and supervising clients who self-administer MDIs require the problem-solving and knowledge-application abilities of professional nurses. In some states of Australia and New Zealand, client care attendants or enrolled nurses may legally be able to administer medications via this route. For this procedure, client assessment by the registered nurse is required as delegation may not be appropriate.

Equipment

- MDI with medication canister
- Spacer (e.g. Volumatic) (optional)
- Facial tissues (optional)

- Washbasin or sink with warm water
- Paper towel
- Medication administration report (MAR)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Review prescriber's order, including client's name, medication name, number of inhalations.	Ensures safe and correct administration of medication.
2. Identify client, compare name on MAR with client's ID bracelet and ask client's name.	Ensures that correct client receives medication.
3. Assess client's ability to hold, manipulate and depress canister and inhaler. Assess respiration and level of dyspnoea, and auscultate chest.	Any impairment of grasp or presence of hand tremors interferes with client's ability to depress canister within inhaler.
4. Assess client's readiness and ability to learn: client asks questions about medication, disease or complications; requests education in use of inhaler; is mentally alert; participates in own care. Client should not be fatigued, in pain or in respiratory distress. Assess level of understanding of technical vocabulary terms, and purpose and action of prescribed medications.	Affects client's ability to understand explanations and actively participate in teaching process. Mental or physical limitations affect client's ability to learn and the methods nurse uses for instruction. Knowledge of disease is essential for client to realistically understand use of inhaler.
5. Assess medication schedule and number of inhalations prescribed for each dose.	Influences explanations nurse provides for use of inhaler.
6. If previously instructed in self-administration of inhaled medicine, assess client's technique in using an inhaler.	Nurse's instruction may require only simple reinforcement, depending on client's level of dexterity.
7. Instruct client in comfortable environment by sitting in chair in hospital room or sitting at kitchen table in home.	Client will be more likely to remain receptive of nurse's explanations.
8. Provide adequate time for teaching session.	Prevents interruptions. Instruction should occur when client is receptive.
9. Perform hand hygiene and arrange equipment needed.	Reduces transfer of microorganisms; saves time.
10. Allow client opportunity to manipulate inhaler, canister and spacer device. Explain and demonstrate how canister fits into inhaler.	Client must be familiar with how to use equipment.

STEPS	RATIONALE
11. Explain what metered dose is, and warn client about overuse of inhaler, including medication side effects.	Client must not arbitrarily administer excessive inhalations because of risk of serious side effects. If medication is given in recommended doses, side effects are uncommon.
12. Explain steps for administering inhaled dose of medication (demonstrate steps when possible):	Use of simple, step-by-step explanations allows client to ask questions at any point during procedure.
a. Remove mouthpiece cover from inhaler.	
b. Shake inhaler well.	Ensures fine particles are aerosolised.
c. Have client take a deep breath and exhale.	Prepares the client's airway to receive the medication.
d. Instruct the client to position the inhaler in one of two ways. (1) Open lips and place inhaler in mouth with opening towards back of throat (see illustration). (2) Position the device 2.5–5 cm from the mouth (see illustration).	Directs aerosol spray towards airway. Positioning the mouthpiece 2.5–5 cm from the mouth is considered the best way to deliver the medication.
e. With the inhaler properly positioned, have client hold inhaler with thumb at the mouthpiece and the index and middle fingers at the top. This is called a three-point or lateral hand position.	MDIs work best when clients use a three-point or lateral hand position to activate canisters.
f. Instruct client to tilt head back slightly, inhale slowly and deeply through mouth and depress medication canister fully.	Medication is distributed to airways during inhalation. Inhalation through mouth rather than nose draws medication more effectively into airways.
g. Hold breath for approximately 10 seconds.	Allows tiny drops of aerosol spray to reach deeper branches of airways.
h. Exhale through pursed lips.	Keeps small airways open during exhalation.



Step 12d(1) Inhaler placed in mouth with opening towards back of throat.



Step 12d(2) Inhaler positioned 2.5–5 cm from the mouth.

STEPS	RATIONALE
13. Explain steps to administer inhaled dose of medication using a spacer such as a Volumatic (demonstrate when possible):	
a. Remove mouthpiece cover from MDI and mouthpiece of spacer.	Inhaler fits into end of spacer.
b. Insert MDI into end of spacer.	Spacer traps medication released from the MDI; the client then inhales the drug from the device. These devices deposit up to 80% more medication in the lungs rather than in the oropharynx.
c. Shake inhaler well.	Ensures fine particles are aerosolised.
d. Place spacer mouthpiece in mouth and close lips. Do not insert beyond raised lip on mouthpiece. Avoid covering small exhalation slots with the lips (see illustration).	Medication should not escape through mouth.
e. Breathe normally through spacer mouthpiece.	Allows client to relax before delivering medication.
f. Depress medication canister, spraying one puff into spacer.	Emits spray that allows finer particles to be inhaled. Large droplets are retained in spacer.
g. Breathe in slowly and fully (for 5 seconds).	Ensures particles of medication are distributed to deeper airways.
h. Hold full breath for 5–10 seconds.	Ensures full medication distribution.
14. Instruct client to wait 2–5 minutes between inhalations or as ordered by prescriber.	Medications must be inhaled sequentially. First inhalation opens airways and reduces inflammation. Second or third inhalation penetrates deeper airways.
15. Instruct client against repeating inhalations before next scheduled dose.	Medications are prescribed at intervals during day to provide constant drug levels and minimise side effects. Beta-adrenergic MDIs are used either on an ‘as needed’ basis or regularly every 4–6 hours.



Step 13d Spacer mouthpiece placed between lips.
Care must be taken not to cover the exhalation slots with the lips.

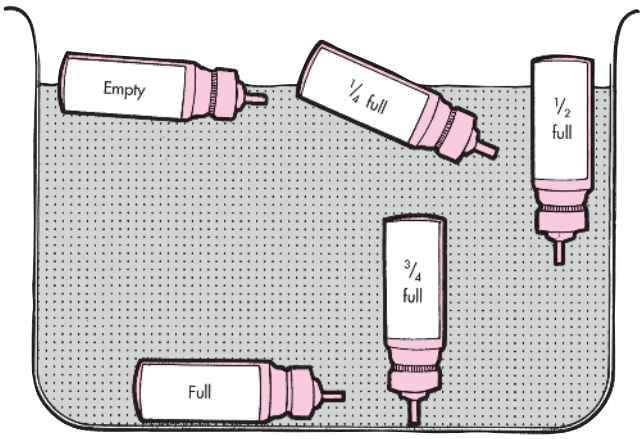
STEPS	RATIONALE
16. Explain that client may feel gagging sensation in throat caused by droplets of medication on pharynx or tongue.	Results when inhalant is sprayed and inhaled incorrectly.
17. Instruct client to rinse mouth with water.	Reduces buccal absorption of medication.
18. Instruct client in removing medication canister and cleaning inhaler in warm water.	Accumulation of spray around mouthpiece can interfere with proper distribution during use. Some medicines can also increase risk of oral candida (thrush) if not washed from mouth.
19. Ask if client has any questions.	Clarifies misconceptions or misunderstanding.
20. Have client explain and demonstrate steps in use of inhaler. Teach client how to check the volume of the inhaler.	Return demonstration provides feedback for measuring client's learning.
21. Ask client to explain medication schedule.	Improves likelihood of compliance with therapy.
22. Ask client to describe side effects of medication and criteria for calling prescriber.	Will allow client to recognise signs of overuse and need to seek medical support when medications are ineffective.
23. After medication instillation, assess client's respirations and auscultate lungs.	Determines status of breathing pattern and adequacy of ventilation.

RECORDING AND REPORTING

- Document in nurses' notes what skills were taught and client's ability to perform skills.
- Record time when client used MDI (number of puffs).
- Report any undesirable effects from medication.

HOME CARE CONSIDERATIONS

- Teach clients how to determine fullness of canisters, using displacement in water (see illustration below).



Determining fullness of canisters.

An MDI delivers a measured dose of medication with each push of a canister – approximately 2–8 kg of hand pressure must be used to activate the aerosol. It is important to assess hand strength and psychomotor skill, as both can diminish with age and from the effects of chronic respiratory disease.

In many cases, a more even absorption of the medication is achieved by the use of a *spacer*, a device that mixes the medication with room air inside the spacer before it is inhaled (see *Research highlight*). Clients should be encouraged to use these devices to improve the action of their medication and reduce absorption of the medicine via the oral mucosa.

Medications administered via the inhalation route exert local and systemic effects; for example, salbutamol relieves bronchospasm via a local effect on the respiratory system but also acts systemically, potentially increasing heart rate and causing headaches. Clients should rinse the mouth after using this type of medication.

Administering medications by irrigation

Medications may be used to irrigate or wash out a body cavity and are delivered in a stream of solution. Irrigation solutions are most commonly sterile water, saline or antiseptic solutions and are used for the eye, ear, throat, vagina and urinary tract. If there is a break in the skin or mucosa, the nurse uses aseptic technique. When the cavity to be irrigated is not sterile, as is the case with the ear canal (see Box 27-12) or vagina, clean technique is acceptable. In healthcare settings, however, use sterile solutions. Irrigations can be used to clean an area, instil a medication or be applied hot or cold to injured tissue.

Parenteral administration of medications

Parenteral administration of medications is the administration of medications by a route that bypasses the GI tract (e.g. topical or injectable routes). The term 'parenteral administration' is often used to refer to injections. This is an invasive procedure that must be performed using aseptic techniques (Box 27-13). After a needle pierces the skin, there is risk of infection. Each type of injection requires certain skills to ensure the medication reaches its target location. The effects of a parenterally administered medication can develop rapidly, depending on the rate of medication absorption. The nurse closely observes the client's response.

Equipment

Various syringes and needles are available, each designed to deliver a certain volume of a medication to a specific type of tissue.

Syringes

Syringes consist of a cylindrical barrel and a close-fitting plunger with a tip designed to fit the hub of a

RESEARCH HIGHLIGHT

Research focus

In acute asthma, inhaled beta-2-agonists have been administered in the past for relief of bronchospasm using wet nebulisation. More recently, clinicians and researchers have argued that metered-dose inhalers with a holding chamber (spacer) are just as effective and easier to use as they do not require a power source or regular maintenance and are less expensive.

Research abstract

A systematic review of the research comparing the effects of holding chambers compared with nebulisers for the delivery of beta-2-agonists for acute asthma was undertaken. 1897 children and 729 adults were included from 39 trials from emergency room and community settings. In addition, six trials on inpatients with acute asthma (207 children and 28 adults) were also reviewed.

Method of delivery of beta-2-agonist did not appear to affect hospital admission rates. In adults, the relative risk of admission for spacer versus nebuliser was 0.94 (95% CI: 0.61–1.43). The relative risk for children was 0.71 (95% CI: 0.47–1.08). In children, length of stay in the emergency department was significantly shorter when the spacer was used, with a mean difference of –70 minutes (95% CI: –0.43 to –0.24 minutes). Length of stay in the emergency department for adults was similar for the two delivery methods.

Peak flow and forced expiratory volume were also similar for the two delivery methods. Pulse rate was lower for spacer in children, mean difference –5% baseline (95% CI: –8 to –2% baseline).

Evidence-based practice

- Metered-dose inhalers with holding chamber produced outcomes that were at least equivalent to nebuliser delivery in children.
- Holding chambers may have some advantages compared with nebulisers for children with acute asthma.

Reference

Cates CJ, Welsh E, Rowe BH 2013 Holding chambers (spacers) versus nebulisers for beta-agonist treatment of acute asthma. Cochrane Database Syst Rev (2):2013 Sep 13:9:CD000052.

BOX 27-13 Preventing infection during an injection

- To prevent contamination of solution, draw medication from ampoule quickly. Do not allow it to stand open.
- To prevent needle contamination, avoid letting needle touch contaminated surface (e.g. outer edges of ampoule or vial, outer surface of needle cap, nurse's hands, countertop, table surface).
- To prevent syringe contamination, avoid touching length of plunger or inner part of barrel. Keep tip of syringe covered with cap or needle.
- To prepare skin, wash skin soiled with dirt, drainage or faeces with soap and water and dry. Use friction and a circular motion while cleaning with an antiseptic swab. Swab from centre of site, and move outwards in a 5 cm radius.

hypodermic needle. In general, syringes are classified as being Luer-lock or non-Luer-lock, based on the design of the syringe tip. Luer-lock syringes require needles that are twisted onto the tip and automatically lock in place (Figure 27-13A, B). This design prevents the inadvertent removal of the needle. Non-Luer-lock syringes require needles that slip firmly onto the tip (Figure 27-13C, D).

Most healthcare institutions use disposable single-use plastic syringes, which are inexpensive and easy to manipulate. A syringe is filled by aspiration, pulling the plunger outwards while the needle tip remains immersed in the prepared solution. The nurse may handle the outside of the syringe barrel and the handle of the plunger. To maintain sterility, avoid letting any unsterile object touch the tip or inside of the barrel, the hub, the shaft of the plunger or the needle (Figure 27-14). Syringe sizes range from 0.5 to 60 mL with a scale along the barrel divided into tenths of a millilitre.

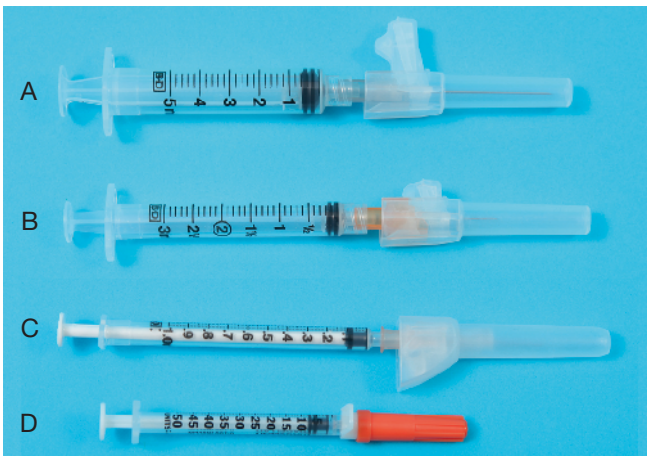


Figure 27-13 Types of syringes.

A, 5 mL syringe (Luer-lock). B, 3 mL syringe (Luer-lock). C, Tuberculin syringe marked in 0.01 mm (hundredths) for doses < 1 mL. D, Insulin syringe marked in units (50).

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Insulin syringes

These are available in sizes that hold 0.3–1 mL (Figure 27-13) and are calibrated in units. Insulin syringes that hold 0.3 mL are known as low-dose syringes. Most insulin syringes are U-100s, designed for use with U-100 strength insulin. Each millilitre of solution contains 100 units of insulin; 1 mL = 100 units.

Needles

Needles come individually packaged to allow flexibility in choosing the right needle for a client. Some needles are pre-attached to standard-sized syringes. Most needles are disposable and have three parts: the *hub*, which fits onto the tip of a syringe; the *shaft*, which connects to the hub; and the *bevel* or slanted tip. When inserted into tissue the bevel creates a narrow incision that quickly closes when the needle is removed, preventing leakage of medication, blood or serum. A short-bevelled tip is best for intravenous injections because it is not easily occluded against the inside of a blood vessel wall. Long-bevelled tips are sharper and narrower; this minimises discomfort when entering subcutaneous or intramuscular tissue. Large-diameter, flat-tip needles are only used for drawing up medications (i.e. not used directly on clients).

The nurse chooses the needle length (Figure 27-15) according to the client's size and weight and the type of tissue into which the medication is to be injected. A child or slender adult generally requires a shorter needle. The nurse uses longer needles (25–38 mm) for intramuscular injections and shorter needles (9–16 mm) for subcutaneous injections.

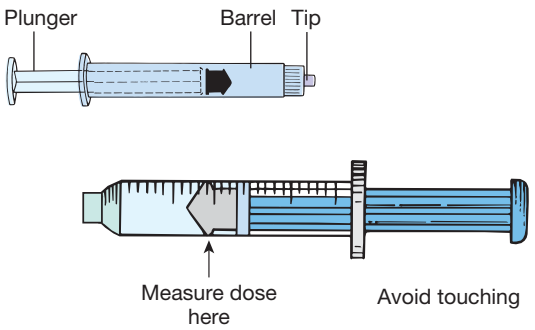


Figure 27-14 Parts of a syringe.

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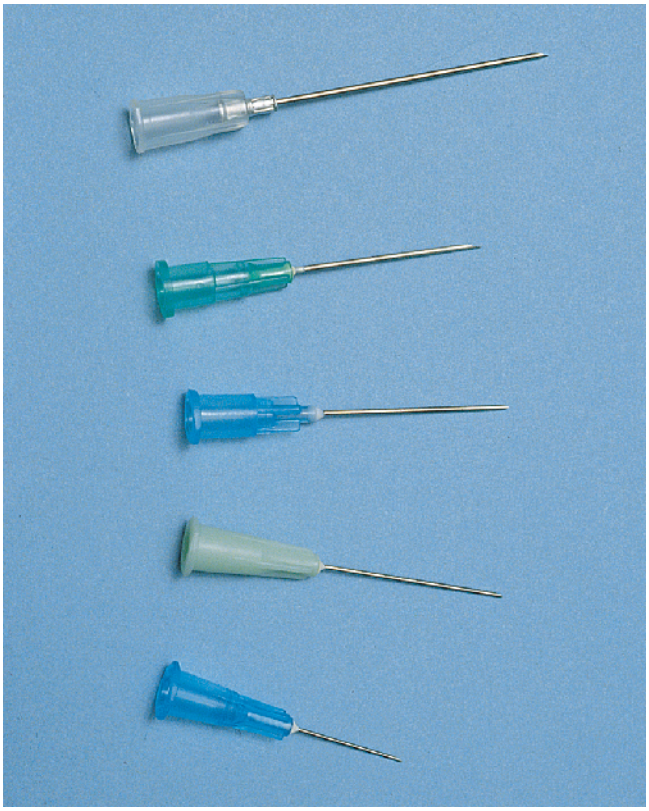

Figure 27-15 Needles.

Top to bottom: 19 gauge, 38 mm length; 20 gauge, 25 mm length; 21 gauge, 25 mm length; 23 gauge, 25 mm length; and 25 gauge, 16 mm length.

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The smaller the needle gauge, the larger the needle diameter (Figure 27-15). The selection of a gauge depends on the viscosity of fluid to be injected or infused. An intramuscular injection requires a 23 or 24 gauge needle. Subcutaneous injections require smaller diameter needles such as a 25 or 26 gauge needle. A 26 gauge needle is used for an intradermal injection.

Disposable injection units

Disposable single-dose, pre-filled syringes are available for some medications. The nurse must be careful to check the medication and concentration because all pre-filled syringes appear very similar. With these syringes, the nurse does not have to prepare medication dosages except to expel portions of unneeded medication. Another type of injection system involves screwing a plunger-like device into the end of a pre-filled vial containing a needle. The nurse advances the plunger to expel excess medication as in a regular syringe. After the medication is given, the entire unit is disposed of in an appropriate receptacle (sharps container). This system is designed to reduce the risk of needle-stick injuries.

Preparing an injection from an ampoule

Ampoules contain single doses of medication in a liquid. Ampoules are available in several sizes, from 1 mL to 10 mL or more. An ampoule may be made of glass or plastic with a constricted neck that must be snapped off to allow access to the medication (Figure 27-16A). A colour ring or a large dot is sometimes placed on the neck to indicate where the ampoule is pre-scored to be broken easily. Aspiration of the medication into a syringe is completed using a drawing-up needle (usually an 18 or 19 gauge needle), which is discarded and replaced by the injection needle (Skill 27-7). A filter needle may be used instead of a drawing-up needle (if required by institutional policy).

Preparing an injection from a vial

A vial is a single-dose or multidose container with a rubber seal at the top (Figure 27-16B). A metal or plastic cap protects the seal until it is ready for use. Vials can contain liquid or dry forms of medications; those that are unstable in solution are packaged dry. The vial label or package insert specifies the solvent or diluent used to dissolve the medication and the amount of diluent needed to prepare a desired medication concentration. Normal saline and sterile distilled water are commonly used to dissolve medications. Unlike the ampoule, the vial is a closed system, and air must be injected into it to permit easy withdrawal of the solution. Failure to inject air before drawing up creates a vacuum within the vial that makes withdrawal difficult (Skill 27-7).

Mixing medications

If two medications are compatible, it is possible to mix them in one injection as long as the final volume is within accepted limits for the site to be used. A client will then receive just one injection at a time. Most nursing units have

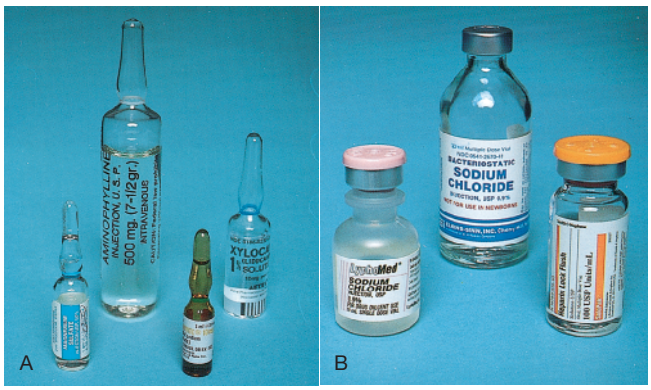

Figure 27-16 Ampoules and vials

A, Medication in ampoules. **B**, Medication in vials.

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SKILL 27-7

Preparing injections

Delegation considerations

Preparing injections from ampoules and vials requires the problem-solving and knowledge-application abilities of professional nurses. In some states of Australia and New Zealand, client care attendants or enrolled nurses may legally be able to administer medications via this route. For this procedure, client assessment by the registered nurse is required as delegation may not be appropriate.

Equipment

Medication in an ampoule:

- Syringe and two needles (filter needle optional)
- Small gauze pad or alcohol swab

Medication in a vial:

- Syringe and two needles (filter needle optional)
- Small gauze pad or alcohol swab
- Diluent (e.g. Normal saline or sterile water)

Both:

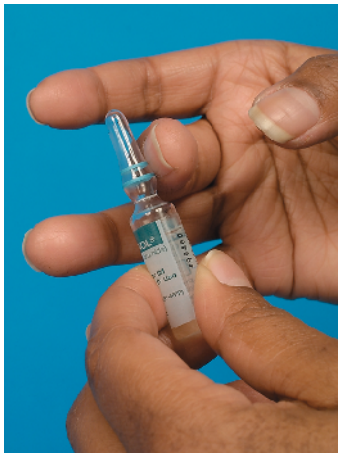
- Medication administration record (MAR)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Review order, including name and medication name, dose, route of administration and time of administration.	Ensures correct administration of medication.
2. Review pertinent information related to medication, including action, purpose, side effects and nursing implications.	Allows nurse to administer medication properly and to monitor client's response.
3. Check date of expiration of medication vial or ampoule.	Medication potency may increase or decrease when outdated.
4. Assess client's body build, muscle size and weight.	Determines type and size of syringe and needles for injection.
5. Perform hand hygiene.	Reduces transmission of microorganisms.
6. Prepare medication.	
A. Ampoule preparation	
(1) Tap top of ampoule lightly and quickly with finger until fluid moves from neck of ampoule (see illustration).	Dislodges any fluid that collects above neck of ampoule. All solution moves into lower chamber.

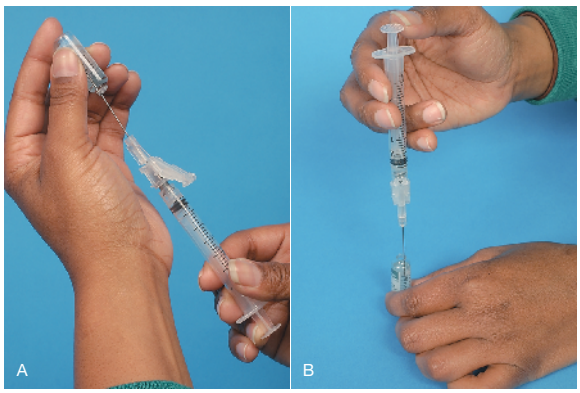
STEPS	RATIONALE
(2) Place small gauze pad around neck of ampoule.	Placing pad around neck of ampoule protects nurse's fingers from trauma as glass tip is broken off.
(3) Snap neck of ampoule quickly and firmly away from hands (see illustration).	Protects nurse's fingers and face from shattering glass.
(4) Draw up medication quickly.	System is open to airborne contaminants.
(5) Hold ampoule upside down, or set it on a flat surface. Insert syringe or filter needle (see agency policy) into centre of ampoule opening. Do not allow needle tip or shaft to touch rim of ampoule.	Broken rim of ampoule is considered contaminated. When ampoule is inverted, solution will dribble out if needle tip or shaft touches rim of ampoule.



Step 6A(1) Tapping ampoule to move fluid down neck.



Step 6A(3) Snapping neck away from hands.



Step 6A(6) Medication aspirated with (A) ampoule inverted and (B) ampoule on flat surface.

(6) Aspirate medication into syringe by gently pulling back on plunger (see illustration).	Withdrawal of plunger creates negative pressure within syringe barrel, which pulls fluid into syringe.
(7) Keep needle tip under surface of liquid. Tip ampoule to bring all fluid within reach of the needle.	Prevents aspiration of air bubbles.
(8) If air bubbles are aspirated, do not expel air into ampoule.	Air pressure may force fluid out of ampoule and medication will be lost.

STEPS	RATIONALE
(9) To expel excess air bubbles, remove needle from ampoule. Hold syringe with needle pointing up. Tap side of syringe to cause bubbles to rise towards needle. Draw back slightly on plunger, and then push plunger upwards to eject air. Do not eject medication.	Withdrawing plunger too far will remove it from barrel. Holding syringe vertically allows fluid to settle in bottom of barrel. Pulling back on plunger allows fluid within needle to enter barrel so fluid is not expelled. Air at top of barrel and within needle is then expelled.
(10) If syringe contains excess medication, use sink for disposal. Hold syringe vertically with needle tip up and slanted slightly towards sink. Slowly eject excess medication into sink. Recheck medication level in syringe by holding it vertically.	Medication is safely dispersed into sink. Position of needle allows medication to be expelled without flowing down needle shaft. Rechecking fluid level ensures proper dose.
(11) Change needle on syringe.	New needle prevents tracking medication through skin and subcutaneous tissues. New needle is sharp and correct gauge and length.
B. Vial containing a solution	
(1) Remove cap covering top of unused vial to expose sterile rubber seal, keeping rubber seal sterile. If reusing multi-dose vial, firmly and briskly wipe surface of rubber seal with alcohol swab and allow it to dry.	Vial comes packaged with cap to prevent contamination of rubber seal. Cap cannot be replaced after seal removal. Allowing alcohol to dry prevents needle from being coated with alcohol and mixing with medication.
(2) Pick up syringe and remove needle cap. Pull back on plunger to draw amount of air into syringe equivalent to volume of medication to be aspirated from vial.	Air must first be injected into vial to prevent build-up of negative pressure in vial when aspirating medication.
(3) With vial on flat surface, insert tip of needle with bevelled tip entering first through centre of rubber seal (see illustration). Apply pressure to tip of needle during insertion.	Centre of seal is thinner and easier to penetrate. Injecting bevelled tip first and using firm pressure prevent coring of rubber seal, which could enter vial or needle.



Step 6B(3) Inserting needle through centre of rubber seal with vial on flat surface.



Step 6B(5) Vial inverted to allow fluid to be withdrawn.



Step 6B(10) Tapping barrel of syringe to dislodge air bubbles.

STEPS	RATIONALE
(4) Inject air into the vial's airspace, holding on to plunger. Hold plunger with firm pressure; plunger may be forced backwards by air pressure within the vial.	Air must be injected before aspirating fluid. Injecting into vial's airspace prevents formation of bubbles and inaccuracy in dose.
(5) Invert vial while keeping firm hold on syringe and plunger (see illustration). Hold vial between thumb and middle fingers of non-dominant hand. Grasp end of syringe barrel and plunger with thumb and forefinger of dominant hand to counteract pressure in vial.	Inverting vial allows fluid to settle in lower half of container. Position of hands prevents forceful movement of plunger and permits easy manipulation of syringe.
(6) Keep tip of needle below fluid level.	Prevents aspiration of air.
(7) Allow air pressure from the vial to fill syringe gradually with medication. If necessary, pull back slightly on plunger to obtain correct amount of solution.	Positive pressure within vial forces fluid into syringe (unless vial has been used several times).
(8) When desired volume has been obtained, position needle into vial's airspace; tap side of syringe barrel carefully to dislodge any air bubbles. Eject any air remaining at top of syringe into vial.	Forcefully striking barrel while needle is inserted in vial may bend needle. Accumulation of air displaces medication and causes dose errors.
(9) Remove needle from vial by pulling back on barrel of syringe.	Pulling plunger rather than barrel causes plunger to separate from barrel, resulting in loss of medication.
(10) Hold syringe at eye level, at 90-degree angle, to ensure correct volume and absence of air bubbles. Remove any remaining air by tapping barrel to dislodge any air bubbles (see illustration). Draw back slightly on plunger; then push plunger upwards to eject air. Do not eject fluid.	Holding syringe vertically allows fluid to settle in bottom of barrel. Pulling back on plunger allows fluid within needle to enter barrel so fluid is not expelled. Air at top of barrel and within needle is then expelled.
(11) Change needle to appropriate gauge and length according to route of medication.	Inserting needle through a rubber stopper may dull bevelled tip. New needle is sharper. Because no fluid is along shaft, needle will not track medication through tissues.
(12) For multi-dose vial, make label that includes date of mixing, concentration of medication per millilitre and nurse's initials.	Ensures that future doses will be prepared correctly. Some medications must be discarded after certain number of days after mixing of vial.
C. Vial containing a powder (reconstituting medications)	
(1) Remove cap covering vial of powdered medication.	Cap prevents contamination of rubber seal.
(2) Draw up diluent into syringe following Steps 5B(2) to 5B(10).	Prepares diluent for injection into vial containing powdered medication.

STEPS	RATIONALE
(3) Insert tip of needle through centre of rubber seal of vial of powdered medication. Inject diluent into vial. Remove needle.	Diluent begins to dissolve and reconstitute medication.
(4) Mix medication thoroughly. Roll in palms. Do not shake.	Ensures proper dispersal of medication throughout solution. Shaking produces bubbles.
(5) Draw up the prescribed volume of reconstituted medication into syringe.	Once diluent has been added, concentration of medication (mg/mL) determines dose to be given.
7. Dispose of soiled supplies. Place broken ampoule and/or used vials and used needle in puncture-proof and leakproof sharps container. Clean work area and perform hand hygiene.	Correct disposal of glass and needle prevents accidental injury to staff. Controls transmission of infection.

charts that list common compatible medications, as do the manufacturers' instructions. If there is any uncertainty about medication compatibility, consult a pharmacist.

Mixing medications from two vials

It is no longer best practice (or common) that multiuse vials are used, except sometimes in vaccination programs or in some areas of anaesthetics. However, if multidose vials are used and a client requires one injection drawn from two different multiuse vials, the nurse applies the following principles when mixing the medications:

- Do not contaminate the contents of one vial with those of another.
- Ensure the final dosage is accurate.
- Maintain aseptic technique.

Only one syringe is needed to mix medications from two vials, assuming both medicines are compatible (Figure 27-17). The nurse takes an appropriately sized syringe with a needle attached and aspirates the volume of air equivalent to the dose of the first medication (vial A). The nurse injects the air into vial A, making sure the needle does not touch the solution. The nurse withdraws the needle, aspirates air equivalent to the dose of the second medication (vial B), and then injects the volume of air into vial B. The nurse immediately withdraws the medication from vial B into the syringe. At this point the medication from vial A has not contaminated vial B. The nurse applies a new sterile needle to the syringe and inserts it into vial A, being careful not to push the plunger and expel the medication within the syringe into the vial. The nurse then withdraws the desired amount of medication from vial A into the syringe. If a vial has excess positive pressure, the plunger may move before the nurse is ready, causing an accidental withdrawal of too much of the medication. If excess medication is withdrawn, the whole solution in the syringe must be discarded; under no circumstances is the excess fluid returned to the vial. After withdrawing the necessary amount, the nurse withdraws the needle and applies a new needle for administration to the client. The process of mixing two medications in one syringe is complex, and should be done only by experienced nurses.

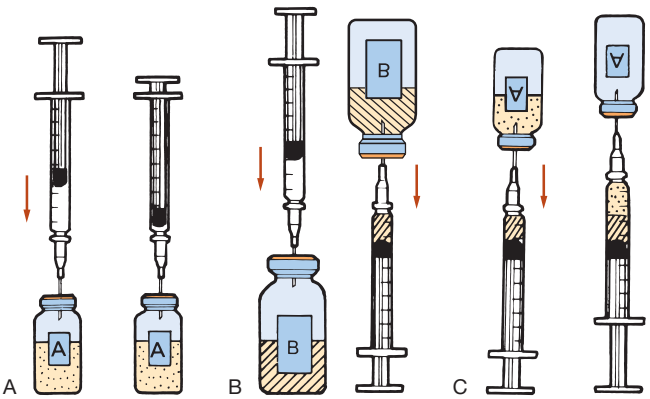


Figure 27-17 Steps in mixing medications from two vials.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Mixing medications from one vial and one ampoule

Mixing medications from a vial and an ampoule is simple because it is not necessary to add air to withdraw medication from an ampoule. The nurse prepares medication from the vial first and, using the same syringe and needle, withdraws medication from the ampoule. This

technique prevents contamination of the solution in the vial and the needle.

Mixing and preparing insulin

Insulin is the hormone used to treat diabetes mellitus as well as some other medical disorders. It must be administered by injection because it is a protein and therefore would be broken down and destroyed in the GI tract. Most diabetic clients requiring insulin learn to self-administer injections. The medication is available in 100 units per mL of solution. When preparing insulin, an insulin 'pen' is most commonly used; however, sometimes in acute care, the insulin may also be administered using an appropriately sized 'insulin syringe'. A 100-unit scaled syringe is commonly used to prepare 100-unit insulin (see Figure 27-13C).

Insulin is classified by rate of action, including *rapid*, *intermediate* and *long-acting*. Each type has a different onset, peak and duration of action. A client with diabetes may require more than one type of insulin. For example, by receiving a rapid-acting (regular) and an intermediate-acting insulin, a client receives more-sustained control of blood glucose over 24 hours.

Regular insulin is a clear solution that acts rapidly and can be given either subcutaneously or intravenously. Other types of insulin are also mostly clear, although some older and less commonly used types are cloudy (because of the addition of a protein, which slows absorption). The slower-acting insulin can be given only subcutaneously.

Insulin is ordered by specific dosage at select times, or by a sliding scale. A sliding scale dictates a certain dosage based on the client's blood-glucose level (BGL) (Box 27-14). Only regular insulin is used for sliding scales. If more than one type of insulin is required to manage the client's diabetes, the client will usually have these administered by separate insulin injecting pens. Rarely, the nurse can mix two different types of insulin into one syringe, provided the volume of the injection is not too large (see Box 27-15). This minimises the discomfort associated with multiple injections. The mixing of insulin, however, is less common today because stable pre-mixed insulin (70% intermediate and 30% regular, or 50% of each) is available.

Before withdrawing insulin from a vial, the vial should be rotated for at least 1 minute between both hands. This re-suspends the modified insulin preparations and helps to warm the medication. Insulin vials should not be shaken. Shaking causes bubbles to form, which take up space and alter the dosage.

BOX 27-14 Example of sliding scale insulin order (in units of insulin)

Give regular insulin subcut:
2 units for glucose 5.1–7.0 mmol/L
4 units for glucose 7.1–10 mmol/L
6 units for glucose 10.1–13 mmol/L
For glucose > 13.1 mmol/L, call prescriber

BOX 27-15 Procedural guidelines for mixing two kinds of insulin in one syringe

Mixing insulins in a syringe is not common in practice anymore, but for some clients this may be required (especially in children). In general, advice should be sought from a diabetes nurse educator and the long-acting insulin is drawn up into the syringe before the short-acting insulin. In the past this used to be known as 'Cloudy before Clear' whereby the cloudy insulin (most long-acting insulins were cloudy, i.e. Protaphane, which is not commonly used today) was drawn up before the clear insulin (the short-acting insulins were clear). This statement is now misleading and shouldn't be used as most insulins are clear now, irrespective of whether they are short- or long-acting.

Modified from White JR, Campbell RK 1996 In Haire-Joshu D (ed) Management of diabetes mellitus: perspectives of care across the life span, 2nd edn, Mosby, St Louis.

Administering injections

Each injection route is unique with regard to the type of tissue into which the medication is to be injected. The characteristics of the tissue involved influence the rate of medication absorption and thus the onset of medication action. Before injecting a medication, the nurse should know the volume of the medication to administer, the medication's characteristics, including viscosity, and the location of anatomical structures underlying injection sites (Skill 27-8).

Inability to administer injections correctly can have negative consequences. Failure to select an injection site in relation to anatomical landmarks can result in nerve or bone damage during needle insertion. It can also result in failure to administer the medicine into the correct tissue, for example, intramuscularly instead of subcutaneously. Inability to maintain stability of the needle and syringe unit could result in pain for the client and possibly tissue damage. If the nurse fails to aspirate the syringe before injecting an intramuscular medication, the medication may accidentally be injected directly into an artery or vein. Injecting too large a volume of medication for the

SKILL 27-8

Administering injections

Delegation considerations

Administering injections requires the problem-solving and knowledge-application abilities of professional nurses. For this procedure, delegation to nurse assistants is inappropriate. In some states of Australia and New Zealand, client care attendants or enrolled nurses may legally be able to administer medications via this route. For this procedure, client assessment by the registered nurse is required as delegation may not be appropriate.

Equipment

- Proper size syringe and needle:
  - Subcutaneous (subcut): Syringe (1–3 mL) and needle (25 to 26 gauge)
  - Intramuscular (IM): Syringe 2–3 mL for adult, 0.5–1 mL for infants and small children. Two needles: 21 to 24 gauge
  - Intradermal (ID): 1 mL tuberculin syringe with pre-attached 26 or 27 gauge needle
- Small gauze pad and/or alcohol swab
- Vial or ampoule of medication or skin test solution
- Disposable gloves
- Medication administration record (MAR)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
For all injections	
1. Review prescriber's medication order for client's name, medication name, dose, time and route of administration.	Ensures safe and correct administration of medication.
2. Assess client's history of and known response to allergies.	Certain substances have similar compositions; nurse should not administer any substance with known allergic response.
3. Observe verbal and non-verbal responses towards receiving injection.	Injections can be painful. Anxiety can increase pain.
4. Assess for contraindications.	
A. For subcutaneous injections Assess for factors such as circulatory shock or reduced local tissue perfusion. Assess adequacy of client's adipose tissue.	Reduced tissue perfusion interferes with medication absorption and distribution. Physiological changes of ageing or client illness may influence the amount of SC tissue a client possesses. This influences methods of administering injections.
B. For intramuscular injections Assess for factors such as muscle atrophy, reduced blood flow or circulatory shock.	Atrophied muscle absorbs medication poorly. Factors interfering with blood flow to muscles impair medication absorption.

STEPS	RATIONALE
5. Prepare correct medication dose from ampoule or vial (see Skill 27-7). Check carefully. Be sure all air is expelled.	Ensures that medication is sterile. Preparation techniques differ for ampoule and vial.
6. Identify client; check identification bracelet with MAR and ask client's name.	Ensures correct client receives ordered medication.
7. Explain steps of procedure and tell client injection will cause a slight burning or sting.	Helps minimise client's anxiety.
8. Close room curtain or door.	Provides privacy.
9. Wash hands thoroughly; apply disposable gloves.	Reduces transfer of microorganisms.
10. Keep sheet or gown draped over body parts not requiring exposure.	Selection of correct injection site may require exposure of body parts.
11. Select appropriate injection site. Inspect skin surface over sites for bruises, inflammation or oedema. a. subcut: Palpate sites for masses or tenderness. Avoid these areas. For daily insulin, rotate site daily. Be sure needle is correct size by grasping skinfold at site with thumb and forefinger. Measure fold from top to bottom; needle should be half length. b. IM: Note integrity and size of muscle and palpate for tenderness or hardness. Avoid these areas. If injections are given frequently, rotate sites. c. ID: Note lesions or discolourations of forearm. Select site three to four finger widths below antecubital space and a hand width above wrist.	

■ **Critical decision point: Injection sites should be free of abnormalities that may interfere with medication absorption. Sites used repeatedly can become hardened from lipohypertrophy (increased growth in fatty tissue). An ID site should be clear so that results of skin test can be seen and interpreted correctly.**

12. Help client to comfortable position:	
a. subcut: Have client relax arm, leg or abdomen, depending on site chosen for injection.	Relaxation of site minimises discomfort.
b. IM: Have client lie flat, on side or prone, depending on site chosen.	Reduces strain on muscle and minimises discomfort of injections.
c. ID: Have client extend elbow and support it and forearm on flat surface.	Stabilises injection site for easiest accessibility.
d. Talk with client about subject of interest.	Distraction reduces anxiety.

■ **Critical decision point: Ensure that client's position is not contraindicated by medical condition.**

13. Relocate site using anatomical landmarks.	Injection into correct anatomical site prevents injury to nerves, bones and blood vessels.

STEPS	RATIONALE
14. Clean site with an antiseptic swab. Apply swab at centre of the site and rotate outwards in a circular direction for about 5 cm (see illustration). Note: Some agencies may not require the use of alcohol swabs before giving an injection, but the evidence for this is not clear so many agencies will still require this step.	Mechanical action of swab removes secretions containing microorganisms.
15. Hold swab or gauze between third and fourth fingers of non-dominant hand.	Gauze or swab remains readily accessible when needle is withdrawn.
16. Remove needle cap from needle by pulling it straight off.	Prevents needle from touching and contaminating sides of cap.
17. Hold syringe between thumb and forefinger of dominant hand:	
a. subcut: Hold as dart, palm down (see illustration) or hold syringe across tops of fingertips. b. IM: Hold as dart, palm down.	Quick, smooth needle insertion minimises discomfort.
c. ID: Hold bevel of needle pointing up.	With bevel up, medication is less likely to be deposited into tissues below dermis.
18. Administer injection **A. Subcutaneous**	
(1) For average-size client, spread skin tightly across injection site or pinch skin with non-dominant hand.	Needle penetrates tight skin more easily than loose skin. Pinching skin elevates subcutaneous tissue and may desensitise area.
(2) Inject needle quickly and firmly at 45- to 90-degree angle. Then release skin, if pinched.	Injecting medication into compressed tissue irritates nerve fibres.
(3) For obese client, pinch skin at site and inject needle at 90-degree angle below tissue fold.	Obese clients have fatty layer of tissue above subcutaneous layer.
(4) Inject medication slowly.	Aspiration of heparin injection may cause the needle to move, creating tissue damage and bleeding (haematoma).

STEPS	RATIONALE



Step 14 Cleaning site using circular motion.



Step 17a Holding syringe as a dart.



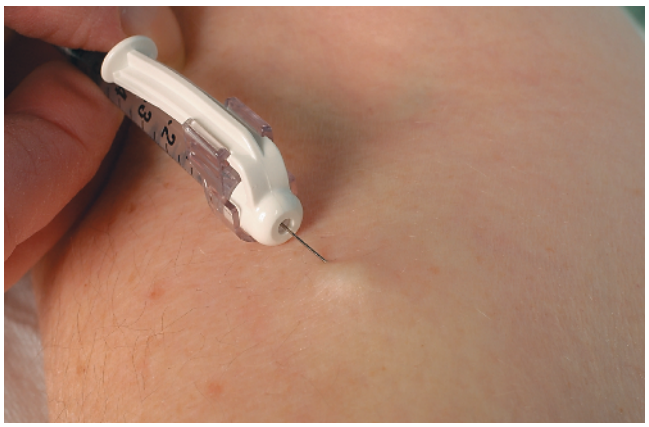
Step 18B(3) Pulling back on plunger to aspirate drug.

B. Intramuscular	
(1) Position non-dominant hand at proper anatomical landmarks and pull skin down to administer in a Z-track.	Speeds insertion and reduces discomfort. Creates zigzag path through tissues that seals needle track to avoid leaking of medication into subcutaneous tissue.
(2) If client's muscle mass is small, grasp body of muscle between thumb and fingers.	Ensures that medication reaches muscle mass.
(3) Insert needle quickly at 90-degree angle into muscle. After needle enters site, grasp lower end of syringe barrel with non-dominant hand. Move dominant hand to end of plunger. Avoid moving syringe while slowly pulling back on plunger to aspirate drug (see illustration). If blood appears in syringe, remove needle, discard medication and syringe and repeat procedure.	Properly performed injection requires smooth manipulation of syringe parts. Movement of syringe may displace needle and cause discomfort. Aspiration of blood into syringe indicates IV placement of needle; subcut and IM injections are not for IV use (dermis is relatively vascular).

■ **Critical decision point: If blood appears in syringe (indicating needle is in the bloodstream rather than into the muscle), remove needle and dispose of medication and syringe correctly. Repeat preparation procedure.**

(4) Inject medication slowly.	Slow injection reduces pain and tissue trauma.
(5) Smoothly and steadily withdraw needle and release skin.	Support of tissues around infection site minimises discomfort during needle withdrawal. Some advocate use of dry gauze to minimise client discomfort associated with alcohol on non-intact skin.
C. Intradermal	
(1) With non-dominant hand, stretch skin over site with forefinger or thumb.	Needle pierces tight skin more easily.

STEPS	RATIONALE
(2) With needle almost against client's skin, insert it slowly at a 5- to 15-degree angle until resistance is felt. Then advance needle through epidermis to approximately 3 mm below skin surface. Needle tip can be seen through skin.	Ensures needle tip is in dermis.
(3) Inject medication slowly. Normally, resistance is felt. If not, needle is too deep; remove and begin again.	Slow injection minimises discomfort at site. Dermal layer is tight and does not expand easily when solution is injected.
(4) While injecting medication, notice that small bleb approximately 6 mm resembling mosquito bite appears on skin's surface (see illustration).	Bleb indicates medication is deposited in dermis.



Step 18C(4) Injection creates a small bleb.

19. Withdraw needle while applying alcohol swab or gauze gently over site. Support of tissue around injection site minimises discomfort during needle withdrawal.	Some advocate the use of dry gauze to minimise client discomfort associated with alcohol on non-intact skin.
20. Do not massage site after subcut injection of heparin or insulin or after IM or ID injection.	Massage of site after heparin injection may cause bleeding; massage after insulin injection may increase absorption of insulin. Massage of IM site may cause underlying tissue damage. Massage of ID site may disperse medication into underlying tissue and alter test results.
21. Help client to comfortable position.	Gives client sense of wellbeing.
22. Discard uncapped needle or needle enclosed in safety shield and attached syringe into puncture and leakproof receptacle.	Needles should not be recapped before disposal. Safety shields prevent needle-stick injuries.
23. Remove disposable gloves and perform hand hygiene.	Reduces transmission of microorganisms.

STEPS	RATIONALE
24. Stay with client for 3–5 minutes and observe for any adverse reactions.	Severe anaphylactic reaction is characterised by dyspnoea, wheezing and circulatory collapse.
25. Ask whether client feels any acute pain, burning, numbness or tingling at injection site.	Continued discomfort may indicate injury to underlying bones or nerves.
26. Inspect site, noting any bruising or induration.	Bruising or induration indicates complication associated with injection. Notify nurse in charge or medical officer. Provide warm compress to site.
27. Return to evaluate client's response to medication in 10–30 minutes. IM medications absorb quickly; undesired effects may also develop rapidly.	Nurse's observations determine efficacy of medication action.
28. Ask client to explain purpose and effects of medication.	Evaluates client's understanding of information taught.
29. For ID injections, use skin pencil and draw circle around perimeter of injection site. Read site within 48–72 hours of injection.	Site must be read at various intervals to determine test results. Pencil mark makes site easy to find.

RECORDING AND REPORTING

- Chart medication dose, route, site, time and date given in medication record.
- Report any undesirable effects from medication to nurse in charge or medical officer.
- Record client's response to medications in nurses' notes.

HOME CARE CONSIDERATIONS

- Clients with hypertrophy of the skin from repeated insulin injections (common with beef or pork formulations) should be taught not to use the site for 6 months.

site selected causes extreme pain and may result in local tissue damage.

Many clients, particularly children, fear injections. Clients with serious or chronic illness are often given several injections daily. The nurse may be able to minimise a client's discomfort in the following ways:

- Use topical anaesthetic creams or patches to reduce the sensation of the injection.
- Use a sharp-bevelled needle in the smallest suitable length and gauge.
- Position the client as comfortably as possible to reduce muscular tension.
- Select the proper injection site, using anatomical landmarks.
- Divert the client's attention from the injection through conversation.
- Insert the needle quickly and smoothly to minimise tissue pulling.
- Hold the syringe steady while the needle remains in tissues.
- Inject the medication slowly and steadily.
- Massage the injected area gently for several seconds (unless contraindicated, e.g. anticoagulants).

There are several different types of injections: subcutaneous, intramuscular and intradermal.

Subcutaneous injections

These involve placing medications into the loose connective tissue under the dermis (Skill 27-8). Because subcutaneous tissue is not as richly supplied with blood, absorption of the medication is somewhat slower than with intramuscular injections. Because subcutaneous tissue contains pain receptors, the client may experience some discomfort. The best subcutaneous injection sites are the outer posterior aspect of the upper arms, the abdomen from below the costal margins to the iliac crests, and the anterior aspects of the thighs (Figure 27-18). The site most

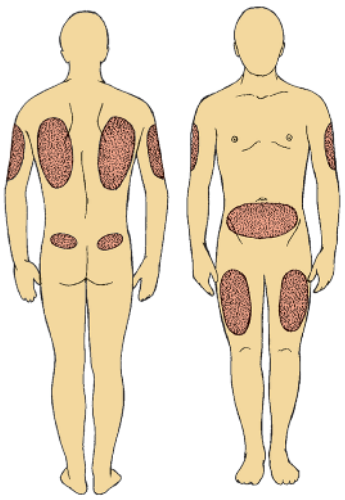


Figure 27-18 **Sites recommended for subcutaneous injections.**

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Figure 27-19 **Giving subcutaneous heparin in the abdomen.**

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often recommended for heparin and insulin injection is the abdomen (Figure 27-19). Other sites include the scapular areas of the upper back and the upper ventral or dorsal gluteal areas.

The injection site chosen should be free of skin lesions, bony prominences and large underlying muscles or nerves. Clients with diabetes should practise intra-site rotation of insulin injections. Use of the same part of the body (e.g. abdomen) for a sequence of injections provides more consistency in the absorption of the insulin; the injections should be given at least 2.5 cm away from the previous site. Rotation of sites within an anatomical region ensures more consistent absorption times. Repeated injection into the same site causes a natural immune response, resulting in lipodystrophy.

Only small doses (0.5–1 mL) of water-soluble medications should be given subcutaneously, because the tissue is sensitive to irritating solutions and large volumes of medications. Collection of medications within the tissues can cause a sterile abscess, which appears as a hard, painful lump under the skin.

A client's bodyweight indicates the depth of the subcutaneous layer, so the nurse must choose the needle length and angle of insertion based on weight. Generally, a 25 gauge 26 mm needle inserted at a 45-degree angle (Figure 27-20) or a 13 mm needle inserted at a 90-degree angle deposits medications into the subcutaneous tissue of a normal-sized client. A child may require only a 13 mm needle. If the client is obese, pinch the tissue and use a needle that is long enough to insert through fatty tissue at the base of the skin fold. The preferred needle length is half the width of the skin fold. Thin clients may have insufficient tissue for subcutaneous injections; the upper abdomen is the best site for injection with thin clients.

To ensure the medication reaches the subcutaneous tissue, the nurse follows this rule: if 5 cm of tissue can be grasped, the needle should be inserted at a 90-degree angle; if 2.5 cm of tissue can be grasped, the needle should be inserted at a 45-degree angle.

Intramuscular injections

The intramuscular (IM) route provides faster medication absorption than the subcutaneous, because of the greater vascularity of muscle. Muscle is less sensitive to irritating and viscous medications. There is less danger of causing tissue damage when medications enter deep muscle. There is, however, a risk of inadvertently injecting medications directly into blood vessels. The nurse uses a longer and heavier-gauge needle to pass through subcutaneous tissue and penetrate deep muscle tissue. Bodyweight and the amount of adipose tissue can influence needle size selection. For example, an obese client may require a needle 77 mm long, and a thin client may require a needle only 12–25 mm long.

The angle of insertion for an intramuscular injection is 90 degrees (Figure 27-20). A normal, well-developed client can tolerate 3–4 mL of medication into a larger muscle without severe muscle discomfort. A larger volume of medication is unlikely to be absorbed properly. Children, older adults and thin clients can tolerate only 2 mL of an intramuscular injection, and no more than 1 mL is recommended for small children and older infants.

Repeated injections into the same muscle can cause severe discomfort. With the client relaxed, palpate the muscle to rule out any hardened lesions. Discomfort is minimised by helping the client assume a position which reduces muscle strain.

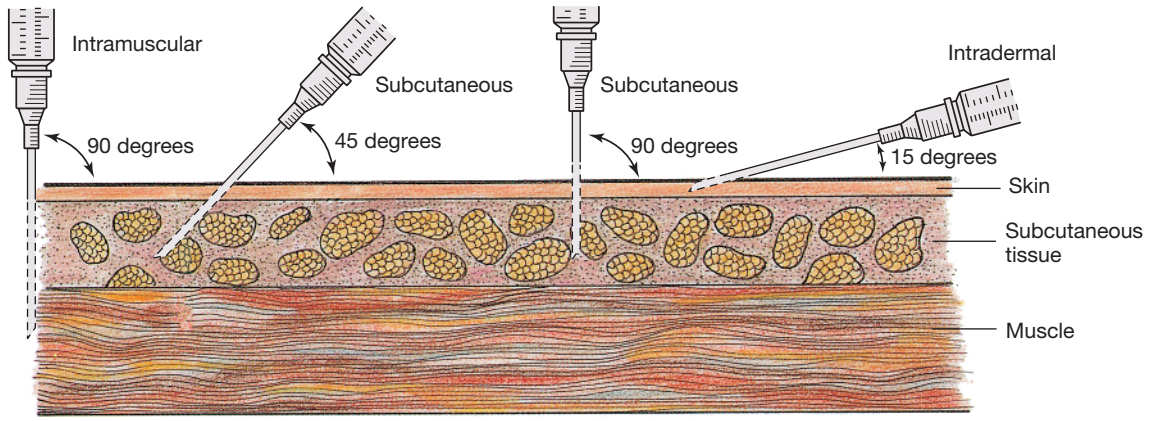

Figure 27-20 Comparison of angles of insertion for intramuscular (90 degrees), subcutaneous (45 degrees) and intradermal (15 degrees) injections.

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Intramuscular sites

When selecting an intramuscular site (Box 27-16), consider whether the area is free from infection or necrosis; the presence of localised areas of bruising or abrasions or tenderness; the location of underlying bones, nerves and major blood vessels; and the volume of medication to be administered.

Ventrogluteal

The ventrogluteal muscle is a safe site for all clients, with a maximum dose of 4 mL. The gluteus medius and minimus are situated deep and away from major nerves and blood vessels. Injuries such as fibrosis, nerve damage, abscess, tissue necrosis, muscle contraction, gangrene and pain are rare.

Locate the muscle by placing the heel of the hand over the greater trochanter of the client's hip, with the wrist perpendicular to the femur. The right hand is used for the left hip, and the left hand is used for the right hip. Point the thumb towards the client's groin and the fingers towards the client's head, point the index finger to the anterosuperior iliac spine and extend the middle finger back along the iliac crest towards the buttock. The index finger, the middle finger and the iliac crest form a triangle, and the injection site is the centre of the triangle (Figure 27-21). The client may lie on the side or the back. Flexing of the knee and hip helps the client relax this muscle.

BOX 27-16 Characteristics of intramuscular sites

Vastus lateralis

- Lacks major nerves and blood vessels.
- Rapid drug absorption.

Ventrogluteal

- A deep site, situated away from major nerves and blood vessels.
- Less chance of contamination in incontinent adults or infants.
- Easily identified by any prominent bony landmark.

Deltoid

- Easily accessible but muscle not well developed in most people.
- Used for small amounts of medications.
- Not used in infants or children with underdeveloped muscles.
- Potential for injury to radial and ulnar nerves or brachial artery.

Vastus lateralis

The vastus lateralis muscle is normally used in adult clients, for volumes up to 5 mL. The muscle is thick and well developed, is located on the anterior lateral aspect of the thigh and extends in an adult from a hand width above the knee to a hand width below the greater trochanter of the femur (Figure 27-22). The middle third of the muscle is the suggested site for injection. The width of the muscle usually extends from the midline of the thigh to the midline of the thigh's outer side. With young children or cachetic (wasted) clients, it helps to grasp the body of the muscle during injection to be sure that the medication is deposited in muscle tissue. To help relax the muscle, ask the client to lie flat with the knee slightly flexed. The injection can also be given while the client is in the sitting position.

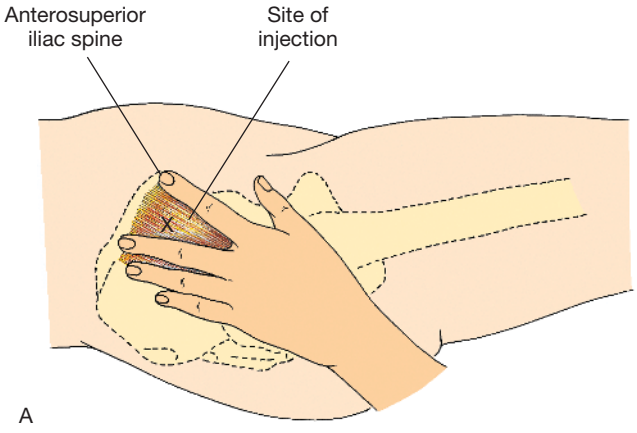



Figure 27-21

A, Landmarks for ventrogluteal site. B, Locating IM injection for ventrogluteal site.

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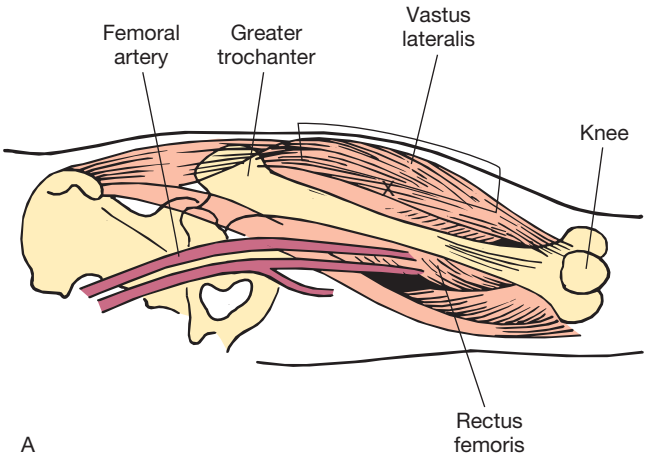



Figure 27-22

A, Landmarks for vastus lateralis site. B, Giving IM injection in vastus lateralis site.

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Dorsogluteal

The dorsogluteal muscle has been a traditional site for intramuscular injections for volumes of 1–4 mL. Because of the risk of striking major blood vessels or the underlying sciatic nerve and the risk of causing permanent or partial paralysis of the involved leg, this site is not recommended by this text.

Deltoid

Although the deltoid muscle is easily accessible, this muscle is often not well developed and is not recommended for injection volumes over 2 mL. The radial and ulnar nerves and brachial artery lie within the upper arm along the humerus (Figure 27-23). This site should only be used for small volumes of medication, or when other sites are inaccessible. To locate the deltoid muscle, fully expose the client's upper arm and shoulder (a tight-fitting sleeve should not be rolled up). Ask the client to relax the arm by flexing the elbow. The client may sit, stand or lie down. Palpate the lower edge of the acromion process, which forms the base of a triangle in line with the midpoint of the lateral aspect of the upper arm. The injection site is in the centre of the triangle, about 2.5–5 cm below the acromion process. The site may also be located by placing four fingers across the deltoid muscle, with the top finger along the acromion process. The injection site is then three finger widths below the acromion process.

• CRITICAL REFLECTION POINT

The volume of an ordered IM injection is 4 mL. Identify the muscles you could use to administer this volume, and select the length of needle required for an obese client in this situation.

Special techniques for IM injections

Air-lock technique

Intramuscular injections using the air-lock technique are less irritating to subcutaneous tissues during needle

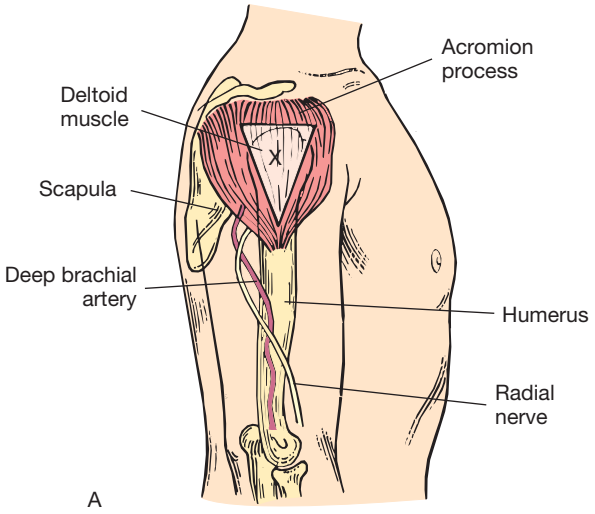



Figure 27-23

A, Landmark for deltoid site. B, Giving IM injection in deltoid muscle.
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withdrawal. A small volume of air injected behind a bolus of medication clears the needle of medication, preventing it from leaking through subcutaneous tissues. This technique is not used commonly and should be used only when recommended in the medication information insert. Examples include Wyeth's vaccines prepared with aluminium adjuvant, diphtheria and tetanus toxoid and the pertussis vaccine. After preparing the proper dose, draw up 0.2 mL of air. The needle is then injected downwards at a 90-degree angle so that the air rises to the top of the medication towards the plunger. As the medication is injected into the muscle, the air follows the medication, creating an air lock (Figure 27-24). Administering the medication with the needle at an

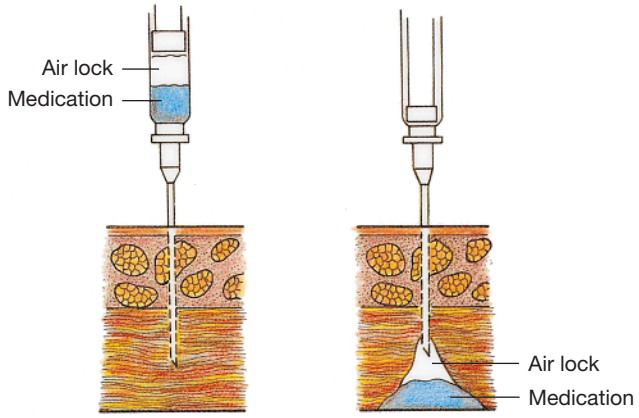

Figure 27-24 Administering IM injection by the air-lock technique prevents tracking of caustic medications through subcutaneous tissue.

angle of less than 90 degrees allows the air to collect along the barrel of the syringe and enter the muscle too soon, causing medication to leak into subcutaneous tissues.

Z-track method

When irritating preparations such as iron are given intramuscularly, the **Z-track method of injection** minimises irritation and staining by sealing the medication in muscle tissue. Select an IM site, preferably in larger, deeper muscles such as the ventrogluteal muscle. A new needle must be applied to the syringe after preparing the medication so that no solution remains on the outside needle shaft. After preparing the site with an antiseptic swab, pull the overlying skin and subcutaneous tissues approximately 2.5–3.5 cm to the side. Holding the skin taut with the non-dominant hand, inject the needle deep into the muscle. If there is no blood return on aspiration, the nurse injects the medication slowly. The needle remains inserted for 10 seconds to allow the medication to disperse evenly. Withdraw the needle and then release the skin. This leaves a zigzag path that seals the needle track where tissue planes slide across one another (Figure 27-25). The medication cannot escape from the muscle tissue. Massage of the site is contraindicated as it could force medication into subcutaneous tissues.

Intradermal injections

The nurse typically gives intradermal injections for skin testing, for example, tuberculin screening and allergy tests. These medications are potent, so they are injected into the dermis, where blood supply is reduced and medication absorption occurs slowly. A client may have

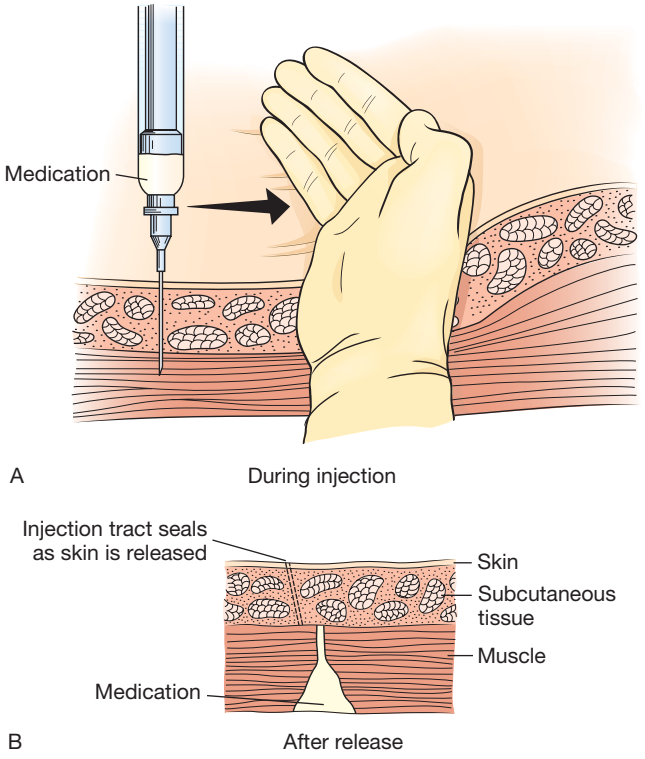

Figure 27-25

A, Pulling on overlying skin during IM injection moves tissue to prevent later tracking. B, The Z-track left after injection prevents the deposit of medication through sensitive tissue.

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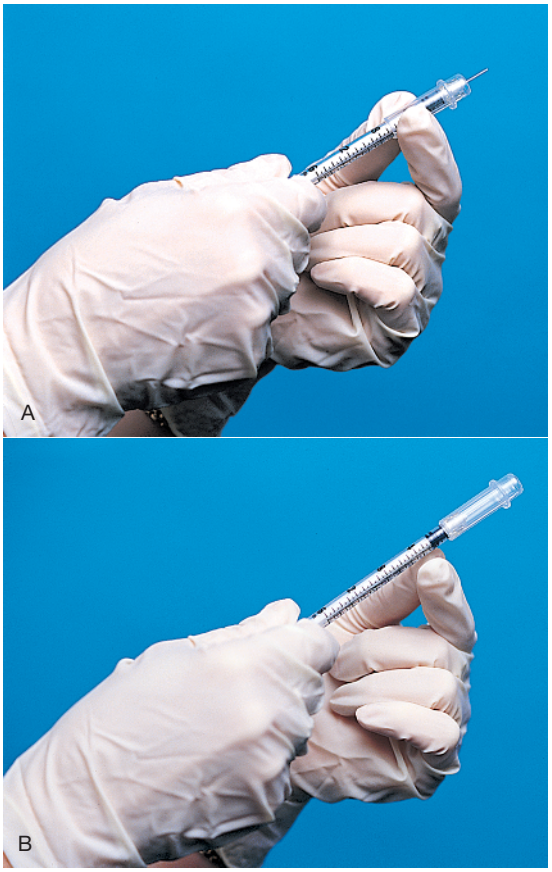

Figure 27-26 Needle with plastic guard to prevent needle-sticks.

A, Position of guard before injection. B, After injection the guard locks in place, covering the needle.

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a severe anaphylactic reaction if the medication enters the circulation too rapidly.

Skin testing requires the nurse to be able to clearly see the injection sites for changes in colour and tissue integrity. Intradermal sites should be lightly pigmented, free of lesions and relatively hairless. The inner forearm and upper back are ideal locations.

The nurse uses a small hypodermic syringe for skin testing. The angle of insertion for an intradermal injection is 5–15 degrees (see Figure 27-20). As the nurse injects the medication, a small bleb (bubble) resembling a mosquito bite should appear on the skin's surface. If a bleb does not appear or if the site bleeds after needle withdrawal, there is a good chance that the medication entered subcutaneous tissues. In this case, test results will be invalid.

Safety in administering medications by injection

Needleless devices

A large number of needle-stick injuries occur in healthcare settings each year. These injuries commonly occur when nurses forget to recap needles, mishandle intravenous lines and needles or contact stray needles left at a client's bedside. The risk of exposure of health workers to blood-borne pathogens has led to the development of 'needleless devices' or special needle safety devices. Special syringes designed with a sheath or guard that covers the needle after it is withdrawn from the skin are available (Figure 27-26). The needle is immediately covered, eliminating the chance of a needle-stick injury. The syringe and sheath are disposed of together in a sharps receptacle. 'Needleless' syringes (e.g. Interlink system) for use with needleless injection ports on intravenous lines are widely used.

Needles and other instruments considered 'sharps' are always disposed of into clearly marked sharps containers (Figure 27-27). Containers should be puncture- and leak-proof. A needle should never be forced into a full receptacle.

Needle recapping

The practice of recapping contaminated needles is not recommended and is against institutional policy.



Figure 27-27 **Sharps disposal using only one hand.**

Intravenous administration

The nurse administers medications intravenously by the following methods:

- as mixtures, within large volumes of IV fluids
- by injection of a bolus, or small volume, of medication through an existing intravenous infusion line or intermittent venous access (referred to as a *heparin* or *medication lock*)
- by '**piggyback**' infusion of a solution containing the prescribed medication and a small volume of IV fluid through an existing IV line
- direct intravenous injection into the vein via a 21–25 gauge needle and syringe.

In the first three methods, the client has either an existing IV infusion line or an access site, such as an intermittent infusion. The IV route is often used in emergencies when a fast-acting medication must be delivered quickly (Skill 27-9).

When using any method of IV medication administration, clients must be closely observed for symptoms of adverse reactions; this includes assessing vital signs before, during and after infusion. After a medication enters the bloodstream, it begins to act immediately and there is no way to stop its action. Special care must be taken to avoid errors in dose calculation and preparation. The seven rights of safe medication administration should be double-checked and the desired action and side effects known. The known antidote should be available during administration. The nurse uses the principles of aseptic non-touch technique when preparing and administering IV medications (see Chapter 29).

The IV route is best when it is necessary to establish constant therapeutic blood levels. Medications which are highly alkaline and irritating to muscle and subcutaneous tissue cause less discomfort when given intravenously.

Large-volume infusions

Of the methods of administering IV medications, mixing medications in large volumes of fluids is the safest

SKILL 27-9

Adding medications to intravenous fluid containers

Delegation considerations

Adding medications to IV fluid containers requires the problem-solving and knowledge-application abilities of professional nurses. For this procedure, delegation to nurse assistants is inappropriate. (In some institutions the pharmacist may add medications to primary containers of IV solutions.)

Equipment

- Vial or ampoule of prescribed medication
- Syringe of appropriate size (5–20 mL)
- Sterile Interlink cannula or needle (19 to 21 gauge) with special filters (optional)
- Correct diluent (e.g. sterile water, Normal saline)
- Sterile IV fluid container of ordered fluid volume
- Alcohol or antiseptic swab
- Label to attach to IV bag or bottle
- Medication administration record (MAR)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Check prescriber's order to determine type of IV solution to use and type of medication and dosage.	Client's overall physical condition dictates type of IV solution used. Ensures safe and accurate medication administration.
2. Collect information necessary to administer drug safely, including action, purpose, side effects, normal dose, time of peak onset and nursing implications.	Allows nurse to give medication safely and to monitor client's response to therapy.
3. When more than one medication is to be added to IV solution, assess for compatibility of medications.	Medications are often incompatible when mixed together. Chemical reactions that occur result in clouding or crystallisation of IV fluids. Check clinical agency policy for approved medication compatibility list.
4. Assess client's systemic fluid balance, as reflected by skin hydration and turgor, bodyweight, pulse, blood pressure and urine output.	Danger of continuous IV infusions is that fluids may infuse too rapidly, causing circulatory overload.
5. Assess client's history of medication allergies.	IV administration of medications causes rapid effects. Allergic response can be immediate.
6. Assess IV insertion site for signs of infiltration or phlebitis.	An intact, properly functioning site ensures medication is given safely.
7. Perform hand hygiene and use gloves if this is agency policy (i.e. for cytotoxic or antibiotic medicines).	Reduces transfer of microorganisms.
8. Assemble supplies in medication room (or other area as designated by clinical agency).	Ensures orderly procedure, with less likelihood of contaminating supplies.
9. Prepare prescribed medication from vial or ampoule (see Skill 27-7).	Ensures accurate delivery of medication.
10. Identify client by reading identification band and asking name. Compare with MAR.	Ensures correct client receives medication.
11. Assess client's understanding of purpose of medication therapy.	May reveal need for education.
12. Add medication to new container (usually done in medication room):	
a. Solution in a bag: locate medication injection port on plastic IV solution bag. Port has small stopper at end. Do not select port for the IV tubing insertion or air vent.	Medication injection port is self-sealing to prevent introduction of microorganisms after repeated use.
b. Solution in a bottle: locate injection site on IV solution bottle, which is often covered by a cap.	Accidental injection of medication through main tubing port or air vent can alter pressure within bottle and cause fluid leaks through air vent. Cap seals bottle to maintain its sterility.

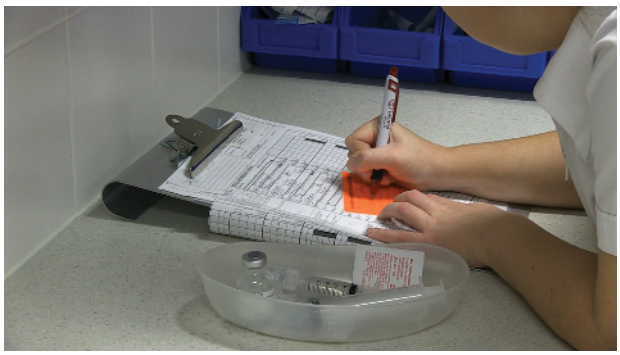
STEPS	RATIONALE
c. Wipe off port or injection site with alcohol/antiseptic swab (see illustration).	Reduces risk of introducing microorganisms.
d. Remove needle cap or sheath from syringe and insert needle of syringe or needleless device through centre of injection port or site; inject medication (see illustration).	Injection of needle into sides of port may produce leak and lead to fluid contamination.
e. Withdraw syringe from bag or bottle.	
f. Mix medication and IV solution by holding bag or bottle and turning it gently end to end.	Allows even distribution of medication.
g. Complete medication label with name and dose of medication, date, time and nurse's initials and attach to bottle or bag (see illustration). Optional (check agency policy): Apply a flow strip that identifies the time the solution was hung and intervals indicating fluid levels. Spike bag or bottle with IV tubing and prime the tubing with the fluid.	Label can be easily read during infusion of solution. Informs nurses and other healthcare workers of contents of bag or bottle. Priming the line removes the air within the tubing which reduces risk of air embolism.



Step 12c Wiping port with alcohol/antiseptic swab.



Step 12d Injecting medicine through centre of port.



Step 12g Completing medication label.

■ **Critical decision point: Do not use felt-tip markers on plastic surfaces. The ink can penetrate the plastic and leak into the IV solution.**

13. Bring assembled items to client's bedside and check client's name against the prescriber's orders.	Ensures correct client receives ordered medication.

STEPS	RATIONALE
14. Prepare client by explaining that medication is to be given through existing IV line or one to be started. Explain that no discomfort should be felt during medication infusion. Encourage client to report symptoms of discomfort.	Most IV medications do not cause discomfort when diluted. Pain at insertion site may be early indication of infiltration.
15. Regulate infusion at prescribed rate.	Prevents rapid infusion of fluid.
16. Add medication to existing container:	
a. Prepare vented IV bottle or plastic bag:	
(1) Check volume of solution remaining in bottle or bag.	Ensures the appropriate minimal volume is available to dilute medication adequately.
(2) Close off IV infusion clamp.	Prevents medication from directly entering circulation as it is injected into bag or bottle.
(3) Wipe off medication port with an alcohol or antiseptic swab.	Mechanically removes microorganisms that could enter container during needle insertion.
(4) Insert syringe needle or needleless device through injection port and inject medication.	Injection port is self-sealing and prevents fluid leaks.
(5) Lower bag or bottle from IV pole and gently mix. Rehang bag.	Ensures medication is evenly distributed.
b. Complete medication label and attach it to bag or bottle.	Informs nurses and doctors of contents of bag or bottle.
c. Regulate infusion to desired rate.	Prevents rapid infusion of fluid.
17. Properly dispose of equipment and supplies. Do not cap needle on syringe. Specially sheathed needles are discarded as a unit with needle covered.	Proper disposal of needle prevents injury to nurse and client. Capping of needles increases risk of needle-stick injuries.
18. Perform hand hygiene.	Reduces transmission of microorganisms.
19. Observe client for signs or symptoms of adverse reaction.	IV medications can cause rapid effects.
20. Observe for signs and symptoms of fluid volume excess.	Rapid uncontrolled infusion can cause circulatory overload.
21. Periodically return to client's room to assess IV insertion site and rate of infusion.	Over time IV site may become infiltrated or cannula may become malpositioned. Flow rate may change according to client's position or volume left in container.
22. Observe for signs or symptoms of IV infiltration.	Infiltrated medications can injure tissue.

RECORDING AND REPORTING

- Record solution and medication added to parenteral fluid on appropriate form.
- Report any adverse reactions to nurse in charge or prescriber.

and easiest. Medications are diluted in large volumes (500 mL or 1000 mL) of compatible IV fluids, such as Normal saline or dextrose solution. In some agencies the pharmacist adds medications to the primary container of IV solution to ensure asepsis. Because the medication is not in a concentrated form, the risk of side effects or fatal reactions is reduced when infused over the prescribed timeframe. Vitamins and potassium chloride are two types of medications commonly added to IV fluids.

Intravenous infusions which contain medicines should be administered via a volume-controlled system to ensure the medication is given at the ordered rate. If the volume is given too quickly, the risk of adverse reactions or side effects (e.g. fluid overload, drug overdose or cardiac arrest) is increased; slow administration, however, may not allow the medication to reach therapeutic levels.

Intravenous bolus

An IV bolus involves introducing a concentrated dose of a medication directly into the systemic circulation via the side-arm of the IV giving set or directly into an IV cannula (Skill 27-10). The use of a bolus which requires only a small amount of fluid to deliver the medication is an advantage when the client's daily fluid intake is restricted.

The IV bolus is the most dangerous method of administering medications, because there is no time to correct errors. In addition, a bolus may cause direct irritation to the lining of blood vessels.

Before administering a bolus, the nurse confirms placement and patency of the IV line (Box 27-17). Accidental injection of a medication into the tissues around a vein can cause pain, sloughing of tissues, abscesses and even tissue necrosis, depending on the medication's composition. The rate of administration of an IV bolus medication is usually determined by the amount of medication that can be given each minute. The rate of infusion is critical and the nurse must resist the temptation to hurry the procedure. The nurse should determine the recommended concentration and rate of administration, the purpose for which a medication is prescribed and any potential adverse effects related to the rate or route of administration. It is important that the rate of infusion is slowed if the client complains of pain. The bolus should be stopped immediately if the client shows any signs of adverse effects of the medication.

Patient-controlled analgesia (PCA) is one form of bolus administration (see Chapter 41). A small-volume infusion pump or syringe pump/syringe-driver (Figure 27-29) is equipped with a handheld button, which, when pressed by the client, delivers a pre-set dose of the medication as a bolus. PCA allows clients to assess and treat their pain on a continuous basis. For a PCA to be effective, the client must be well informed on how the device works and have the coordination to use the handset.

BOX 27-17 Procedural guidelines for checking the patency of an intravenous cannula

Flushing – not always a reliable indicator, as little resistance may be experienced even when cannula has tissued.

Lack of pain around the IV site – problematic, as infiltration of isotonic solutions generally does not produce discomfort.

Oedema and coolness of IV site – a medication should never be given intravenously if the insertion site appears puffy or oedematous or the IV fluid cannot flow at the proper rate. This is not always descriptive of extravasation, for it depends on the site and previous status of tissues.

Checking for blood return – the inability to obtain a blood return may suggest that the needle or catheter is in the client's tissues or is resting against the vein wall. Unreliable, as blood may flow freely with seepage of solution into tissues around the cannula.

Obstructing the venous flow above the cannula by the application of a tourniquet or occlusion by finger pressure – may be advised in determining patency. If the IV cannula is in the vein, the flow rate will decrease or stop with obstruction of venous flow; whereas with infiltration, the flow rate will continue unchanged.

Volume-controlled infusions

Control of the volume of fluid or medication administered via an intravenous infusion is very important, especially if the client is young or elderly, or if the medication in the infusion has serious side effects or is given in small doses. Using volume-controlled infusions has several advantages:

- It reduces the risk of rapid-dose infusion by IV push. Medications are diluted and infused over a longer time, for example, 30–60 minutes.
- It allows administration of medications while they are still in a stable condition (e.g. antibiotics are stable for a limited time in solution).
- It allows control of IV fluid intake.
- It may be used to allow clients to control their own medication use (i.e. PCA).

One way of administering a medication IV is to mix it with a small amount (50–100 mL) of compatible IV fluid. The fluid is within a secondary fluid container separate from the primary infusion. The secondary infusion connects directly to the primary IV line or to separate tubing that inserts into the primary line.

SKILL 27-10

Administering medications by intravenous bolus

Delegation considerations

Administering medications by intravenous bolus requires the problem-solving and knowledge-application abilities of professional nurses. For this procedure, delegation to nurse assistants is inappropriate.

Definitions

Bolus: method of rapid IV medication administration; refers to the concentration or amount of medication.

Flush: solution (usually 5–10 mL Normal saline) is slowly administered to check patency of cannula; to flush medication from cannula or to create a lock (saline or heparin).

Equipment

IV medication (existing infusion):

- Disposable gloves
- Medication in vial or ampoule
- Syringe
- Needleless device or sterile needles (21 and 25 gauge)
- Antiseptic swab
- Watch with second-hand or digital readout
- Medication administration record (MAR)

IV flush (IV lock):

- Disposable gloves
- Medication in vial or ampoule
- Syringe
- Vial of appropriate flush solution (5–10 mL saline most common, but heparin may also be used; if heparin is used, most common concentration is 10–100 units; check agency policy)
- Needleless device or sterile needles (21 and 25 gauge)
- Alcohol or antiseptic swab
- Watch with second-hand or digital readout
- Medication administration record (MAR)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Check the prescriber's order for type, dosage, route and time of medication.	Ensures safe and accurate medication administration.
2. Assess IV insertion site for signs of infiltration or phlebitis.	Confirming the placement of the IV catheter and the integrity of the surrounding tissue ensures that the medication is administered safely.
3. If medication is to be pushed into an IV line, assess the patency of the line.	The IV line must be patent for medication to reach venous circulation effectively.
4. Prepare ordered medication from vial or ampoule (see Skill 27-7). Read directions carefully for proper IV dilution of medications.	Directions can be found in Australian Injectable Handbook, from package instructions or in MIMS Annual.
5. After drawing up medications, remove the needle (for needleless system) otherwise apply a small-gauge needle to the syringe (this system is rarely used).	Used to insert through IV line with needle system only.

STEPS	RATIONALE
6. Perform hand hygiene. Put on gloves.	During IV bolus administration, risk of blood exposure is low. However, nurse may manipulate IV dressing or expose site while completing other activities. Gloves reduce exposure.
7. Check client's identification by looking at identification bracelet and asking name and any known allergies.	Ensures that medication is administered to correct client.
8. **Administer medications by IV medication (existing infusion)**	
a. Select injection port of IV tubing closest to client. (Circle on port may indicate site for needle insertion.) If add-on 0.22 micrometre filter is used, give medication below filter next to client.	Allows for easier fluid aspiration to obtain blood return. Injection ports are self-sealing and will not leak.
b. Clean injection port with antiseptic swab. Allow to dry.	Prevents introduction of microorganisms during needle insertion.
c. Connect syringe to IV line (needleless) or insert needle of syringe containing prepared drug through centre of injection port (see illustration).	Prevents damage to port's diaphragm and subsequent leakage.
d. Check patency (Box 27-17) to ensure safe and adequate medication administration.	Final check that medication is being delivered into the bloodstream.
e. Leave concurrent compatible infusion running and inject medication slowly over several minutes as per directions on medication package. Use watch to time administration (see illustration).	Ensures safe medication infusion. Rapid injection of IV medication can prove fatal.
f. After injecting medication, withdraw syringe, and recheck fluid infusion rate.	Injection of bolus may alter rate of fluid infusion. Rapid fluid infusion can cause circulatory overload.



Step 8c Connecting syringe to needleless IV line.



Step 8e Using a watch to time administration of medication.

9. **Administer medications into IV cannula (non-concurrent infusion) (IV lock or a needleless system)**	

STEPS	RATIONALE
A. Prepare flushing solutions (1) Flushing with heparin: (a) Prepare syringe with heparin flush solution as per prescriber's orders. (b) Prepare 2 syringes with 5–10 mL of Normal saline. (2) Flushing with saline only: (a) Prepare 2 syringes with 5–10 mL of Normal saline each.	Flush solution keeps heparin lock patent after medication is administered.
B. IV lock	
(1) Clean lock's rubber diaphragm with antiseptic swab.	Prevents introduction of microorganisms during needle insertion.
(2) Insert needle of syringe containing Normal saline through centre of diaphragm (only for needle-based systems).	
(3) Pull back gently on syringe plunger and look for blood return.	Determines whether IV needle or catheter is positioned in vein.
Critical decision point: At times a heparin lock will not yield a blood return even though the lock is patent.	
(4) Flush reservoir with saline by pushing slowly on plunger.	Clears needle and reservoir of blood.
Critical decision point: Observe closely the area of skin above the IV catheter. Note any puffiness or swelling as the reservoir is flushed, which could indicate infiltration into the tissues, requiring removal of the catheter.	
(5) Remove needle and syringe.	
(6) Clean lock's diaphragm with antiseptic swab.	Prevents transmission of infection.
(7) Insert needle of syringe containing prepared medication through centre of diaphragm (see illustration).	Using centre of diaphragm prevents leakage.



Step 9B(7) Inserting needle of syringe through centre of lock diaphragm.

STEPS	RATIONALE
(8) Inject medication bolus slowly over several minutes. (Each medication has recommended rate for bolus administration. Check package directions.) Use watch to time administration.	Rapid injection of IV medication can result in death.
(9) After administering bolus, withdraw syringe.	
(10) Clean lock's diaphragm with antiseptic swab.	Prevents transmission of microorganisms.
(11) Repeat injection of Normal saline.	Flushes reservoir and needle of medication.
(12) Heparin flush: insert needle of syringe containing heparin through diaphragm. Inject heparin slowly, and remove syringe.	Maintains patency of needle by inhibiting clot formation.
C. IV needleless valve cap (1) Insert syringe (without a needle) containing Normal saline into the valve.	
(2) Flush reservoir with saline by pushing slowly on plunger.	Clears reservoir of any blood.
(3) Remove the syringe.	
(4) Insert syringe containing prepared medication into the valve.	
(5) Inject medication slowly over several minutes. Follow precautions in Step 9B(8).	Rapid injection of IV drug can result in death.
(6) After administering bolus, withdraw syringe.	
(7) Repeat injection of 5–10 mL of Normal saline.	Unless patient is a child or on a strict fluid restriction.
(8) See Step 9B(12).	
(9) Replace sterile cap over valve.	

RECORDING AND REPORTING

- Record medication, dose, time and route on appropriate form.
- Report any side effects immediately to prescriber and pharmacy, because they could be life-threatening.

Three volume-control infusion methods are commonly used in Australasia: a secondary small-volume drip chamber or burette placed between the client and the primary infusion, a piggyback and/or tandem set and mechanical 'pumps'.

Volume-control administration sets

Volume-control administration sets (burettes) are small (50–150 mL) containers that attach just below the primary infusion bag or bottle. The set is attached and filled in a manner similar to that used with a regular IV infusion. The priming filling of the set varies, however, depending on the type of filter (floating valve or membrane) within the set. Follow package directions for priming sets.

Large volume-controlled system

This system is a mains-power or battery-operated pump which controls the rate at which the infusion is delivered,

and supplies a history of how much fluid has been delivered, the rate of delivery and any problems (alarms) which may have been encountered. There are many pumps available and the nurse must be careful to set up and run the device according to the manufacturer's instructions. An example of a volume-controlled system is shown in Skill 27-11.

SKILL 27-11

Administering intravenous medications by piggyback/tandem set-up, intermittent intravenous infusion sets and mini-infusion pumps

Delegation considerations

Administering medications by IV fluid by piggyback/tandem set-up, intermittent intravenous infusion sets and mini-infusion pumps requires the problem-solving and knowledge-application abilities of professional nurses. For this procedure, delegation is inappropriate.

Equipment

Piggyback, tandem or mini-infusion pump

- Gloves (for connecting IV tubing)
- Medication prepared in 5–150 mL labelled infusion bag or syringe
- Short microdrip or macrodrip tubing set for piggyback/tandem
- Needleless device
- Needles (21 or 23 gauge, only if stopcocks or other needleless methods are not available)
- Stopcocks
- Mini-infusion pump
- Adhesive tape (optional)
- Alcohol or antiseptic swab
- IV pole or rack
- Medication administration record (MAR)

Volume-control administration set

- Gloves (for connecting IV tubing)
- Burette
- Infusion tubing (may have needleless system attachment)
- Syringe (5–20 mL)
- Vial or ampoule of ordered medication
- Medication label
- Medication administration record (MAR)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Check prescriber's order to determine type of IV solution to be used, type of medication, dose, route and time of administration.	Client's overall physical condition dictates type of IV solution used. Ensures safe and accurate medication administration.
2. Collect information necessary to administer medication safely, including action, purpose, side effects, normal dose, time of peak onset and nursing implications.	Allows nurse to give medication safely and to monitor client's response to therapy.
3. Assess patency of client's existing IV infusion line (Box 27-17).	IV line must be patent for medication to reach venous circulation effectively.

STEPS	RATIONALE
4. Assess IV insertion site for signs of infiltration or phlebitis: redness, pallor, swelling, tenderness on palpation.	Confirmation of placement of IV needle or catheter and integrity of surrounding tissues ensures medication is administered safely.
5. Assess client's history of medication allergies.	Effects of medications can develop rapidly after IV infusion. Nurse should be aware of clients at risk.
6. Assemble supplies at bedside. Inform client that medication will be given through IV equipment.	Medication preparation is not usually required. Nurse may assemble infusion tubing and bag of medication in medication room or client's room. Allows client to understand procedure and minimises anxiety.
7. Perform hand hygiene and put on gloves.	Reduces transmission of infection. During handling of IV tubing there is some risk of blood exposure.
8. Check name on MAR with client's identification bracelet and ask client's name and any known allergies.	Ensures medication is administered to correct client.
9. Assess client's understanding of purpose of medication therapy.	May reveal need for education.
10. Explain purpose of medication and side effects to client and explain that medication is to be given through existing IV line. Encourage client to report symptoms of discomfort at site.	Keeps client informed of planned therapies.
11. **Administer infusion**	
A. Piggyback or tandem infusion	
(1) Connect infusion tubing to medication bag. Allow solution to fill tubing by opening regulator flow clamp (priming).	Infusion tubing should be filled/primed with solution and free of air bubbles to prevent air embolus.
(2) Hang piggyback medication bag above level of primary fluid bag. (Hook may be used to lower main bag.) Hang tandem infusion at same level as primary fluid bag (see illustration).	Height of fluid bag affects rate of flow.
(3) Connect tubing of piggyback or tandem infusion to appropriate connector on primary infusion line:	
(a) Stopcock: Wipe off stopcock port with alcohol swab and connect tubing. Turn stopcock to open position.	Stopcock eliminates need for needle.
(b) Needleless system: Wipe off needleless port, and insert tip of piggyback or tandem infusion tubing (see illustration).	Establishes route for IV medication to enter main IV line.

STEPS	RATIONALE
(4) Regulate flow rate of medication solution by adjusting regulator clamp. (Usually medication should infuse within 20–90 minutes.) Make your client comfortable and stay with them for 3–5 minutes to watch for signs of allergic reaction.	Provides slow, intermittent infusion of medication in 20–90 minutes; maintains therapeutic blood levels. Read medication package insert for specific information on how long to infuse the medication.
(5) After medication has infused, check flow regulator on primary infusion. Back-check valve on piggyback stops flow of the primary infusion until second medication infuses. The tandem and primary infusions flow together until the tandem set empties.	Valve prevents backup of medication into main infusion line. Checking flow rate ensures proper administration of IV fluids.
(6) Regulate main infusion line to desired rate, if necessary.	Infusion of piggyback may interfere with the main line infusion rate.
(7) Leave secondary bag and tubing in place for future medication administration or discard in appropriate containers.	Establishment of secondary line produces route for microorganisms to enter main line. Repeated changes in tubing increase risk of infection transmission (check clinical agency policy).



Step 11A(2) Position of tandem infusion bag.



Step 11A(3)(b) Needleless system: inserting tip of piggyback infusion tubing into port.

B. Volume-control administration set (e.g. burette)	
(1) Assemble supplies in medication room.	Controls risk of contaminating IV solution.
(2) Prepare medication from vial or ampoule (see Skill 27-7).	Ensures medication is sterile.
(3) Explain procedure to client. Encourage client to report symptoms of discomfort at site. Check client's name against prescriber's orders and assess client's condition to ascertain if it is appropriate to administer medication.	Keeps client informed of planned therapies.

STEPS	RATIONALE
(4) Fill burette chamber with desired amount of fluid (50–100 mL) by opening clamp between chamber and main IV bag (see illustration).	Small volume of fluid dilutes IV medication and reduces risk of too-rapid infusion.
(5) Close clamp and check to be sure clamp on air vent of chamber is open.	Prevents additional leakage of fluid into chamber. Air vent allows fluid in chamber to exit at regulated rate.
(6) Clean injection port on top of chamber with antiseptic swab.	Prevents introduction of microorganisms during medication insertion.
(7) Remove needle cap or sheath and insert syringe needle through port, then inject medication (see illustration). Gently rotate chamber between hands. If burette has a needleless valve then inject medication directly into the burette with the syringe only.	Rotating mixes medication with solution in chamber to ensure equal distribution.



Step 11B(4) Filling burette chamber with fluid from main IV bag.



Step 11B(7) Injecting medication into burette chamber.

(8) Regulate IV infusion rate to allow medication to infuse at the required rate.	For optimal therapeutic effect, medication should infuse in prescribed time interval.
(9) Label chamber with name of medication, dosage, total volume including diluent and time of administration.	Alerts nurses to medication being infused. Prevents other medications from being added to chamber.
(10) Dispose of uncapped needle or needle enclosed in safety shield and syringe in proper container. Remove gloves and wash your hands.	Prevents accidental needle-stick injuries and transfer of microorganisms.
(11) Make your client comfortable and stay with them for 3–5 minutes to ensure that they have not had any adverse reactions. During the infusion ensure you check the infusion rate and condition of the IV site.	Ensures timely intervention can occur in the case of allergy or infiltrated IV site.
(12) After the medicine has infused, check and regulate the flow of the primary infusion. Leave secondary bag and tubing in place for future medicine administration or discard according to agency policy.	

STEPS	RATIONALE
C. Mini-infuser/syringe driver administration	
(1) Connect pre-filled syringe to mini-infusion tubing.	Special tubing designed to fit syringe delivers medication to main IV line.
(2) Carefully apply pressure to syringe plunger, allowing tubing to fill with medication.	Ensures tubing is free of air bubbles to prevent air embolus.
(3) Place syringe into mini-infuser/syringe driver pump (follow product directions). Be sure syringe is secure.	
(4) Connect mini-infusion tubing to main IV line.	
(a) Stopcock: Wipe off stopcock port with alcohol swab and connect tubing. Turn stopcock to open position.	Stopcock reduces risk of needle-stick injuries.
(b) Needleless system: Wipe off needleless port and insert tip of mini-infuser tubing.	Needleless system reduces risk of needle-stick injuries.
(5) Explain purpose of medication and side effects to client and explain that medication is to be given through existing IV line. Ask client to report symptoms of discomfort at site. Check client's name against prescriber's orders and assess client's condition to ascertain if it is appropriate to administer medication.	Informs client of planned therapies and assesses if medicine is given to the correct client.
(6) Hang infusion pump with syringe on IV pole alongside main IV bag. Press button on pump to begin infusion. Optional: set alarm.	Pump automatically delivers medication at safe, constant rate based on volume in syringe. (Alarm is used if medication is delivered into heparin/saline lock.)
(7) Remove disposable gloves. Wash hands.	Reduces transmission of infection.
12. Observe client for signs of adverse reactions.	IV medications act rapidly.
13. During infusion, periodically check infusion rate and condition of IV site.	IV must remain patent for proper medication administration. Development of infiltration necessitates discontinuing infusion.

RECORDING AND REPORTING

- Record medication, dose, route and time administered on MAR.
- Record volume of fluid in medication bag or chamber on intake and output form.
- Report any adverse reactions to nurse in charge or prescriber.

HOME CARE CONSIDERATIONS

- Ensure that all needles contaminated by blood are disposed of in puncture-resistant containers (e.g. small sharps container, or if not available a coffee tin while a sharps container is being organised).
- Piggyback tubing and intravenous container should be disposed of in non-puncture container or according to agency policy.

Mini-infuser or syringe-pump

A mini-infuser pump is mains-powered or battery-operated and allows medications to be given in very small amounts (5–60 mL) within controlled infusion times, often using standard syringes (Figure 27-28). It is important that the infusion site is checked regularly for signs of puffiness, redness or pain (signs that IV has 'tissued'). Mechanical devices may continue the infusion without problems even if the site is damaged.

Piggyback infusion

A piggyback is a small IV bag or bottle (25–100 mL) connected to short tubing lines, which in turn connect to the upper port of a primary infusion line, or to an intermittent venous access. The set is called a piggyback because the small bag or bottle is set higher than the primary infusion bag or bottle. In the piggyback set-up, the main line does not infuse when the piggybacked medication is infusing. The port of the primary IV line contains a back-check valve that automatically stops flow of the primary infusion once the piggyback infusion flows. After the piggyback solution infuses and the solution within the tubing falls below the level of the primary infusion drip chamber, the back-check valve opens and the primary infusion again flows. The term 'piggyback line' is often used for the tandem infusion method described below.

A **tandem infusion** set-up is a small IV bag or bottle (25–100 mL) connected to a short tubing line in the lower port of a primary infusion line, or to an intermittent venous access line. The tandem set is placed at the same height as the primary infusion bag or bottle. In the tandem set-up, the tandem and the main line infuse simultaneously. The nurse must monitor the tandem set-up closely. If the tandem set-up is not immediately clamped when the medication is infused, the IV solution from the primary line will back up into the tandem line.



Figure 27-28 **Small-volume infusion pump.**

Dreamstime/Linqong.

Intermittent venous access

An intermittent venous access is an IV catheter not connected to an infusion, and is used for medication administration at designated intervals (Figure 27-29). If it is inserted peripherally it is often called an 'IV bung'; other devices may be inserted centrally (Portacath or peripherally inserted central catheter (PICC line) which may also give intermittent venous access).

The advantages of intermittent venous access include:

- cost savings resulting from the omission of continuous IV therapy
- convenience to the nurse by eliminating constant monitoring of flow rates
- increased mobility, safety and comfort for the client.

Prior to medication administration the cannula must be checked for patency (see Box 27-17). After an IV bolus or piggyback medication has been administered through an intermittent venous access, the access must be flushed with a solution to maintain patency and to ensure that all of the medication is administered into the vein. It is now widely accepted that Normal saline is as effective as the traditionally used heparin flush solution for peripheral catheters.



Figure 27-29 **Intermittently accessed peripheral intravenous catheter. Here a medication is being administered from a syringe, known as a 'bolus' dose.**

Wikimedia/Calleamanecer.

Key concepts

- Learning medication classifications improves understanding of nursing implications for administering medications with similar characteristics.
- Medication legislation regulates the production, distribution, prescription and administration of medications.
- All controlled substances are handled according to strict procedures that account for each medication.
- The nurse applies understanding of the physiology of medication action when timing administration, selecting routes, initiating actions to promote medication efficacy and observing responses to medications.
- The older person's body undergoes structural and functional changes that alter actions of medication and influence the manner in which nurses provide medication therapy.
- Children's medication doses are calculated on the basis of body surface area and/or weight.
- Each medication order should include the client's name, the order date, the medication name, dosage, route and time of administration and the prescriber's signature.
- A medication history should reveal allergies, medications a client is taking and client's compliance with therapy.
- Nurses should involve clients in the planning of medication administration.
- The seven rights of medication administration ensure accurate preparation and administration of medication doses: right medication, right dose, right client, right route, right time, right reason and right documentation.
- Nurses should administer only medications they prepare, and prepared medications are never left unattended.
- Medications should be charted immediately after administration.
- A nurse uses clinical judgement in determining the best time to administer prn medications.
- The nurse reports a medication error immediately.
- When preparing medications, the nurse checks the medication container label against the medication administration record three times.
- Air locks prevent leaking of medication through subcutaneous tissues and localise the medication in muscle tissue.
- The Z-track method for intramuscular injections protects subcutaneous tissues from irritating parenteral fluids.
- Failure to select injection sites by anatomical landmarks may lead to tissue, bone or nerve damage.
- Application of the principles of quality use of medications (QUM) improves client outcomes.

Online resources

Australian Commission on Safety and Quality in Health Care; medication safety program, www.safetyandquality.gov.au/our-work/medication-safety

Buzzy Bee for injections in children, http://buzzy4shots.com/what-is-buzzy/

Health Quality and Safety Commission New Zealand; national medication safety program, www.hqsc.govt.nz/our-programmes/medication-safety

National Inpatient Medication Chart, www.safetyandquality.gov.au/our-work/medication-safety/medication-chart/

National Medicines Policy (Australia), www.health.gov.au/internet/main/publishing.nsf/content/nmp-objectives-policy.htm

Quality Use of Medicines, www.health.gov.au/internet/main/publishing.nsf/Content/nmp-quality.htm

References

Bellis J, Kirkham J, Nunn A, Pirmohamed M 2013 Adverse drug reactions and off-label and unlicensed medicines in children: a prospective cohort study of unplanned admissions to a paediatric hospital. Br J Clin Pharmacol 77(3):545–53.

Brotto V, Rafferty K 2015 Clinical dosage calculations: for Australia and New Zealand, 2nd edn. Cengage Learning, South Melbourne.

Cates C, Welsh E, Rowe B 2013 Holding chambers (spacers) versus nebulisers for beta-agonist treatment of acute asthma. The Cochrane Collaboration Systematic Review. CD000052. pub3.

Department of Health (DoH) 2015a The National Medicines Policy document. DoH, Canberra. Online. Available: www.health.gov.au/internet/main/publishing.nsf/Content/National+Medicines+Policy-2; accessed 4 March 2016.

Department of Health 2015b Quality Use of Medicines (QUM). Online. Available: www.health.gov.au/internet/main/publishing.nsf/Content/nmp-quality.htm; accessed 4 March 2016.

Ebersole P, Hess P 2004 Toward healthy aging: human needs and nursing response, 6th edn. Mosby, St Louis.

Lazarou J, Pomeranz BH, Corey PN 1998 Incidence of adverse drug reactions in hospitalized patients: a meta-analysis of prospective studies. JAMA 279(15):1200–5.

Roughhead L, Semple S, Rosenfeld E 2013 Literature review: medication safety in Australia 2013. Australian Commission on Safety and Quality in Health Care.

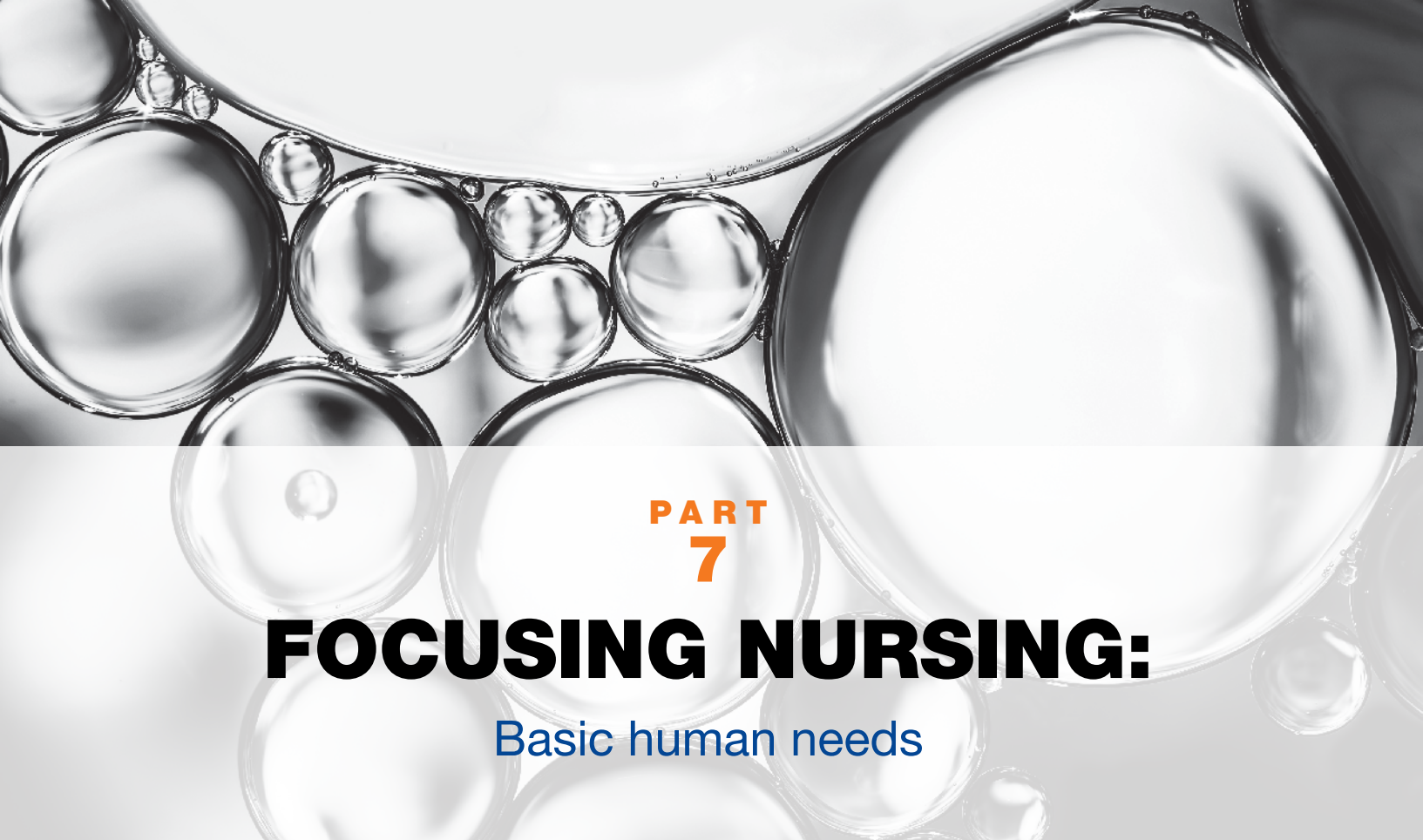
Society of Hospital Pharmacists of Australia, 'Don't Rush to Crush' Handbook. Online. Available: www.shpa.org.au/Publications/Do-not-Rush-to-Crush

Thong B, Tan T 2011 Epidemiology and risk factors for drug allergy. Br J Clin Pharmacol 71(5):684–700.

Wong DL et al 2004 Whaley and Wong's Nursing care of infants and children, 7th edn. St Louis, Mosby.

World Health Organization (WHO) 2010 Medicines: rational use of medicines; fact sheet no. 338. WHO, Geneva. Online. Available: www.who.int/mediacentre/factsheets/fs338/en/; accessed 20 Apr 2012.

World Health Organization (WHO) 2007 Promoting safety of medicines for children. WHO, Geneva. Online. Available: http://apps.who.int/medicinedocs/documents/s14235e/s14235e.pdf; accessed 2 Jul 2012.



PART
7

FOCUSING NURSING:

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CHAPTER

28

Promoting mobility

Georgina Willetts

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Learning outcomes

Mastery of content will enable you to:

- demonstrate a comprehensive understanding of the concepts of mobility and immobility
- describe the physiological and pathological influences on body alignment and joint mobility
- identify key changes in physiological and psychosocial function associated with immobility
- perform a comprehensive mobility and activity assessment and advocate for appropriate patient-centred care
- identify the key complication for each body system in relation to immobility
- develop nursing and collaborative interventions for preventing and treating immobility
- perform safe positioning and transfer techniques of the patient with impaired mobility
- describe the key active and passive range-of-motion exercises
- describe they key concepts of safe mobilisation and using aids for walking
- engage in a clinical reasoning process for immobility nursing management following a systematic approach.

Promoting mobility and preventing immobility

One of the fundamental aims of nursing practice is to assist the patient to maintain or regain independence. Individuals experiencing health breakdown often develop problems with mobility and movement which make it difficult to get into and out of beds and chairs, stand up, sit down and walk. Losing the ability to move purposefully and easily impinges on the individual's ability to remain physically independent in daily activities and invariably reduces quality of life.

Nurses use a range of interventions aimed at promoting mobility and movement. These typically include methods of helping patients walk, positioning of limbs, physical exercises, supportive equipment and techniques to help patients transfer from one place to another (Kneafsey 2007). When working in acute care settings, encouraging patients to mobilise may be a low priority compared with meeting their other needs. Yet, for the patient with impaired physical mobility, the resultant inactivity may lead to life-threatening complications, such as a pressure injury, deep vein thrombosis or pulmonary infection, as well as longer-term decreased functional ability.

This chapter will briefly review anatomy and physiology relating to body mechanics that are relevant to both the nurse's own body mechanics as well as the patient's activity–exercise pattern. Nursing practice will be outlined in relation to mobility, including nursing interventions to promote mobility and movement and prevent complications of immobility.

Overview of body mechanics, exercise and activity

The coordinated efforts of the musculoskeletal and nervous systems to maintain balance, posture and body alignment provide the foundation for safe and effective movement of the body during normal physical activity. Therefore the use of proper body mechanics is important for the safety and wellbeing of nurses and patients (see Table 28-1).

Body alignment

Body alignment refers to the relationship of one body part to another along a horizontal or vertical line. Correct alignment reduces strain on musculoskeletal structures, maintains adequate muscle tone and contributes to balance.

Body balance

Body balance is achieved when a relatively low centre of gravity is balanced over a wide, stable base of support and a vertical line falls from the centre of gravity through the base of support. The base of support is the foundation and the nervous system is responsible for muscle tone regulating and coordinating the amount of pull exerted by the individual muscles. When the vertical line from the centre of gravity does not fall through the base of support, the body loses balance. Body balance is also enhanced by proper **posture** – the body position that most favours function, requires the least muscular work to maintain and places the least strain on muscles, ligaments, cartilage and bones.

TABLE 28-1 Body mechanics for healthcare workers

Action	Rationale
When planning to move a patient, arrange for adequate help. Use mechanical aids	Two workers lifting together divide the workload by 50%. Mechanical aids reduce worker and patient injury
Encourage patient to help as much as possible	Promotes patient's independence and strength while minimising workload
Keep back, neck, pelvis and feet aligned. Avoid twisting	Reduces risk of injury to lumbar vertebrae and muscle groups. Twisting increases risk of injury
Flex knees; keep feet wide apart	A broad base of support increases stability
Position self close to patient (or object being lifted)	The force is minimised. 5 kg at waist height close to body is equal to 50 kg at arm's length
Use arms and legs (not back)	The leg muscles are stronger, larger muscles capable of greater work without injury
Slide patient towards yourself using a slide sheet	Sliding requires less effort than lifting. Slide sheet minimises shearing forces, which can damage patient's skin
Set (tighten) abdominal and gluteal muscles in preparation for move	Preparing muscles for the load minimises strain and stabilises the trunk

The maintenance of proper body alignment and posture is achieved by using two simple techniques:

- By separating the feet to a comfortable distance, the base of support can then easily be widened.
- Bending the knees and flexing the hips until the person is squatting and still maintaining proper back alignment by keeping the trunk erect will increase balance by bringing the centre of gravity closer to the base of support.

Coordinated body movement

Coordinated body movement is a result of weight, centre of gravity and balance. *Weight* is the force exerted on the body mass by gravity. When an object is lifted the lifter must overcome the object's weight and be aware of its centre of gravity; in symmetrical objects, the *centre of gravity* is located at the exact centre of the object. *Balance* is the even distribution of weight allowing an object to remain upright. The force of weight is always directed downwards. An object that is unbalanced has its centre of gravity away from the midline and falls without support. Because people are not geometrically perfect, their centres of gravity are usually at 55–57% of standing height and located in the midline. Like unbalanced objects, patients who fail to maintain a balance with their centre of gravity are unsteady, which places them at risk of falling.

Friction

Friction is a force that occurs in a direction opposing that of movement. As the nurse turns, transfers or moves a patient up in bed, friction must be minimised or prevented. The greater the surface area of an object, the greater the friction. This can present some issues when moving a patient. However, by following some basic principles, including using patient-movement devices such as a slide sheet, friction can be reduced.

A passive or immobilised patient has the potential to produce greater friction when moved. Thus, when possible, nurses should use the patient's strength and mobility in association with the appropriate lifting aid when transferring or moving the patient up in bed. This can be done by explaining the procedure and telling patients when to move. The use of a slide sheet reduces friction because the patient is more easily moved along the bed's surface.

Exercise and activity

Exercise is physical activity for the purpose of conditioning the body, improving health and maintaining fitness. It may also be used as a therapeutic measure. The exercise program chosen and developed for a patient depends heavily on the individual's **activity tolerance**, the kind and amount of exercise or activity that the person is able to perform. Physiological, emotional and developmental factors influence the patient's activity tolerance.

A program of regular physical activity and exercise promotes physical and psychological health (Department of Health 2014). An active lifestyle is important for maintaining and promoting health; it is also an essential treatment modality for many chronic diseases. A program of regular physical activity and exercise enhances functioning of all body systems, including cardiopulmonary functioning (endurance), musculoskeletal fitness (flexibility and bone integrity), weight control and maintenance (body image) and psychological wellbeing. For example, Cooney and colleagues' (2014) review of the evidence suggests that exercise and physical activity have significant effects on depression symptoms.

The best program of physical activity includes a combination of exercises that produce different physiological and psychological benefits. Isotonic, isometric and resistive isometric are three categories of exercise classified according to the type of muscle contraction involved. *Isotonic exercises* cause muscle contraction and changes in muscle length (isotonic contraction) – examples are walking, swimming, dance aerobics, jogging, bicycling, and moving arms and legs with light resistance. The benefits of isotonic exercises are increased circulation and respiratory functioning; increased osteoblastic activity (activity by bone-forming cells which maintain bone strength); and increased muscle tone, mass and strength.

Isometric exercises involve tightening or tensing of muscles without moving body parts (isometric contraction) – examples are quadriceps static exercises and contraction of the gluteal muscles. This form of exercise is ideal for patients who are unable to tolerate the increase in activity that is expected during isotonic exercises. An immobilised patient in bed easily accomplishes isometric exercises. The benefits are increased muscle mass, tone and strength (thus decreasing the potential for muscle wasting); and increased circulation to the involved body part.

Isometric exercises may also be resistive. *Resistive isometric exercises* are those where the person contracts the muscle while pushing against a stationary object or resisting the movement of an object. A gradual increase in the amount of resistance and length of time that the muscle contraction is held will increase muscle strength and endurance. Examples of resistive isometric exercises are push-ups, pushing against a footboard to move up in bed, and hip lifting. In hip lifting, the patient, who is in a sitting position, pushes with the hands against a surface such as the seat of a chair and raises the hips. Resistive isometric exercises help to promote muscle strength

and provide sufficient stress against bone to promote osteoblastic activity.

Regulation of movement

Coordinated body movement involves integrated functioning of the skeletal, muscular and nervous body systems. Because of the integrative nature of these three systems in mechanical support of the body, they are often considered as a single functional unit.

Musculoskeletal system

Bones perform five major functions in the body: support, protection, movement, mineral and fat storage and haematopoiesis (blood-cell formation) (Marieb & Hoehn 2015). In the discussion of body mechanics, two of these functions – support and movement – are most important. In *support*, bones serve as the framework and contribute to the shape, alignment and positioning of the body parts. In *movement*, bones together with their joints constitute levers for muscle attachment. As muscles contract and shorten, they pull on bones, producing joint movement.

Joints

An articulation, or *joint*, is the connection between bones. Each joint is classified according to its structure and degree of mobility. On the basis of connective structures, joints are classified as fibrous, cartilaginous or synovial. *Fibrous joints* fit closely together and are fixed, permitting little, if any, movement (i.e. the skull). *Cartilaginous joints* have little movement but are elastic and use cartilage to unite separate body surfaces (i.e. spinal joints). *Synovial joints*, or true joints, are freely movable and are the most mobile, numerous and anatomically complex of the body's joints (i.e. the elbow, the knee, etc.).

Ligaments, tendons and cartilage

These are structures that support the skeletal system. *Ligaments* are white, shiny, flexible bands of fibrous tissue that bind joints and connect bones and cartilage. Ligaments are elastic and aid joint flexibility and support. In some areas of the body, ligaments also have a protective function. *Tendons* are white, glistening, fibrous bands of tissue that connect muscle to bone. *Cartilage* is avascular, supporting connective tissue with the flexibility of a firm, plastic material. The characteristics of cartilage permit it to sustain weight and serve as a shock-absorber between articulating bones.

Skeletal muscle

When we walk, talk, run, breathe or participate in physical activity, we do so by contracting skeletal muscles. There are over 600 skeletal muscles in the body. In addition to facilitating movement, these muscles determine the form and contour of our bodies. Most of our muscles span at least one joint and attach to both articulating bones. When contraction occurs, one bone is fixed while the other moves. The *origin* is the point of attachment that remains still; the *insertion* is the point that moves when the muscle contracts (Marieb & Hoehn 2015).

The muscles of movement are located near the skeletal region, where movement is caused by a lever system. The lever system makes the work of moving a weight or load easier. It occurs when specific bones, such as the humerus, ulna and radius, and the associated joints, such as the elbow, act as a lever. Thus, the force applied to one end of the bone to lift a weight at another point tends to rotate the bone in the direction opposite to that of the applied force. Muscles that attach to bones of leverage provide the necessary strength to move the object.

Gravity is constantly pulling on parts of the body. The only way the body can be held in position is for muscles to exert a force on bones in the opposite direction. Muscles accomplish this counterforce by maintaining a low level of sustained contraction. Poor posture places more work on muscles to counteract the force of gravity. This leads to fatigue and can eventually interfere with bodily functions and cause deformities.

The antagonistic, synergistic and antigravity muscle groups are coordinated by the nervous system and maintain posture and initiate movement.

- *Antagonistic muscles* bring about movement at the joint. During movement, the active mover muscle contracts while its antagonist relaxes. For example, during flexion of the arm the active mover, the biceps brachii, contracts and its antagonist, the triceps brachii, relaxes. During extension of the arm the active mover, now the triceps brachii, contracts and the new antagonist, the biceps brachii, relaxes.
- *Synergistic muscles* contract to accomplish the same movement. When the arm is flexed, the strength of the contraction of the biceps brachii is increased by contraction of the synergistic muscle, the brachialis. Thus with synergistic muscle activity there are now two active movers – the biceps brachii and the brachialis – which contract while the antagonistic muscle, the triceps brachii, relaxes.
- *Antigravity muscles* are involved with joint stabilisation. These muscles continuously oppose the effect of gravity on the body and permit a person to maintain an upright or sitting posture. In an adult, the antigravity muscles are the extensors of the leg, the gluteus maximus, the quadriceps femoris, the soleus muscles and the muscles of the back.

Skeletal muscles support posture and carry out voluntary movement. The muscles are attached to the skeleton by tendons, which provide strength and permit motion. The movement of the extremities is voluntary and requires coordination from the nervous system.

Nervous system

Movement and posture are regulated by the nervous system. The major voluntary motor area, located in the cerebral cortex, is the precentral gyrus. A majority of motor fibres descend (via pyramidal pathways) from the motor cortex and cross at the level of the medulla. Thus the motor fibres from the right motor cortex initiate voluntary movement for the left side of the body, and vice versa. The cerebellum and basal ganglia integrate information from the motor cortex as well as sensory input to plan and coordinate complex motor activities (Marieb & Hoehn 2015).

Transmission of impulses from the nervous system to the musculoskeletal system is an electrochemical event. The neurotransmitter acetylcholine transfers the electric impulse from the nerve across the neuromuscular junction to stimulate the muscle, causing contraction.

Proprioception

Proprioception is the awareness of the position of the body and its parts. Proprioceptors are specialised receptors located in skeletal muscles, tendons, joints, ligaments and connective-tissue coverings of bones and muscles (Marieb & Hoehn 2015). During daily activities, proprioceptors constantly advise the brain of our body movements and position by monitoring how much the tissues containing the receptors are stretched.

Balance

Balance centres in the central nervous system (i.e. vestibular nuclei in the brainstem and cerebellum) respond to information from three main sources about the body's position in space. The vestibular apparatus in the inner ear (receptors in the semicircular canals and vestibule) respond to changes in body position and send signals to the brain. Balance centres also receive input through vision as well as somatic receptors, such as proprioceptors (Marieb & Hoehn 2015). These centres initiate reflexes that fix the eyes on objects and activate muscles to maintain balance.

Pathological influences on mobility

Many pathological conditions affect mobility. Although a complete description of each is beyond the scope of this chapter, an overview of four pathological influences is presented here: postural abnormalities, impaired muscle development, damage to the central nervous system and direct trauma to the musculoskeletal system. Common abnormal assessment findings of the musculoskeletal system are presented in Table 28-2.

Postural abnormalities

Congenital or acquired postural abnormalities affect the efficiency of the musculoskeletal system, as well as body alignment, balance and appearance. During the nursing assessment, body alignment and range of motion (ROM) are observed. Postural abnormalities can cause pain and impair alignment and mobility. Some postural abnormalities may limit ROM. Nurses intervene to maintain maximum ROM in unaffected joints and then may design interventions to strengthen affected muscles and joints, improve the patient's posture and adequately use affected and unaffected muscle groups. Referral to and/or collaboration with a physiotherapist may enhance nursing interventions for a patient with a postural abnormality.

Impaired muscle development

Injury and disease can lead to numerous alterations in musculoskeletal function. The *muscular dystrophies* are a group of familial disorders that cause degeneration of skeletal muscle fibres. The most prevalent of the muscle diseases in childhood, the muscular dystrophies are characterised by progressive, symmetrical weakness and wasting of skeletal muscle groups, with increasing disability and deformity (Nash 2014).

Damage to the central nervous system

Damage to any component of the central nervous system that regulates voluntary movement results in impaired body alignment and mobility. Neurological diseases, such as multiple sclerosis and Parkinson's disease, can cause progressive mobility problems. The motor cortex can be damaged by trauma such as a head injury, stroke or meningitis. Motor impairment is directly related to the location and amount of destruction of the motor cortex. For example, a person with a right-sided cerebral haemorrhage with complete necrosis is likely to have destruction of the right motor cortex and left-sided hemiplegia.

Trauma to the descending pathways in the spinal cord involved in motor control, such as the pyramidal (corticospinal) tracts, also impairs mobility. The most common trauma is transection of the spinal cord in which motor fibres are damaged. If the injury is complete, it is likely to cause a complete bilateral loss of voluntary motor control below the level of the trauma. Spinal cord trauma frequently results from motor vehicle accidents, gunshot or knife wounds to the neck and back.

TABLE 28-2 Common assessment abnormalities of the musculoskeletal system

Finding	Description	Possible aetiology and significance
Ankylosis	Scarring within a joint leading to stiffness or fixation	Chronic joint inflammation
Atrophy	Wasting of muscle, characterised by decreased circumference and flabby appearance leading to decreased function and tone	Muscle denervation, contracture, prolonged disuse as a result of immobilisation
Contracture	Resistance of movement of muscle or joint as a result of fibrosis of supporting soft tissues	Shortening of muscle or ligaments, tightness of soft tissue, incorrect positioning of immobilised extremity
Crepitation (crepitus)	Crackling sound or grating sensation as a result of friction or broken bone or cartilage bits in joint	Fracture, dislocation, chronic inflammation, osteoarthritis
Effusion	Fluid in joint, possibly with swelling and pain	Trauma, especially to knees; inflammation
Ganglion	Small fluid-filled synovial cyst usually on dorsal surface of wrist or foot	Degeneration of connective tissue close to tendons and joints leading to formation of small cysts
Hypertrophy	Increase in size of muscle as a result of enlargement of existing cells	Exercise or other increased stimulation, increased androgens
Kyphosis (dowager's hump)	Anteroposterior or forward bending of thoracic spine with convexity of curve in posterior direction	Poor posture, tuberculosis, arthritis, osteoporosis, growth disturbance of vertebral epiphyses
Lordosis	Lumbar spinal deformity resulting in anteroposterior curvature with concavity in posterior direction	Secondary to other spinal deformities, muscular dystrophy, obesity, flexion contracture of hip, congenital dislocation of hip
Pesplanus	Flatfoot	Congenital condition, muscle paralysis, mild cerebral palsy, early muscular dystrophy
Scoliosis	Deformity resulting in lateral curvature of thoracic spine	Idiopathic or congenital condition, fracture or dislocation, osteomalacia
Subluxation	Partial dislocation of joint	Instability of joint capsule and supporting ligaments (e.g. from trauma, arthritis)
Valgus (bow legs)	Angulation of bone away from midline	Alteration in gait, pain, arthritis
Varus (knock-knees)	Angulation of bone towards midline	Alteration in gait, pain, arthritis

Brown D, Edwards H (eds) 2012 Lewis's Medical–surgical nursing: assessment and management of clinical problems, 3rd edn. Mosby, Sydney.

Direct trauma to the musculoskeletal system

Direct trauma to the musculoskeletal system can result in contusions, sprains and fractures. A **fracture** is a disruption of bone tissue continuity. Fractures most commonly result from direct external trauma, but they can also occur as a consequence of some deformity of the bone (e.g. pathological fractures of osteoporosis, Paget's disease or osteogenesis imperfecta). As the fracture heals, bone begins to repair. The fractured bone initiates a cellular process that results in bone formation. Young children are able to form new bone more easily than adults and, as a result, have few complications after a bone fracture. Treatment includes positioning the fractured bone in proper alignment and immobilising it to promote healing and restore function. Immobilisation results in some muscle atrophy, loss of tone and joint stiffness.

Acquired or congenital conditions that affect the structure of the musculoskeletal or nervous system impair body alignment or joint mobility. Impairment can be temporary or permanent. Regardless of the duration of the impairment, the nursing care plan includes interventions that maintain the present level of alignment and joint mobility and/or increase the patient's level of motor function.

Complications of immobility

Fully understanding mobility requires more than an overview of normal body mechanics and the regulation of movement by the musculoskeletal and nervous systems. Having knowledge of how **immobility** affects physical and psychosocial functioning can help you prevent, assess for and manage complications caused by impaired mobility. Putting this nursing knowledge and skill into practice

can mean the difference between patient recovery and independence, and costly and life-threatening complications, functional decline and disability.

Nurses have always been concerned with the clinical problems caused by immobility and have developed a body of knowledge over time. It is instructive to read a collection of classic articles published almost half a century ago in the *American Journal of Nursing*, entitled 'The hazards of immobility', which summarised the physiological changes that occur in healthy, ill and injured people who undergo bed rest (Olson 1967). The articles described the detrimental effects of immobility on cardiovascular, respiratory, gastrointestinal, musculoskeletal, urinary, metabolic and psychosocial health, with implications for nursing practice. Today there is a large and growing body of nursing research that examines the effectiveness of interventions to prevent and manage the complications of immobility.

Mobility refers to a person's ability to move about freely, whereas *immobility* refers to the inability to move about freely. Mobility and immobility are best understood as the end points on a continuum. Some patients move back and forth on this continuum, but for other patients immobility is absolute and continues indefinitely. The terms 'bed rest' and 'impaired physical mobility' are frequently used when discussing patients on the mobility–immobility continuum.

Bed rest is an intervention that restricts patients to bed for therapeutic reasons. Bed rest is most often prescribed by nursing and medical staff and may have different interpretations among healthcare professionals. For example, in some settings bed rest may mean strict confinement to the bed or 'complete bed rest', while in others patients on bed rest may be assisted to use a bedside commode or go to the bathroom. Patients with a wide variety of conditions are placed on bed rest, and the duration of bed rest depends on the illness or injury and the patient's prior state of health.

Impaired physical mobility is defined as a 'limitation in independent, purposeful movement of the body or of one or more extremities' (Carpenito-Moyet 2013:390). Alterations in the level of physical mobility can result from prescribed restriction of movement in the form of bed rest, physical restriction of movement because of external devices (e.g. a cast or skeletal traction), voluntary restriction of movement or impairment of motor or skeletal function.

The deleterious effects of muscular deconditioning associated with lack of physical activity may be apparent within days. The normal individual on complete bed rest loses muscle strength from baseline levels at a rate of 3% a day (Nash 2014). Bed rest is also associated with other systemic complications. The term 'disuse atrophy' has been used to describe the pathological reduction in the normal size of muscle fibres after prolonged inactivity from bed rest, trauma, casting, or local nerve damage (Nash 2014).

Periods of immobility or prolonged bed rest can cause major physiological and psychological effects. These effects can be gradual or immediate, and vary from patient to patient. The greater the extent and the longer the duration of immobility, the more pronounced the consequences. A sedentary lifestyle will increase the risks of associated immobility complications. In society today many people lead relatively sedentary lives, working at computers, watching television for long periods of time and with overall decreasing levels of activity. When these people require nursing care their levels of activity need to be identified in order to assess increased potential for immobility complications. The patient with complete mobility restrictions is continually at risk of complications.

Systemic effects of immobility

All body systems work more efficiently with some form of movement. Exercise has been shown to have positive outcomes for all major systems of the body. Therefore, when there is an alteration in mobility, each body system is at risk of impairment. The severity of the impairment depends on the patient's overall health, degree and length of immobility, and age. For example, older adults with chronic illnesses develop pronounced effects of immobility more quickly than do younger patients with the same degree of immobility.

Metabolic changes

Immobility disrupts normal metabolic functioning, including decreasing the metabolic rate; altering the metabolism of carbohydrates, fats and proteins; causing fluid, electrolyte and calcium imbalances; and causing gastrointestinal disturbances such as decreased appetite and slowing of peristalsis. However, in the presence of an infectious process, immobilised patients may have an increased basal metabolic rate as a result of fever or wound healing because these increase cellular oxygen requirements.

A deficiency in kilojoules and protein is characteristic of patients with a decreased appetite secondary to immobility. Proteins are constantly being synthesised and broken down into amino acids in the body to be re-formed into other proteins. Amino acids that are not used are excreted. The body can synthesise certain non-essential amino acids, but depends on ingested proteins to supply the eight essential amino acids. When more nitrogen (the

end-product of amino-acid breakdown) is excreted than is ingested in proteins, the body is said to have a negative nitrogen balance, and weight loss, decreased muscle mass and weakness result from tissue catabolism (tissue breakdown). Protein loss leads to muscle loss.

Another metabolic change is increased calcium loss from bones, resulting in *hypercalcaemia*. As a result, urinary excretion of calcium increases because immobility causes the release of calcium into the circulation.

Decreased gastrointestinal motility that develops from immobility can lead to various impairments of gastrointestinal functioning. Constipation is a common problem, although diarrhoea may result from a faecal impaction (accumulation of hardened faeces). This finding is not normal diarrhoea but rather liquid stool passing around the area of impaction (see Chapter 32). Left untreated, faecal impaction can result in a mechanical bowel obstruction that may partially or completely occlude the intestinal lumen, blocking normal propulsion of liquid and gas. The resulting fluid in the intestine produces distension and increases intraluminal pressure. Over time, intestinal function becomes depressed, dehydration occurs, absorption ceases and fluid and electrolyte disturbances worsen.

Respiratory changes

Regular aerobic exercise is known to enhance respiratory functioning. Lack of movement and exercise places patients at higher risk of respiratory complications. Postoperative and immobile patients are at high risk of developing pulmonary complications. The most common respiratory complications are **atelectasis** (collapse of alveoli) and **hypostatic pneumonia** (inflammation of the lung from stasis or pooling of secretions). In atelectasis, secretions block a bronchiole or a bronchus and the distal lung tissue (alveoli) collapses as the existing gas is absorbed, producing hypoventilation. The site of the blockage determines the extent of atelectasis. A lung lobe or even a whole lung may be collapsed. Pooling secretions and decreased ability to cough productively increase the collection of mucous in the bronchi, particularly when the patient is in the supine, prone or lateral position (Figure 28-1). Secretions accumulate in the dependent regions of the airways (Figure 28-2). Because mucous is an excellent medium for bacterial growth, hypostatic pneumonia may result.

Cardiovascular changes

Orthostatic (or postural) hypotension is defined as a reduction in systolic blood pressure of at least 20 mmHg or diastolic blood pressure of at least 10 mmHg within 3 minutes of standing from a lying position (Consensus Committee of the American Autonomic Society and the American Academy of Neurology 1996). Patients with orthostatic hypotension may present with lightheadedness, blurred vision, dizziness, weakness and fatigue, or with syncope. In the immobilised patient, decreased circulating fluid volume, pooling of blood in the lower extremities and decreased autonomic response occur. These factors result in decreased venous return, followed by a decrease in cardiac output, which is reflected by a decline in blood pressure.

As the workload of the heart increases, so does oxygen consumption. The heart therefore works harder and less efficiently during periods of prolonged rest. As immobilisation increases, cardiac output falls, further decreasing cardiac efficiency and increasing workload.

Patients are also at risk of *thrombus formation*, such as a deep-vein thrombosis (DVT) (Figure 28-3). A *thrombus*

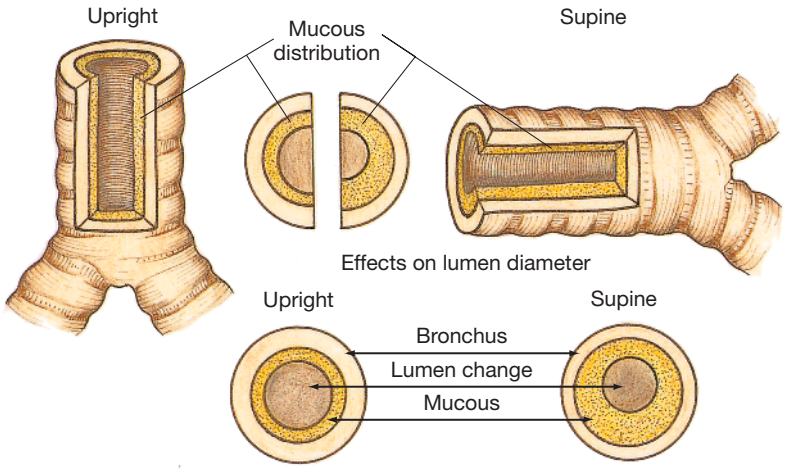


Figure 28-1 Effect of recumbency and gravity on distribution of respiratory tract and diameter of bronchiolar lumen.

Gröer MW, Shekelton ME 1989 Basic pathophysiology: a holistic approach, 3rd edn. Mosby, St Louis.

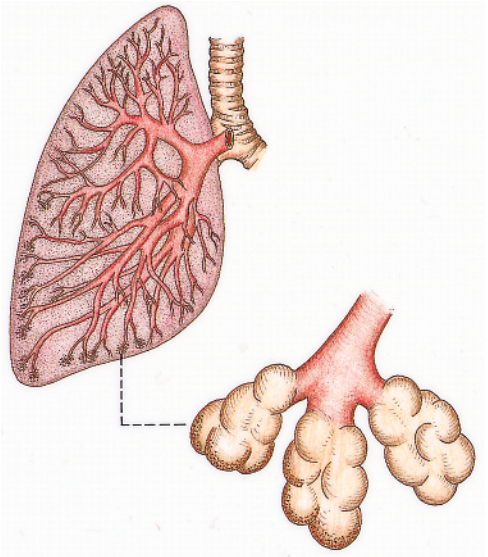


Figure 28-2 Pooling of secretions in dependent regions of the lungs in the supine position.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.



Figure 28-3 Thrombus formation in a vessel.

Nobel SI, Shelley MD, Coles B et al 2008 Management of venous thromboembolism in patients with advanced cancer: a systematic review and meta-analysis. Lancet Oncology 9(6):577–84. © 2008 Elsevier Ltd.

is an accumulation of platelets, fibrin, clotting factors and the cellular elements of the blood attached to the interior wall of a vein or artery, sometimes occluding the lumen of the vessel. There are three factors that contribute to venous thrombus formation (known as Virchow's triad):

1. Venous stasis (e.g. poor venous return associated with bed rest and immobility)
2. Damage to the endothelium (inner lining of the vein), and
3. Hypercoagulability of the blood (Soars 2015).

A dislodged thrombus, called an **embolus**, may travel through the circulatory system to the lungs (called a pulmonary embolism or PE) or brain, where they are life-threatening.

Musculoskeletal changes

The effects of immobility on the musculoskeletal system can include permanent impairment of mobility. Restricted mobility may result in loss of endurance, strength and muscle mass. Other effects of restricted mobility affecting the skeletal system are impaired calcium metabolism and impaired joint mobility.

Decreased mobility and muscle atrophy – loss of muscle tissue – may occur with immobility. Pathological atrophy is a phenomenon widely observed in response to illness, decreased **activities of daily living (ADLs)**, and immobilisation (Craft et al 2014). Because of protein breakdown, the patient loses lean body mass, which is composed partially of muscle. Therefore, the reduced muscle mass is unable to sustain activity without increased fatigue. The muscle mass is decreased from metabolic causes and disuse. As immobility continues and the muscles are not exercised, there is continued decrease in mass. Loss of endurance, decreased muscle mass and strength, and joint instability subsequent to immobility put patients at risk of falls (see Chapter 12).

Immobilisation causes two skeletal changes: impaired calcium metabolism and joint abnormalities. Because immobilisation results in bone reabsorption, the bone tissue is less dense, or is atrophied and disused and can result in *osteoporosis*. When osteoporosis occurs, the patient is at risk of pathological fractures. Immobilisation and non-weightbearing activities increase the rate of bone reabsorption. Bone reabsorption also causes calcium to be released in the blood, and hypercalcaemia results.

Based on a recent study measuring bone density in a population sample, the prevalence of osteoporosis among those aged 50 and over was estimated to be 23% of women and 6% of men. This estimate includes both diagnosed and undiagnosed cases of osteoporosis (AIHW 2014).

More women are affected because of the postmenopausal rapid decline of oestrogen, a hormone that plays a central role in the maintenance of bone mass balance. Osteoporosis increases the risk of fractures. In 2011–12 over 19,000 people were hospitalised due to hip fractures (AIHW 2014). It is imperative for nurses to recognise that immobilised patients may be at high risk of accelerated bone loss if they have primary osteoporosis. Early patient evaluation and consultation and referral to nutritionists and physiotherapists are important interventions for

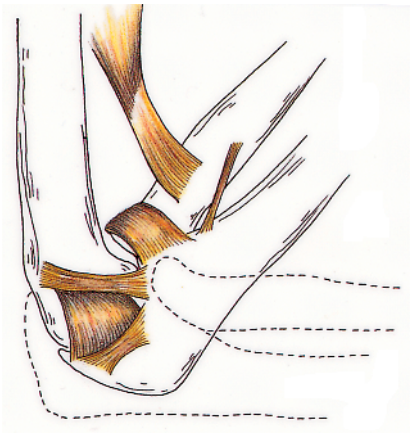


Figure 28-4 **Contracture of the elbow: inability to extend to a 90-degree angle (dotted line) and to a 180-degree angle (not illustrated).**

preventing disability in patients with primary osteoporosis who become immobilised.

Immobility can lead to joint contractures. A **joint contracture** is an abnormal and possibly permanent condition characterised by fixation of the joint (Figure 28-4). It is caused by disuse, atrophy and shortening of the muscle fibres. When a contracture occurs, the joint cannot obtain full range of motion. Contractures may leave a joint in a non-functional position.

One common and debilitating contracture is **footdrop** (Figure 28-5). When footdrop occurs, the foot is permanently fixed in plantar flexion. Walking is difficult with the foot in this position, since the person cannot dorsiflex the foot. The patient with footdrop is therefore unable to lift the toes off the ground. Patients who have suffered strokes with resulting left- or right-sided paralysis (hemiplegia) are susceptible to footdrop.

Urinary elimination changes

The patient's urinary elimination is altered by immobility. In the upright position, urine flows out of the renal pelvis and into the ureters and bladder because of gravitational forces. When the patient is recumbent or flat, the kidneys and the ureters move towards a more level plane. Urine formed by the kidney must enter the bladder unaided by gravity. Because the peristaltic contractions of the ureters are insufficient to overcome gravity, the renal pelvis may fill before urine enters the ureters (Figure 28-6). This condition is called urinary stasis and increases the risk of urinary tract infection (UTI) and renal calculi (see Chapter 33).

Renal calculi are calcium stones that lodge in the renal pelvis and pass through the ureters (Figure 28-7). Immobilised patients are at risk of calculi because of altered calcium metabolism and the resulting hypercalcaemia.

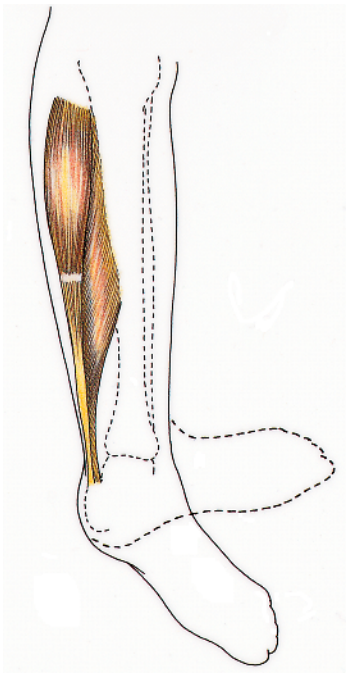


Figure 28-5 **Footdrop. Ankle is fixed in a plantar flexion. Normally the ankle is able to flex (dotted line), which eases walking.**

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

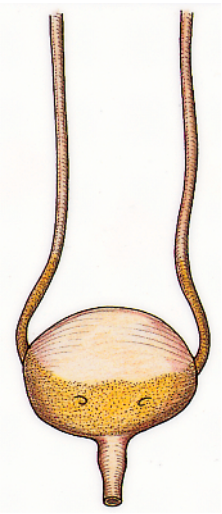


Figure 28-6 **Stasis of urine with reflux to ureters.**

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

As the period of immobility continues, fluid intake can diminish; other causes, such as fever, increase the risk of dehydration. As a result, urinary output declines and urine is usually highly concentrated. This concentrated urine increases the risk of calculi formation and infection. Poor perineal care after bowel movements, particularly in women, increases the risk of urinary tract contamination by *Escherichia coli bacteria*. Another cause of UTIs in

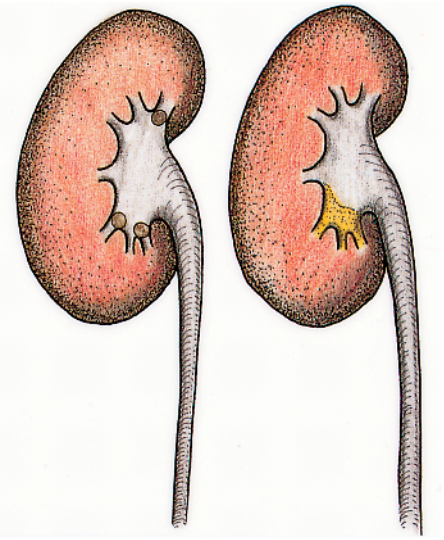


Figure 28-7 **Types of renal calculi in the renal pelvis.**

immobilised patients is the use of an indwelling urinary catheter.

Integumentary changes

The direct effect of pressure on the skin is compounded by the changes in metabolism that accompany immobility. Older adults and patients with paralysis also have a greater risk of developing pressure ulcers. Any break in the skin's integrity is difficult to heal in the immobilised patient.

A *pressure ulcer* is an impairment of the skin as a result of prolonged ischaemia to tissues (see Chapter 26). The ulcer is characterised initially by inflammation and usually forms over a bony prominence. Ischaemia develops when the pressure on the skin is greater than the pressure inside the small peripheral blood vessels supplying blood to the skin.

Tissue metabolism depends on the body's receipt of oxygen and nutrients from the blood supply and the elimination of metabolic wastes. Any factor that interferes with perfusion will affect cellular metabolism and, as a result, the function of the cell. Pressure affects cellular metabolism by decreasing or obliterating tissue circulation. When a patient lies in bed or sits in a chair, the weight of the body is on bony prominences. The longer the pressure is applied, the longer the period of ischaemia and therefore the greater the risk of skin breakdown.

Psychosocial effects

Immobilisation may lead to emotional and behavioural responses, sensory alterations and changes in coping. These changes are individualised to each patient. In addition, immobilised patients may also have social and family difficulties.

The most common emotional changes are depression, behavioural changes, sleep–wake disturbances and impaired coping. The immobilised patient can become depressed because of changes in role, self-concept and other factors. *Depression* is an affective disorder characterised by extreme feelings of sadness, melancholy, dejection, worthlessness, emptiness and hopelessness out of proportion to reality. Depression can result from worrying about present and future levels of health, finances and family needs. Because immobilisation removes patients from their daily routine, they have more time to worry about disability. Worrying can quickly increase depression, causing withdrawal. Assessing behavioural changes throughout restricted mobility helps to identify changes in self-concept, recognise early signs of depression and develop nursing interventions (see Chapter 40).

Behavioural changes resulting from immobilisation vary widely, depending on the patient. Common behavioural changes include hostility, fear and anxiety. Early in the clinical reasoning process nurses will interview the patient and the patient's family and friends about normal behavioural patterns to gain baseline data. If unexpected behaviours are observed later, nurses can intervene to reduce the effects of immobilisation on the patient's behavioural patterns.

The immobilised patient requires frequent and regular nursing care. Because of physiological hazards, the patient cannot be allowed to sleep for 8 hours without a change of position or other nursing care. *Disruption of normal sleeping patterns* can further cause behavioural changes. Nursing interventions should be used to ensure that the patient receives sufficient sleep (see Chapter 30). The patient who is on bed rest and able to change position during sleep does not require continuous physical nursing care directed at reducing the hazards of immobility. Unless other treatment activities are required during the night, the care plan for the physiologically stable patient on bed rest should provide for uninterrupted sleep.

Long-term immobility or bed rest can affect usual *coping patterns*. Such a patient may withdraw and become passive. The passive patient allows nurses to provide care but is not interested in increasing independence or being involved in care. Early in the care of an immobilised patient, the patient's normal coping mechanisms should be assessed. A nursing care plan is then developed that will enable the patient to continue to use these coping abilities or help the patient develop new ones.

Developmental changes

Developmental changes tend to be associated more with immobility in the very young and in older adults.

The immobilised young or middle-aged adult who has been healthy may experience few, if any, developmental changes. However, there are exceptions and patients must be fully assessed for developmental implications. One exception might be permanent immobilisation as the result of a spinal cord injury.

Infants, toddlers and preschoolers

The newborn infant's spine is flexed and lacks the anteroposterior curves of the adult (see Chapter 16). As the baby grows, musculoskeletal development permits support of weight for standing and walking. Posture is awkward because the head and upper trunk are carried forward. Because bodyweight is not evenly distributed along a line of gravity, posture is off-balance, and falls occur often. When the infant, toddler or preschooler is immobilised, it is usually because of trauma or the need to correct a congenital skeletal abnormality. Prolonged immobilisation can delay the child's gross motor skills and intellectual development. Nurses caring for immobilised children should plan activities that provide physical and psychosocial stimulation.

Adolescents

The adolescence stage is usually initiated by a tremendous growth spurt (see Chapter 16) where growth is frequently uneven. Prolonged immobilisation may alter adolescent growth patterns, causing the adolescent to lag behind peers in gaining independence. When immobilisation occurs, social isolation is often a major concern for this age group.

Adults

An adult who has correct posture and body alignment feels good and generally appears self-confident. The healthy adult also has the necessary musculoskeletal development and coordination to carry out ADLs (see Chapter 17). When periods of prolonged immobility occur, all physiological systems are at risk. In addition, the role of the adult may change with regard to the family or social structure, such as loss of identity associated with a job.

Older adults

A progressive loss of total bone mass occurs with the older adult. Some of the possible causes of this loss include decreased physical activity, hormonal changes and actual bone reabsorption. The effect of bone loss is weaker bones and, as a result, older adults may walk more slowly, walk bent over, take smaller steps and appear less coordinated. When balance is impaired, they are at greater risk of falls and injuries (see Chapter 18). Falls in older adults are associated with immediate serious consequences such as fractures and head injuries, as well as longer-term functional decline (Grealish & Chaboyer 2015).

Older adults are also at risk of decreased functional status and impaired mobility secondary to hospitalisation (see Box 28-1). Immobilisation of older adults may increase their physical dependence on others, which accelerates functional losses. Immobilisation of some older adults can result from degenerative diseases, trauma or chronic illness. For some older adults, immobilisation occurs gradually and progressively; whereas for others, especially those who have had a stroke, immobilisation is sudden. When providing nursing care for an older adult, the plan of care developed should be one that encourages the patient to perform as many self-care activities as possible, thereby maintaining the highest level of mobility (see *Research highlight*).

BOX 28-1 Hazards of hospitalisation of the older adult

- For many older people, hospitalisation results in functional decline despite cure or repair of the condition for which they were admitted. Hospitalisation can result in complications unrelated to the problem that caused admission or to its specific treatment, and for reasons that are explainable and avoidable.
- Usual ageing is often associated with functional change, such as a decline in muscle strength and aerobic capacity; vasomotor instability; reduced bone density; diminished pulmonary ventilation; altered sensory continence, appetite and thirst; and a tendency towards urinary incontinence. Hospitalisation and bed rest superimpose factors such as enforced immobilisation, reduction of plasma volume, accelerated bone loss, increased closing volume and sensory deprivation. Any of these factors may thrust vulnerable older people into a state of irreversible functional decline.
- The factors that contribute to a cascade to dependency are identifiable and can be avoided by modification of the usual acute hospital environment by de-emphasising bed rest, removing the hazard of the high hospital bed with rails and actively facilitating ambulation and socialisation.

Creditor MC 1993 Hazards of hospitalization of the elderly. Ann Intern Med 118(3):219.

• CRITICAL REFLECTION POINT

Critical thinking and sound clinical judgement when caring for patients with impaired mobility requires nurses to draw on their knowledge of mobility and immobility and on previous experience, and apply evidence-based practices

RESEARCH HIGHLIGHT

Research focus

In older patients, acute medical illness that requires hospitalisation is a sentinel event that often precipitates disability. This results in the subsequent inability to live independently and complete basic activities of daily living (ADLs). This nursing research examined the association between mobility levels of older adults during hospitalisation and functional outcomes at discharge and 1-month follow-up.

Research abstract

Design: Prospective cohort study.

Setting: A 900-bed teaching hospital in Israel.

Participants: 525 older (≥ 70 years) acute medical patients hospitalised for a non-disabling condition.

Measurements

In-hospital mobility was assessed using a previously validated scale. The main outcomes were decline from premorbid baseline functional status at discharge (ADLs) and at 1-month follow-up (ADLs and instrumental ADLs). Hospital mobility levels and functional outcomes were assessed according to prehospitalisation functional trajectories. Logistic regressions were modelled for each outcome, controlling for functional status, morbidity and demographic characteristics.

Results

Forty-six per cent of participants had declined in ADLs at discharge and 49% at follow-up; 57% had declined in IADLs at follow-up. Mobility during hospitalisation was twice as high in participants with no pre-admission functional decline.

Low versus high in-hospital mobility was associated with worse basic functional status at discharge (adjusted odds ratio (AOR) = 18.03; 95% confidence interval (CI) = 7.68–42.28) and at follow-up (AOR = 4.72; 95% CI = 1.98–11.28) and worse IADLs at follow-up (AOR = 2.00; 95% CI = 1.05–3.78). The association with poorer discharge functional outcomes was present in participants with pre-admission functional decline (AOR for low vs high mobility = 15.26; 95% CI = 4.80–48.42) and in those who were functionally stable (AOR for low vs high mobility = 10.12; 95% CI = 2.28–44.92).

Evidence-based practice

- The results of this study show that low levels of in-hospital mobility were associated with functional decline of older adults at discharge and, even more so, at follow-up.
- In-hospital mobility, unlike personal and disease-related risk factors, is a potentially modifiable care aspect that has important implications for in-hospital care regimens.
- Level of mobility was significantly related to functional outcomes of patients whether or not they had functional decline before their hospitalisation, indicating the value of developing and evaluating a policy for the early and effective mobilisation of all older hospitalised patients in general medical units.

Reference

Zisberg A, Shadmi E, Sinoff G et al 2011 Low mobility during hospitalization and functional decline in older adults. J Am Geriatr Soc 59:266–73.

and professional standards. Patients with impaired mobility often have multiple needs, which must be prioritised. To understand the impact of immobility on the patient and family, nurses integrate knowledge from nursing and other disciplines, previous experiences and information gathered from patients.

CLINICAL EXAMPLE

You are a student nurse caring for Albert Devereaux, an alert and oriented 81-year-old man, admitted to hospital after a fall with complaints of dizziness and syncope. His blood pressure (BP) on admission was 80/40 mmHg. At the aged care nursing facility where he lives, he ambulated with a walker independently but, since a recent episode of syncope, he has complained of weakness and needs another person to assist him while walking as a fall precaution.

Nursing staff found Mr Devereaux lying on the floor on his right hip, and he explained, 'I had to go to the bathroom. I know I should have called for help, but the nurses are so busy. I figured I could go myself. Only two more steps and I could have reached my walker. I just slipped.' He reports pain in his right hip that is a 5 on a 0–10 numerical pain rating scale, which he describes as an 'ache' that is worse with movement of his right leg.

An X-ray of his right hip is taken, which is negative for a fracture. You take a set of orthostatic vital signs: lying BP = 110/80 mmHg, heart rate = 73 beats per minute; standing BP = 90/50 mmHg, heart rate = 92 beats per minute. His other vital signs are temperature 36.8°C, respiratory rate 16 breaths per minute, oxygen saturation (SpO_2) 99% on room air.

No injuries are noted on inspection and palpation of his head and neck. Pupils are equal and react briskly to light. His chest is clear to auscultation, heart sounds are irregular. There is full range of motion in the upper extremities and handgrip strength is bilaterally equal. His abdomen is soft and non-tender. There is no physical deformity of the right hip or other injuries apparent, but a moderate amount of

continued

ecchymosis is visible over his right hip that extends around to his lower back and right upper buttock. He demonstrates normal movement and sensation in both feet. He has requested the urinal once for 200 mL of clear yellow urine. An electrocardiogram confirms his known history of atrial fibrillation.

Mr Devereaux is admitted, and his plan of care includes assessment of orthostatic vital signs every shift and fall precautions. You explain to him how to use the call light and he remains on bed rest with side rails up. Later in the shift Mr Devereaux tells you he is worried about the consequences of this fall for his mobility and independence.

Adapted from Douglas C 2001 Pulling it all together. In Lewis P, Foley D (eds) Weber & Kelley's Health assessment in nursing. Lippincott Williams & Wilkins, Philadelphia.

• CRITICAL REFLECTION POINT

1. **Based on the *Clinical example* above, construct a concept map which demonstrates all the significant assessment data from the case study and the relationships or links among this data.**
2. **What priority nursing interventions would you implement for Mr Devereaux to maintain his safety and promote normal movement and mobility?**
3. **How will you assess for and prevent the complications of immobility while Mr Devereaux remains on bed rest?**
4. **How would you further explore the psychosocial impact of this fall on Mr Devereaux and his fears about loss of mobility and independence?**

CLINICAL REASONING PROCESS

Using the clinical reasoning process discussed in Chapter 5, the critical application of anatomy and physiology knowledge, and experience with patients enables nurses to develop individualised care plans for patients with mobility impairments and for those who are at risk. A care plan is designed to improve the patient's functional status, promote self-care, maintain psychological wellbeing and prevent the complications of immobility.

GATHERING RELEVANT INFORMATION AND DATA

Mobility

Collecting patient data around mobility focuses on range of motion, gait, exercise and activity tolerance and body alignment (Figure 28-8). When unsure of the patient's abilities, the nurse should begin assessment of mobility with the patient in the most supportive position and move to higher levels of mobility according to the patient's tolerance. Generally, assessment of movement is commenced while the patient is lying down, and then proceeds to assessing sitting positions in bed, transfers to chair and finally gait by watching the patient walk. This helps to protect the patient's safety.

Range of motion

Range of motion (ROM) is the maximum amount of movement available at a joint in one of the three planes of the body: sagittal, frontal or transverse (Figure 28-9). Ligaments, muscles and the nature of the joint limit joint mobility in each of the planes. However, some joint movements are specific to each plane. In the *sagittal plane*, movements are flexion and extension (fingers and elbows), dorsiflexion and plantar flexion

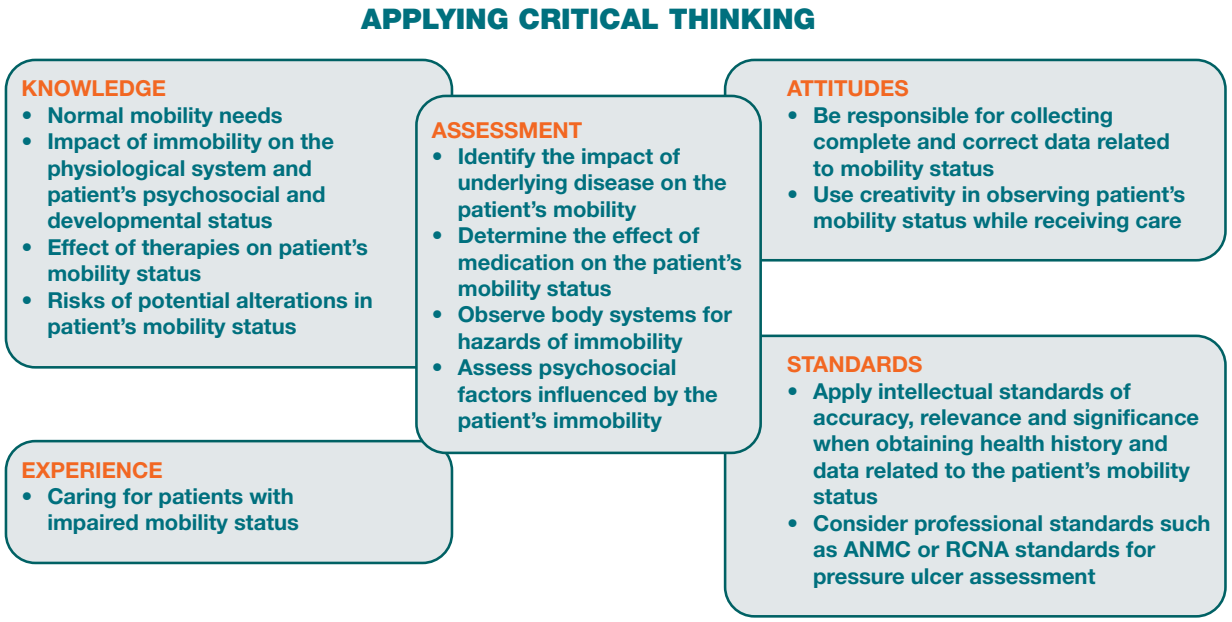


Figure 28-8 Critical thinking associated with the assessment phase for immobility.

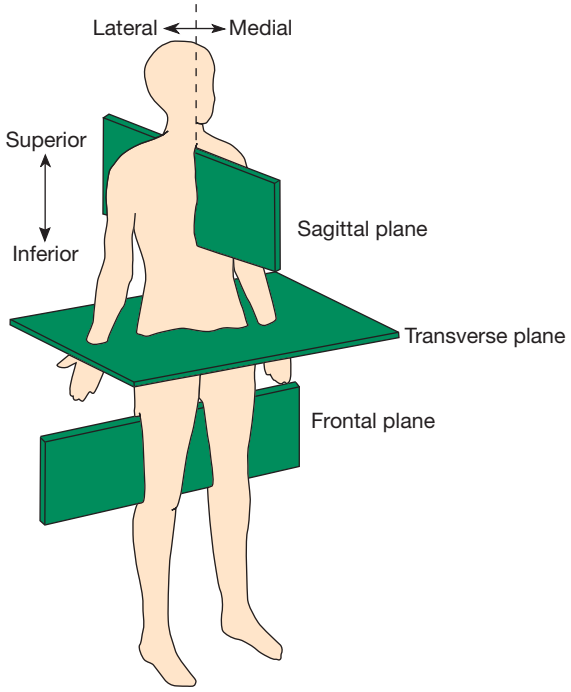


Figure 28-9 Planes of the body.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

(feet) and extension (hip). In the *frontal plane*, movements are abduction and adduction (arms and legs) and eversion and inversion (feet). In the *transverse plane*, movements are pronation and supination (hands) and internal and external rotation (hips).

To assess ROM, the patient is questioned about and physically examined for stiffness, swelling, pain, limited movement and unequal movement. This data is then documented in the appropriate nursing documentation. Table 28-3 presents the normal ROM ranges for each joint.

Patients whose mobility is restricted because of illness, disability or trauma require ROM exercises to reduce the hazards of immobility. ROM exercises may be *active* (patients are able to move all joints through their ROM unassisted) or *passive* (patients are unable to move independently, and the nurse moves each joint through its ROM), or somewhere in between. With a weak patient, for example, the nurse may merely provide support while the patient performs most of the movement, or the patient may be able to move some joints actively while the nurse passively moves others. Nurses first assess the patient's ability to engage in active ROM exercises and the need for assistance, teaching or reinforcement. In general, exercises should be as active as health and mobility allow. Contractures may develop in joints not moved periodically through their full ROM.

Gait

Gait is the manner or style of walking, including rhythm, measure of beat, cadence and speed. Assessing gait allows for conclusions to be made about the patient's balance, posture and the ability to walk without assistance.

Gait can easily be assessed as the patient walks into the room, by asking the patient to walk a short distance or while assisting the patient to mobilise. A normal gait should demonstrate:

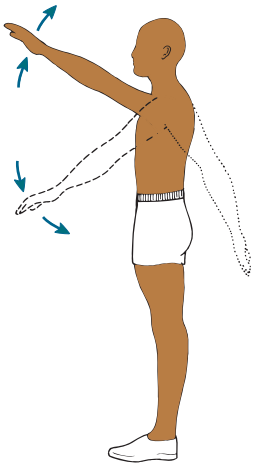
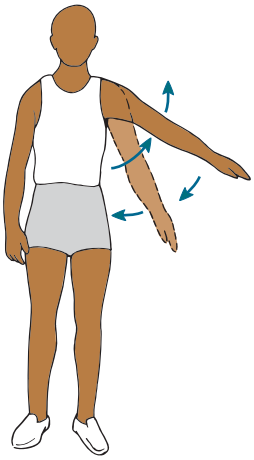
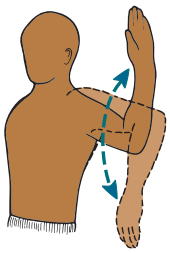
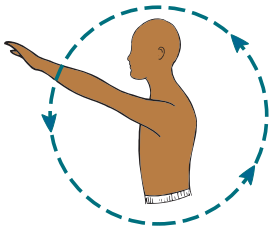
- a regular, smooth rhythm
- symmetry in the length of leg swing
- smooth transition from stance through the swing phases
- smooth, symmetrical opposite arm swing.

TABLE 28-3 Range-of-motion exercises

Body part	Type of joint	Type of movement	Range (degrees)	Muscles involved
Neck, cervical spine	Pivotal			
		*Flexion:* Bring chin to rest on chest	45	Sternocleidomastoid
		Extension: Bend head back as far as possible	10	Trapezius
		*Lateral flexion:* Tilt head as far as possible towards each shoulder	40–45	Sternocleidomastoid
		*Rotation:* Turn head as far as possible in circular movement	180	Sternocleidomastoid, trapezius

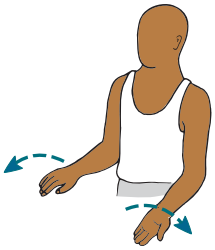
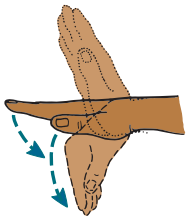
continued

TABLE 28-3 *continued*

Body part	Type of joint	Type of movement	Range (degrees)	Muscles involved
Shoulder	*Ball and socket*			
		*Flexion:* Raise arm from side position forwards to position above head	170–180	Coracobrachialis, deltoid
		Extension: Move arm behind body, keeping elbow straight	45–60	Latissimus dorsi, teres major, deltoid
		*Abduction:* Raise arm to side to position above head with palm away from head *Adduction:* Lower arm sideways and across body as far as possible	170–180	Deltoid, supraspinatus Pectoralis major
		*Internal rotation:* With elbow flexed, rotate shoulder by moving arm until thumb is turned inwards and towards back	70–80	Pectoralis major, latissimus dorsi, teres major, subscapularis
		External rotation: With elbow in full circle, move arm until thumb is upwards and lateral to head	81–90	Infraspinatus, teres major
		*Circumduction:* Move arm in full circle (circumduction is combination of all movements of ball-and-socket joint)	360	Deltoid, coracobrachialis, latissimus dorsi, teres major

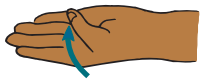
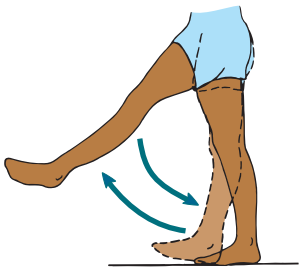
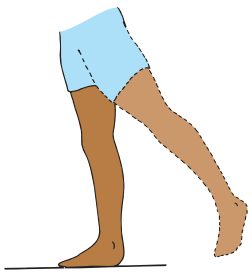
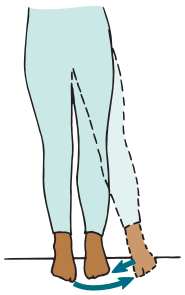
continued

TABLE 28-3 ***continued***

Body part	Type of joint	Type of movement	Range (degrees)	Muscles involved
Elbow	*Hinge*			
		*Flexion:* Bend elbow so that lower arm moves towards its shoulder joint and hand is level with shoulder	150	Biceps brachii, brachialis, brachioradialis
		Extension: Straighten elbow by lowering hand	150	Triceps brachii
Forearm	*Pivotal*			
		*Supination:* Turn lower arm and hand so that palm is up	70–90	Supinator, biceps brachii
		Pronation: Turn lower arm so that palm is down	70–90	Pronator teres, pronator quadratus
Wrist	*Condyloid*			
		*Flexion:* Move palm towards inner aspect of forearm	80–90	Flexor carpi ulnaris, flexor carpi radialis
		Extension: Bring dorsal surface of hand back as far as possible	89–90	Extensor carpi radialis brevis, extensor carpi radialis longus, extensor carpi ulnaris
		*Abduction (radial deviation):* Bend wrist medially towards thumb	Up to 30	Flexor carpi radialis, extensor carpiradialis brevis, extensor carpiradialis longus
		Adduction (ulnar deviation): Bend wrist laterally towards fifth finger	30–50	Flexor carpi ulnaris, extensor carpi ulnaris
Fingers	*Condyloid hinge*			
		*Flexion:* Make fist	90	Lumbricales, interosseus volaris, interosseus dorsalis
		*Extension:* Bend fingers back as far as possible	30–60	Extensor digiti quinti proprius, extensor digitorum communis, extensor indicis proprius
		*Abduction:* Spread fingers apart	30	Interosseus dorsalis
		Adduction: Bring fingers together	30	Interosseus volaris

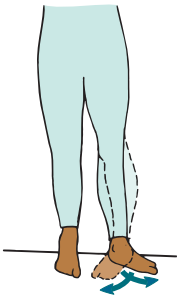
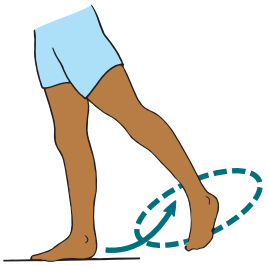
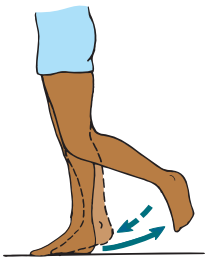
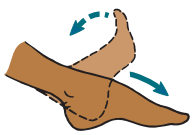
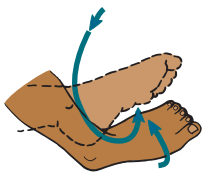
continued

TABLE 28-3 ***continued***

Body part	Type of joint	Type of movement	Range (degrees)	Muscles involved
Thumb	*Saddle*			
		*Flexion:* Move thumb across palmar surface of hand *Extension:* Move thumb straight away from hand	70–80	Flexor pollicis brevis Extensor pollicis longus, extensor pollicis brevis
		Abduction: Extend thumb laterally (usually done when placing fingers in abduction and adduction) *Adduction:* Move thumb back towards hand	70–80	Abductor pollicis brevis and longus Adductor pollicis obliquus, adductor pollicis transversus
		*Opposition:* Touch thumb to each finger of same hand		Opponeus pollicis, opponeus digiti minimi
Hip	*Ball and socket*			
		*Flexion:* Move leg forwards and up	120–130	Psoas major, iliacus, sartorius
		Extension: Move back beside other leg	120–130	Gluteus maximus, semitendinosus, semimembranosus
		*Hyperextension:* Move leg behind body	10–20	Gluteus maximus, semitendinosus, semimembranosus
		*Abduction:* Move leg laterally away from body	30–50	Gluteus medius, gluteus minimus
		Adduction: Move leg back towards medial position and beyond if possible	20–30	Adductor longus, adductor brevis, adductor magnus

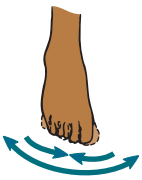
continued

TABLE 28-3 ***continued***

Body part	Type of joint	Type of movement	Range (degrees)	Muscles involved
		*Internal rotation:* Turn foot and leg towards other leg	35–40	Gluteus medius, gluteus minimus, tensor fasciae latae
		External rotation: Turn foot and leg away from other leg	40–50	Obturatorius internus, obturatorius externus, quadratus femoris, piriformis, gemellus superior and inferior, gluteus maximus
		*Circumduction:* Move leg in circle		Psoas major, gluteus maximus, gluteus medius, adductor magnus
Knee	*Hinge*			
		*Flexion:* Bring heel back towards back of thigh	135–145	Biceps femoris, semitendinosus, semimembranosus, sartorius
		Extension: Return leg to floor	0	Rectus femoris, vastus lateralis, vastus medialis, vastus intermedius
Ankle	*Hinge*			
		*Dorsal flexion:* Move foot so that toes are pointed upwards	20–30	Tibialis anterior
		Plantar flexion: Move foot so that toes are pointed downwards	45–50	Gastrocnemius, soleus
Foot	*Gliding*			
		*Inversion:* Turn sole of foot medially	30–40	Tibialis anterior, tibialis posterior
		Eversion: Turn sole of foot laterally	15–25	Peroneus longus, peroneus brevis
Toes	*Condyloid*			
		*Flexion:* Curl toes downwards	30–60	Flexor digitorum, lumbricalis pedis, flexor hallucis brevis
		Extension: Straighten toes	30–60	Extensor digitorum longus, extensor digitorum brevis, extensor hallucis longus

continued

TABLE 28-3 ***continued***

Body part	Type of joint	Type of movement	Range (degrees)	Muscles involved
		Abduction: Spread toes apart	15 or less	Abductor hallucis, interosseus dorsalis
		*Adduction:* Bring toes together	15 or less	Adductor hallucis, interosseus plantaris

Exercise and activity tolerance

Exercise and activity tolerance is the kind and amount of exercise or work that a person is able to perform. Assessment of activity tolerance is necessary when planning activity such as walking, ROM exercises or ADLs such as bathing, for patients with acute or chronic illness. Activity-tolerance assessment includes data from physiological, emotional and developmental domains. This assessment is applicable in all clinical settings and is completed by nurses.

As activity is begun, patients should be monitored for symptoms such as dyspnoea, fatigue or chest pain and/or a change in vital signs from baseline. The weak or deconditioned patient is unable to sustain activity because the greater energy needed to complete the activity creates fatigue and generalised weakness. Even seemingly simple tasks such as eating and moving in bed may need to be monitored. When decreased activity tolerance is noted, assessment is made of the time needed by the patient to recover. Decreasing recovery time may indicate improving activity tolerance.

People who are depressed, worried or anxious are frequently unable to tolerate exercise. Depressed patients are usually not motivated to participate. Patients who are worried or anxious tire easily because they expend a great deal of energy in worry and anxiety. Thus they may experience physical and emotional exhaustion.

Developmental changes also affect activity tolerance. As the infant enters the toddler stage, the activity level increases and the need for sleep declines. The school-aged child expends mental energy in learning and may require more rest after school or before strenuous play. The adolescent going through puberty may require more rest because much of the body's energy is expended on growth and hormone changes.

Changes may still occur through the adult years, but many of these changes are related to work and lifestyle choices. Pregnancy may cause fluctuations in a woman's energy tolerance, especially during the first and third trimesters when she may have increased fatigue. Hormonal changes and fetal development use body energy, and the woman may be unable or unmotivated to carry out physical activities. During the last trimester, fetal development consumes a great deal of the mother's energy and the size and location of the fetus may limit the ability to take a deep breath, resulting in less oxygen being available for physical activities.

As a person grows older, activity tolerance changes. Muscle mass is reduced, posture changes and the composition of bones is altered. There are often changes in the cardiorespiratory system, such as decreased maximum heart rate and decreased lung compliance, which affect the intensity of exercise. As age progresses, the older individual may still exercise, but will do so at a reduced intensity.

There is an overall improvement of physiological functioning as a result of exercise. All systems become stronger and function more efficiently. Nurses may therefore plan interventions directed at increasing exercise. However, nurses in rehabilitation and acute care settings often care for patients with impaired mobility, and therefore develop nursing therapies designed to minimise the hazards of immobility.

Body alignment

Assessment of body alignment can be carried out with the patient standing, sitting or lying down. The first step in assessing body alignment is to put patients at ease so that unnatural or rigid positions are not assumed. When the body alignment of an immobilised or unconscious patient is assessed, pillows and positioning supports should be removed from the bed and the patient placed in the supine position.

STANDING Assessment of the patient's body alignment when the standing patient is focused on the following points:

- The head is erect and midline.
- When observed posteriorly, the shoulders and hips are straight and parallel.
- When observed posteriorly, the vertebral column is straight.
- When the patient is observed laterally, the head is erect and the spinal curves are aligned in a reversed S pattern. The cervical vertebrae are anteriorly convex, the thoracic vertebrae are posteriorly convex and the lumbar vertebrae are anteriorly convex.
- When observed laterally, the abdomen is comfortably tucked in and the knees and ankles are slightly flexed. The person appears comfortable and does not seem conscious of the flexion of knees or ankles.
- The arms hang comfortably at the sides.
- The feet are placed slightly apart to achieve a base of support, and the toes are pointed forwards.
- When the patient is viewed anteriorly, the centre of gravity is in the midline, and the line of gravity is from the middle of the forehead to a midpoint between the feet. Laterally the line of gravity runs vertically from the middle of the skull to the posterior third of the foot (Figure 28-10).

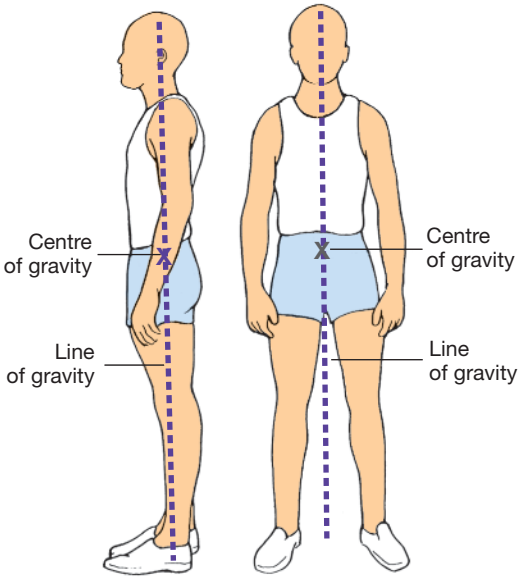


Figure 28-10 Correct body alignment when standing.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

SITTING Assessment of body alignment of the sitting patient (Figure 28-11) is undertaken by observations of the following:

- The head is erect, and the neck and vertebral column are in straight alignment.
- The bodyweight is evenly distributed on the buttocks and thighs.
- The thighs are parallel and in a horizontal plane.
- Both feet are supported on the floor. With patients of short stature, a footstool is used and the ankles are comfortably flexed.
- A 2–4 cm space is maintained between the edge of the seat and the popliteal space on the posterior surface of the knee. This space ensures that there is no pressure on the popliteal artery or nerve to decrease circulation or impair nerve function.
- The patient's forearms are supported on the armrest, in the lap or on a table in front of the chair.

It is particularly important to assess alignment when sitting if the patient has muscle weakness, muscle paralysis or nerve damage. Because of these alterations, the patient has diminished sensation in the affected area and is unable to perceive pressure or decreased circulation. Proper alignment while sitting reduces the risk of musculoskeletal system damage in such a patient. The patient with severe respiratory disease may assume a posture of leaning on the table in front of the chair in an attempt to breathe more easily.

LYING People who are conscious and healthy have voluntary muscle control and normal perception of pressure. As a result, they usually assume a position of comfort when lying down. Because their ROM, sensation and circulation are within normal limits, they change positions when they perceive muscle strain and decreased circulation.

Assessment of body alignment with the patient in the lateral position (Figure 28-12) is best done when the patient is



Figure 28-11 Correct body alignment when sitting.

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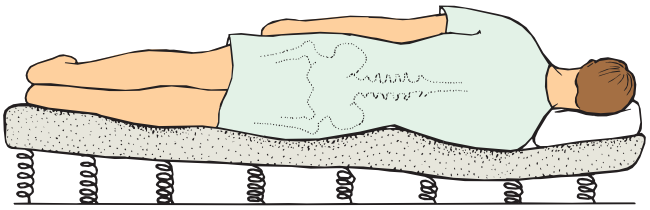


Figure 28-12 Correct body alignment when lying down.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

restricted to bed and not able to move well. All positioning supports should be removed from the bed except for the pillow under the head, and an adequate mattress should support the body. This position allows for full view of the spine and back and will help provide other baseline body alignment data, such as whether the patient can remain positioned without aid. The vertebrae should be in straight alignment without observable curves. The position should not cause discomfort. Conditions that create a risk of damage to the musculoskeletal system when lying down include patients with impaired mobility (e.g. in traction or with arthritis), decreased sensation (e.g. sensory deficits after stroke), impaired circulation (e.g. diabetes) or lack of voluntary muscle control (e.g. spinal cord injuries).

Impaired mobility

Assessment of the patient with impaired mobility is undertaken by performing a head-to-toe body systems physical assessment (refer to Chapter 23 for normal findings). In addition, gathering nursing data should also focus on the psychosocial and developmental impact of immobility. Common abnormal assessment findings associated with immobility for each body system are presented in Table 28-4.

Assessment of passive and active ROM is important as a baseline against which later measurements can be compared to evaluate whether a loss in joint mobility has occurred. Objective data about the degree of joint ROM can be measured with

TABLE 28-4 Body systems assessment for complications of immobility

System	Assessment techniques	Abnormal findings
Metabolic	Inspection	Slowed wound healing, abnormal laboratory data
		Muscle atrophy, decreased amount of subcutaneous fat
Respiratory	Inspection	Increased respiratory rate, asymmetrical chest wall movement, dyspnoea
	Auscultation	Crackles, wheezes
Cardiovascular	Palpation	Increased heart rate, weak peripheral pulses, peripheral oedema
	Auscultation	Orthostatic hypotension, third heart sound
Musculoskeletal	Inspection, palpation	Erythema, increased diameter in calf or thigh, muscle atrophy
	Palpation	Decreased ROM, joint contracture
Skin	Inspection	Break in skin integrity
Elimination	Inspection	Decreased urine output, cloudy or concentrated urine, decreased frequency of bowel movements
	Palpation	Distended bladder and abdomen
	Auscultation	Decreased bowel sounds

WORKING WITH DIVERSITY

Focus on cultural care

Dairy products are key sources of the calcium necessary to prevent osteoporosis. However, people's ability to tolerate the lactose in dairy products is thought to be related to their ethnic background. People with an Asian background often have lactose intolerance, but research has shown that they may be able to tolerate small amounts of dairy products. Australian Aboriginal peoples and those of Greek and Mediterranean origin are also reported to experience lactose intolerance more than Caucasians. To ensure bone health, education is needed about sources of calcium, both dairy and non-dairy. Although generally in lower amounts per serving than dairy foods, the non-dairy sources of calcium include green leafy vegetables, legumes and cereals. Calcium-fortified foods and calcium supplements are another option for people who cannot meet their calcium needs from foods naturally containing this mineral.

Implications for practice

- For all patients, be aware of their normal dietary habits.
- When assessing a person's nutritional intake, note the sources of calcium.
- Offer alternatives to dairy products for people with suspected or actual lactose intolerance.
- Provide education to patients about sources of calcium.
- Consider lactose intolerance as a cause of diarrhoea, gaseous distension and abdominal cramping.

References

Adapted from Greenfield H 2003 Can Chinese children drink milk? Nutrition Today 38(3):77.

McBean L et al 2001 Healthy eating in later years. Nutrition Today 36(4):192.

Weaver CM 2003 Does good nutrition conflict with cultural sensitivities? Nutrition Today 38(3):76.



Figure 28-13 Goniometer, used here to verify correct degree of elbow flexion for crutch use.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

a goniometer, although this is rarely done in the acute care setting (see Figure 28-13).

Psychosocial assessment

Common reactions to immobilisation include boredom, feelings of isolation, depression and anger. Changes in the patient's emotional status should be identified. Examples of change that may indicate psychosocial concerns are a cooperative patient who becomes less cooperative or an independent patient who asks for more help than is usual. The reasons for such alterations should be determined. Identifying how the patient usually copes with loss is vital (see Chapter 22). A change in mobility status, whether permanent or not, may cause a grief reaction. Families are a key resource for information about behaviour changes.

Unexplained changes in the sleep–wake cycle must be identified and corrected. Most can be prevented or minimised, such as those occurring because of nursing activities, a noisy environment or discomfort. They may also occur because of medications such as analgesics or sleep medications (see Chapter 36).

Because psychosocial changes usually occur gradually, nurses should observe the patient's behaviour on a daily basis. If behavioural changes occur, the nurse should determine the causes and evaluate the changes as short-term or long-term. Identifying the cause helps nurses to design appropriate nursing interventions.

Developmental assessment

Assessment of the immobilised patient should include developmental considerations to ensure that the patient's needs are identified. The nurse determines whether the young child can meet developmental tasks and is progressing normally. The child's development may regress or be slowed because of immobilisation. By identifying a child's overall developmental needs, nursing therapies can be designed to maintain normal development. The parents should also be reassured that developmental delays are usually temporary.

Immobilisation of a family member affects normal role-relationship patterns and the family's functioning. The family's response to this change may lead to problems, stress and anxieties. Children seeing parents who are immobile may have difficulty understanding what is happening.

Assessing for hospitalisation-associated immobility

As discussed above, hospitalisation of the older adult commonly leads to reduced mobility and functional status, even when the acute illness that necessitated hospitalisation is successfully treated. Nursing assessment at admission and over the course of hospitalisation is important to identify changes in functional status. Covinsky et al (2011) suggest that the key domains that should be documented include baseline ADL function, mobility and cognition. These are simple and brief assessments that nurses can make during daily patient care. A decline in function needs prompt investigation to determine why the change occurred and what can be done to return the patient to an optimal level of functioning as soon as possible.

Immobility may also directly lead to complications, such as pulmonary emboli or pneumonia. If these conditions develop, the primary nurse will collaborate with the medical or nurse practitioner for prescribed therapy to intervene. Nurses need to be alert for these potential complications and work to prevent them.

CLINICAL EXAMPLE

You are a student nurse caring for Abby O'Brien, a 31-year-old woman on an orthopaedic ward. During your initial shift assessment you elicit the following data.

Interview data

Abby states, 'I fell off my horse while riding. The horse stepped on my leg and crushed the bone in my upper leg.' She reports pain in her right leg of severity 6 (on a 0–10 numerical pain rating scale) and says the prescribed analgesia only helps a little. She wants to move but cannot because of the traction. Abby states, 'My bottom hurts because I can't move around.' She tells you, 'I haven't had a bowel movement for 3 days now; the last time I did it was hard to pass. Normally at home I go every day.' Abby hasn't been hungry either. She says, 'The food is horrible.' She states that she is so bored she cannot stand it. 'I am used to being active – being stuck in bed is driving me crazy. TV shows aren't worth watching.'

Physical examination data

- Vital signs: temperature 36.7°C, heart rate 88 beats per minute, respiratory rate 16 breaths per minute, blood pressure 108/72 mmHg; height 165 cm, weight 61 kg.
- Medication: oxycodone (an opioid analgesic) 5 mg by mouth every 6 hours for pain relief. She has taken these regularly for the last several days.
- Diet: regular diet. Has eaten, on average, 30% of meals. Fluid intake has averaged 1000 mL/day.
- Activity: patient is on complete bed rest.
- Respiratory: breathing even and unlaboured. Lungs are clear to auscultation.
- Cardiovascular: all distal pulses palpable. Heart rate and rhythm regular. No peripheral oedema.
- Abdomen: slightly distended. Hypoactive bowel sounds throughout abdomen.
- Musculoskeletal: right leg in skeletal traction. Normal sensation to foot/toes, capillary refill < 2 seconds. Other extremities: full range of motion. No pain over joints and muscles.
- Integument: skin warm and dry. Pin sites for traction without redness or drainage. 5 cm diameter redness over sacrum. Skin intact.

Adapted from Wilson SF, Giddens JF 2009 Health assessment for nursing practice, 4th edn. Mosby, St Louis.

• CRITICAL REFLECTION POINT

1. **Identify the significant or abnormal assessment data in the *Clinical example*. Explain how and why this data is abnormal given the patient's presenting problem.**
2. **Construct a concept map that demonstrates all the significant assessment data from the clinical scenario and the relationships or links among this data.**
3. **Identify three nursing problems from the clinical scenario and list all the supporting assessment data for each problem identified.**
4. **How would you develop a nursing care plan to manage each of the identified problems?**

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

After collecting the data from the patient in relation to mobility or immobility, nurses synthesis this information and make informed clinical judgements about the person's needs,

concerns and health problems. Critical thinking ensures that a decision relating to the patient's plan of care integrates all that the nurse knows about the individual whilst also drawing on past experiences with immobilised patients. Evidence-based clinical guidelines are similarly important to consider when developing a plan of care.

Together, the nurse and patient set realistic expectations for care, and goals are set that are individualised and measurable. Therapeutic interventions are planned for patients with actual problems with or risks to body alignment and mobility. Therapies are planned according to severity of risks to the patient, and the plan is individualised according to the patient's developmental stage, level of health and lifestyle. Care planning must take the patient's own goal-setting into consideration. The immediacy of any problem is determined by the effect the problem has on the patient's mental and physical health.

It can be easy to overlook the potential complications of immobility until they occur. Nurses must therefore be vigilant in monitoring patients, reinforcing prevention techniques and supervising appropriate others in carrying out activities aimed at preventing immobility complications. Maintaining body alignment is especially important for patients with actual or potential limitations in mobility. Turning and positioning of a comatose patient must be done correctly and the position must be changed frequently to reduce the risk of poor alignment and future injury to the skin and musculoskeletal system. The frequency of turning is based on patient assessment of the risk of pressure injury.

The nurse frequently collaborates with others in the healthcare team, such as a physiotherapist or occupational therapist, when considering mobility needs. For example, physiotherapists are a resource for planning ROM or strengthening exercises and occupational therapists are a resource for planning ADLs that patients need to modify or relearn. Discharge planning is begun when a patient enters the healthcare system. In anticipation of the patient's discharge from an institution, a referral may be made to help the patient remain mobile or regain mobility at home. Therefore, consideration must be given to the patient's home environment when planning therapies to maintain or improve body alignment and mobility.

SETTING PRIORITIES AND ESTABLISHING GOALS

Priorities of care

When developing a plan of care, you need to establish priorities and goals based on the patient's level of mobility/immobility (see Figure 28-14). For patients who are mobile it is imperative that they are encouraged to mobilise safely. Patients should also be involved in setting their priorities for their care whenever possible. For example, the nurse should encourage the patient to help determine care routines. The patient should provide as much self-care as possible. Hygiene and grooming articles should be kept within easy reach. Patients should be encouraged to wear their glasses or dentures and to shave or apply make-up, if this is their normal routine. These are activities through which people maintain their body image. Maintenance of body image can help improve the patient's ability to mobilise. Nursing care should provide mental and physical stimulation in all patients.

Goals and outcomes

Nursing care should provide mental and physical stimulation, particularly for a young child. Play activities can be incorporated into the care plan. Completing games and puzzles, for example, helps a child develop fine motor skills, and reading helps the child develop cognitively. An immobilised child should be placed with children of the same age who are not immobilised, unless a contagious disease is present. Nursing activities, such as dressing changes, cast care and care of traction, can be designed to require the child's participation. The nurse must recognise significant changes from normal behavioural patterns. If these continue, the nurse should consult a clinical nurse, counsellor or other healthcare professional whose specialty is children.

APPLYING CRITICAL THINKING

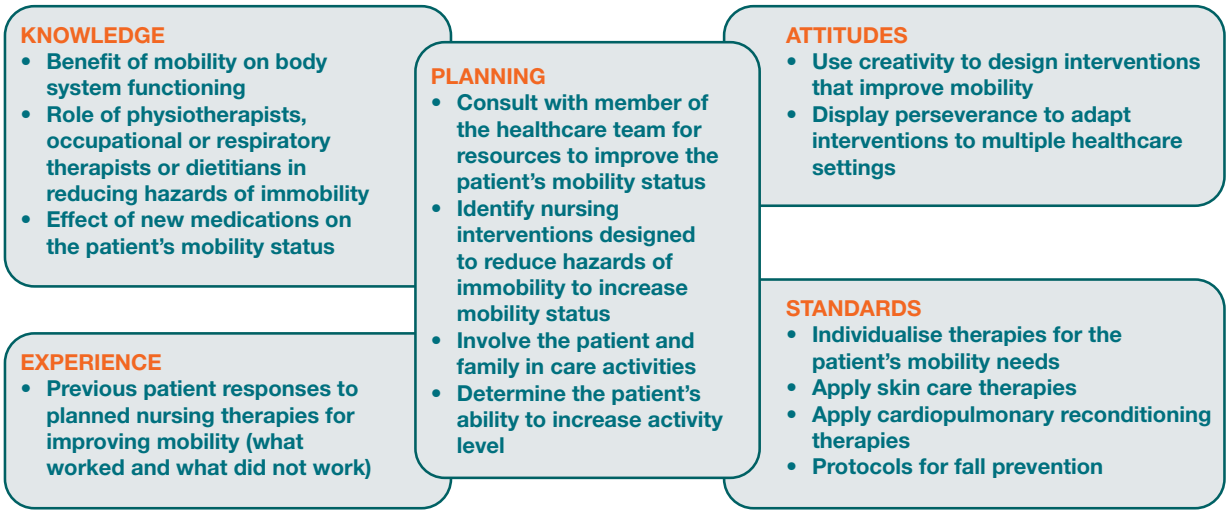


Figure 28-14 **Critical thinking associated with the planning phase for immobility.**

Nursing care should provide mental and physical stimulation in all patients. Restricted mobility of older patients presents unique nursing problems. Older patients who are frail or have chronic illnesses may have an increased risk of the psychosocial hazards of immobility. Having a calendar and a clock with a large dial, conversing about current events and family members and encouraging visits from significant others may reduce the risk of social isolation. Nursing care should encourage older patients to perform as many ADLs as independently as possible.

The nurse should also observe the patient's failure to cope with restricted mobility. If the nursing care plan is not improving coping patterns, an advanced practice nurse, counsellor, social worker, spiritual adviser or other consultant may be needed. Their recommendations should be incorporated into the care plan.

Time should be made to assist patients to walk, encourage exercise if the patient is able and encourage patients to ambulate from bed to the chair as much as possible. This should include removing any unnecessary tethers such as oxygen, bladder catheters and intravenous catheters, creating hospital norms that patients are expected to walk regularly.

PREPARING FOR AND TAKING ACTION

When preparing to care for the patient with impaired mobility the nurse must also prepare himself or herself. This requires an understanding of their own body mechanics and the requirements of moving a patient with impaired mobility.

Body mechanics

Mao (Mao et al 2015) identified that a healthcare worker's quality of working life is impacted significantly if human factors and ergonomics (HFE) are not given the appropriate attention, this includes **body mechanics**, which can lead to pain and injury to both staff and patients. The number of injuries in occupational settings has increased over the years, and back pain is the most common and expensive injury. Back injuries are often the direct result of improper lifting and bending. The most common back injury is strain on the lumbar muscle group, which includes the muscles around the lumbar vertebrae.

Nurses are especially at risk of injury to lumbar muscles when lifting, transferring or positioning immobilised patients. Because of this, most facilities in Australia have adopted a manual handling policy where the concept of no lifting is central, as well as providing training to staff on the use of devices and mechanical aids that are alternatives to lifting when transferring, moving and repositioning patients. It is important to assess the weight and obtain assistance when moving objects or patients that would be hazardous to your health or the patient's health.

Nurses need to adopt good manual handling techniques to protect themselves, those they supervise and the patients for whom they care. When assisting to mobilise patients, the nurse should assess the patient's mobility care plan, weight to be mobilised and what assistance (if any) is needed. Another consideration is the condition of the patient and whether they can provide help while being moved. If help is needed, the nurse should determine the number of persons required and equipment needed to safely transfer the patient. The manual handling protocols of the healthcare agency should be checked before transferring or mobilising patients (Commonwealth of Australia 2007).

While nurses should adhere to a no-lift approach in their workplace, you may encounter situations where it is necessary to transfer patients under less than ideal circumstances (Kay et al 2013). In these extreme circumstances you should adopt proper body mechanics to minimise the risk of injury:

- Keep the weight to be lifted as close to the body as possible; this action places the object in the same plane as the lifter and close to the centre of gravity for balance.
- Bend at the knees; this helps to maintain the centre of gravity and uses the stronger leg muscles to do the lifting (Figure 28-15).
- Avoid twisting. Twisting can overload the spine and lead to serious injury.
- Tighten abdominal muscles and tuck the pelvis; this provides balance and helps protect the back.
- Maintain the trunk erect and knees bent so that muscle groups work together in a coordinated manner.

Exercise

Although many health problems can cause or contribute to immobility, it is important to remember that exercise programs can enhance wellness. Exercise is known to reduce the risk of many health problems, such as cardiovascular disease, diabetes and osteoporosis. Thus, exercise should be incorporated into the care plan. Functional decline from disuse is a major concern as ageing occurs. Nurses can contribute to promoting health for many patients by encouraging or starting managed exercise programs. Older adults can enjoy and benefit from exercises other than traditional Western exercises such as walking or swimming. Hospitalised patients should be encouraged to do stretching, ROM exercises and ambulate within the limits of their condition.

A sedentary lifestyle contributes to the development of health-related problems. Nurses promote health by encouraging patients to engage in a regular exercise program (Box 28-2). Low-to-moderate levels of exercise are associated with a range of health benefits. A holistic approach is taken to develop and implement a plan to enhance the patient's overall physical fitness. The recommendations for physical activity and fitness should be discussed with the patient, and a program of exercise designed in collaboration with the patient. The national physical activity guidelines for Australians (Department of Health 2014) outline the minimum levels of physical activity required to gain a health benefit and ways to incorporate incidental physical activity into everyday life (see Box 28-3).

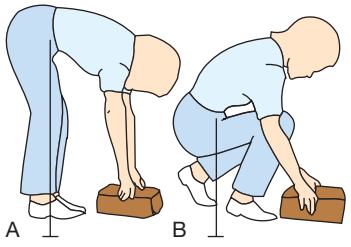


Figure 28-15 Incorrect (A) and correct (B) body position for lifting.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

BOX 28-2 Procedural guidelines for helping patients to exercise

1. Be aware of any medical limitations (e.g. weightbearing status, untreated fracture, cardiovascular disease).
2. Teach patients breathing skills to help reduce anxiety and to fully oxygenate tissues and expand lungs.
3. Always know the patient's limitations.
4. Do not force a muscle or a joint during exercise.
5. Let each patient move at their own pace.
6. Posture, body alignment and good body mechanics should be maintained during exercise.
7. Monitor vital signs before, during and after exercise.
8. Stop exercising if the patient has pain, shortness of breath or a change in vital signs.
9. Patients should wear shoes and comfortable clothing.
10. Know what the patient's mobility skills were before hospitalisation.
11. Keep a record of the patient's progress and provide feedback as the patient exercises.

• CRITICAL REFLECTION POINT

Your clinical rotation is in extended care and you are working in assisted living. The registered nurse working in the assisted-living wing asks you to help her with a program entitled 'Lifestyle choices: living life to its fullest'. She asks you to participate and discuss how regular exercise can improve overall health and to show how exercise can be incorporated into activities of daily living. Develop a content outline and justify the teaching strategies you intend to use.

Acute care

In the acute care setting, specific interventions are designed to reduce the impact of immobility on the patient and to position and transfer patients correctly.

Metabolic system interventions

The immobilised patient requires a high-protein, high-kilojoule diet with vitamin B and C supplements. Protein is needed to repair injured tissue and rebuild depleted protein stores. A high-kilojoule intake provides sufficient fuel to meet metabolic needs and to replace subcutaneous tissue. Supplementation with vitamin C is necessary to replace protein stores. Vitamin B complex is needed for skin integrity and wound healing.

If the patient is unable to eat, nutrition must be provided parenterally or enterally. Enteral feedings include delivery through a nasogastric or gastrostomy tube of high-protein, high-kilojoule solutions with complete requirements of vitamins, minerals and electrolytes (see Chapter 31).

Respiratory system interventions

Nursing interventions for the respiratory system are aimed at maintaining a patent airway, promoting expansion of the chest and lungs, preventing stasis of pulmonary secretions and promoting adequate exchange of respiratory gases.

BOX 28-3 Australian National Physical Activity Guidelines

Physical activity recommendations for children 0–5 years

- Being physically active every day is important for the healthy growth and development of infants, toddlers and preschoolers.
- **Infants (birth to 1 year):** For healthy development in infants, physical activity – particularly supervised floor-based play in safe environments – should be encouraged from birth.
  - Before infants begin to crawl, physical activity includes reaching and grasping, pulling and pushing, moving their head, body and limbs during daily routines and supervised floor play, including tummy time. Once your infant is mobile, encourage them to be as active as possible in a safe, supervised and nurturing play environment.
- **Toddlers (1–3 years) and preschoolers (3–5 years):** Toddlers and preschoolers should be physically active every day for at least 3 hours, spread throughout the day.
  - You'd be surprised by how many opportunities there are throughout the day for toddlers and preschoolers to be active. Remember that kids don't need to do their 3 hours of physical activity all at once. It can be accumulated throughout the day and can include light activity like standing up, moving around and playing.
  - Children younger than 2 years of age should not spend any time watching television or using other electronic

continued

media (DVDs, computer and other electronic games). For children 2–5 years of age, sitting and watching television and the use of other electronic media (DVDs, computer and other electronic games) should be limited to less than 1 hour per day.

- Infants, toddlers and preschoolers should not be sedentary, restrained or kept inactive for more than 1 hour at a time, with the exception of sleeping.
- 'Sedentary behaviour' refers to time spent being physically inactive. All children need some 'down time' but they are not naturally inactive for long periods of time. Sitting in strollers, highchairs and car seats (being restrained) for long periods isn't good for children's health and development and goes against their natural tendency to be active and play.

Physical activity recommendations for 5- to 12-year-olds

- For health benefits, children aged 5–12 years should accumulate at least 60 minutes of moderate to vigorous intensity physical activity every day.
- Children's physical activity should include a variety of aerobic activities, including some vigorous intensity activity.
- On at least 3 days per week, children should engage in activities that strengthen muscle and bone.
- To achieve additional health benefits, children should engage in more activity – up to several hours per day.
- To reduce health risks, children aged 5–12 years should minimise the time they spend being sedentary every day. To achieve this:
  - Limit use of electronic media for entertainment (e.g. television, seated electronic games and computer use) to no more than 2 hours a day – lower levels are associated with reduced health risks.
  - Break up long periods of sitting as often as possible.

Physical activity recommendations for 13- to 17-year-olds

- For health benefits, young people aged 13–17 years should accumulate at least 60 minutes of moderate to vigorous intensity physical activity every day.
- Young people's physical activity should include a variety of aerobic activities, including some vigorous intensity activity.
- On at least 3 days per week, young people should engage in activities that strengthen muscle and bone.
- To achieve additional health benefits, young people should engage in more activity – up to several hours per day.
- Limit use of electronic media for entertainment (e.g. television, seated electronic games and computer use) to no more than 2 hours a day – lower levels are associated with reduced health risks.
- Break up long periods of sitting as often as possible.

Physical activity guidelines for adults (18–64 years)

- Being physically active and limiting your sedentary behaviour every day is essential for health and wellbeing.
- Doing any physical activity is better than doing none. If you currently do no physical activity, start by doing some, and gradually build up to the recommended amount.
- Be active on most, preferably all, days every week.
- Accumulate 150–300 minutes (2.5–5 hours) of moderate intensity physical activity or 75–150 minutes (1.25–2.5 hours) of vigorous intensity physical activity, or an equivalent combination of both moderate and vigorous activities, each week.
- Do muscle strengthening activities on at least 2 days each week.
- Minimise the amount of time spent in prolonged sitting.
- Break up long periods of sitting as often as possible.

Physical activity recommendations for older Australians (65 years and older)

Being physically active and staying fit and healthy will help you get the most out of life, whatever your age. Being physically active for 30 minutes every day is achievable and even a slight increase in activity can make a difference to your health and wellbeing.

There are five physical activity recommendations for older Australians.

1. Older people should do some form of physical activity, no matter what their age, weight, health problems or abilities.
2. Older people should be active every day in as many ways as possible, doing a range of physical activities that incorporate fitness, strength, balance and flexibility.
3. Older people should accumulate at least 30 minutes of moderate intensity physical activity on most, preferably all, days.
4. Older people who have stopped physical activity, or who are starting a new physical activity, should start at a level that is easily manageable and gradually build up to the recommended amount, type and frequency of activity.
5. Older people who continue to enjoy a lifetime of vigorous physical activity should carry on doing so in a manner suited to their capability into later life, provided recommended safety procedures and guidelines are adhered to.

Australian National Physical Activity Guidelines © 2014 Commonwealth of Australia as represented by the Department of Health.

MAINTAINING A PATENT AIRWAY Immobilised patients and those on bed rest are generally weakened. If weakness progresses, the cough reflex gradually becomes inefficient. The stasis of secretions in the lungs may be life-threatening for an immobilised patient because hypostatic pneumonia can easily develop. Dislodging and mobilising the stagnant secretions reduces the risk of pneumonia. Assessment findings that indicate this condition include productive cough with greenish-yellow sputum, fever, pain on breathing, crackles and/or wheezes and dyspnoea. The nurse should actively work with the patient to deep-breathe and cough every 1–2 hours as described in promoting chest expansion, below.

In the immobilised patient, an obstructed airway is usually the result of a mucous plug. The nurse can implement several therapies, such as chest physiotherapy, to reduce the risk of mucous plugs and to maintain a patent airway. Nasotracheal or orotracheal suction techniques may be used to remove secretions in the upper airways of a patient who is unable to cough productively. This procedure must be performed aseptically. The nurse places a suction catheter in the patient's nose or through the mouth and applies suction. The nurse can also suction secretions from an artificial airway, such as an endotracheal or tracheal tube. The nurse inserts a catheter into the artificial airway in a sterile procedure. This removes pulmonary secretions from the upper and lower airways (see Chapter 35 for suctioning techniques).

PROMOTING EXPANSION OF THE CHEST AND LUNGS The nurse promotes chest expansion with several interventions. Changing the position of the patient at least every 2 hours allows the dependent lung regions to re-expand. Re-expansion maintains the elastic recoil property of the lungs and clears the dependent lung regions of pulmonary secretions.

The nurse should encourage the patient to deep-breathe and cough every 1–2 hours. Alert patients can be taught to deep-breathe or yawn every hour or to use an incentive spirometer (see Chapter 35). The nurse teaches the patient to take in three deep breaths and cough with the third exhalation. This technique produces a more forceful, productive cough without excessive fatigue. These respiratory interventions will aid alveolar expansion and prevent atelectasis. Coughing reduces the stasis of pulmonary secretions.

PREVENTING STASIS OF PULMONARY SECRETIONS Stagnant secretions accumulating in the bronchi and lungs may lead to growth of bacteria and subsequent development of pneumonia. Changing the patient's position every 2 hours can reduce stagnation of secretions. This change helps mobilise secretions.

The immobile patient should maintain hydration, taking into consideration any requirements to limit fluid intake. Hydration helps keep mucociliary clearance normal. In patients free from infection and with adequate hydration, pulmonary secretions will appear thin, watery and clear. The patient can easily remove the secretions with coughing. Without adequate hydration the secretions are thick and tenacious and difficult to remove. Encouraging fluids also benefits in helping with bowel and urine elimination and aids in maintaining circulation and skin integrity.

Chest physiotherapy, including percussion and positioning, is an effective method of preventing pulmonary secretion stasis. These techniques help the patient to drain secretions from specific segments of the bronchi and lungs into the trachea so that the patient can cough and expel the secretions. Respiratory assessment findings identify areas of the lungs requiring chest physiotherapy (see Chapter 35).

Cardiovascular system interventions

The effects of bed rest or immobilisation on the cardiovascular system include orthostatic hypotension, increased cardiac workload and thrombus formation. Nursing therapies are designed to minimise or prevent these alterations.

REDUCING ORTHOSTATIC HYPOTENSION After bed rest, patients usually have an increased pulse rate, a decrease in pulse pressure and an increase in fainting in response to a tilting or an erect posture. Interventions should be directed towards reducing or eliminating the effects of orthostatic hypotension. The nurse attempts to get the patient moving as soon as the physical condition allows, even if this only involves dangling legs from the bed or moving to a chair. This activity maintains muscle tone and increases venous return. Isometric exercises, those activities that involve muscle tension without muscle shortening, do not have any beneficial effect on preventing orthostatic hypotension but may improve activity tolerance. When getting an immobile patient up for the first time, the nurse should usually be assisted with at least one other person. This is a precautionary step. The patient will still be expected to do as much of the transfer as the condition allows.

REDUCING CARDIAC WORKLOAD The nurse designs interventions to reduce cardiac workload, which is increased by immobility. A primary intervention is to discourage the patient from using the Valsalva manoeuvre. When using this manoeuvre the patient holds their breath, which increases

BOX 28-4 Procedural guidelines for application of sequential compression devices (SCDs)

1. Measure patient for proper-size stocking by measuring around the largest part of the patient's thigh.
2. Place a protective stocking over the patient's leg.
3. Wrap the stocking around the leg, starting at the ankle, with the opening over the patella (see illustration).
4. Attach the stockings to the insufflator and verify that the intermittent pressure is between 35 and 45 mmHg.



Application of sequential compression stockings.

intrathoracic pressure. This decreases venous return and cardiac output. When the strain is released, venous return and cardiac output immediately increase and systolic blood pressure and pulse pressure rise. These pressure changes produce a reflex bradycardia and a possible decrease in blood pressure that may cause sudden cardiac death in patients with heart disease. The nurse teaches the patient to breathe out while moving or being lifted up in bed.

PREVENTING THROMBUS FORMATION Prevention of **venous thromboembolism** is the goal of care through an aggressive program of prophylaxis. The National Health and Medical Research Council's National Institute of Clinical Studies (NICS) has developed an evidence-based clinical practice guideline for the prevention of venous thromboembolism in patients admitted to Australian hospitals (NICS 2009, see *Online resources*).

Prevention begins with identification of patients at risk and continues throughout the time patients are immobile or otherwise at risk. Many interventions reduce the risk of thrombus formation in the immobilised patient. Leg exercises, position changes, fluids and teaching should begin when the patient becomes immobile. Preoperative patients should be given this information before surgery (see Chapter 39).

Elastic compression stockings and the sequential compression device also help maintain external pressure on the muscles of the lower extremities and thus may promote venous return (Skill 28-1 and Skill 28-2). When considering applying graded compression stockings, the nurse first needs to assess the

SKILL 28-1

Applying sequential compression devices (SCDs)

Delegation and other considerations

Applying SCDs can be delegated to nurse assistants. The following information should be given when delegating this task:

- Avoid activities that promote venous stasis (e.g. crossing legs, wearing garters or placing pillows under the knees).
- When possible, elevate legs to improve venous return.
- Do not massage legs.

Equipment

- Disposable leg wraps (knee or thigh length or foot)
- Tubing set
- Pump controller

Therapeutic relationship and patient considerations

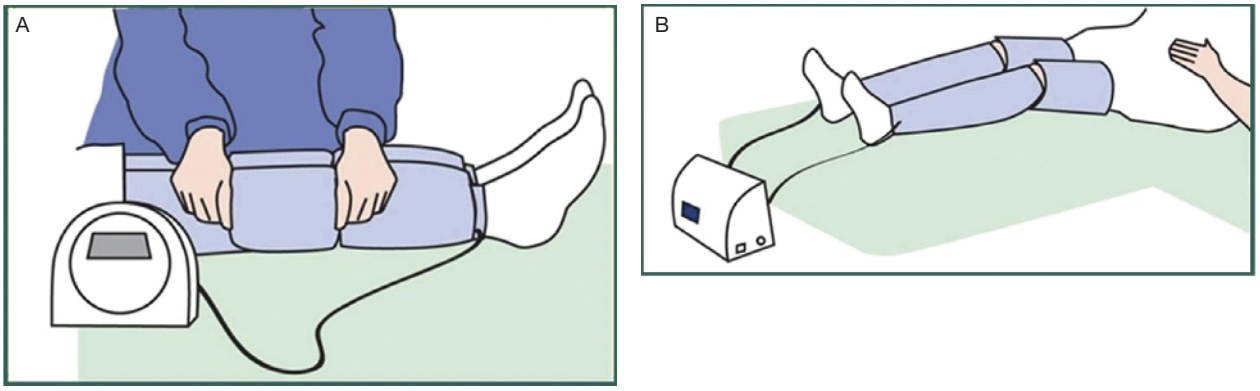
- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
PREPARATION	
1. Assess patient for risk factors for venous thromboembolism to determine need for SCD.	
2. Review medical prescription for type/length of SCD.	
3. Observe for signs, symptoms and conditions that might contraindicate the use of SCD.	
4. Review product information for application and use.	
5. Gather equipment.	
6. Assess patient's or caregiver's understanding of application of SCD.	Identifies potential educational needs of patient or caregiver.

STEPS	RATIONALE
7. Assess and document condition of patient's skin and circulation to legs (i.e. neurovascular assessment and for presence of pedal pulses, oedema, discolouration of skin, temperature, lesions or cuts).	Identifies a baseline for skin integrity and quality of peripheral pulses in lower extremities after SCD in place.
8. Explain procedure and reasons for applying SCD.	
9. Perform hand hygiene.	
10. Plug the SCD pump into the wall socket, but leave turned off.	

■ **Critical decision point: Follow policy of the clinical facility for the amount of time alternating pneumatic compression devices are removed during the day.**

11. Remove wraps from packaging.	
12. Connect tubing set to the pump, noting the connecting click is heard.	
13. Unfold wrap and place the inflatable bladder directly behind the patient's calf.	



(A) Application of intermittent pneumatic compression device. (B) Intermittent pneumatic compression device.

14. Wrap the device around the patient's leg and ensure the fastener tabs are secured. Repeat the process for the other leg.	
15. Check the wrap is not too tight by slipping two fingers beneath it.	To prevent wraps from constricting circulation distally.
16. Attach the wraps to the tubing set-up; be alert for a clicking connecting sound to indicate connection.	
17. Adjust the pump pressure regulator to product recommended pressure according to the physician's request.	Intermittent compression and relaxation reduces venous stasis and therefore improves the natural fibronolytic activity of the body.
18. Ensure there are no kinks in the tubing.	Kinks can restrict airflow through the system.
19. Turn the pump on. Note illumination of the light that indicates it is operational.	

STEPS	RATIONALE
20. Position the patient comfortably, with the nurse call bell at reach.	
21. Advise the patient to notify nurse of any tingling, numbness or discomfort.	
22. Perform hand hygiene.	
23. Regularly remove wraps for inspection of the skin and neurovascular assessment.	Wraps should be removed accordingly.



(C) Sequential compression devices are placed on the patient's legs prior to the induction of anesthesia.



(D) Intermittent compression devices can be used in conjunction with graduated compression stockings.

Critical decision point: The effectiveness of the mechanical device in preventing clot formation is dependent on appropriate fitting and being consistently applied with minimal interruptions.

RECORDING AND REPORTING

- Record baseline neurovascular assessment data.
- Record neurovascular assessment data after application.
- Record condition of skin.
- Record type of sleeve used; thigh high, knee high.
- Record date and time of SCD application.

HOME CONSIDERATIONS

- The use of SCDs is not appropriate in the home.

patient's suitability for wearing them. The stockings should not be applied if there is any local condition affecting the leg (e.g. any skin lesion, gangrenous condition or recent vein ligation), as application may compromise circulation. The stockings must be applied properly, and they must be removed and reapplied at least twice a day (Box 28-4). In addition, the stockings should always be clean and dry. It may be useful for the patient to have two pairs.

Positioning techniques help reduce compression of the leg veins. Proper positioning used with other therapies (e.g. heparin or elastic stockings) helps reduce the patient's risk of thrombus formation (see Positioning patients in bed, Skill 28-3). When positioning patients, the nurse must be careful to prevent pressure on the posterior knee and deep veins in the lower extremities. Patient teaching should include avoiding crossing the legs, not sitting for prolonged periods of time, not wearing

SKILL 28-2

Applying elastic stockings

Delegation considerations

Applying elastic stockings can be delegated to nurse assistants. The following information should be given when delegating this task:

- Avoid activities that promote venous stasis (e.g. crossing legs, wearing garters or placing pillows under the knees).
- When possible, elevate legs to improve venous return.
- Do not massage legs.
- Elevate legs before applying stockings.
- Avoid wrinkles in the stockings.
- Observe for allergic reactions, skin irritation and thrombophlebitis.

Equipment

- Tape measure
- Talcum powder
- Elastic support stockings (proper size)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Assess patient for risk factors for venous thromboembolism to determine need for elastic stockings.	Potential candidates for elastic stockings are patients who have an alteration in one of the elements of Virchow's triad.
2. Observe for signs, symptoms and conditions that might contraindicate the use of elastic stockings:	
• Dermatitis or open skin lesion	Elastic stockings may aggravate a skin condition or cause it to spread. Also, medication and dressings may need to be applied to lesion.
• Recent skin graft	Continuous pressure is necessary to keep graft adherent to recipient bed, but pressure should not be so firm as to cause death of graft.
• Disproportionately large thighs	Elastic stockings may not fit correctly, causing excessive pressure and constriction around thighs, thereby reducing venous return.
• Decreased circulation in lower extremities (e.g. peripheral vascular disease) as evidenced by cyanotic, cool extremities	Elastic stockings may further impede circulation.
3. Obtain medical prescription.	May be needed for legal or reimbursement reasons.
4. Assess patient's or caregiver's understanding of application of elastic stockings.	Identifies potential educational needs of patient or caregiver.

STEPS	RATIONALE
5. Assess and document condition of patient's skin and circulation to legs (i.e. presence of pedal pulses, oedema, discolouration of skin, temperature, lesions or cuts).	Identifies a baseline for skin integrity and quality of peripheral pulses in lower extremities.
6. Explain procedure and reasons for applying stockings.	Reduces anxiety and encourages patient cooperation.
7. Use tape measure to measure patient's legs to determine proper stocking size.	Stockings must be measured according to manufacturer's directions. Elastic stockings come in two lengths: knee length and thigh length. The choice of length depends on the prescription.

■ **Critical decision point: Compare patient's measurements with the manufacturer's sizing chart. If too large, stockings will not adequately support extremities. If too small, stockings may impede circulation. The optimum stocking pressure is 20–30 mmHg at the ankle, decreasing to 8 mmHg at the middle to upper thigh. This change in pressure produces the greatest increase in venous flow velocity that is both safe and practical.**

8. Perform hand hygiene.	Reduces transmission of microorganisms.
9. Position patient in supine position. Elevate head of bed to comfortable level.	Promotes good body mechanics for nurse. Patient position eases application. Also, the stockings should be applied before standing to prevent stagnation of blood in lower extremities. If patient has been standing, patient should sit in chair or lie in bed for 15 minutes with legs elevated before applying elastic stockings.
10. After legs are cleaned, apply small amount of talcum powder to legs and feet, provided that patient does not have sensitivity to talcum powder.	Talcum powder reduces friction and allows for easier application of stockings.
11. Apply stockings.	
a. Turn elastic stocking inside out by placing one hand into sock, holding toe of sock with other hand, and pulling (see illustration). Leave the toe of the stocking tucked inside to form a pocket.	Allows easier application of stocking.
b. Place patient's toes into foot of elastic stocking, making sure that sock is smooth (see illustration).	Wrinkles in sock can impede circulation to lower region of extremity.



Step 11a Turning stocking inside out.



Step 11b Placing foot into sock.

STEPS	RATIONALE
c. Slide remaining portion of sock over patient's foot, being sure that the toes are covered. Make sure the foot fits into the toe and heel position of the sock. Sock will now be right side out (see illustration).	If toes remain uncovered, they will become constricted by elastic and their circulation can be reduced.
d. Slide sock up over patient's calf until sock is completely extended. Be sure sock is smooth and no ridges are present (see illustration).	Ridges impede venous return and can counteract overall purpose of elastic stocking.
e. Instruct patient not to roll socks partially down.	Rolling sock partially down has a constricting effect and can impede venous return.



Step 11c Sliding stocking over foot.



Step 11d Applying stocking over calf.

12. Reposition patient to position of comfort and wash hands.	Maintains proper body alignment and promotes comfort. Reduces transmission of microorganisms.
13. Inspect stocking to make sure there are no wrinkles or binding at top of stocking.	Wrinkles lead to increased pressure and alter circulation.
14. Observe patient's reaction to stockings.	Ensures patient is adapting to stockings and is not experiencing any discomfort from stockings.
15. Observe patient or caregiver applying stockings.	Determines ability to perform skill accurately.
16. Remove stockings at least once a shift, and assess skin and circulatory status.	Stockings may shift or be too tight, and this step ensures skin and circulation are intact.
17. Ensure shoes/slippers are available for patient.	Wearing shoes/slippers decreases risk of patient slipping.

RECORDING AND REPORTING

- Record date and time of stocking application and stocking length and size in nurses' notes (flow sheet may be used).
- Record condition of skin and circulatory assessment, including pulses, temperature, sensation, movement, capillary refill and calf circumference at application and each shift.
- Report changes indicating a decline in circulation.

HOME CARE CONSIDERATIONS

- Instruct patients to have two pairs of stockings – one pair to wear, the other to wash.
- Instruct patients that if there are bodyweight changes greater than 4.5 kg, stockings should be remeasured.
- Remind patients to put on stockings before getting up for the morning or sitting for prolonged periods. As the day progresses, leg swelling may increase and may make stocking application difficult. (It may be helpful to remind patients that they may have noticed this swelling when wearing shoes.)

clothing that constricts the legs or waist, not putting pillows under the knees and avoiding massaging the legs.

ROM exercises are designed to reduce the risk of contractures but may also aid in preventing thrombi. Activity causes contraction of the skeletal muscles, which in turn exerts pressure on the veins to promote venous return, thereby reducing venous stasis. Specific exercises that help prevent thrombophlebitis are ankle pumps, foot circles and knee flexion. Ankle pumps, sometimes called calf pumps, include alternating plantar flexion and dorsiflexion. Foot circles require the patient to rotate the ankle. Knee flexion involves alternately extending and flexing the knee. These exercises are sometimes referred to as *anti-embolic exercises* and should be done hourly while awake.

When DVT is suspected, the nurse should report it immediately for further investigation. The legs should be elevated with no pressure on the thrombus to reduce swelling and pain. Elastic compression stockings are applied to both legs to above the thighs. Drug therapy includes intravenous heparin or subcutaneous low-molecular-weight heparin, with overlap with an oral anticoagulant (warfarin) until it becomes effective. The family, patient and all healthcare personnel should be instructed not to massage the area because of the danger of dislodging the thrombus.

Musculoskeletal system interventions

The immobilised patient must receive some exercise to prevent excessive **muscle atrophy** and joint contractures. If the patient is unable to move part or all of the body, the nurse must perform passive ROM exercises for all immobilised joints while bathing the patient and at least two or three further times a day. If one extremity is paralysed, the patient can be taught to put each joint independently through its ROM. Patients on bed rest should have active ROM exercises incorporated into their daily schedules. Nurses can teach patients to integrate exercises during ADLs.

Some orthopaedic conditions require more frequent passive ROM exercises to restore the injured joint's function after surgery. Patients with such conditions may use automatic equipment for passive ROM exercises (Figure 28-16). The equipment moves an extremity to a prescribed angle for a prescribed period. This is beneficial when the patient must gradually increase the degree and duration of flexion and extension.



Figure 28-16 Continuous passive range-of-motion machine.

Potter PA, Perry AG 2004 Fundamentals of nursing, 6th edn. Mosby, St Louis.

Active ROM exercises maintain function of the musculoskeletal system. The nurse should also plan interventions for the gradual return of mobility for patients who will be able to resume normal activity. The best nursing intervention is establishing an individualised progressive exercise program. A progressive exercise program gradually increases the patient's physical activity to reverse the deconditioning associated with immobility. Progressive exercise programs are used for patients with musculoskeletal, neurological, cardiopulmonary, renal and other chronic diseases. When working with older adults, the nurse should consider gerontological principles that enhance the effectiveness of exercise programs and limit injuries (see *Working with diversity*, Focus on older adults).

Teaching, referral and interdisciplinary collaboration are important for patients with limited mobility. Depending on the setting and resources available, the nurse may want to refer the patient for physiotherapy. The therapist sets up the specific exercise program and the nurse plays an important role in reinforcing it.

WORKING WITH DIVERSITY

Focus on older adults

- Ensure low exercise intensity of 40–70% maximum predicted heart rate (maximum predicted heart rate = age in years subtracted from 220) and very gentle exercise progression.
- Use perceived exertion versus exercise heart rate to monitor exercise intensity.
- Perform a gradual, extended exercise warm-up and cool-down to decrease risk of postural hypotension and cardiac dysrhythmias.
- Use correct body mechanics, appropriate clothing, exercise-specific shoes and sufficient hydration.
- Avoid sudden twisting movements, rapid movements and rapid transitions from one movement to the next.
- Avoid exercises that tax vision and balance.
- Avoid sustained isometric contractions of more than 10 seconds.
- Avoid exercise during acute viral infections.
- Stop exercising if angina, premature ventricular contractions or excessive breathlessness occurs.
- Seek a physical examination and written instructions for specific exercise restrictions before onset of an exercise program.
- Engage in brisk walking for 10–15 minutes to tone the extremities and provide aerobic activity for older adults.
- Older adults may perform both strenuous and less strenuous activities. Activities may range from gardening to chair-based exercises and Tai Chi.

Integumentary system interventions

The major risk to the skin from restricted mobility is the formation of pressure ulcers (Coleman et al 2013). Nursing interventions therefore focus on preventing or treating these ulcers (see Chapter 26). Early identification of high-risk patients and their risk factors helps the nurse prevent pressure ulcers. Interventions aimed at prevention are positioning, skin care and the use of therapeutic devices to relieve pressure. The immobilised patient's position should be changed according to the patient's activity level, perceptual ability, treatment protocols and daily routines. Although turning every 1–2 hours is recommended for preventing ulcers, it may also be necessary to use devices for relieving pressure. The time that a patient sits uninterrupted in a chair should be limited to 1 hour or less, but this time interval is individualised. The patient should be repositioned frequently because uninterrupted pressure will cause skin breakdown.

Elimination system interventions

The nursing interventions for maintaining optimal urinary functioning are directed at keeping the patient well hydrated and preventing urinary stasis, calculi and infections without causing bladder distension.

Adequate hydration helps prevent **renal calculi** and UTIs. The well-hydrated patient should void a large amount of dilute urine that is approximately equal to fluid intake. If the patient is incontinent, the nurse should modify the care plan to include toileting aids and a hygiene schedule so that the increased urinary output does not cause skin breakdown.

To prevent bladder distension, nurses assess the frequency and amount of urinary output. A patient who continually dribbles urine and whose bladder is distended may have reflex incontinence. If the immobilised patient does not have voluntary control of bladder elimination, bladder re-training may be necessary. If the patient experiences bladder distension, the nurse may be required to insert a straight catheter or an indwelling Foley catheter (see Chapter 33).

Nurses can also record the frequency and consistency of bowel movements; constipation is common in immobile patients. A diet rich in fluids, fruits, vegetables and fibre can facilitate normal peristalsis. If a patient is unable to maintain regular bowel patterns, a medical prescription for stool softeners, cathartics or enemas may be indicated (see Chapter 32).

Psychosocial changes

Assessment can identify effects of prolonged immobilisation on the patient's psychosocial dimension. People who have a tendency towards depression or mood swings are at greater risk of developing psychosocial effects during bed rest or immobilisation. There are many nursing interventions to meet the patient's psychosocial needs.

Nurses should anticipate changes in the patient's psychosocial status. They must also provide stimuli to maintain orientation. A daily newspaper helps the patient keep track of events and time. Diversional activities such as reading, music, television and DVDs can be used to provide stimulation and help pass the time.

Positioning techniques

Patients with impaired nervous, skeletal or muscular system functioning and increased weakness often require help from the nurse to attain proper body alignment while in bed or sitting. Several positioning devices are available for maintaining good body alignment for patients (summarised in Table 28-5).

TABLE 28-5 Devices used for proper positioning

Devices	Uses and descriptions
Abduction or wedge pillow	Triangular-shaped pillows made of heavy foam Used following total hip replacement surgery to ensure the new hip joint remains in abduction and flexion (Figure 28-19)
Bed boards	Plywood boards placed under the entire surface area of the mattress Useful for increasing back support and alignment, especially with a soft mattress
Hand rolls	Foam-filled rolls of various shapes/sizes Maintain the thumb slightly adducted and in opposition to the fingers; maintain fingers in a slightly flexed position. The nurse evaluates the position of the hand roll to make certain the hand is indeed in a functional position
Hand–wrist splints	Individually moulded splints; should be used only for the patient for whom the splint was made Maintain proper alignment of the thumb in slight adduction and the wrist in slight dorsiflexion
Footboard	Board placed perpendicular to mattress, parallel to and touching plantar surfaces of patient's feet Used to prevent footdrop by maintaining feet in dorsiflexion
Foot boots	Boots made of rigid plastic or heavy foam which keep the foot flexed at the proper angle Used to maintain feet in dorsiflexion Foot boots should be removed two or three times a day to assess skin integrity and joint mobility
Pillows	Readily available in most healthcare facilities, including the home Should be of appropriate size for the body part to be positioned Pillows provide support, elevate body parts and can splint incisional areas, reducing postoperative pain during activity or coughing and deep-breathing

continued

TABLE 28-5 ***continued***

Devices	Uses and descriptions
Sandbags	Filled plastic tubes that can be shaped to body contours; can be used in place of, or in addition to, trochanter rolls Provide support and shape to body contours, immobilise extremities and maintain specific body alignment
Side rails	Bars positioned along the sides of the length of the bed Ensure patient safety and are useful for increasing mobility. In addition, they provide assistance in rolling from side to side or sitting up in bed
Trapeze bar	Bar descending from a securely fastened overhead bar attached to the bed frame (Figure 28-18) Allows patient to use upper extremities to raise the trunk off the bed, to assist in transfer from bed to wheelchair or to perform upper-arm strengthening exercises
Trochanter rolls	A cotton bath blanket or a sheet folded lengthwise to a width extending from the greater trochanter of the femur to the lower border of the popliteal space (Figure 28-17). The blanket is placed under the buttocks and then rolled away from the patient until the thigh is in the neutral position or an inward position with the patella facing upwards Used to prevent external rotation of legs when patients are in the supine position

Pillows are a positioning aid that may or may not be readily available. Before using a pillow it should be assessed to determine whether it is the proper size. A thick pillow under the patient's head increases cervical flexion. A thin pillow under body prominences may be inadequate to protect skin and tissue from damage caused by pressure. When additional pillows are unavailable, or if they are an incorrect size, folded sheets, blankets or towels can be used as positioning aids. The 30-degree lateral position is recommended for patients at risk of pressure ulcer development.

A footboard is placed perpendicular to the mattress, parallel to and touching the plantar surfaces of the patient's feet. The footboard prevents footdrop by maintaining the feet in dorsiflexion. After placing it on the bed, the nurse needs to determine that it is correctly placed, with the patient's feet placed firmly against the board. Another common technique is the use of high-top tennis shoes or an ankle–foot orthotic to help maintain dorsiflexion.

A trochanter roll prevents external rotation of the hips when the patient is in a supine position. To form a trochanter roll, a cotton bath blanket is folded lengthwise to a width that will extend from the greater trochanter of the femur to the lower border of the popliteal space (see Figure 28-17). The blanket is placed under the buttocks and then rolled counter-clockwise until the thigh is in neutral position or in inward rotation. When correct alignment of the hip is achieved, the patella faces directly upwards. Sandbags are sand-filled plastic tubes or bags that can be shaped to body contours. Sandbags can be used in place of or in addition to trochanter rolls. They immobilise an extremity or maintain body alignment.

Hand rolls maintain the thumb in slight adduction and in opposition to the fingers. A hand roll maintains the hand, thumb and fingers in a functional position. Nursing assessment will include evaluating the hand roll to make sure that the hand is indeed in a functional position. Hand rolls are most often used for patients whose arms are paralysed or who are unconscious. Rolled washcloths should not be used as hand rolls, since they do not keep the thumb well abducted, especially in patients who have a spastic paralysis.



Figure 28-17 Trochanter roll.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Hand–wrist splints are individually moulded for the patient to maintain proper alignment of the thumb (slight adduction) and the wrist (slight dorsiflexion). These splints should be used only by the patient for whom the splint was made.

The trapeze bar is a triangular device that descends from a securely fastened overhead bar that is attached to the bed frame. It allows the patient to pull with the upper extremities to raise the trunk off the bed, to assist in transfer from bed to wheelchair or to perform upper-arm exercises (see Figure 28-18). It is a useful device for helping to increase independence, maintain upper body strength and decrease the shearing action from sliding across or up and down in bed.

Although each procedure for positioning has specific guidelines, there are some universal steps that best nursing practice should follow for patients who require positioning



Figure 28-18 Patient using a trapeze bar.

Hoffman-Wold G 2008 Basic Geriatric nursing. Mosby, St Louis.

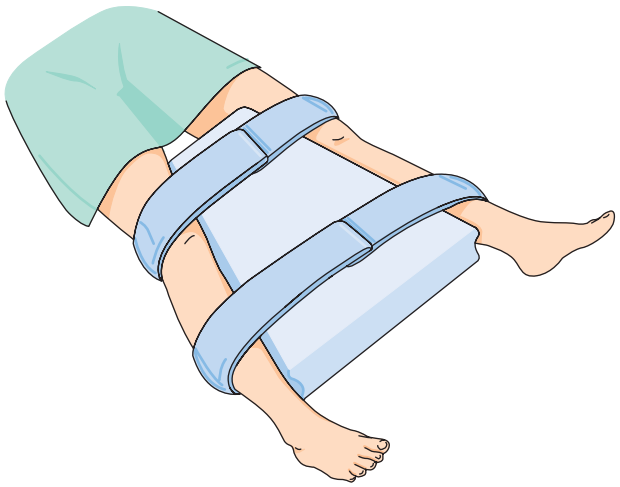


Figure 28-19 Abduction pillow used after total hip replacement.

Beare PG, Myers JL 1998 Adult health nursing, 3rd edn. Mosby, St Louis.

assistance (Skill 28-3). Following the guidelines reduces the risk of injury to the musculoskeletal system when the patient is sitting or lying. When joints are unsupported, their alignment is impaired. Likewise, if joints are not positioned in a slightly flexed position, their mobility is decreased. During positioning, the nurse also assesses for pressure points. When actual or potential pressure areas exist, nursing interventions involve removal of the pressure, thus decreasing the risk of development of pressure ulcers and further trauma to the musculoskeletal system. In these patients the 30-degree lateral position should be used when possible. A further consideration is maintaining the optimum position of the patient. Once the nurse has positioned the patient consideration needs to be given to the potential of the patient compromising the position, such as through slouching. Although at all times the nurse needs to encourage the patient to move where possible, the nurse also needs to consider the possible impact on the patient if the patient compromises their positioning. An example of this is the patient sliding down the bed after being positioned in a supported Fowler's position. This could result in slouching, which can restrict the lungs and breathing, and ultimately result in a decrease in tissue oxygenation.

SUPPORTED FOWLER'S POSITION In the supported Fowler's position the head of the bed is elevated 45–60 degrees and

SKILL 28-3

Positioning patients in bed

Delegation considerations

The task of moving and positioning patients in bed can be delegated to assistants. A risk assessment should be conducted on all patients requiring assistance with positioning. A 'no-lift' policy has been implemented in most facilities. Equipment such as lifting machines should be used whenever repositioning poses a risk to the patient and to the staff.

Equipment

- Slide sheets
- Pillows
- Other support devices as necessary (e.g. hand splints, sandbags, wedge pillows, trochanter rolls)
- Lifting devices if required

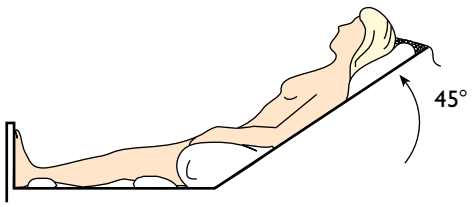
Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Assess patient's body alignment and comfort level while patient is lying down.	Provides baseline data for later comparisons. Determines ways to improve position and alignment.
2. Assess for risk factors that may contribute to complications of immobility:	Increased risk factors require patient to be repositioned more frequently.
• Paralysis: hemiparesis resulting from stroke; decreased sensation	Paralysis impairs movement; muscle tone changes; sensation is affected. Because of difficulty in moving and poor awareness of involved body part, patient is unable to protect and position body part for self.
• Impaired mobility: traction or arthritis or other contributing disease processes	Traction or arthritic changes of affected extremity result in decreased range of joint motion.
• Impaired circulation	Decreased circulation predisposes patient to pressure injury.
• Age: very young, older adults	Premature and young infants require frequent turning because their skin is fragile. Normal physiological changes associated with ageing predispose older adults to greater risks of developing complications of immobility.
• Patient's level of consciousness	Determines need for special aids or devices. Patients with altered levels of consciousness may not understand instructions and may be unable to help.
3. Assess patient's physical ability to help with moving and positioning.	Enables nurse to use patient's mobility and strength. Determines need for additional help. Ensures patient and nurse safety.
4. Explain procedure to patient.	Helps to decrease anxiety and increase cooperation.
5. Adjust the bed height to between mid-thigh and hip height.	Raises level of work towards nurse's centre of gravity.
6. Remove all pillows and devices used in previous position.	Reduces interference from bedding during positioning procedure.
7. Get extra help as needed.	Provides for patient and nurse safety.
8. Position patient in bed.	
A. Patient-assisted bed slide (one nurse):	
(1) Place patient supine with head of bed flat.	Enables nurse to assess body alignment. Reduces gravity's pull on patient's upper body.
(2) Remove pillow from under head and shoulders and place pillow at head of bed.	Prevents striking patient's head against head of bed.
(3) Ask or assist the patient to fold his or her arms across the chest.	

STEPS	RATIONALE
(4) Fold a slide sheet in half and tuck under the patient's shoulders and hips with the fold facing towards the patient's feet.	Slide sheets reduce friction and reduce the force required to move the patient.
(5) Ask or assist the patient to roll to the side to pull the slide sheet into position.	
(6) Have the patient roll back to supine position and bend their knees.	
(7) Stand at the end of the bed and support the patient's feet.	
(8) Ask the patient to extend the legs while holding the feet against the mattress. The patient will push himself or herself up the bed.	Where possible, patients should be encouraged to move themselves.
B. Bed slide (two nurses):	
(1) Place patient supine with head of bed flat.	Enables nurse to assess body alignment. Reduces gravity's pull on patient's upper body.
(2) Remove pillow from under head and shoulders and place pillow at head of bed.	Prevents striking patient's head against head of bed.
(3) Ask or assist the patient to fold his or her arms across the chest.	
(4) Tuck two slide sheets (on top of each other) under the length of the patient's body.	Slide sheets reduce friction and reduce the force required to move the patient.
(5) Ask or assist the patient to cross their legs (i.e. if rolling to the left, cross right over left). Roll the patient to the side and pull the slide sheet into position over the mattress.	
(6) Roll the patient back to a supine position.	
(7) Stand at the top end of the bed corners and gather the ends of the top slide sheet with palms down.	Face in the direction of movement to prevent spinal twisting.
(8) In a controlled manner and with arms straight, both nurses should lunge backwards on the count of three, transferring weight from the front foot to the back foot, moving the patient towards the head of the bed.	Assuming a broad stance increases stability and balance. Use of large muscle groups and shifting weight reduces the force needed to move load.
(9) Tuck the slide sheets under the patient and pull them out from beneath the patient. Replace pillows and position the patient to a position of comfort and safety.	

STEPS	RATIONALE
C. Position patient in supported semi-Fowler's position (see illustration):	
(1) Elevate head of bed 45–60 degrees.	Increases comfort, improves ventilation and increases patient's opportunity to socialise or relax.
(2) Rest head against mattress or on small pillow.	Prevents flexion contractures of cervical vertebrae.
(3) Use pillows to support arms and hand if patient does not have voluntary control or use of hands and arms.	Prevents shoulder dislocation from effect of downward pull of unsupported arms, promotes circulation by preventing venous pooling and prevents flexion contractures of arms and wrists.
(4) Position pillow at lower back.	Supports lumbar vertebrae and decreases flexion of vertebrae.
(5) Place small pillow or roll under thigh.	Prevents hyperextension of knee and occlusion of popliteal artery from pressure from bodyweight.
(6) Place small pillow or roll under ankles.	Prevents prolonged pressure of mattress on heels.

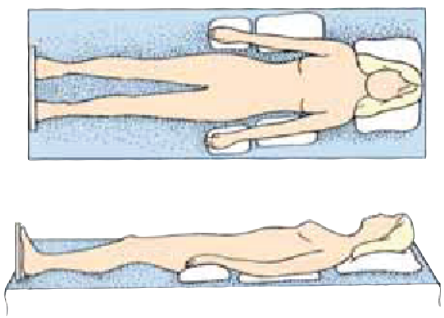


Step 8C(6) Supported semi-Fowler's position.

■ **Critical decision point: To keep feet in proper alignment, place footboard at bottom of patient's feet.**

D. Position hemiplegic patient in supported semi-Fowler's position:	
(1) Elevate head of bed 45–60 degrees.	Increases comfort, improves ventilation and increases patient's opportunity to relax.
(2) Position patient in sitting position as straight as possible, with support for affected shoulder.	Counteracts tendency to slump towards affected side. Improves ventilation and cardiac output; decreases intracranial pressure. Improves patient's ability to swallow and helps to prevent aspiration of food, liquids and gastric secretions.
(3) Position head on small pillow with chin slightly forwards. If patient is totally unable to control head movement, hyperextension of the neck must be avoided.	Prevents hyperextension of neck. Too many pillows under head may cause or worsen neck flexion contracture.
(4) Provide support for involved arm and hand on overbed table in front of patient. If transfer is to wheelchair, arms of chair can provide support. Place arm away from patient's side and support elbow with pillow.	Paralysed muscles do not automatically resist pull of gravity as they do normally. As a result, shoulder subluxation, pain and oedema may occur.

STEPS	RATIONALE
(a) Position flaccid hand in normal resting position with wrist slightly extended, arches of hand maintained and fingers partially flexed; may use section of rubber ball cut in half; clasp patient's hands together.	Maintains hand in functional position. Prevents contractures.
(b) Position spastic hand with wrist in neutral position or slightly extended; fingers should be extended with palm down or may be left in relaxed position with palm up.	Maintains hand in functional position. Inhibits flexor spasticity.
(5) Flex knees and hips by using pillow or folded blanket under knees.	Ensures proper alignment. Flexion prevents prolonged hyperextension, which could impair joint mobility.
(6) Support feet in dorsiflexion with firm pillow or footboard.	Prevents footdrop. Stimulation of ball of foot by hard surface has tendency to increase muscle tone in patient with extensor spasticity of lower extremity.
E. Position patient in supine position:	
(1) Place patient on back with head of bed flat.	Necessary for placing patient in supine position.
(2) Place small rolled towel under lumbar area of back.	Provides support for lumbar spine.
(3) Place pillow under upper shoulders, neck or head.	Maintains correct alignment and prevents flexion contractures of cervical lumbar spine.
(4) Place trochanter rolls or sandbags parallel to lateral surface of patient's thighs.	Reduces external rotation of hip.
(5) Place small pillow or roll under ankle to elevate heels.	Reduces pressure on heels, helping to prevent pressure sores.
(6) Support feet in dorsiflexion with firm pillow or footboard.	Prevents footdrop.
(7) Place pillows under pronated forearms, keeping upper arms parallel to patient's body (see illustrations).	Reduces internal rotation of shoulder and prevents extension of elbows. Maintains correct body alignment.

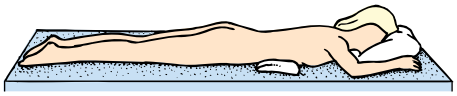




Step 8E(7) Supine position with supporting pillows.

STEPS	RATIONALE
(8) Place hand rolls in patient's hands. Consider physical therapy referral for use of hand splints.	Reduces extension of fingers and abduction of thumb. Maintains thumb slightly adducted and in opposition to fingers.
F. Position hemiplegic patient in supine position:	
(1) Place head of bed flat.	Necessary for positioning in supine position.
(2) Place folded towel or small pillow under shoulder or affected side.	Decreases possibility of pain, joint contracture and subluxation. Maintains mobility in muscles around shoulder to permit normal movement patterns.
(3) Keep affected arm away from body with elbow extended and palm up. (Alternative is to place arm out to side, with elbow bent and hand towards head of bed.)	Maintains mobility in arm, joints and shoulder to permit normal movement patterns. (Alternative position counteracts limitation of ability of arm to rotate outwards at shoulder (external rotation). External rotation must be present to raise arm overhead without pain.)
(4) Place folded towel under hip of involved side.	Diminishes effect of spasticity in entire leg by controlling hip position. Slight flexion breaks up abnormal extension pattern of leg. Extensor spasticity is most severe when patient is supine.
(5) Support feet with soft pillows at right-angle to leg, and keep heels off bed or use heel protectors.	Maintains foot in dorsiflexion and prevents footdrop. Pillows prevent stimulation to ball of foot by hard surface, which has tendency to increase muscle tone in patient with extensor spasticity extremity.
G. Position patient in prone position:	
(1) Roll patient over arm positioned close to body, with elbow straight and hand under hip. Position on abdomen in centre of bed.	Positions patient correctly so alignment can be maintained.
(2) Turn patient's head to one side and support head with small pillow (see illustration).	Reduces flexion or hyperextension of cervical vertebrae.
(3) Place small pillow under patient's abdomen below level of diaphragm (see illustration).	Reduces pressure on breasts of some female patients and decreases hyperextension of lumbar vertebrae and strain on lower back. Improves breathing by reducing mattress pressure on diaphragm.
(4) Support arms in flexed position level at shoulders.	Maintains proper body alignment. Support reduces risk of joint dislocation.
(5) Support lower legs with pillow to elevate toes (see illustration).	Reduces external rotation of legs and mattress pressure on toes.

STEPS	RATIONALE



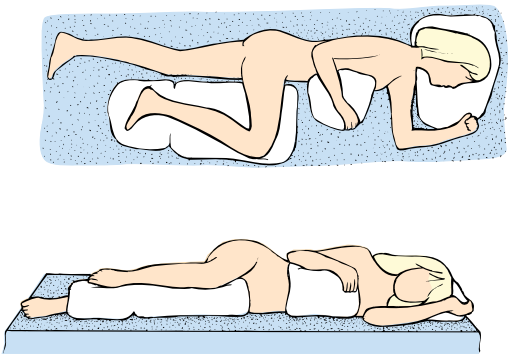
Step 8G(2 & 3) Placement of pillows under head and abdomen.



Step 8G(5) Placement of pillows to support lower legs.

H. Position hemiplegic patient in prone position:	
(1) Move patient towards unaffected side.	Ensures proper patient alignment in centre of bed when patient is rolled onto abdomen.
(2) Roll patient onto side.	
(3) Place pillow on patient's abdomen.	Prevents sagging of abdomen when patient is rolled over; decreases hyperextension of lumbar vertebrae and strain on lower back.
(4) Roll patient onto abdomen by positioning involved arm close to patient's body, with elbow straight and hand under hip. Roll patient carefully over arm.	Prevents injury to affected side.
(5) Turn head towards involved side.	Promotes development of neck and trunk extension, which is necessary for standing and walking.
(6) Position involved arm out to side, with elbow bent, hand towards head of bed and fingers extended (if possible).	Counteracts limitation of arm's ability to rotate outwards at shoulder (external rotation). External rotation must be present to raise arm over head without pain.
(7) Flex knees slightly by placing pillow under legs from knees to ankles.	Flexion prevents prolonged hyperextension, which could impair joint mobility.
(8) Keep feet at right-angle to legs by using pillow high enough to keep toes off mattress.	Maintains feet in dorsiflexion.
I. Position patient in lateral (side-lying) position:	
(1) Lower head of bed completely or as low as patient can tolerate.	Provides position of comfort for patient and removes pressure from bony prominence on back.
(2) Position patient supine towards side of bed.	Provides room for patient to turn to side.

STEPS	RATIONALE
Critical decision point: Patients at risk of pressure ulcer development require the 30-degree lateral position.	
(3) Roll patient onto side towards nurse by flexing patient's knees and placing one hand on patient's hip and one hand on patient's shoulder.	Client is positioned so leverage on hip makes turning easy. Rolling patient towards nurse lessens trauma to tissues.
(4) Place pillow under patient's head and neck.	Maintains alignment. Reduces lateral neck flexion. Decreases strain on sternocleidomastoid muscle.
(5) Bring shoulder blade forward.	Prevents patient's weight from resting directly on shoulder joint.
(6) Position both arms in slightly flexed position. Upper arm is supported by pillow level with shoulder; other arm, by mattress.	Decreases internal rotation and adduction of shoulder. Supporting both arms in slightly flexed position protects joint. Ventilation is improved because chest is able to expand more easily.
(7) Place tuck-back pillow behind patient's back. (Make by folding pillow lengthwise. Smooth area is slightly tucked under patient's back.)	Provides support to maintain patient on side.
(8) Place pillow under semiflexed upper leg level at hip from groin to foot (see illustrations).	Flexion prevents hyperextension of leg. Maintains leg in correct alignment. Prevents pressure on bony prominence.
(9) Place sandbag parallel to plantar surface of dependent foot.	Maintains dorsiflexion of foot. Prevents footdrop.

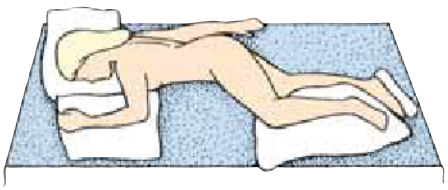




Step 8I(8) Side-lying patient with pillows in place.

J. Position patient in Sims' (semi-prone) position:	
(1) Lower head of bed completely.	Provides for proper body alignment while patient is lying down.
(2) Place patient in supine position.	Prepares patient for position.

STEPS	RATIONALE
(3) Position patient in lateral position, lying partially on abdomen.	Patient is rolled only partially on abdomen.
(4) Place small pillow under patient's head.	Maintains proper alignment and prevents lateral neck flexion.
(5) Place pillow under flexed upper arm, supporting arm level with shoulder.	Prevents internal rotation of shoulder. Maintains alignment.



Step 8J(7) Sims' (semi-prone) position with pillows and sandbag in place.

(6) Place pillow under flexed upper legs, supporting leg level with hip.	Prevents internal rotation of hip and adduction of leg. Flexion prevents hyperextension of leg. Reduces mattress pressure on knees and ankles.
(7) Place sandbags parallel to plantar surface of foot (see illustration).	
9. Perform hand hygiene.	Reduces transmission of infection.
10. Lower bed and raise side rails.	Provides for patient safety.
11. Observe patient's body alignment, position and level of comfort.	Determines effectiveness of positioning. Additional supports (e.g. pillows, bath blankets) may be added or removed to promote comfort and correct body alignment.
12. Assess for areas of erythema or breakdown involving skin.	Provides ongoing observation regarding patient's skin and musculoskeletal systems. Indicates complications of immobility or improper positioning of body part.

RECORDING AND REPORTING

- Record each position change, including amount of assistance needed and patient's response and tolerance.
- Record and report any signs of pressure injury in areas such as over bony prominences.

HOME CARE CONSIDERATIONS

- For patients who need positioning at home, teach family the importance of body mechanics for themselves and the patient.
- Teach family about the signs of skin breakdown and the importance of safety during positioning for patients with decreased sensation.

the patient's knees are slightly elevated without pressure to restrict circulation in the lower legs. The angle of head and knee elevation and the length of time that the patient should remain in the supported Fowler's position are influenced by the patient's illness and overall condition. Supports must permit flexion of the hips and knees and proper alignment of the normal curves in the cervical, thoracic and lumbar vertebrae.

SUPINE POSITION The supine position, in which the patient rests on the back, is also called the dorsal recumbent position. In the supine position the relationship of body parts is essentially the same as in good standing alignment, except that the body is in the horizontal plane. Pillows, trochanter rolls and hand rolls or arm splints are used to increase comfort and reduce injury to the skin or musculoskeletal system. The mattress should be firm enough to support the cervical, thoracic and lumbar vertebrae. Shoulders are supported, and the elbows are slightly flexed to control shoulder rotation. A foot support is used to prevent footdrop and maintain proper alignment.

PRONE POSITION The prone position is lying face or chest down. Often the patient's head is turned to the side, but if a pillow is under the head it should be thin enough to prevent cervical flexion or extension and maintain alignment of the lumbar spine. Placing a pillow under the lower leg permits dorsiflexion of the ankles and some knee flexion, which promotes relaxation. If a pillow is unavailable, the ankles should be in dorsiflexion over the end of the mattress.

SIDE-LYING POSITION In the side-lying (or lateral) position, the patient is resting on the side with the major portion of bodyweight on the dependent hip and shoulder. Therefore, in patients at risk of pressure ulcers, a 30-degree lateral position may be used (see Chapter 26). Trunk alignment should be the same as in standing. For example, the structural curves of the spine should be maintained, the head should be supported in line with the midline of the trunk, and rotation of the spine should be avoided.

SIMS' POSITION Sims' position differs from the side-lying position in the distribution of the patient's weight. In Sims' position the weight is placed on the anterior ilium, humerus and clavicle.

Transfer techniques

Nurses often provide care for immobilised patients whose position must be changed, who must be moved up in bed or who must be transferred from a bed to a chair or from a bed to a stretcher. Use of proper body mechanics enables nurses to move or transfer patients safely and also minimises risk of injury. Although nurses use many transfer techniques, the following general guidelines should be followed in any transfer procedure:

- Raise the side rail on the side of the bed opposite to the nurse to prevent the patient from falling out of bed.
- Elevate the level of the bed to a comfortable height.
- Assess the patient's mobility and strength to determine what help the patient can offer during transfer.
- Determine the need for assistance.
- Explain the procedure and describe what is expected of the patient.
- Assess for correct body alignment and pressure areas after each transfer.

Moving a completely immobilised patient alone is difficult and dangerous. The nurse who is attempting transfer or moving techniques for the first time should request help to reduce the risk of injury to the patient and nurse. It is important to be aware of lifting and transferring policies in different states and healthcare agencies – Victoria, for example, has manual handling principles and the Australian Nursing Federation has a no-lift policy.

MOVING PATIENTS Patients require various levels of assistance to move up in bed, move to the side-lying position or sit up at the side of the bed. For example, a young, healthy woman may need only a little support as she sits at the side of the bed for the first time after childbirth, whereas an older man may need help from one or more nurses to do the same task 1 day after abdominal surgery. Nurses should always enlist the patient's help to the fullest extent possible. To determine what the patient is able to do alone and how many people are needed to help move the patient in bed, a nursing assessment of the patient is done to determine whether the illness contradicts exertion (e.g. cardiovascular disease). Next, it is important to determine whether the patient comprehends what is expected of them. For example, a patient recently medicated for postoperative pain may be too lethargic to understand instruction, so to ensure safety two nurses are needed to move the patient in bed. Best nursing practice determines the comfort level of the patient, and also evaluates the patient's personal strength and knowledge of the procedure. Finally, as a part of the nursing assessment, a clinical decision is made about whether the patient is too heavy or immobile for a nurse to complete the procedure alone. In doubtful cases nurses should always request assistance from another person. Always use lifting aids. Skills 28-3 and 28-4 describe the steps commonly used in moving patients in bed and transferring them to a sitting position at the side of the bed.

TRANSFERRING A PATIENT FROM A BED TO A CHAIR Transfer of a patient from a bed to a chair by one nurse requires assistance from the patient and should not be attempted with a patient who cannot help (see Skill 28-4).

The procedure is explained to the patient before the transfer. Moving obstacles out of the way also prepares the environment. The chair is placed next to the bed with the chair back in the same plane as the head of the bed. Placement of the chair allows the nurse to pivot with the patient and to transfer the patient's weight quickly. A safe transfer is the first priority. The nurse who is doubtful about personal strength or the patient's ability to help should request assistance. Often a hydraulic lift can be used to transfer patients (see Skill 28-4). The patient should sit and dangle the feet over the side of the bed for a minute before standing. The patient should then stand at the side of the bed for another minute, so that the patient can quickly be lowered back into bed in case of dizziness or fainting.

When moving an immobilised patient from a bed to a wheelchair, nurses must use proper body mechanics. If a patient has an immobile lower extremity from a cast or paralysis, the transfer should be towards the unaffected leg. A lifting device should be used.

TRANSFERRING A PATIENT FROM A BED TO A STRETCHER An immobilised patient who must be transferred from a bed to a stretcher or from a bed to another bed requires the use of a transfer board and slide

SKILL 28-4

Transfer techniques

Delegation considerations

The task of moving and positioning patients in bed can be delegated to assistants. A risk assessment should be conducted on all patients requiring assistance with positioning. A 'no-lift' policy has been implemented in most facilities. Equipment such as lifting machines should be used whenever repositioning poses a risk to the patient and to the staff.

Equipment

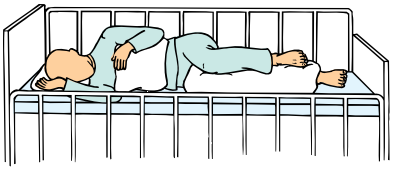
- Transfer belt (if needed), sling or lap board (as needed), non-skid shoes, bath blankets, pillows, lifting equipment when necessary
- Wheelchair: position chair at 45-degree angle to bed, lock brakes, remove footrests, lock bed brakes
- Stretcher: position at right-angle (90 degrees) to bed, lock brakes on stretcher, lock brakes on bed
- Mechanical/hydraulic lift: use frame, canvas strips or chains, and hammock or canvas strips

Therapeutic relationship and patient considerations

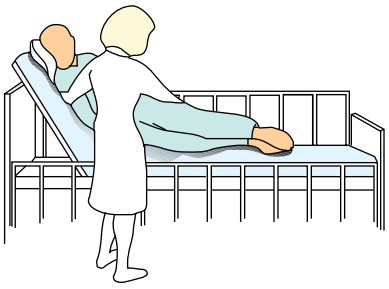
- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Assess the patient for the following: • Muscle strength • Joint mobility • Presence of paralysis or paresis • Orthostatic hypotension • Activity tolerance • Level of consciousness • Level of comfort • Ability to follow instructions	Provides information relative to patient's abilities, physical status, ability to comprehend, and the number of people needed to provide safe transferral.
2. Identify patients at greatest risk of problems with transferral.	Provides information relative to patients who may require intervention beyond the care provider (e.g. physiotherapy department).
3. Explain procedure to patient.	Promotes cooperation, encourages assistance and enhances understanding of procedure.
4. Close door or curtain.	Maintains privacy.
5. Perform hand hygiene.	Reduces transfer of microorganisms.
6. **Transfer patient**	
A. Assisting patient into sitting position on side of bed:	
(1) With patient in supine position, raise head of bed 30 degrees.	Decreases amount of work needed by patient and nurse to raise patient to sitting position.

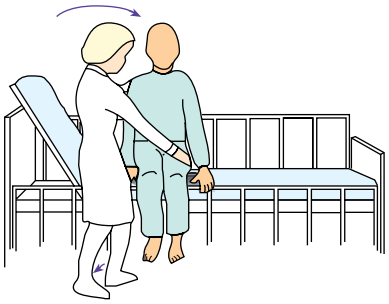
STEPS	RATIONALE
(2) Where possible, patients should be encouraged to move themselves into position or assist as much as possible.	
(3) Turn patient to side, facing nurse on side of bed on which patient will be sitting (see illustration).	Prepares patient to move to side of bed and protects patient from falling.
(4) Stand opposite patient's hips. Turn diagonally so that nurse faces patient and far corner of foot of bed.	Places nurse's centre of gravity nearer patient. Reduces twisting of nurse's body because nurse is facing direction of movement.
(5) Place feet apart with foot closer to head of bed in front of other foot.	Increases balance and allows nurse to transfer weight as patient is brought to sitting position on side of bed.
(6) Place arm nearer head of bed under patient's shoulder, supporting head and neck.	Maintains alignment of head and neck as nurse brings patient to sitting position.
(7) Place other arm over patient's thighs (see illustration).	Supports hip and prevents patient from falling backwards during procedure.
(8) Move patient's lower legs and feet over side of bed. Pivot towards rear leg, allowing patient's upper legs to swing downwards.	Decreases friction and resistance. Weight of patient's legs when off bed provides gravity to lower legs, and weight of legs helps pull upper body into sitting position.
(9) At same time, shift weight to rear leg and elevate patient (see illustration).	Allows nurse to transfer weight in direction of motion.
(10) Remain in front of patient until patient regains balance.	Reduces risk of falling.



Step 6A(3) Patient lying on side, facing nurse.



Step 6A(7) Placement of nurse's arms to support patient.



Step 6A(9) Nurse shifting weight to rear leg to elevate patient safely.

B. Transfer patient from bed to chair:	
(1) Adjust the bed slightly higher than the chair. Assist patient to sitting position on side of bed. Have chair in position at 45-degree angle to bed and ensure brakes are on.	Positions chair within easy access for transfer.

STEPS	RATIONALE
(2) Apply transfer belt or other transfer aids, if needed.	Transfer belt allows nurse to maintain stability of patient during transfer and reduces risk of falling. Patient's arm should be in sling if flaccid paralysis is present.
Critical decision point: If patient has immobile lower leg (i.e. cast, paralysis), transfer towards the stronger leg.	
(3) Ensure that patient has stable, non-skid shoes. Weightbearing, or stronger, leg is placed forwards, with weaker foot back.	Non-skid soles decrease risk of slipping during transfer. Always have patients wear shoes during transfer; bare feet increase risk of falls. Patient will stand on weightbearing, or stronger, leg.
(4) Spread feet apart.	Ensures balance with wide base of support.
(5) Flex hips and knees, aligning feet and knees with patient's feet (see illustration).	Flexion of knees and hips lowers nurse's centre of gravity to object to be raised; aligning knees with patient's allows for stabilisation of knees when patient stands.
(6) Grasp transfer belt from underneath, if used, or reach through patient's axillae and place hands on patient's scapulae.	Transferring patient with hands on scapulae reduces pressure on axillae and maintains patient stability. Patients with upper-extremity paralysis or paresis should never be lifted by or under arms. Transfer belt is grasped at each side to provide movement of patient at centre of gravity.
(7) Rock patient up to standing position on count of three while straightening hips and legs and keeping knees slightly flexed (see illustration). Patient is instructed to use hands to push up if possible.	Rocking motion gives patient's body momentum and requires less muscular effort to transfer patient.
(8) Maintain stability of patient's weak or paralysed leg with knee.	Ability to stand can often be maintained in paralysed or weak limb with support of knee to stabilise.
(9) Pivot on foot further from chair.	Maintains support of patient while allowing adequate space for patient to move.
(10) Instruct patient to use armrests on chair for support and ease themselves into chair (see illustration).	Increases patient stability.
(11) Flex hips and knees while lowering patient into chair (see illustration).	Prevents injury to nurse from poor body mechanics.
(12) Assess patient for proper alignment for sitting position. Provide support for paralysed extremities. Lap board or sling will support flaccid arm. Stabilise leg with bath blanket or pillow.	Prevents injury to patient from poor body alignment.

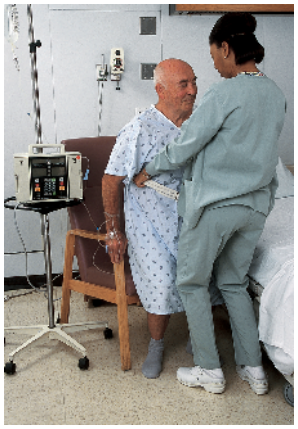
STEPS	RATIONALE



Step 6B(5) Position of flexed hips and knees.



Step 6B(7) Rock patient up to standing position.



Step 6B(10) Patient uses armrests for support while being lowered.



Step 6B(11) Flexion of hips and knees to lower patient.

(13) Praise patient's progress, effort, performance.	Continued support and encouragement provide incentive for patient perseverance.
C. Use mechanical/hydraulic lift to transfer patient from bed to chair (two nurses):	
(1) Bring lift to bedside. Before using lift, be thoroughly familiar with its operation.	
(2) Position chair near bed and allow adequate space to manoeuvre hoist.	Prepares environment for safe use of lift and subsequent transfer.
(3) Raise bed to safe working height with mattress flat. Lower side rails.	Allows nurse to use proper body mechanics.

■ **Critical decision point: Assess all tubes, making sure that they will not be inadvertently pulled, tangled or strained during transfer.**

(4) Roll patient laterally towards one nurse.	Positions patient for use of lift sling.
(5) Place sling evenly under patient's back (follow manufacturer's guidelines for correct positioning of the sling) and then roll patient to opposite side to position sling.	Place sling under patient's centre of gravity and greatest portion of bodyweight.
(6) Roll patient supine on sling and position hoist over patient. Lower boom and attach sling to frame with the head end attached first. Raise patient's knees and feed the leg sections of the sling under the thighs and attach to frame.	Sling should extend from shoulders to knees to support patient's bodyweight equally.
(7) Elevate head of bed.	Positions patient in sitting position.
(8) Ask or assist patient to fold their arms over the chest.	To prevent injury during transfer.

STEPS	RATIONALE
(9) Pump hydraulic handle using long, slow, even strokes, or activate electronic hoist until patient is raised off bed ensuring the head is supported (see illustration).	
(10) Use steering handle to pull lift from bed and manoeuvre to chair.	Moves patient from bed to chair.
(11) Slowly lower patient into chair (see illustration).	
(12) Detach sling from frame and remove hoist. Pull leg straps to the side, tilt patient forward to slide out the sling.	Safely guides patient into back of chair as seat descends.
(13) Reposition the patient to a position of comfort and safety.	
7. Perform hand hygiene.	
8. With each transfer, assess patient's tolerance and level of tiredness.	
9. With each transfer, evaluate patient's alignment.	



Step 6C(9) Using mechanical lift to raise patient off bed.



Step 6C(11) Lowering patient into chair.

RECORDING AND REPORTING

- Record each transfer and position change, including amount of assistance needed and patient's response.
- Record and report any signs of pressure injury over areas such as bony prominences.

HOME CARE CONSIDERATIONS

- Teach family the importance of body mechanics for safety of themselves and the patient.

sheet beneath the patient (Figure 28-20). In this technique, nurses need to be on opposite sides of the bed and holding on to the slide sheet when transferring the patient to the stretcher. The stretcher and the bed are placed side by side so that the patient can be transferred quickly and easily using the slide sheet. As with all procedures, safety is the priority. Safety is increased if the team works together in a coordinated way. Therefore one person should assume the leadership role.

Caution is used when the patient has or is suspected of having spinal cord trauma. If the patient must be moved, a transfer board should be placed under them to maintain spinal alignment before transferring the patient to a stretcher (see Figure 28-20). The patient should be prepared for the transfer and asked to help when possible (e.g. by folding arms over the chest). The environment should be free from obstacles, and unnecessary equipment should be removed from the bed.

Restorative care

The goal of restorative care for the patient who is immobile is to maximise functional mobility and independence and reduce residual functional deficits such as impaired gait and decreased endurance. The focus in restorative care is not only on ADLs that relate to physical self-care, but also on *instrumental activities of daily living (IADLs)*. IADLs are activities that are necessary to be independent in society beyond eating, grooming, transferring and toileting, and include such skills as shopping, preparing meals, banking and taking medications.

Many of the same nursing interventions as described in the acute care section above are used, but the emphasis with restorative care is on working collaboratively with patients and their significant others and with other healthcare professionals. The aim is to facilitate the patient's return to maximal functional ability in both ADLs and IADLs so that quality of life is enhanced.

Intensive specialised therapy such as occupational or physiotherapy is common. The patient, if in a restorative or rehabilitation institution, is likely to go to the therapy department two to three times a day. The nurse's role is to work collaboratively with these professionals and reinforce exercises and teaching. For example, after a stroke, a patient is likely to receive gait training from a physiotherapist, speech rehabilitation from a speech therapist and training from an occupational therapist on food preparation or other household chores. The therapy may not be able to restore total functional health, but may help the patient adapt to the mobility limitations or complications.

Restorative care is carried out in a variety of settings for the patient who has mobility limitations. The site of the care depends on the level of care needed, the amount and frequency of care required and the types of care that are available in a geographical area. Extended care refers to a variety of supportive care services provided to patients who have lost the ability for some aspect of self-care. The term 'extended care' is somewhat misnamed, however, since the timeframe for restorative care services that a patient requires may range from several weeks to years. After a total knee replacement, for example, it is not unusual for a patient to move from the acute care setting to a restorative care setting such as a nursing home or a rehabilitation facility, or to a rehabilitative unit at the same hospital where acute care was provided. Restorative care may also take place at home. The patient may go from hospital to nursing home to home, or go directly home from a hospital. The patient may receive care in the home from professionals or make outpatient visits to therapists' offices.

Common restorative interventions focus on regaining mobility. Performing exercises to maintain or regain joint mobility and teaching the use of aids for walking are common restorative nursing interventions. Items frequently used to help adapt to mobility limitations include walkers, walking sticks, wheelchairs, and aids such as toilet seat extenders, reaching sticks, special eating utensils and clothing with Velcro closures.

Range-of-motion exercises

To ensure adequate joint mobility, the nurse can teach the patient about active ROM exercises. When the patient does not have voluntary motor control, the nurse institutes passive ROM exercises. Walking also increases joint mobility. Occasionally patients need to use aids such as crutches or walkers to help them walk.



Figure 28-20

A, Transfer board is placed under a slide sheet beneath the patient. B, Patient is transferred from bed to stretcher using slide sheet and board.

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Patients with restricted mobility are unable to perform some or all ROM exercises independently. This limitation can be identified in patients in whom one extremity has limited movement or in completely immobilised patients. When caring for patients with actual or potential impaired mobility, the nurse designs interventions directed at maintaining maximum joint mobility. One such nursing intervention is ROM exercises.

To ensure that patients routinely receive these exercises the nurse should schedule them at specific times, perhaps with another nursing activity, such as during the patient's hygiene care. This enables the nurse to systematically assess and improve the patient's ROM. In addition, bathing usually requires that extremities and joints be put through complete ROM. The nurse first assesses the patient's ability to engage in active ROM exercises and the need for assistance. In general, exercises should be as active as health and mobility allow. Contractures may develop in joints not moved periodically through their full ROM.

Unless contraindicated, the care plan should include moving the patient's extremities through the fullest ROM possible. Passive ROM exercises should begin as soon as the patient's ability to move the extremity or joint is lost. Movements are carried out slowly and smoothly, just to the point of resistance, and should not cause pain. A joint should never be forced beyond its capacity. Each movement should be repeated at least five times during the session.

When performing passive ROM exercises, the nurse stands at the side of the bed closest to the joint being exercised. If an extremity is to be moved or lifted, the nurse places a cupped hand under the joint to support it (Figure 28-21), supports the joint by holding the adjacent distal and proximal areas (Figure 28-22) or supports the joint with one hand and cradles the distal portion of the extremity with the remaining arm (Figure 28-23).

Helping a patient to walk

In the normal walking posture the head is erect; the cervical, thoracic and lumbar vertebrae are aligned; the hips and knees have appropriate flexion; and the arms swing freely with the legs. Illness or trauma can reduce activity tolerance so that assistance in walking is required. In addition, temporary or permanent damage to the musculoskeletal and nervous systems may necessitate use of an aid for walking.

Like other procedures, helping a patient to walk requires preparation. When a patient's mobility has been restricted, the nurse must assess the patient's activity tolerance, tolerance of the upright position (orthostatic hypotension), strength, presence of pain, coordination and balance to determine the amount of help needed.

The patient is given an indication of the distance they should try to walk, who is going to help, when the walk will take place and why walking is important. In addition, the nurse and patient determine how much independence the patient can assume.

The environment is also checked to be sure that there are no obstacles in the patient's path. Chairs, overbed tables and wheelchairs are cleared out of the way so that the patient has ample room to walk safely. Before starting, rest points should be established in case activity tolerance is less than estimated or the patient becomes dizzy. For example, a chair might be placed in the hall for the patient to rest if needed.



Figure 28-21 Using a cupped hand to support a joint.

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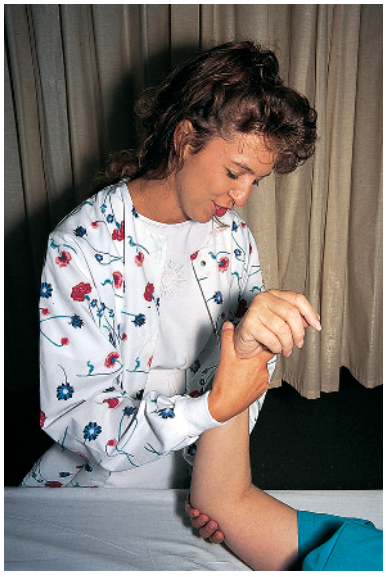

Figure 28-22 Supporting the joint by holding the distal and proximal areas adjacent to the joint.

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Figure 28-23 Cradling the distal portion of an extremity.

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To prevent orthostatic hypotension, the patient should be helped to a position of sitting at the side of the bed and should rest for 1–2 minutes before standing. Likewise, after standing, the patient should remain stationary for 1–2 minutes before moving. The patient's balance must stabilise before walking. A dizzy patient is quickly assisted back to bed. It is important to remember that the longer the period of immobility, the greater the risk of hypotension when the patient stands.

The nurse should provide support at the waist so that the patient's centre of gravity remains midline. This can be achieved when the nurse places both hands at the patient's waist or uses a gait belt; a gait belt encircles the waist and has handles attached for the nurse to hold. While walking, the patient should not lean to one side because this alters the centre of gravity, distorts balance and increases the risk of falling.

A patient who at any point appears unsteady or complains of dizziness should be helped to a nearby bed or chair. If the patient faints or begins to fall, the nurse should assume a wide base of support with one foot in front of the other, thus supporting the bodyweight. Then the nurse should gently lower the patient to the floor, protecting the head. Although lowering a patient to the floor is not difficult, the student should practise this technique with a friend or classmate before attempting it in a clinical setting.

Patients with **hemiplegia** (one-sided paralysis) or **hemiparesis** (one-sided weakness) often need assistance to walk. The nurse always stands on the patient's affected side and supports the patient by holding one arm around the patient's waist (or uses a gait belt once the patient's stability is ensured), with the other arm around the inferior aspect of the patient's upper arm so that the nurse's hand is under the patient's axilla. Providing support by holding the patient's arm is incorrect because the nurse cannot easily support the weight to lower the patient to the floor if the patient faints or falls. In addition, if the patient falls with the nurse holding an arm, a shoulder joint may be dislocated. A two-nurse method helps distribute the patient's weight evenly. The two nurses stand on either side of the patient. Each nurse's near arm is around the patient's waist, and the other arm is around the inferior aspect of the patient's arm, so that both nurses' hands are supporting the patient's axillae.

Using aids for walking

Patients who are recovering from a lengthy illness that has required bed rest and whose mobility is impaired often require walking aids. These include walking sticks, walkers and crutches; the patient and family may need to be taught how to use these aids.

WALKERS Walkers are extremely light, movable devices about waist-high and made of metal tubing (Figure 28-24). They have four widely placed, sturdy legs. The patient holds the handgrips on the upper bars, takes a step, moves the walker forwards and takes another step. There are many variations on this theme.

WALKING STICKS Walking sticks are lightweight, easily movable devices that are about waist high and made of wood or metal. Two common types of walking stick are the single straight-legged walking stick and the four-pronged walking stick. The single straight-legged stick is more common and is used to support and balance a patient with decreased leg strength. This stick should be kept on the stronger side of the body. For maximum support when walking, the patient places the stick forward 15–25 cm, keeping bodyweight on both legs. The weaker leg is moved forwards to the stick so that bodyweight is divided between the stick and the stronger leg. The stronger leg is then advanced past the stick so that the weaker leg and the bodyweight are supported by the stick and weaker leg. The patient must be taught that two points of support, such as both feet or one foot and the stick, are present at all times.



Figure 28-24 Patient using a walker.

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Figure 28-25 Four-pronged stick.

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The four-pronged stick provides the most support and is used when there is partial or complete leg paralysis or some hemiplegia (Figure 28-25). The same three steps that are used with the straight-legged stick are taught to the patient.

CRUTCHES Crutches are often needed to increase mobility. The nurse begins crutch instruction with guidelines for safe use (Box 28-5). The use of crutches may be temporary, such as after ligament damage to the knee. However, a patient with paralysis of the lower extremities may need crutches permanently. A crutch is a wooden or metal staff. The two types of crutches are the double adjustable Lofstrand, or forearm, crutch (Figure 28-26) and the axillary wooden or metal crutch.

BOX 28-5 Patient teaching for crutch safety

Objective

- Patient will state and demonstrate safe crutch walking.

Teaching strategies

- Teach patient with axillary crutches about the dangers of pressure on the axillae, which occurs when leaning on the crutches to support bodyweight.
- Explain why patient must use crutches that were measured for him or her.
- Show patient how to routinely inspect crutch tips. Rubber tips should be securely attached to the crutches. When tips are worn, they should be replaced. Rubber crutch tips increase surface friction and help prevent slipping.
- Explain that the crutch tips should remain dry. Water decreases surface friction and increases the risk of slipping.
- Show patient how to inspect the structure of the crutches. Cracks in a wooden crutch decrease its ability to support weight. Bends in aluminium crutches can alter body alignment.
- Provide patient with a list of pharmacies or medical supply companies in the community for obtaining repairs, new rubber tips, handgrips and crutch pads.

Evaluation

Patient states and demonstrates principles of crutch safety.

The forearm crutch has a handgrip and a metal band that fits around the patient's forearm. The metal band and the handgrip are adjusted to fit the patient's height. The axillary crutch has a padded curved surface at the top, which fits under the axilla. A handgrip in the form of a crossbar is held at the level of the palms to support the body.

It is important that crutches be measured for the appropriate length and that patients be taught to use their crutches safely, to achieve a stable gait, to ascend and descend stairs and to rise from a sitting position.

MEASURING FOR CRUTCHES The axillary crutch is the more common crutch used. Measurements include the patient's height, the angle of elbow flexion and the distance between the crutch pad and the axilla. When crutches are fitted, the length of the crutch should be 5 cm from the axilla to a point 15 cm lateral to the patient's heel (Figure 28-27).

The handgrips should be positioned so that the patient's bodyweight is not supported by the axillae. Pressure on the axillae increases risk to underlying nerves, which could result in partial paralysis of the arm (crutch palsy). Correct position of the handgrips is determined with the patient upright, supporting weight by the handgrips with the elbows slightly flexed (20–25 degrees). When the height and placement of the handgrips have been determined, the nurse should again verify that the distance between the crutch pad and the patient's axilla is 3–4 finger-widths (Figure 28-28).



Figure 28-26 Double adjustable Lofstrand, or forearm, crutch.

Shutterstock/RTimages.

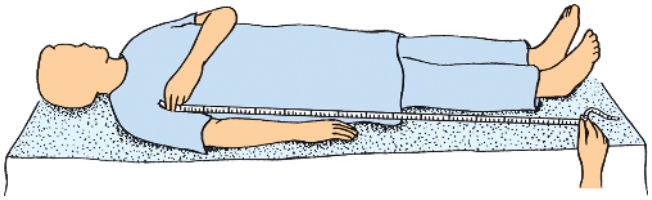

Figure 28-27 Measuring crutch length.

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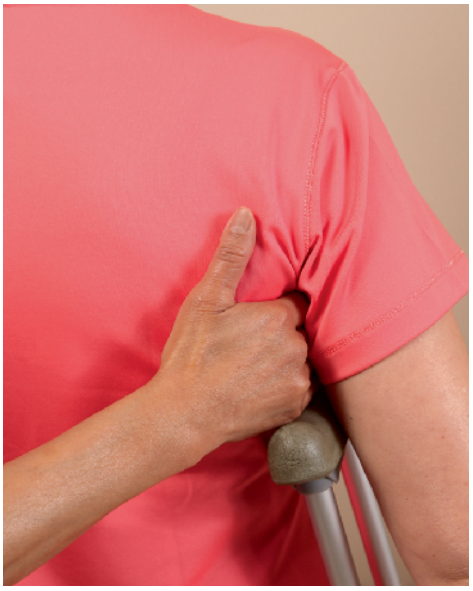

Figure 28-28 Verifying correct distance between crutch pad and axilla.

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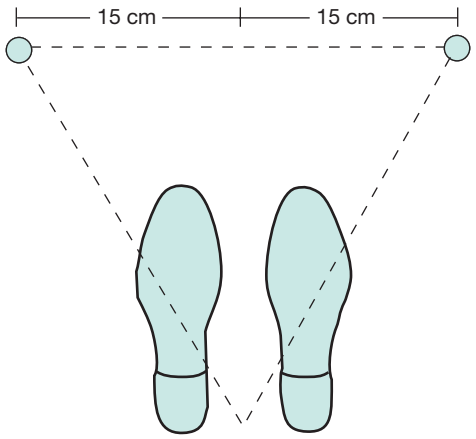

Figure 28-29 Tripod position, basic crutch stance.

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CRUTCH GAIT Crutch gait is assumed by alternately bearing weight on one or both legs and on the crutches. The gait selected by the doctor is determined by assessing the patient's physical and functional abilities and the disease or injury that resulted in the need for crutches.

This section summarises the basic crutch stance and the four standard gaits: four-point alternating gait, three-point alternating gait, two-point gait and swing-through gait.

The *basic crutch stance* is the tripod position, formed when the crutches are placed 15 cm in front of and 15 cm to the side of each foot (Figure 28-29). This position improves the patient's balance by providing a wider base of support. The body alignment of the patient in the tripod position includes an erect head and neck, straight vertebrae and extended hips and knees. No weight should be borne by the axillae. The tripod position is assumed before crutch walking.

Four-point alternating, or *four-point gait* gives stability to the patient but requires weightbearing on both legs. Each leg is moved alternately with each opposing crutch so that three points of support are on the floor at all times (Figure 28-30A).

Three-point alternating, or *three-point gait* requires the patient to bear all of the weight on one foot. In three-point gait, weight is borne on both crutches and then on the uninvolved leg, and the sequence is repeated (Figure 28-30B). The affected leg does not touch the ground during the early phase of the three-point gait. Gradually the patient progresses to touchdown and full weightbearing on the affected leg as the doctor orders.

The *two-point gait* requires at least partial weightbearing on each foot (Figure 28-30C). The patient moves a crutch at the same time as the opposing leg, so that the crutch movements are similar to arm motion during normal walking.

The *swing-through gait* is often used by paraplegics who wear weight-supporting braces on their legs. With weight placed on the supported legs, the patient places the crutches one stride in front and then swings to or through the crutches while they support the patient's weight.

CRUTCH WALKING ON STAIRS When ascending stairs on crutches, the patient usually uses a modified three-point gait (Figure 28-31). The patient stands at the bottom of the stairs and transfers bodyweight to the crutches. The unaffected leg is advanced between the crutches onto the stairs. The patient then shifts weight from the crutches to the unaffected leg. Finally, the patient aligns both crutches on the stairs. This sequence is repeated until the patient reaches the top of the stairs.

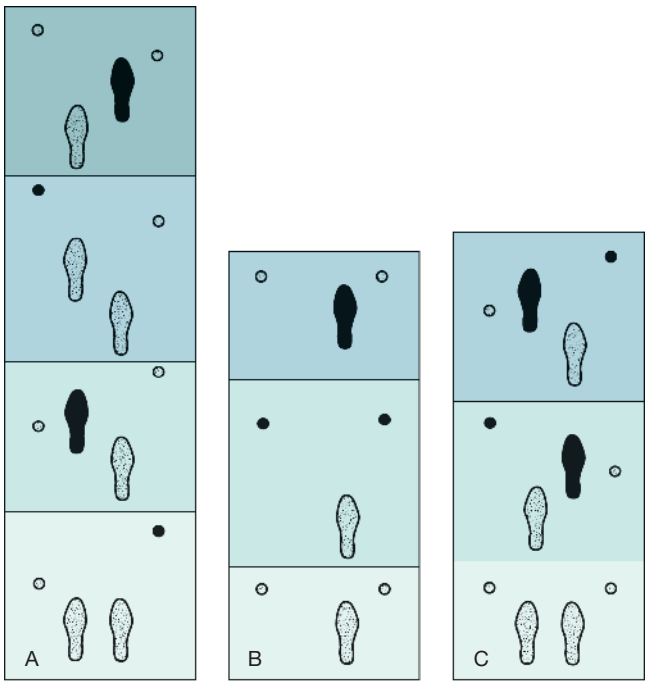

Figure 28-30 (Read each diagram from bottom to top.)

A, Four-point alternating gait. Solid feet and crutch tips show foot and crutch tip moved in each of the four phases. B, Three-point gait with weight borne on unaffected leg. Solid foot and crutch tips show weightbearing in each phase. C, Two-point gait with weight borne partially on each foot and each crutch advancing with opposing leg. Solid areas indicate leg and crutch tips bearing weight.

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To descend the stairs (Figure 28-32), a three-phase sequence is also used. The patient transfers bodyweight to the unaffected leg. The crutches are placed on the stairs, and the patient transfers bodyweight to the crutches, moving the affected leg forwards. Finally, the unaffected leg is moved to the stairs with the crutches. Again, the patient repeats the sequence until reaching the bottom of the stairs.

Because in most cases patients will need to use crutches for some time, they should be adequately taught to use crutches on stairs before discharge. This instruction applies to all crutch-dependent patients, not only those who have stairs in their homes.

SITTING IN A CHAIR WITH CRUTCHES As with crutch-walking and crutch-walking up and down stairs, the procedure for sitting in a chair involves phases and requires the patient to transfer weight (Figure 28-33). First, the patient gets positioned at the centre front of the chair with the posterior aspect of the legs touching the chair. Then the patient holds both crutches in the hand opposite the affected leg. If both legs are affected, as with a paraplegic person who wears weight-supporting braces, the crutches are held in the hand on the patient's stronger side. With both crutches in one hand, the patient supports



Figure 28-31 Ascending stairs.

A, Weight is placed on crutches. B, Weight is transferred from crutches to unaffected leg on stairs. C, Crutches are aligned with unaffected leg on stairs.

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Figure 28-32 Descending stairs.

A, Bodyweight is on unaffected leg. B, Bodyweight is transferred to crutches. C, Unaffected leg is aligned on stairs with crutches.

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bodyweight on the unaffected leg and the crutches. While still holding the crutches, the patient grasps the arm of the chair with the remaining hand and lowers the body into the chair. To stand, the procedure is reversed, and the patient, when fully erect, should assume the tripod position before beginning to walk.

Activity and exercise for patients with chronic disease

The nurse is also involved in implementing a plan of care designed to increase activity and exercise in patients with chronic diseases such as heart disease, hypertension, chronic obstructive pulmonary disease (COPD) and diabetes mellitus which require specific considerations.



Figure 28-33 Sitting in a chair.

A, Both crutches are held by one hand. Patient transfers weight to crutches and unaffected leg. B, Patient grasps arm of chair with free hand and begins to lower herself into chair. C, Patient completely lowers herself into chair.

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CORONARY HEART DISEASE Activity and exercise have been shown to play a role in secondary prevention or recurrence of coronary heart disease (CHD). Cardiac rehabilitation has become an integral part of comprehensive care of patients who have been diagnosed with CHD. Nurses are involved in many aspects of cardiac rehabilitation and may help patients develop a program of exercise that fits their needs and level of functioning. Exercise-based cardiac rehabilitation is effective in reducing overall and cardiovascular mortality and appears to reduce the risk of hospital admissions in the shorter term (< 12 months follow-up) in patients with CHD (Heran et al 2011). Basic exercise guidelines for patients following an acute coronary syndrome are based on the FITT formula (frequency, intensity, type of exercise, time) and are presented in Box 28-6.

HYPERTENSION Regular physical activity is an important lifestyle modification for people with prehypertension and hypertension to control BP and reduce overall cardiovascular risk. Moderate-intensity aerobic exercise such as brisk walking, cycling and swimming, can lower BP, promote relaxation and decrease or control bodyweight.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE A reduction in exercise tolerance is one of the main complaints of people with chronic lung disease. Pulmonary rehabilitation – of which exercise training is an essential component – is a beneficial therapeutic tool in helping patients reach an optimal level of functioning (Lacasse et al 2006). Some patients are fearful of participating in exercise because of the potential of worsening dyspnoea. This aversion to physical activity sets up a progressive deconditioning in which minimal physical exertion results in dyspnoea. Pulmonary rehabilitation provides a safe environment with nurses and other healthcare professionals

BOX 28-6 FITT exercise guidelines after acute coronary syndrome

Warm-up/cool-down

Mild stretching for 3–5 minutes before the exercise activity and 5 minutes after the activity is important. Activity should not be started or stopped abruptly.

Frequency

The patient should exercise 5 or more times a week.

Intensity

Exercise intensity should be determined by the patient's heart rate (HR). If a treadmill test has not been performed, the patient recovering from a myocardial infarction should not exceed 20 beats/minute over the resting HR.

Type of exercise

Exercise should be regular, rhythmic and repetitive, using large muscles to build up endurance (e.g. walking, cycling, swimming, rowing).

Time

Exercise for 20–30 minutes. It is important to begin slowly at personal tolerance (perhaps only 5–10 minutes) and build up to 30 minutes.

Brown D, Edwards H (eds) Lewis's Medical–surgical nursing: assessment and management of clinical problems, 3rd edn. Mosby, Sydney.

monitoring the progress of the patient, thus providing encouragement and support to increase activity and exercise. In some situations pulmonary rehabilitation is not an option and patients are advised to exercise on their own. Walking is the best physical exercise for COPD patients, and they should be encouraged to walk for 15–20 minutes a day by building up gradually (Kent 2012).

DIABETES MELLITUS Along with diet, glucose monitoring and medication, exercise is considered an essential component in diabetes management. People with diabetes are also encouraged to exercise because it leads to improved cardiovascular fitness and psychological wellbeing. The nurse educates the person with diabetes about certain risks and precautions regarding exercise (see Box 28-7). Instruction for patients with type 1 diabetes should include the need for a pre-exercise physical examination and precautions to monitor blood glucose before, during and after exercise, to avoid injecting insulin into muscles that will be active during exercise, to perform low- to moderate-intensity exercises, to carry a concentrated form of carbohydrates (boiled sweets or jelly beans) and to wear a medical-alert bracelet.

• CRITICAL REFLECTION POINT

Willie Portman is a 65-year-old man who has enrolled in a cardiac rehabilitation program following a myocardial infarction (MI). What factors do you consider in developing an exercise program for Mr Portman? What interventions could be incorporated to help motivate this patient to exercise on a daily basis?

BOX 28-7 Exercise for patients with diabetes mellitus

1. Exercise does not have to be vigorous to be effective. The blood-glucose-reducing effects of exercise can be attained with mild exercise, such as brisk walking. The exercises selected should be enjoyable to foster regularity.
2. Exercise is best done after meals, when the blood glucose level is rising.
3. Exercise plans should be individualised for each patient and monitored by the healthcare provider.
4. It is important to self-monitor blood glucose levels before, during and after exercise to determine the effect exercise has on the blood glucose level at particular times of the day.
5. Be alert to the possibility of delayed exercise-induced hypoglycaemia, which may occur several hours after the completion of exercise.
6. Taking a glucose-lowering medication does not mean that planned or spontaneous exercise cannot occur.
7. It is important to compensate for extensive planned and spontaneous activity by monitoring the blood glucose level to make adjustments in the insulin dose (if taken) and food intake.

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EVALUATING IMPACTS AND OUTCOMES

Patient care

To evaluate outcomes and review the processes of nursing care, nurses measure the effectiveness of all interventions. Patient assessment data are compared with the selected evaluation criteria and expected outcomes, such as the patient's ability to maintain or improve body alignment, joint mobility, walking, moving or transferring, or the absence of complications of immobility. The effectiveness of patient and family teaching to prevent future risks to mobility are also evaluated (Figure 28-34). Evaluation is cumulative and continuous. The continuous or formative nature of evaluation allows the nurse to determine whether new or revised therapies are required and if new nursing diagnoses have developed.

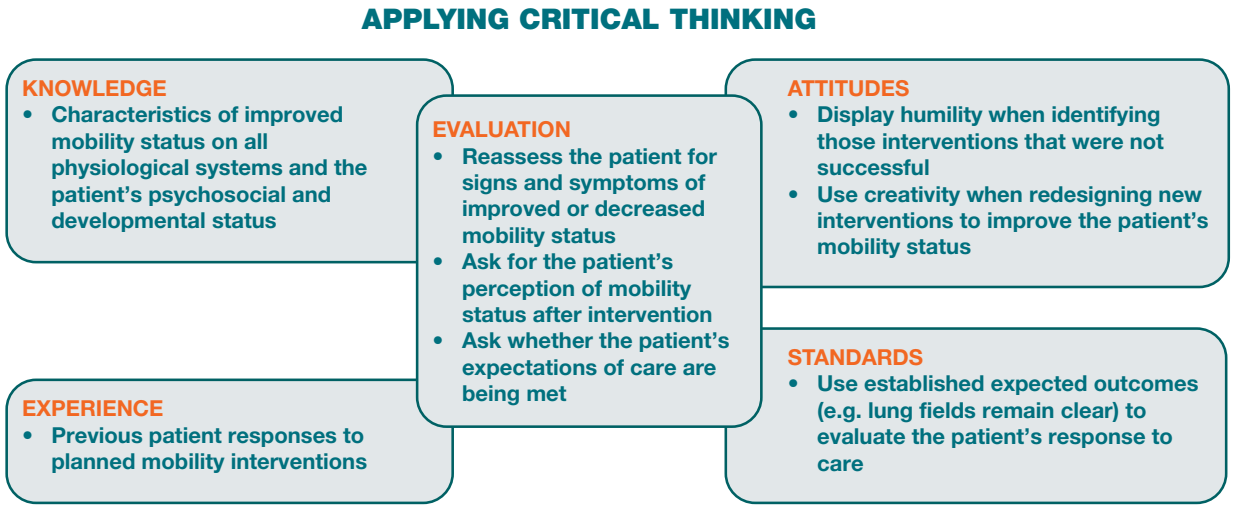


Figure 28-34 **Critical thinking associated with the evaluation phase for immobility.**

Patient expectations

Patients who are immobile and dependent on others for some or all of their needs can become overly dependent or try to do too much for themselves too early. Finding the balance between independence and dependence is a difficult task. Patients will want control over their mobility that is personally satisfactory. In the patient who is completely dependent on others for care, control over how and when things are done may be very important. Do patients feel they are treated with dignity? Do caregivers treat them as adults? Are they given opportunities to make meaningful choices? Patients who are dependent on others for care may see their demands as the only control they have over their life. Empathy is an important attitude in critical thinking when assessing patients' expectations; it helps the nurse to identify modifications that may be needed in care planning.

SAMPLE STUDENT NURSING CARE PLAN

Gathering relevant data and information*

Evelyn Brown is an 84-year-old woman admitted for a right-sided **total hip replacement (THR) for osteoarthritis**. It is day 4 postoperatively. Mrs Brown is afebrile and her wound is clean, dry and intact. Observations are within normal limits. During the shift you find that she is **not able to transfer from chair to bed without assistance**. She states that she is '**afraid of falling**' and **frequently refuses to get out of bed**. She rates her pain as a 1 on a scale of 0–10. She states that she needs analgesia to help her sleep during the night but does not need any during the day.

**Important data to cluster in setting priorities in bold.*

Priority problem(s)

Immobility

Making appropriate judgements and decisions

Judgements and decisions on Mrs Brown's nursing care plan will require synthesis of the data and information collected from the patient and relevant others. This will include synthesis of mobility assessment including ROM; exercise and activity tolerance; body alignment; ability to transfer; full head-to-toe systems assessment and potential immobility complications. Decisions and judgements about Mrs Brown's care will also be determined by the patient's own expectations and the dependence or independence Mrs Brown experienced prior to hospital admission.

Setting priorities and establishing goals	Expected outcomes
The overall priority for Mrs Brown is to maintain mobility Goals: • Return Mrs Brown to previous level or improved level of mobility prior to surgery • Involve Mrs Brown in all decisions of her care plan • Prevent development of immobility complications	Patient demonstrates ability to transfer independently, walk with assistive devices and move with ease within 2 days. Patient will state fear of falling is less within 2 days. Patient's calves non-tender, without redness or oedema. Patient's skin will remain intact.
Preparing for and taking action†	**Rationale**
Circulatory care	
• Administer low-molecular-weight heparin (LMWH) for thromboprophylaxis as prescribed.	Patients are at high risk of venous thromboembolism (VTE) following total hip replacement. Evidence-based clinical guidelines recommend LMWH as an effective therapy to prevent VTE after hip replacement (National Health and Medical Research Council 2009).
• Use graduated compression stockings, intermittent pneumatic compression (SCDs) or a foot pump following total hip replacement until the patient is fully mobile; remove each shift for hygiene. • Reinforce antiembolic exercises (e.g. leg exercises) while awake.	Application increases venous tone, improving venous return and reducing venous stasis. Evidence-based clinical guidelines recommend these interventions after hip replacement whether or not pharmacological thromboprophylaxis is used (National Health and Medical Research Council 2009).
• Assist Mrs Brown to sit on the side of the bed before transferring to chair.	Moving slowly will decrease the likelihood of orthostatic hypotension. Moving the patient slowly will also avoid the perception by the patient of being rushed, which may cause the patient to become more fearful.

Preparing for and taking action†	Rationale
Skin surveillance	
• Perform skin integrity assessment (e.g. check for any non-blanchable redness, localised heat, oedema and induration).	To monitor for pressure areas and plan appropriate intervention.
• Encourage Mrs Brown to shift position at least every hour while awake.	
• Use pressure-relieving devices, keeping Mrs Brown's heels off the bed by placing a pad under the lower legs.	Reducing the pressure on the heels so that tissue blood flow is maintained to prevent pressure areas.
Positioning	
• Explain transfer procedure to Mrs Brown and ensure understanding of hip precautions.	Reduces anxiety.
• Collaborate with physiotherapist in developing and executing an exercise program.	Helps to strengthen muscles used in transfer.
• Encourage Mrs Brown to assist as much as possible in transfer and positioning.	

† Intervention classification labels from McCloskey JC, Bulechek GM 2000 Nursing interventions classification (NIC), 3rd edn. Mosby, St Louis.

Evaluating impacts and outcomes

- Assess calves daily.
- Perform neurovascular assessment of extremities every shift.
- Observe skin integrity each shift.
- Observe patient transfer from bed to chair.
- Ask Mrs Brown to rate her fear of falling on a scale of 0–10.
- Ask Mrs Brown to rate her mobility against her expectations.

Key concepts

- Coordinated body movement requires integrated functioning of the muscular, skeletal and nervous systems.
- Developmental stages influence body alignment and mobility; the greatest impact of physiological changes on the musculoskeletal system is observed in children and older adults.
- Immobility may result from illness or be prescribed for therapeutic reasons and presents hazards to physiological and psychosocial health.
- Nursing assessment of mobility focuses on range of motion, gait, exercise and activity tolerance, and body alignment.
- Exercise and activity are essential components for maintaining and regaining health. Nurses are well placed to improve health by encouraging physical activity and working with patients to develop individualised exercise programs.
- In the acute care setting, specific interventions are designed to reduce the impact of immobility on the patient and by positioning and transferring patients safely.
- Nurses use a range of interventions aimed at promoting mobility and movement, including range-of-motion exercises, helping patients walk and using supportive equipment and techniques to help patients mobilise.

Online resources

Department of Health and Ageing; physical activity guidelines, http://www.health.gov.au/internet/main/publishing.nsf/content/health-pubhlth-strateg-phys-act-guidelines

Ministry of Health; physical activity guidelines, www.health.govt.nz/yourhealth-topics/physical-activity

National Health and Medical Research Council; clinical practice guidelines for the prevention of venous thromboembolism in patients admitted to Australian hospitals, www.nhmrc.gov.au/guidelines/publications/cp115

References

Australian Institute of Health and Welfare (AIHW) 2014 Estimating the prevalence of osteoporosis in Australia. AIHW, Canberra. Online. Available: www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129548481; accessed 22 March 2016.

Carpenito-Moyet LJ 2013 Handbook of nursing diagnosis, 14th edn. Wolters-Kluwer/Lippincott Williams & Wilkins, Philadelphia.

Coleman S, Gorecki C, Nelson EA et al 2013 Patient risk factors for pressure ulcer development: systematic review. International Journal of Nursing Studies 50(7):974–1003.

Commonwealth of Australia 2007 National code of practice for the prevention of musculoskeletal disorders from performing manual tasks at work. Commonwealth of Australia 2007, Canberra.

Cooney G, Mead G, Dwan K 2014 Exercise for depression (Report). The Journal of the American Medical Association 311(23).

Consensus Committee of the American Autonomic Society and the American Academy of Neurology 1996 Consensus statement on the definition of orthostatic hypotension, pure autonomic failure, and multiple system atrophy. Neurology 46(5):1470.

Covinsky KE, Pierluissi E, Johnston CB 2011 Hospitalization-associated disability: she was probably able to ambulate, but I'm not sure. JAMA 306(16):1782–93.

Craft J, Gordon C, Tiziani A 2014 Understanding pathophysiology. Mosby, Sydney.

Department of Health (DoH) 2014 Physical activity and sedentary behavior guidelines. DoH, Canberra. Online. Online. Available: www.health.gov.au/internet/main/publishing.nsf/content/health-pubhlth-strateg-phys-act-guidelines; accessed 22 Mar 2016.

Grealish L, Chaboyer W 2015 Older, in hospital and confused – the value of nursing care in preventing falls in older people with cognitive impairment. International Journal of Nursing Studies 52(8):1285–7.

Heran BS, Chen JMH, Ebrahim S et al 2011 Exercise-based cardiac rehabilitation for coronary heart disease. Cochrane Database Syst Rev (7):CD001800.

Kay K, Evans A, Glass N 2013 Moments of speaking and silencing: nurses share their experiences of manual handling in healthcare. Collegian 22(1):61–70.

Kent B 2012 Obstructive pulmonary diseases. In Brown D, Edwards H, (eds), Lewis's Medical–surgical nursing: assessment and management of clinical problems, 3rd edn. Mosby, Sydney.

Kneafsey R 2007 A systematic review of nursing contributions to mobility rehabilitation: examining the quality and content of the evidence. J ClinNurs 16:325–40.

Lacasse Y, Goldstein R, Lasserson TJ et al 2015 Pulmonary rehabilitation for chronic obstructive pulmonary disease. Cochrane Database Syst Rev (2):CD003793. DOI: 10.1002/14651858.CD003793.pub2

Mao X, Jia P, Zhang L et al 2015 An evaluation of the effects of human factors and ergonomics on health care and patient safety practices: a systematic review. PLoS One 10(6).

Marieb EN, Hoehn KN 2015 Human anatomy and physiology, 10th edn. Pearson Australia.

Nash D 2014 Alterations of musculoskeletal function across the lifespan. In J Craft, C Gordon, A Tiziani (eds), Understanding pathophysiology. Mosby, Sydney.

National Institute of Clinical Studies (NICS) 2009 Clinical practice guideline for the prevention of venous thromboembolism (deep vein thrombosis and pulmonary embolism) in patients admitted to Australian hospitals. National Health and Medical Research Counci, Melbourne. Online. Available: www.nhmrc.gov.au/guidelines/publications/cp115; accessed 22 Mar 2016.

National Health and Medical Research Council 2009 Clinical practice guideline for the prevention of venous thromboembolism (deep vein thrombosis and pulmonary embolism) in patients admitted to Australian hospitals. National Health and Medical Research Council, Melbourne.

Olson EV 1967 The hazards of immobility. Am J Nurs 67(4):780–97.

Smith SF, Duell DJ, Martin BC 2012 Clinical nursing skills: basic to advanced skills, 8th edn. Pearson, Upper Saddle River, NJ.

Soars L 2015 Vascular disorders. In Brown D, Edwards H (eds), Lewis's Medical–surgical nursing: assessment and management of clinical problems, 4th edn. Mosby, Sydney.

CHAPTER

29

Ongoing hygiene

Mary Huynh

KEY TERMS

Acne, p. 918
Alopecia, p. 915
Apocrine glands, p. 908
Buccal glands, p. 909
Caries, p. 915
Cerumen, p. 908
Complete bed bath, p. 928
Cuticle, p. 909
Dermis, p. 908
Eccrine glands, p. 908
Edentulous, p. 919
Effleurage, p. 945
Enucleation, p. 970
Epidermis, p. 908
Gingivitis, p. 910
Halitosis, p. 915
Lunula, p. 909
Mastication, p. 910
Neuropathy, p. 915
Partial bed bath, p. 935
Perineal care, p. 936

Learning outcomes

Mastery of content will enable you to:

- describe factors that influence personal hygiene practices
- discuss the role critical thinking plays in the provision of hygiene care
- conduct a comprehensive assessment of a person's total hygiene needs
- discuss conditions that place a person at risk of impaired skin integrity
- discuss factors that influence the condition of the nails and feet
- explain the importance of foot care for the person with diabetes
- discuss conditions that place the person at risk of impaired oral mucous membranes
- list common hair and scalp problems and their related interventions
- describe how hygiene care for the older adult may differ from that for the younger person
- discuss the different approaches used in maintaining a person's comfort during hygiene care
- successfully perform hygiene procedures for the care of the eyes, ears, nose, mouth, skin, perineum, feet and nails.

Introduction

Maintenance of personal hygiene is necessary for a person's comfort, safety and wellbeing. Well people are capable of meeting their own hygiene needs, but ill or physically challenged people may require assistance. A variety of personal and sociocultural factors influence the person's hygiene practices. Nurses determine a person's ability to perform self-care, and provide hygiene care according to the person's needs and preferences. In the home setting, nurses help the person and family adapt hygiene techniques.

Because hygiene care requires close contact with the person, nurses uses communication skills (see Chapter 12) to promote a caring therapeutic relationship and to use the time with the person for teaching and counselling. Nurses can integrate other nursing activities into hygiene care, including person assessment and interventions such as range-of-motion exercises, inspection of pressure points or inspection and care of intravenous sites. While providing hygiene, nurses must preserve as much of the person's independence as possible, ensure privacy, convey respect and foster physical comfort as well as dignity.

Proper hygiene care requires an understanding of the anatomy and physiology of the integument, oral cavity, eyes, ears, nose and perineal area. While administering hygiene, nurses are able to apply this knowledge in recognising abnormalities and taking appropriate action to prevent further injury to sensitive tissues. The skin and mucosa cells exchange oxygen, nutrients and fluids with underlying blood vessels. The cells require adequate nutrition, hydration and circulation to resist injury and disease. Good hygiene techniques promote the normal structure and function of body tissues.

In addition to anatomy and physiology, nurses apply knowledge of pathophysiology to provide good preventive hygiene care. Nurses learn to recognise those disease states that create changes in the integument, oral cavity and sensory organs. For example, diabetes mellitus may result in chronic vascular changes that impair healing of the skin and mucosa. In the early stages of acquired immune deficiency syndrome (AIDS), fungal infections of the oral cavity are common. As a result of a cerebral vascular accident, paralysis of the trigeminal nerve eliminates the blink reflex, causing corneal drying. In the presence of conditions such as these and in people with sensory impairment, nurses adapt practices to anticipate hygiene needs and minimise any injurious effects (Huskinson & Lloyd 2009).

The skin

The skin is an active organ with the functions of protection, secretion, excretion, temperature regulation and sensation (Table 29-1). The skin has three main layers: epidermis, dermis and subcutaneous. The **epidermis** (outer layer) is composed of several thin layers of cells undergoing different stages of maturation. It shields underlying tissue against water loss and injury and prevents entry of disease-producing microorganisms. The innermost layer of the epidermis generates new cells to replace the dead cells that are continuously shed from the skin's outer surface. The epidermis also contains melanocytes, special cells that produce melanin or dark pigment of the skin. Bacteria commonly reside on the outer epidermis. These resident bacteria are normal flora (see Chapter 25) that do not cause disease, but instead inhibit the multiplication of disease-causing microorganisms.

The **dermis** is a thicker skin layer containing bundles of collagen and elastic fibres to support the epidermis. Nerve fibres, blood vessels, sweat glands, sebaceous glands and hair follicles course through the dermal layers. Sebaceous glands secrete *sebum*, an oily, odorous fluid, into the hair follicles. Sebum lubricates the skin and hair and acts as an antibacterial layer. There are two types of sweat glands: eccrine and apocrine. The **eccrine glands** are distributed throughout the skin. Sweat excreted from the eccrine glands assists in temperature control through evaporation. The **apocrine glands** can be found in the axillary and genital areas. The bacterial decomposition of sweat from these areas is responsible for body odour. In the ears, *ceruminous glands* secrete **cerumen** (earwax) into the external ear canal. This heavy, oily substance traps foreign material entering the ear.

The *subcutaneous tissue layer* contains blood vessels, nerves, lymph tissue and loose connective tissue filled with fat cells. The fatty tissue is a heat insulator for the body. Subcutaneous tissue also supports upper skin layers to withstand stresses and pressure without injury. Very little subcutaneous tissue underlies the oral mucosa.

The skin often reflects a change in physical condition by alterations in colour, thickness, texture, turgor, temperature and hydration (see Chapter 26). As long as the skin is intact and healthy, its physiological function remains good.

The feet, hands and nails

The feet and hands are important to physical health. The structure of the *foot* is similar to that of the hand, with certain differences that adapt it for supporting weight (Thibodeau & Patton 2013). The tarsals and metatarsals play the major role in the functioning of the foot as a

TABLE 29-1 Functions of the skin and implications for care

Function/description	Implications for care
Protection	
The epidermis is a relatively impermeable layer that prevents entrance of microorganisms Although microorganisms reside on the skin surface and in hair follicles, relative dryness of the skin's surface inhibits bacterial growth Sebum removes bacteria from hair follicles Acidic pH of skin further retards bacterial growth	Weakening of epidermis occurs by scraping or stripping its surface (e.g. use of dry razors, tape removal or improper turning or positioning techniques) Excessive dryness causes cracks and breaks in skin and mucosa that allow bacteria to enter. Emollients soften skin and prevent moisture loss, soaking of skin improves moisture retention and hydration of mucosa prevents dryness However, constant exposure of skin to moisture causes maceration or softening, which interrupts dermal integrity and promotes ulcer formation and bacterial growth. Sheets and clothing should be kept dry Misuse of soap, detergents, cosmetics, deodorant and depilatories can cause chemical irritation. Alkaline soaps neutralise the protective acid condition of skin Cleaning of skin removes excess oil, sweat, dead skin cells and dirt that can promote bacterial growth.
Sensation	
Skin contains sensory organs for touch, pain, heat, cold and pressure	Friction should be minimised to avoid loss of stratum corneum, which can result in development of pressure ulcers Smoothing bedclothes removes sources of mechanical irritation Removing rings from fingers prevents nurse from accidentally injuring person's skin Bathwater should not be excessively hot or cold
Temperature regulation	
Body temperature is controlled by radiation, evaporation, conduction and convection	Factors that interfere with heat loss can alter temperature control Wet bedclothes or gowns interfere with convection and conduction Too many blankets or bed coverings can interfere with heat loss through radiation and conduction Coverings can promote heat conservation
Excretion and secretion	
Sweat promotes heat loss by evaporation Sebum lubricates skin and hair	Perspiration and oil can harbour microorganisms. Bathing removes excess body secretions, although too much bathing can cause drying of skin

supporting structure. Any injury or deformity to the foot, including any growths or injuries to the overlying skin, can be painful and thus interfere with a person's normal ability to walk and bear weight.

The *hand*, in contrast to the foot, is constructed largely for manipulation rather than support. A wide range of dexterity exists in the hand because of the wide range of movement between the thumb and fingers. Any condition that interferes with movement of the hand (e.g. superficial or deep pain, joint inflammation) can impair a person's self-help abilities.

The *nails* are epithelial tissues that grow from the root of the *nail bed*, located in a groove hidden by the fold of skin called the **cuticle**. The visible part of the nail is the nail body. It has a crescent-shaped white area known as the **lunula**. Under the nail lies a layer of epithelium called the nail bed (Figure 29-1). The abundance of blood vessels in the nail bed creates its pink or light tan appearance (depending on race). Normally the nails grow about 0.5 mm a week, with fingernails growing faster than toenails (Thibodeau & Patton 2013).

The oral cavity

The oral cavity is lined with mucous membranes continuous with the skin. The *oral* or *buccal cavity* consists of the lips surrounding the opening of the mouth, the cheeks running along the side walls of the cavity, the tongue and its muscles, and the hard and soft palates. The oral mucosa is normally light pink and moist. The floor of the mouth and the undersurface of the tongue are richly supplied with blood vessels. Any type of ulceration or trauma can result in significant bleeding. There are three pairs of salivary glands that secrete about 1 L of saliva a day. The **buccal glands**, found in the mucosa lining the cheeks and mouth, secrete less than 5% of the total saliva; however, buccal gland secretion maintains the hygiene and comfort of oral tissues. Salivary secretion in the mouth

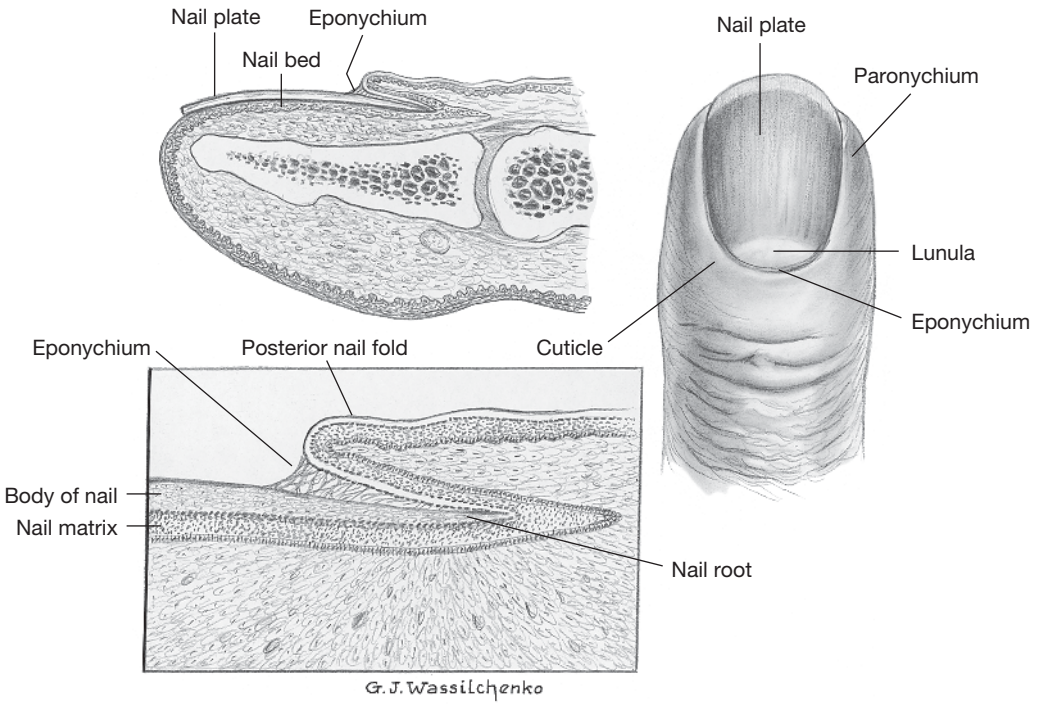


Figure 29-1 **Anatomical structure of a normal nail.**

Thompson J et al 2002 Clinical nursing, 5th edn. Mosby, St Louis.

can be impaired through dehydration, mouth breathing, the effects of medications and exposure to radiation.

The *teeth* are the organs of chewing, or **mastication**. They are designed to cut, tear and grind food so it can be mixed with saliva and swallowed (Thibodeau & Patton 2013). A normal tooth consists of the crown, neck and root (Figure 29-2). The periodontal membrane lies just below the gum margins, surrounds a tooth and holds it firmly in place. Healthy teeth appear white, smooth, shiny and properly aligned. Difficulty in chewing can develop when surrounding gum tissues become inflamed or infected, or when teeth are lost or become loosened. Regular oral hygiene is necessary to maintain the integrity of tooth surfaces and thus prevent dental caries and **gingivitis** (gum inflammation).

The hair

Hair growth, distribution and pattern can indicate a person's general health status. Hormonal changes, emotional and physical stress, medications, ageing, infection and certain illnesses can affect hair characteristics. The hair shaft itself is inert and cannot be directly affected by physiological factors. However, changes in its colour or condition are caused by hormonal and nutrient deficiencies of the hair follicle. The hair follicle contains live cells and a rich capillary blood supply (Figure 29-3).

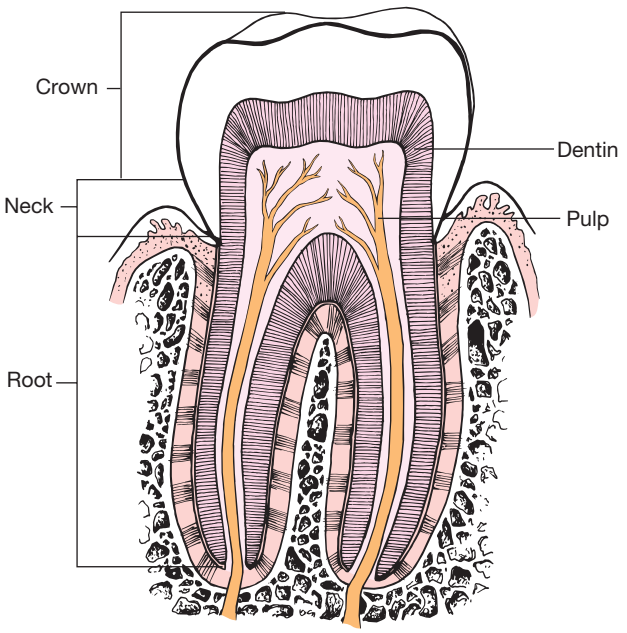


Figure 29-2 **A normal tooth.**

The eyes, ears and nose

When nurses provide hygiene care, the eyes, ears and nose require careful attention. Chapter 27 describes the structure and function of these organs. Cleaning of the

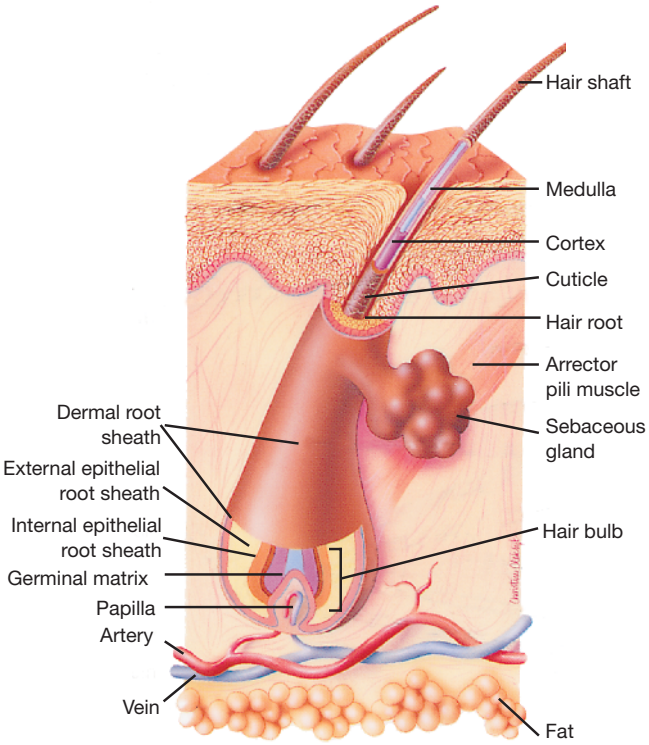


Figure 29-3 Hair follicle, relationship of a follicle and related structures to the epidermal and dermal layers of the skin.

Thibodeau GA, Patton KT 2013 Anatomy and physiology, 8th edn. Mosby, St Louis.

sensitive sensory tissues should be done in a way that prevents injury and discomfort for the person.

The perineal area

Provision of hygiene care to the perineal area requires tact and appreciation of the person's dignity, culture, emotions and physical safety as well as privacy. Maintaining a clean and dry perineal area helps to prevent breakdown and maceration of these sensitive tissues. Soiling with urine, faecal material and perspiration causes irritation and discomfort. Care of the perineal area of a person with a retention catheter is performed more frequently than daily hygiene (see Skill 29-2, on p. 936).

Nurses view people's healthcare needs from a holistic perspective. In the case of hygiene, it is important to consider the knowledge that is available regarding the numerous sociocultural, economic and developmental factors that influence hygiene practices. Application of this knowledge base allows nurses to provide individualised hygiene care. As healthcare professionals, nurses must be conscious of their own hygiene, as they are considered a role model by the person.

Social practices

Social groups influence hygiene preferences and practices, including the type of hygiene products used and the nature and frequency of personal care. During childhood, hygiene is influenced by family customs. This may include, for example, the frequency of bathing, the time of day bathing is performed and the type of oral hygiene practised. As children enter their adolescent years, personal hygiene may be influenced by peer-group behaviour. Young girls, for example, may become more interested in their personal appearance and begin to wear make-up. During the adult years, involvement with friends and work groups shape the expectations people have about their personal appearance. Older adults' hygiene practices may change because of living conditions and available resources.

Personal preferences

Each person has individual desires and preferences about when to bathe, shave and perform hair care. People select different products according to personal preferences, needs and financial resources. These desires should help nurses deliver individualised care. Nurses need to be aware of these, and respect the person's preferences. In addition, nurses should help the person develop new hygiene practices when indicated by an illness or condition.

Body image

A person's general appearance may reflect the importance hygiene holds for that person. Body image is a person's subjective concept of their physical appearance (see Chapter 20). These images can change frequently. Body image affects the way hygiene is maintained. If a person is neatly groomed, nurses should consider the details of grooming when planning care and consult the person before making decisions about how hygiene care is to be provided. People who appear unkempt or uninterested in hygiene may require education about its importance, and nurses should assess the contributing factors. Culturally, maintaining cleanliness may not hold the same importance for some ethnic groups as it does for others. Nurses should be sensitive in considering that the person's economic status may influence the ability to regularly maintain hygiene, and never convey feelings of disapproval when caring for people whose hygiene practices are different from theirs.

When a person undergoes surgery, illness or a change in functional status, body image can change dramatically. For this reason, nurses needs to make an extra effort to promote the person's hygiene, comfort and appearance.

Socioeconomic status

A person's economic resources influence the type and extent of hygiene practices used. Nurses determine whether people can afford necessary supplies such as deodorant, shampoo, toothpaste and cosmetics. When basic care items are not affordable, nurses try to find alternatives. It is also important to learn whether use of these products is a part of the social habits practised by the person's social group. For example, not all people may choose to use shampoos, deodorant or cosmetics. Access to a reliable water supply in some isolated communities alters hygiene practices.

When a nurse cares for a person it is important to learn about the individual's routine adherence to hygiene practices and whether the person values those practices. Health promotion focuses on equity of access to resources while enabling people to increase control over the determinants of their health (Ridde 2007). Thus, health promotion represents combining personal choice with social responsibility for health. When people have the added problem of a lack of socioeconomic resources, it becomes difficult to participate and take a responsible role in health-promotion activities such as basic hygiene.

Cultural variables

A person's cultural beliefs and personal values influence hygiene care. People from diverse cultural backgrounds follow different self-care practices (see Chapter 14). In many cultural groups in Australia, it is common to bathe or shower daily, whereas in some other cultural groups it is customary to bathe completely only once a week (see *Working with diversity*).

WORKING WITH DIVERSITY

Focus on cultural care

For Hindus, personal hygiene is an important part of each day. A daily bath is part of their religious duty. Bathing needs to take place at correct times and in the correct way. For example, bathing after a meal is believed by some Hindus to be injurious. Similarly, a bath that is too hot may injure the eyes. Hot water may be added to cold water, but cold water is not to be added to hot water when one is preparing a bath. Once a bath is completed, the body is dried thoroughly with a towel.

Reference

Adapted from Giger JN, Davidhizar RE 2008 Transcultural nursing: assessment and intervention, 5th edn. Mosby, St Louis.

Health beliefs and motivation

Knowledge about the importance of hygiene and its implications for wellbeing influence hygiene practices. However, knowledge alone is not enough. The person also must be motivated to maintain self-care. Health motivation is part of an individual's health beliefs or attitudes that influence health-related behaviours. The health belief model includes four variables that influence the individual's motivation towards health promotion: (1) the likelihood of experiencing a harmful condition in response to behaviours; (2) perceived seriousness or threat of the condition; (3) perceived effectiveness of modifying behaviours to reduce a threat; and (4) negative aspects of the behaviour (Gillibrand & Stevenson 2006). In regard to a person's hygiene practices, it is important for nurses to know whether, for example, a person perceives being at risk of dental disease, thinks dental disease to be serious, thinks brushing and flossing to be effective in reducing risk and believes there are any negative implications from following recommended hygiene practices. When people recognise there is a risk and reasonable action can be taken with no negative consequence, they will be more receptive to the nurses' counselling and teaching efforts.

Physical condition

People with certain types of physical limitations or disabilities often lack the physical energy and dexterity to perform hygiene care. A person in traction or a cast or who has an intravenous line or other device connected to the body will need assistance with hygiene. Illnesses that cause pain may limit the dexterity and range of motion needed to perform certain measures. People still under the effects of sedation will not have the mental clarity or coordination to perform self-care. Chronic illnesses, such as cardiac disease, cancer, neurological disorders and certain mental health conditions, may exhaust or incapacitate a person. A weakened grasp resulting from arthritis, cerebrovascular accident or muscular disorders can prevent a person from using a toothbrush, washcloth or comb.

CLINICAL REASONING PROCESS

Because hygiene care is so important for a person to feel comfortable, refreshed and renewed, avoid making hygiene care a simple routine. Instead, synthesise knowledge, previous experience with patients, critical-thinking attitudes and standards in judging the most effective way to provide effective hygiene. A middle-aged woman with abdominal



pain who has had major surgery only 24 hours previously will require a different approach to hygiene compared to an older adult who has left-sided paralysis. During the nurses' assessment (Figure 29-4), all critical-thinking elements are considered in understanding the person's needs and in making appropriate nursing diagnoses. In addition, while hygiene is being administered, nurses make important observations (e.g. condition of person's skin, ability of person to move and initiate activities) and use them when making clinical judgements about the person's overall nursing care.

GATHERING RELEVANT INFORMATION AND DATA

Nursing assessment is an ongoing process. Nurses may not have assessed all body regions before administering hygiene; however, they routinely assess the person's condition whenever care is given. For example, during oral care the condition of the teeth and mucosa can be inspected. When a person has had an ongoing problem (e.g. dry skin, inflamed oral mucosa), then it is important to conduct an assessment before care is administered because variations in technique may be necessary. Hygiene care allows nurses to make assessment findings for a variety of healthcare problems and thus helps set healthcare priorities.

Physical examination

While assisting a person with personal hygiene, nurses assess the integument, oral cavity structures, and the eyes, ears and nose (see Chapter 23). Using the skills of inspection and palpation, nurses looks for alterations in the integrity and function of tissues. The assessment also reveals the type and extent of hygiene care required. Special attention is given to the characteristics most influenced by hygiene measures. Is the skin dry from too much bathing? Are there calluses on the feet that may benefit from soaking and moisturising lotion? Is there a coating of the tongue that requires frequent brushing and hydration? Over time, nurses' assessment provides the baseline for determining whether hygiene measures maintain or improve the person's condition.

Skin

While inspecting the skin, nurses thoroughly examines its colour, texture, thickness, turgor, temperature and hydration. The skin should be smooth, warm and supple with good turgor. Pay special attention to the presence and condition of any lesions (see Chapter 26). Certain common skin problems affect how hygiene is administered (Table 29-2). Special care is also given to assess less-obvious or difficult-to-reach skin surfaces, such as under the female's breasts, under the male's scrotum or around the female's perineal tissues (see Chapter 33). Nurses who observe skin problems should explain proper skin care and specific hygiene techniques to the person.

Certain conditions place people at risk of impaired skin integrity (Box 29-1). Nurses must be particularly alert when assessing people with reduced sensation, vascular insufficiency and immobility. Be sure to assess extremities and help turn a person so that a skin surface can be fully viewed. The development of pressure ulcers is a common complication that can extend hospital stays and threaten the wellbeing of the extended-care person (Bluestein & Javaheri 2008).

Feet and nails

Assessment of the feet involves a thorough examination of all *skin surfaces*, including areas between the toes and over the soles of the feet. The heels, soles and sides of the feet are prone to irritation from poorly fitting shoes. In addition, nurses inspect the *shape* and size of toes and the shape of the foot. The toes are normally straight and flat. The feet should be in straight alignment with the ankle and tibia. Inspection of the feet for *lesions* includes noting areas of dryness, inflammation or cracking.

Assess the person's *gait*. Painful foot disorders or decreased sensation can cause limping or an unnatural gait. Nurses ask whether the person has foot discomfort and determines factors

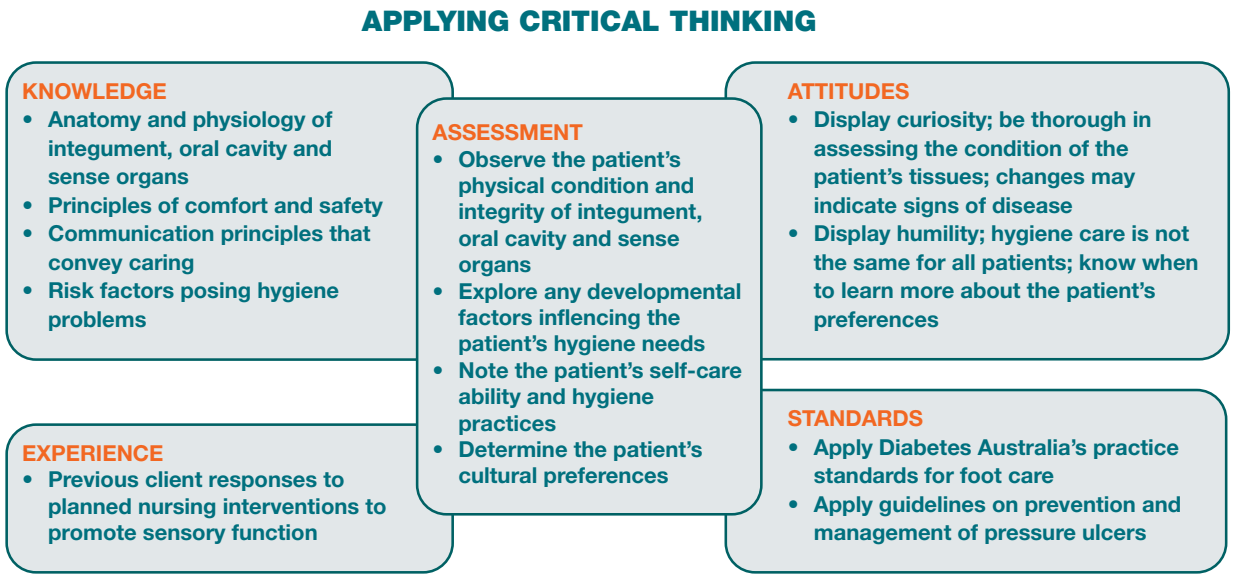


Figure 29-4 **Critical thinking associated with the assessment phase for hygiene.**

TABLE 29-2 Common skin problems

Characteristics	Implications	Interventions
Dry skin		
Flaky, rough texture on exposed areas such as hands, arms, legs or face	Skin may become infected if epidermal layer is allowed to crack	Have person bathe less frequently and rinse body of all soap because residue left on skin can cause irritation and breakdown Where possible, using non-soap products Add moisture to air through use of humidifier Increase fluid intake when skin is dry Use moisturising cream to aid healing. (Cream forms protective barrier and helps maintain fluid within skin.) Use cream such as Sorbolene Use creams to clean skin that is dry or allergic to soaps and detergents
Acne		
Inflammatory, papulopustular skin eruption, usually involving bacterial breakdown of sebum; appears on face, neck, shoulders and back	Infected material within pustule can spread if area is squeezed or picked; permanent scarring can result	Wash hair and skin thoroughly each day with hot water and soap to remove oil Use cosmetics sparingly because oily cosmetics or creams accumulate in pores and tend to make condition worse Implement dietary restrictions, if necessary (foods that aggravate condition should be eliminated from diet) Inform person that exposure to ultraviolet rays, either from sunshine or from heat lamp, may help control acne (caution should be used to prevent burning of skin) Use prescribed topical antibiotics for severe forms of acne
Hirsutism		
Excessive growth of body and facial hair, especially in women	Hirsutism may cause negative body image by giving women a male appearance	Use the following to remove unwanted hair: depilatories (can cause infection, rashes, dermatitis), shaving (safest method), electrolysis (permanently removes hair by destroying hair follicles), tweezers (lasts only temporarily), bleaching of hair (lasts only temporarily), waxing (can cause ingrown hair)
Skin rashes		
Skin eruption that may result from overexposure to sun or moisture or from allergic reaction (may be flat or raised, localised or systemic, pruritic or non-pruritic)	If skin is continually scratched, inflammation and infection may occur. Rashes can also cause discomfort	Wash area thoroughly and apply antiseptic spray or lotion to prevent further itching and help the healing process Apply warm or cold soaks to relieve inflammation, if indicated
Contact dermatitis		
Inflammation of skin characterised by abrupt onset with erythema, pruritus, pain and appearance of scaly oozing lesions (seen on face, neck, hands, forearms and genitalia)	Dermatitis is often difficult to eliminate because person is usually in continual contact with substance causing skin reaction. Substance may be hard to identify	Avoid causative agents (e.g. cleansers and soaps) Do not wash hands with hot water
Abrasion		
Scraping or rubbing away of epidermis that may result in localised bleeding and later weeping of serous fluid	Infection occurs easily because of loss of protective skin layer	Be careful not to scratch person with jewellery or fingernails Wash abrasions with mild soap and water; dry thoroughly and gently Observe dressing or bandage for retained moisture because it could increase risk of infection

BOX 29-1 Risk factors for skin impairment

Immobilisation

When restricted from moving freely, dependent body parts are exposed to pressure, reducing circulation to affected body parts. Nurses should know which people need help to turn and change positions.

Reduced sensation

People with paralysis, circulatory insufficiency or local nerve damage are unable to sense an injury to the skin. During a bath, assess the status of sensory nerve function by checking for pain, tactile sensation and temperature sensation.

Nutrition and hydration alterations

People with limited kilojoule and protein intake can develop thinner, less-elastic skin, with loss of subcutaneous tissue. This can result in impaired or delayed wound healing.

Secretions and excretions on the skin

Moisture on the skin's surface serves as a medium for bacterial growth and can cause irritation, soften epidermal cells and lead to skin maceration. Presence of perspiration, urine, watery faecal material and wound drainage on the skin can result in breakdown and infection.

Vascular insufficiency

Inadequate arterial supply to tissues and impaired venous return decrease circulation to the extremities. Inadequate blood flow can cause ischaemia and breakdown. Risk of infection also exists because delivery of nutrients, oxygen and white blood cells to injured tissues is inadequate.

External devices

An external device applied to or around the skin exerts pressure or friction on the skin. Nurses assesses all surfaces exposed to casts, cloth restraints, bandages and dressings, tubing or orthopaedic braces.

that aggravate the pain. Foot problems may result from bone or muscular alterations rather than skin disorders.

People with peripheral vascular disease, such as those with diabetes mellitus, should be assessed for the adequacy of *circulation* to the feet (see Chapter 23). Palpation of the dorsal pedis and posterior tibial pulses indicates whether adequate blood flow is reaching peripheral tissues. Oedema and changes in skin colour, texture and temperature can indicate whether the person requires special hygiene care.

People with diabetes mellitus should also be checked for **neuropathy**, degeneration of the peripheral nerves characterised by a loss of sensation. Nurses assess the person's sensation to light touch and temperature.

Inspect the condition of the *fingernails and toenails*, looking for lesions, dryness, inflammation or cracking (Table 29-3). The nail is surrounded by a cuticle, which slowly grows over the nail and must be regularly pushed back. The skin around the nail beds and cuticles should be smooth and without inflammation. Nurses should ask women whether they frequently polish their nails and use polish remover, because chemicals in these products can cause excessive nail dryness. Disease can change the shape and curvature of the nails (see Chapter 23).

Inflammatory lesions and fungus of the nail bed can cause thickened, horny nails, which can separate from the nail bed. Reduced circulation to the feet can cause thickening and brittleness of the toenails.

Oral cavity

Chapter 23 describes in detail nurses' assessment of the person's lips, teeth, buccal mucosa, gums, palate and tongue. Inspect all areas carefully for *colour*, *hydration*, *texture* and *lesions*. People who do not follow regular oral hygiene practices may have receding gum tissue, inflamed gums, a coated tongue, discoloured teeth (particularly along gum margins), dental **caries** (chalky white discolouration of tooth or presence of brown or black discolouration), missing teeth and **halitosis** (bad breath). Note that halitosis can also arise from conditions in other parts of the gastrointestinal (GI) tract. Localised pain is a common symptom of gum disease and certain tooth disorders. An infection of the mouth may involve organisms such as *Treponema pallidum*, *Neisseria gonorrhoeae* and herpesvirus hominis.

It is especially important to examine the oral cavity of the patient receiving radiation or chemotherapy. Both treatments can cause serious changes in salivary gland function and mucosal integrity. Nurses' assessment serves as a basis for preventive care for people as they undergo treatment (Harris et al 2008).

Hair

Before performing hair care, assess the condition of the hair and scalp. Normally the hair is clean, shiny and untangled, and the scalp is clear of lesions. The hair of a dark-skinned person is usually thicker, drier and curlier than that of lighter-skinned people. Table 29-4 summarises hair and scalp problems that nurses may identify. In the community health and home-care settings, it is particularly important to inspect the hair for lice so that appropriate hygiene treatment can be provided. If *Pediculosis capitis* (head lice) is suspected, nurses guards against self-infestations by handwashing and using gloves or tongue blades to inspect the person's hair. The loss of hair (**alopecia**) can result from the effects of chemotherapy medications, hormonal changes or unsuitable hair care practices. People at risk of scalp problems are those who have experienced head trauma and those who practise poor hygiene.

Eyes, ears and nose

Nurses examine and assess the condition and function of the eyes, ears and nose (see Chapter 23). Normally the *eyes* are free of infection and irritation. The sclerae are visible anteriorly as the white portion of the eye. The conjunctivae (linings of the eyelids) are clear, pink and without inflammation. The eyelid margins are in close approximation with the eyeball, and the lashes are turned outwards. The lid margins are without inflammation, drainage or lesions. The eyebrows should be symmetrical.

Another important aspect of an eye examination is to determine whether the person wears contact lenses. This is especially significant for people who enter hospitals or other agencies in an unresponsive or a confused state. An undetected lens can cause severe corneal injury when left in place too long.

TABLE 29-3 Common foot and nail problems

Characteristics	Implications	Interventions
Callus		
Thickened portion of epidermis consists of mass of horny, keratotic cells Callus is usually flat, painless and found on undersurface of foot or on palm of hand Problem is caused by local friction or pressure	Condition may cause discomfort when wearing tight shoes	Nurse advises person to wear gloves when using tools or objects that may create friction on palmar surfaces Soft-sole shoes with inner soles are recommended Nurse soaks callus in warm water and Epsom salts to soften cell layers Applications of creams or lotions can reduce reformation Encourage person to see podiatrist
Corns		
Keratosis is caused by friction and pressure from ill-fitting or loose shoes. It is seen mainly on or between toes, over bony prominence Corn is usually cone-shaped, round and raised. Soft corns are macerated	Conical shape compresses underlying dermis, making it thin and tender. Pain is aggravated when tight shoes are worn Tissue can become attached to bone if allowed to grow Person may suffer alteration in gait resulting from pain	Surgical removal may be necessary, depending on severity of pain and size of corn Nurse avoids use of oval corn pads, which increase pressure on toes and reduce circulation Warm water soaks can soften corns before gentle rubbing with a callus file or pumice stone (consult doctor) Wider and softer shoes are suggested
Plantar warts		
Fungating lesion appears on sole of foot and is caused by papillomavirus	Warts may be contagious. They are painful and make walking difficult	Treatment ordered by doctor may include applications of salicylic acid, electrodessication (burning with electrical spark) or freezing with solid carbon dioxide
*Athlete's foot (*Tinea pedis*)*		
Athlete's foot is fungal infection of foot; scaliness and cracking of skin occurs between toes and on soles of feet. Small blister containing fluid may appear Problem is apparently induced by wearing of constricting footwear	Athlete's foot can spread to other body parts, especially hands. It is contagious and frequently recurs	Feet should be well ventilated Drying feet well after bathing and applying powder help prevent infection Wearing clean socks or stockings reduces incidence Doctor may order application of griseofulvin, miconazole or tolnaftate
Ingrown nails		
Toenail or fingernail grows inwards into soft tissue around nail; often results from improper nail trimming	Ingrown nails can cause localised pain when pressure is applied	Treatment is frequent hot soaks in antiseptic solution and removal of portion of nail that has grown into skin Instruct person on proper nail-trimming techniques and refer to podiatrist
Ram's horn nails		
Ram's horn nails are usually long, curved nails	Attempt by nurse to cut nails may result in damage to nail bed with risk of infection	Nurse refers person to podiatrist
Paronychia		
Inflammation of tissue surrounding nail occurs after hangnail or other injury; occurs in people who frequently have their hands in water and is common in diabetic people	Area can become infected	Treatment is hot compresses or soaks and local application of antibiotic ointments Paronychia can be prevented by careful manicuring
Foot odours		
Foot odours are the result of excess perspiration promoting microorganism growth	Condition may cause discomfort because of excess perspiration and embarrassment because of odour	Frequent washing, use of foot deodorants and powders and wearing clean footwear prevent or reduce problem

TABLE 29-4 Hair and scalp problems

Characteristics	Implications	Interventions
Dandruff		
Scaling of scalp is accompanied by itching In severe cases, dandruff is found on eyebrows	Dandruff causes person embarrassment If dandruff enters eyes, conjunctivitis may develop	Shampoo regularly with medicated shampoo. In severe cases, obtain doctor's advice
Ticks		
Small, grey-brown parasites burrow into skin and suck blood	Ticks transmit several diseases to people, including typhoid, Lyme disease, spotted fever and tick paralysis. Some species of tick can cause paralysis	Do not pull the tick from the skin Kill the tick with methylated spirits or insect repellent. Repeat after 1 minute. After 1 hour, brush the tick off. If necessary, lever tick out with open scissor blades
*Lice (*Pediculosis*)*		
Tiny, greyish-white parasite insects which infest mammals		
Head lice (*Pediculosis capitis*) Parasite is found on scalp attached to hair strands Eggs look like oval particles, similar to dandruff Bites or pustules may be observed behind ears and at hairline	Head lice are difficult to remove and may spread to furniture and other people if not treated	Thorough combing can remove lice Doctor may recommend shampooing with a pediculocidal shampoo. Follow directions as to repeating treatment Change bedclothes. Wash bedclothes in hot water to kill lice Caution children not to share hats or towels
Body lice (*Pediculosis corporis*) Parasites tend to cling to clothing, so they may not be easily seen Body lice suck blood and lay eggs on clothing and furniture	Person itches constantly. Scratches seen on skin may become infected Haemorrhagic spots may appear on skin where lice are sucking blood	Bath or shower thoroughly. After skin is dried, apply recommended pediculocidal lotion. After 12–24 hours, have another bath or shower Bag infested clothing or sheets until washed in hot water Vacuum rooms thoroughly and throw away bag after completion
Crab lice (*Pediculosis pubis*) Parasites are found in pubic hair Crab lice are greyish white with red legs	Lice may spread through bed linen, clothing or furniture, or between people via sexual contact	Shave hair off affected area. Clean as for body lice If lice were sexually transmitted, notify partner
Hair loss (alopecia)		
Alopecia occurs in all races Balding patches are seen in periphery of hair line. Hair becomes brittle and broken Condition is caused by use of hair curlers, tight braiding and hot rollers	Patches of uneven hair growth and loss alter person's appearance	Stop hair-care practices that damage hair

Assessment of the external *ear* structures includes inspection of the auricle, external ear canal and tympanic membrane. While performing hygiene measures, note the presence of accumulated cerumen or drainage in the ear canal, local inflammation or pain.

Inspect the *nares* for signs of inflammation, discharge, lesions, oedema and deformity. The nasal mucosa is normally pink and clear and has little or no discharge. A clear, watery discharge may be the result of allergies.

If the person has any form of tubing exiting the nose (e.g. nasogastric), the nurse should look at the nares' surfaces that come in contact with the tubing for tissue sloughing, localised tenderness, inflammation and bleeding.

Developmental changes

The normal process of ageing influences the condition of body tissues and structures and thus the manner in which hygiene measures are performed.

Skin

The *neonate's* skin is relatively immature at birth. The epidermis and dermis are loosely bound together and the skin is very thin. Friction against the skin layers can cause bruising. The neonate

must be handled carefully during bathing. Any break in the skin can easily lead to infection.

A *toddler's* skin layers are more tightly bound together than the neonate's, so the child has a greater resistance to infection and skin irritation. However, because of the child's more-active play and the absence of established hygiene habits, greater attention is needed from parents and caregivers to provide thorough hygiene and to begin teaching good hygiene habits.

During *adolescence* the growth and maturation of the integument increases. In girls, oestrogen secretion causes the skin to become soft, smooth and thicker, with increased vascularity. In boys, male hormones produce an increased thickness of the skin with some darkening in colour. Sebaceous glands become more active, predisposing adolescents to **acne**. Eccrine and apocrine sweat glands become fully functional during puberty. Adolescents usually begin to use antiperspirants. More-frequent bathing and shampooing also become necessary to reduce body odours and eliminate oily hair. Sweating is usually more pronounced in boys in temperate climates.

The condition of the *adult's* skin depends on hygiene practices and exposure to environmental irritants. Normally the skin is elastic, well hydrated, firm and smooth. When an adult bathes frequently or is exposed to an environment with low humidity, the skin can become very dry and flaky. With age, the skin loses its resilience and moisture, and sebaceous and sweat glands become less active. The epithelium thins and elastic collagen fibres shrink, making the skin fragile and subject to bruising and breaking (see *Working with diversity*). These changes warrant caution when turning and repositioning older adults. Typically, the older person's skin is dry and wrinkled. Daily bathing as well as bathing with water that is too hot or soap that is harsh may cause the skin to become excessively dry.

Feet and nails

Changes in the infant's feet occur during infancy and early childhood as locomotion and weightbearing progress. At birth the feet are flat because the arches are protected by fat pads on the soles. As the bones in the arches develop, the pads disappear and the feet begin to assume a mature shape (Hockenberry & Wilson 2011).

The main reason for wearing shoes is protection. Shoes should retain their fit, be made of durable material with a smooth interior and few construction seams to irritate the skin and be soft and flexible, especially in the toes. During weightbearing, there should be at least the space of half the width of the thumbnail, or 1.25 cm, between the end of the longest toe and the shoe (Hockenberry & Wilson 2011). Frequent changes in shoe size are needed to accommodate the infant's rapidly growing feet. Curled toes when shoes are removed and redness and irritation of the skin on the bottom of the toes indicate the need for a larger shoe size. As children grow, it is important that they continue to be fitted with a proper shoe size. The more active a child becomes, the greater the need for sturdy shoes that protect the feet from injury.

During standing, the foot provides body support and absorbs shock. With ageing, the feet begin to show signs of wear and tear. This may occur earlier if a person has not worn comfortable, supportive footwear. The cushioning layer of fat on the soles of the feet becomes thin. Years of walking cause the metatarsal bones to spread and ligaments to stretch, which results in wider feet (Kwan et al 2010).

Chronic foot problems are a common part of ageing. Older adults often have dry feet because of a decrease in sebaceous gland secretion, dehydration of epidermal cells and poor condition of footwear. Fissures that result in itching often develop. The feet of older adults often develop abnormalities over time, which can become disabling if not cared for appropriately (Touhy & Jett 2011). Painful feet can be the result of congenital deformities, weak structure, injuries, and diseases such as diabetes, rheumatoid arthritis and osteoarthritis. Arthritis is generally the cause of changes in the feet after age 55 years. Additional common problems of the feet include hammer and claw toes (flexion contractures); bunions, corns and calluses; heel spurs and gout (Touhy & Jett 2011). Fungal infections occur under toenails, causing yellow streaks or total discolouration. The nails can also become opaque, scaly and hypertrophied. If foot or nail problems stay unresolved, an older adult can easily become disabled. Nurses apply knowledge of typical changes in the feet and nails when anticipating the type of hygiene a person will require.

The mouth

At approximately 6–8 months of age, infants begin teething (Hockenberry & Wilson 2011). The eruption of the deciduous (primary) teeth usually begins with the lower central incisors, followed closely by the upper central incisors (Table 29-5). When the crown of a tooth breaks through the periodontal membrane, some discomfort can be experienced. Drooling, increased finger-sucking or biting on hard objects may be the only signs of discomfort. Some children can become very irritable and have difficulty sleeping and eating. Teething continues to occur until the final molars erupt, at around 27–29 months of age.

The first permanent (secondary) teeth erupt between 5 and 8 years of age (Thibodeau & Patton 2013). Before their appearance they have been developing in the jaw beneath the primary teeth. Meanwhile, the roots of primary teeth are gradually absorbed, so that at the time a deciduous tooth is shed, only the crown remains. The pattern of shedding primary teeth and the eruption of secondary teeth varies widely among

WORKING WITH DIVERSITY

Focus on older adults

With normal ageing the skin decreases in thickness and elasticity. The epidermal cells of the older adult contain less moisture and the skin often has a dry and wrinkled appearance. The connections between the dermis and epidermis are reduced and therefore increase the possibility for skin tears. For many older adults the slightest impact or friction against their fragile skin will cause a skin tear. Nurses play a critical role in maintaining skin integrity of the older adult. Extra care must be taken to protect fragile skin when assisting elders to move and reposition in the bed and to complete hygiene measures, as well as in other activities of daily living.

Reference

Tabloski P 2006 Gerontological nursing. Pearson, Upper Saddle River, NJ.

TABLE 29-5 Physiological development of the mouth

Developmental level	Changes
Infant	Deciduous teeth begin to erupt at about 6 months of age
	Solid food can be taken in mouth at 5–6 months
	Chewing begins by 6–8 months
18 months to 6 years	Twenty deciduous teeth are present
	By age 2, child can begin to brush teeth and learn hygienic practices from parents. Dental caries may become a problem if dental hygiene is neglected
	By age 6, 'baby' teeth begin to fall out and are replaced by permanent teeth
6–12 years	Deciduous teeth are replaced by permanent teeth. Permanent teeth are present by age 12 except second and third molars
	Definite food preferences become apparent
	Dental caries and irregularity in spacing of teeth are significant health problems
12–18 years	All permanent teeth are present
	Dental hygiene practices tend to improve because of increased awareness of body image
18–40 years	Third molars appear
	Good oral hygiene and nutrition practices are needed to avoid problems in later years
40–65 years	Although loss of teeth, usually a result of periodontal disease, is declining, about half of people over age 55 have lost some or all of their teeth because of poor oral care. Root caries and oral cancer occur with higher frequency
65 years and over	Ageing teeth become brittle, drier and darker in colour
	Teeth become uneven, jagged and fractured after years of crushing and grinding
	Gums lose vascularity and tissue elasticity, causing dentures to fit poorly
	Eating habits often change, and malnutrition may be a problem
	Diminished taste sensitivity, thinning of mucosa and decreased mass and strength of muscles of mastication also occur

Adapted from Hockenberry M, Wilson D 2011 Wong's Essentials of pediatric nursing, 9th edn. Mosby, St Louis; Jarvis C 2008 Physical examination and health assessment, 5th edn. Saunders, St Louis.

children. Many of the difficulties created by crowding of teeth become apparent. Since it is during the school-age years that the permanent teeth erupt, good dental hygiene and regular attention to dental caries are a part of health-promotion practices. Children of this age tend to be lax about oral hygiene and are not motivated by improved appearance and odour, as they will be during adolescence. In addition, children prefer sugary sweets and soft drinks for snacks. Parental support is critical for health maintenance.

From adolescence, when all of the permanent teeth are in place, through middle adulthood, the teeth and gums remain healthy if a person follows good eating patterns and good dental care. Avoidance of fermentable carbohydrates and sticky sweets are central to keeping the teeth free of caries. Regular brushing and flossing helps to prevent caries and periodontal disease (Huskinson & Lloyd 2009).

As a person grows older there are numerous factors that can result in poor oral care (see *Research highlight*). These include age-related changes of the mouth, chronic disease such as diabetes, physical disabilities involving hand grasp or strength, lack of attention to oral care, and prescribed medications that have oral side effects. Effects of inadequate care include dental caries and loss of teeth; periodontal disease; systemic infection; and long-term effects on self-esteem, the ability to eat and the maintenance of relationships. Many older people are **edentulous** (without teeth) and wear complete or partial dentures. It is important for nurses to learn whether older adults wear dentures and the condition of underlying supportive gum tissue.

Hair

Throughout life, changes in the growth, distribution and condition of the hair influence the hygiene a person requires (Table 29-6). As males reach adolescence, shaving becomes a part of routine grooming. Young girls who reach puberty may begin to shave or wax their legs and axillae. With ageing, as scalp hair becomes thinner and drier, shampooing is usually done less frequently.

Eyes, ears and nose

Chapter 19 covers the changes in hearing, vision and smell as a result of growth and development.

Self-care ability

A person's self-care abilities determine whether assistance is needed in managing activities of daily living (ADLs), including routine hygiene. Nurses assess a person's physical and cognitive ability to perform basic hygiene measures. The assessment must include measurement of a person's muscle strength, flexibility

RESEARCH HIGHLIGHT

Research focus

Poor oral health in adult life has been linked to socioeconomic status in childhood. Studies have also been conducted linking oral disease to other conditions in adult life. This study reports the lessons learned from an interprofessional education initiative where two or more professions learn about, from and with each other to improve collaboration and the quality of care.

Research abstract

Nursing and dental hygiene students at George Brown College were brought together in an initiative to learn from each other about the overlapping roles they share in oral-health and blood-pressure monitoring. The World Health Organization (WHO) has long advocated for 'multiprofessional' education among undergraduate healthcare students to build 'the skills necessary for solving the priority health problems of individuals and communities that are known to be particularly amenable to team-work'.

There is evidence of a connection between oral health and systemic health, and the increased need for proper daily oral health assessment and care for populations within acute and long-term care. At present, members of the nursing profession whose scope of practice includes providing oral assessment and daily oral care are the frontline caregivers for these populations. The increase in high blood pressure within the general population is also a priority health problem. Dental hygienists are frontline healthcare professionals in oral assessment and oral care education whose scope of practice includes taking blood pressure and pulse.

The results of the Canadian Health Measures Survey show that approximately 70% of the population sees an oral health practitioner on an annual basis. Dental hygienists are in an ideal position to monitor and screen for high blood pressure.

Evidence-based practice

- Promotion of a healthy adult lifestyle and the identification of risk factors, such as smoking, to all sectors of the population.
- Advice regarding oral hygiene throughout the life span.

Reference

Grant L et al 2011 An interprofessional education initiative between students of Dental Hygiene and Bachelor of Science in Nursing. Can J Dental Hygiene 45(1):36–44.

TABLE 29-6 Physiological development of hair growth

Age	Condition of hair
Infancy	Infants may have little or no scalp hair at birth. Scalp hair grows by first year Fine body hair (lanugo) is present on forehead, cheeks, shoulders and back
Childhood	Scalp hair is lustrous, silky, strong and elastic Hair of dark-skinned child is curlier and coarser
Middle childhood to puberty	Androgenic hormones cause increase in thickening and darkening of scalp hair, growth of hair in axillae and pubic areas in both sexes and growth of facial hair in boys
Adolescence	Boys may acquire additional amounts of distribution of body hair, such as on chest Increase in sebaceous gland activity causes hair to become oily
Adulthood	Men with genetic tendency develop baldness
Older adulthood	Axillary and pubic hair diminish in women Scalp hair becomes thinner and depleted of melanin, causing grey colouring Older women may develop chin and facial hair because of decreased oestrogen production Men may experience balding or receding hairline

and dexterity, balance, coordination, and activity tolerance necessary in performing activities such as bathing, brushing teeth and bending over to inspect the feet (Figure 29-5). For example, observing a person's ability to completely brush the front surfaces of all lower front teeth in 30 seconds and noting the person's ability to pick up and use the brush is a way to assess ability to brush the teeth (Miegel & Watchel 2009). The degree of assistance required by a person during hygiene care may also depend on vision, the ability to sit without support, attached equipment, hand grasp and the range of motion in the person's extremities. Painful conditions of the upper extremities pose special problems. Nurses can assess self-care ability by asking the person to perform activities such as brushing the teeth or combing the hair. Observe the person carefully and



Figure 29-5 **A nurse observes a person brushing their teeth. During such observations the nurse can determine how much help the person may need.**

note not only whether the activity is performed correctly, but also whether the person is thorough and can complete the task without undue fatigue.

When people have self-care limitations, part of nurses' assessment is determining whether family or friends are available to assist. In addition, nurses assess the home environment and its influence on the person's hygiene practices. Are there barriers in the home that may affect the person's self-care abilities? Taps that are too tight to easily adjust, baths with high sides and a bathroom too small to fit a chair in front of a sink are a few examples. Burns to small children and the elderly often occur because the tap-water temperature is set too high. Ideally, the temperature should be no higher than 49°C.

Hygiene practices

Each person has a preferred routine for how to perform hygiene. Nurses should not assume that all people typically bathe and groom early each morning after getting out of bed. Some people may bathe on a weekly basis only. In addition, people vary in the type of hygiene products used and in which hygiene measures they practise. In assessing a person's practices, nurses may ask a person to describe what is typically done to care for the skin, teeth, hair and feet. Nurses also observe the person's appearance. For example, dull, tangled and dirty hair indicates improper care. Unkempt hair may result from lack of interest, depression, lack of grooming resources, a physical inability to care for the hair, or the person's preference. When a person's appearance suggests poor hygiene, nurses must be sensitive in learning what the causes are.

Assessment of hygiene practices reveals the person's preferences for grooming. For example, a person may choose to groom the hair in a certain style or choose to trim their nails in a certain way. When a person has a physical disability, special precautions may be needed to perform grooming without injury. Asking the person to help or teach nurses how to perform preferred grooming practices gives the person a greater sense of independence and helps nurses avoid causing the person any discomfort or injury.

Because of a significant increase in the numbers of older adults and minorities, dental practice is facing new challenges. Immigrant communities may have high levels of untreated dental caries or gingivitis. This pattern suggests deficient hygiene practices, limited access to dental care resources or improper hygiene techniques. Helpful questions to use in assessing dental hygiene practices include the following:

- How often does the person brush the teeth?
- What type of toothbrush and toothpaste are used?
- Does the person have dentures, partials or bridges? When and how are they cleaned?
- Does the person use mouthwash, which can cause excess mucosal drying?
- Does the person floss? If so, how often?
- When was the person's last dental visit? How often are visits to a dentist made? What were the most recent results?
- Does the person drink tap-water that is fluoridated?

Toothbrushes should be discarded every 3 months or after an upper respiratory infection or pharyngitis. This prevents infection or reinfection from microbial colonisation on the toothbrush (Harris et al 2008).

Cultural factors

A person's cultural background is an influential factor when determining hygiene needs. Culture plays a role not only in hygiene practices and preferences, but also in sensitivity to personal space (see Chapter 14). For example, some Chinese people may view tasks associated with closeness and touch as being offensive or impolite (Giger 2013). Nurses should ask the person what would make them feel most comfortable during a bath. Perhaps a person would prefer only a partial instead of a full bath from nurses, with a family member completing the bathing of more-private body parts. The person may also defer part of the hygiene. If, in nurses' judgement, hygiene is critical to prevent or worsen problems, such as skin breakdown, nurses must take the time to understand the person's concerns and then offer an explanation that will help the person accept intervention by nurses.

People at risk of hygiene problems

Some people present risks that require more attentive and rigorous hygiene care (Table 29-7). These risks result from side effects of medications, a lack of knowledge, an inability to perform hygiene or a physical condition that potentially injures the skin, integument or other structures. An immobilised person who has a fever, for example, will require more frequent bathing to minimise sweat on the skin, and more frequent turning and positioning to reduce the chance of skin breakdown. Nurses anticipate whether a person is predisposed to such risks and follow through with a complete assessment. For example, if a person is receiving chemotherapy there is the risk of the medication destroying normal flora in the mouth, allowing for the overgrowth of opportunistic microorganisms, for example, fungal organisms such as *Candida albicans*; therefore, the oral examination should be more thorough and detailed, with all surfaces of the tongue and mucosa examined. If a person is diaphoretic, nurses will give special attention to body areas such as a woman's breasts and perineal area to check where moisture may collect and irritate skin surfaces. Nurses anticipate problems created by these risks so as to provide appropriate preventive care. Their assessment will include a review of the

person's medical and surgical history, medications and the specific risk factors the person is likely to have.

Special considerations in hygiene assessment

Depending on the type of hygiene nurses plan to provide, there are certain focused assessments that need to be conducted. Before giving foot care, nurses assess the type of footwear worn by the person. Children or young adults who often don't wear socks may have excess perspiration that promotes fungal growth. Tight or poorly fitting shoes, socks, garters or knee-high stockings may cause skin irritation and interfere with circulation to the feet. Nurses also assess whether people wear clean footwear daily, because repeated use of soiled footwear can lead to infection. If the person has diabetes mellitus or other peripheral vascular disease, it is extremely important that correct footwear be worn. Extra-wide and

TABLE 29-7 Risk factors for hygiene problems

Problem	Hygiene implications
Oral problems	
People who are unable to use upper extremities due to paralysis, weakness or restriction (e.g. cast or dressing)	Person lacks upper-extremity strength or dexterity needed to brush teeth
Dehydration, inability to take fluids or food by mouth (NBM)	Causes excess drying and fragility of mucosa; increases accumulation of secretions on tongue and gums
Presence of nasogastric or oxygen tubes; mouth breathers	Causes drying of mucosa
Chemotherapeutic drugs	Drugs kill rapidly multiplying cells, including normal cells lining oral cavity; ulcers and inflammation can develop
Lozenges, cough drops, antacids and chewable vitamins over-the-counter (OTC)	Medications contain large amounts of sugar; repeated use increases sugar or acid content in mouth
Radiation therapy to head and neck	Reduces salivary flow and lowers pH of saliva; can lead to stomatitis and tooth decay.
Oral surgery, trauma to mouth, placement of oral airway	Cause trauma to oral cavity with swelling, ulcerations, inflammation and bleeding
Immunosuppression; alters blood clotting	Predisposes to inflammation and bleeding gums
Diabetes mellitus	Prone to dryness of mouth, gingivitis, periodontal disease and loss of teeth
Skin problems	
Immobilisation	Dependent body parts are exposed to pressure from underlying surfaces. The inability to turn or change position increases risk of pressure ulcers
Reduced sensation due to stroke, spinal cord injury, diabetes, local nerve damage	Normal transmission of nerve impulses not received when excessive heat or cold, pressure, friction or chemical irritants are applied to skin
Limited protein or kilojoule intake and reduced hydration (e.g. fever, burns, gastrointestinal alterations, poorly fitting dentures)	Limited kilojoule and protein intake predispose to impaired tissue synthesis: skin becomes thinner, less elastic and smoother with a loss of subcutaneous tissue. Poor wound healing may result Reduced hydration impairs skin turgor
Excessive secretions or excretions on the skin from perspiration, urine, watery faecal material and wound drainage	Moisture is a medium for bacterial growth and can cause local skin irritation, softening of epidermal cells and skin maceration
Presence of external devices (e.g. casts, restraint, bandage, dressing)	Device can exert pressure or friction on skin's surface
Vascular insufficiency	Arterial blood supply to tissues is inadequate, or venous return is impaired, causing decreased circulation to extremities. Tissue ischaemia and breakdown may occur; risk of infection is high
Foot problems	
Person unable to bend over or has reduced visual acuity	Person is unable to fully see entire surface of each foot, impairing ability to adequately assess condition of skin and nails
Eye care problems	
Reduced dexterity and hand coordination	Physical limitations create inability to safely insert or remove contact lens

extra-deep shoes will accommodate bunions or hammer toes. Cushioned inner soles help redistribute pressure on the metatarsal head.

• CRITICAL REFLECTION POINT

Mrs Viera is 62 years old and is being seen in the endocrinology clinic for a follow-up appointment for management of her diabetes mellitus. During the nurse's conversation with Mrs Viera, the patient says, 'You know, last week I found a sore on my left foot; I didn't even know it was there.' What type of assessment should the nurse conduct for Mrs Viera, and what could the findings indicate?

A person's eating patterns need to be assessed prior to oral care. The presence of any problems may help nurses to locate abnormalities. Does the person have any problems associated with chewing, denture fit or swallowing? They may have changed the type of food in their diet as a result of chewing difficulties. The presence of an ulcer or irritation may impair chewing and cause a person to avoid eating. This is common in an older adult with poorly fitting dentures.

According to the Australian Institute of Health and Welfare (2008), people living in rural or remote areas have a greater incidence of poor dental health than city people, and have less access to dental care. Indigenous Australians have twice the level of edentulism or complete tooth loss compared with other Australians. Nurses can play a very important role, particularly when caring for people in rural settings, poor people and older adults, in being able to screen for abnormalities such as dental decay and referring dental problems to a dental professional.

If a person wears glasses, contact lenses, artificial eyes or hearing aids, assess the person's knowledge of methods used to care for the aids, and the presence of any problems. Box 29-2 outlines factors to assess in people who use sensory aids. Findings have implications for patient education and nursing care.

The person's expectations

As is the case in any nursing assessment, it is important to know what a person expects from nursing care. In relation to hygiene care, the person may simply expect to have hygiene preferences and practices applied in the healthcare setting. Nurses can learn a person's expectations by asking questions such as 'To make you most comfortable and feel at home, how can I best perform your bath and personal care?' or 'How can we help you to care for your teeth, nails and hair, now that you are back home?'

Learning a person's expectations and applying them in practice is important in establishing a caring relationship. Truly individualising hygiene care shows respect for the person's needs. As nurses learn what the person expects, this information can be incorporated into goal development.

• CRITICAL REFLECTION POINT

Alison Jakes is 14 years old and visiting the clinic for a vaccination. She mentions to the clinic nurse that she has a toothache. What assessment would be required for Alison? What recommendations might the clinic nurse make about dental care?

BOX 29-2 Assessing person's use of sensory aids

Glasses

- Purpose for wearing glasses (e.g. reading, distance, or both)
- Methods used to clean glasses
- Presence of symptoms (e.g. blurred vision, photophobia, headaches, irritation)

Contact lenses

- Type of lens worn
- Frequency and duration of time lenses are worn (including sleep time)
- Presence of symptoms (e.g. burning, excessive eye-watering, redness, irritation, swelling, sensitivity to light)
- Techniques used to clean, store, insert and remove lenses
- Use of eye drops or ointments
- Use of emergency identification bracelet or card that warns others to remove person's lenses in case of emergency

Artificial eye

- Method used to insert and remove eye
- Method of cleaning eye
- Presence of symptoms (e.g. drainage, inflammation, pain involving the orbit)

Hearing aid

- Type of aid worn
- Methods used to clean aid
- Ability to change battery and adjust hearing-aid volume

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

Nurses' assessment will reveal the condition of the skin, oral cavity and other tissues, as well as the person's need for and ability to meet personal hygiene needs. Nurses review all data gathered, consider previous people cared for, review knowledge pertaining to pre-existing conditions and then look for clusters of data suggesting a problem trend. For example, an older adult with degenerative arthritis presents to the home health nurse with pain in the joints, weakness, mobility limitations in the dominant hand and a generally unkempt appearance. Closer review of assessment data reveals defining characteristics of an inability to wash body parts and difficulty turning and regulating a tap. The nursing diagnosis of bathing/hygiene self-care deficit is supported and becomes part of the nursing plan of care. The accurate selection of nursing diagnoses requires critical thinking to identify actual or potential health problems (Box 29-3). Assessment activities must be thorough in revealing all appropriate defining characteristics so that an accurate diagnosis can be made.

BOX 29-3 Priority problems associated with hygiene care

Assessment activities	Defining characteristics	Priority problem
Inspect condition of person's perianal and perineal tissues.	Skin is becoming reddened over perianal area.	Risk of impaired skin integrity related to chemical irritation.
Observe character of person's loose stools.	Stools are diarrhoeal in nature, occurring 5–6 times daily.	
Note frequency of loose stools.		
Observe person attempt to bath self either in bed or at bathroom sink. (Note: be sure positioning does not restrict potential movement.)	Person is unable to wash body or body parts.	Self-care deficit, bathing/hygiene related to upper extremity weakness.
Observe person adjust flow of water.	Person is unable to regulate water flow.	
Assess person's upper extremity strength, range of motion and coordination.	Person has reduced upper extremity movement and strength.	

Whether a person has an actual problem (e.g. impaired tissue integrity) or is at risk (e.g. of infection) determines the focus of nursing interventions. The person with an actual problem will require extensive hygiene care, often more thorough than routine hygiene might involve. For example, if the person has skin breakdown, nurses must initiate care more frequently to keep existing skin surfaces clean and dry and to eliminate factors such as moisture or drainage that can worsen the condition of the skin. Nurses would also provide care to promote healing of injured skin surfaces (see Chapter 26). If the person is at risk of a problem, nurses will institute preventive measures. In the case of risk of impaired oral mucous membranes, nurses will keep the mucosa well hydrated, minimise foods that irritate the membranes and provide cleaning that soothes and reduces tissue inflammation.

The identification of related factors guides nurses in the selection of nursing interventions. Identification of an impaired oral mucous membrane related to malnutrition and one of impaired oral mucous membrane related to chemical trauma require very different interventions. When malnutrition is a causal factor, nurses will obviously confer with a dietitian for appropriate dietary supplements and incorporate patient education into the plan. When mucosa are injured as a result of chemical trauma from chemotherapy, techniques for cleaning and hydrating inflamed tissues and eliminating sources of irritation will be the focus of nursing care. Box 29-4 summarises possible nursing problems that apply to people in need of hygiene care.

BOX 29-4 Priority problems associated with hygiene

Dentition
Fatigue
Risk of infection
Knowledge deficit about hygiene practices
Impaired physical mobility
Altered oral mucous membrane
Powerlessness
Self-care deficit, bathing/hygiene
Self-care deficit, dressing/grooming
Self-esteem disturbance
Impaired skin integrity
Tissue integrity, impaired
Peripheral tissue perfusion, altered

SETTING PRIORITIES AND ESTABLISHING GOALS

During planning, nurses synthesise information from multiple resources (Figure 29-6). Critical thinking ensures that the person's plan of care integrates all that nurses know about the individual person and key critical-thinking elements. Previous experience with other people can be very useful in knowing how to adapt hygiene techniques for special needs. Professional standards are especially important to consider when nurses develop a plan of care. These standards often establish scientifically proven guidelines for effective nursing interventions. For example, Diabetes Australia's guidelines are valuable for preventive foot care in diabetic people (see *Online resources*).

Goals and outcomes

Nurses develop an individualised plan of care for each of the person's potential problems (see *Sample student nursing care plan*). Nurses work together with the person to identify goals and expected outcomes. Goals are established with the person's self-care abilities and resources in mind. Outcomes should be measurable and achievable within the person's limitations. Nurses work further with the person to then select hygiene measures that are appropriate and realistic. For example, a goal for self-care deficit hygiene might be: 'The person will complete his own hygiene care with supervision within 1 week.' The expected outcomes would be 'remains free of body odour, states satisfaction with the ability to use aids in the shower and bathes with minimal assistance in and out of shower'.

APPLYING CRITICAL THINKING

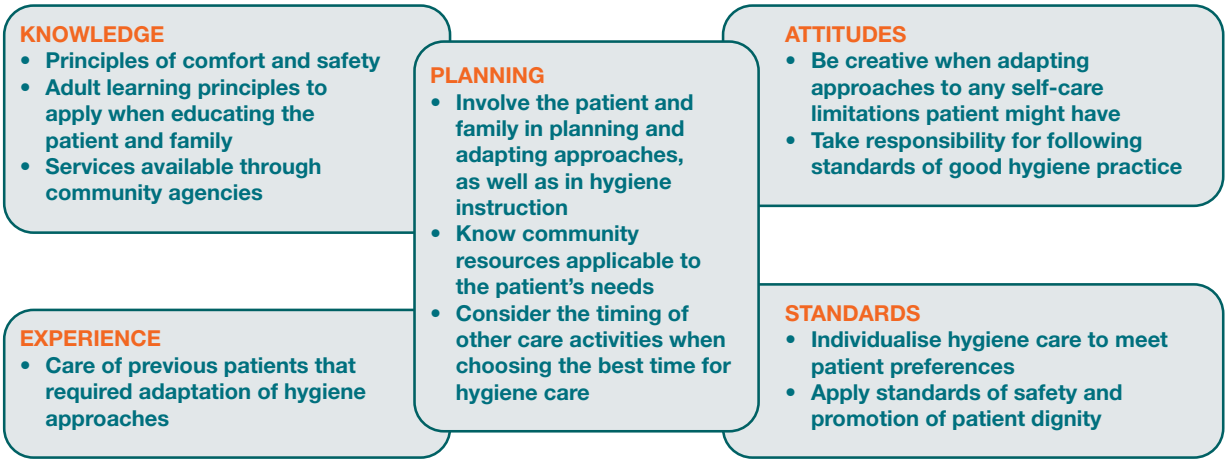


Figure 29-6 **Critical thinking associated with the planning phase for hygiene.**

SAMPLE STUDENT NURSING CARE PLAN

Gathering relevant data and information*

Mrs Wyatt is a 57-year-old who has had multiple sclerosis for 10 years. She was recently hospitalised for an acute exacerbation of the disease. Jeannette, the nurse, makes the initial home visit to see Mrs Wyatt. Jeannette's assessment reveals that Mrs Wyatt has reduced hearing, requiring Jeannette to speak clearly and to stand so Mrs Wyatt can see her lip movements. Mrs Wyatt is married, but her husband, Lon, works full-time during the day. Her sister comes over periodically to help with her care and household chores. Mrs Wyatt has **muscular weakness of both upper extremities**, making it **difficult for her to raise her arms above her shoulders**. She has some foot dragging and ataxia (unsteady gait), so she **bathes in a chair placed in front of the bathroom sink**. Recently her sister has helped with bathing. With some spasticity in her right dominant arm, Mrs Wyatt has difficulty grasping objects. Jeannette arranged her assessment in the morning to observe Mrs Wyatt bathe. She had **increased spasticity while bathing and became very fatigued after only about 5 minutes**. Mrs Wyatt continues to be very independent in making decisions about her care. She tells Jeannette, 'It is important for me to be able to bathe myself.'

**Important data to cluster in setting priorities in bold.*

Priority problem(s)

Inability to self-care: bathing/hygiene related to muscle spasticity and fatigue.

Making appropriate judgements and decisions

Setting priorities and establishing goals	Expected outcomes
Mrs Wyatt will be able to perform self-bathing without assistance within 1 month.	Mrs Wyatt will experience decreased duration of muscle spasms within 2 weeks. Mrs Wyatt will experience less fatigue during bathing activities within 1 month. Mrs Wyatt will be able to grasp and manipulate bathing equipment.

Preparing for and taking action†	Rationale
Energy management	
• Plan bathing at a time when Mrs Wyatt has most energy.	Will minimise occurrence of fatigue.
Self-care assistance	
• Set up bathing area (with assistance of husband or sister) so that all bathing equipment is at waist level, easy for Mrs Wyatt to reach.	Easy access to equipment will reduce muscle fatigue.
• Instruct Mrs Wyatt's sister to encourage Mrs Wyatt's independence and to intervene only when she is unable to bathe herself.	Multiple sclerosis is a degenerative disease that progresses. People may have remissions along with relapses. Therapy maintains the highest level of independent activity.
• Confer with physical or occupational therapist about the appropriateness of aids to use during bathing.	Decrements in the ability to perform gross motor function over time indicate need for aids and a modified environment to help control symptoms and to make activities of daily living easier to perform.
Exercise promotion: stretching	
• Perform stretching exercises prescribed by physical therapy every 6–8 hours.	Stretching prevents muscle contraction and reduces muscle spasms.

† Preparing for and taking action classification labels from Bulechek GM et al 2008 Nursing interventions classification (NIC), 5th edn. Mosby, St Louis.

Evaluating impacts and outcomes

- Assess the range of motion of upper extremities for presence of spasticity.
- Ask Mrs Wyatt to report if they experience fatigue during bathing.
- Observe Mrs Wyatt bathing at the bathroom sink.

The person's condition influences the plan for delivering hygiene. A seriously ill person usually needs a daily bath because body secretions accumulate and can become a source of infection. An older person at home may require a visit from a home health aide to help with a bath. People who are normally inactive during the day and have skin that tends to be dry may need to bathe only twice a week. Timing is also important in planning hygiene. Being interrupted in the middle of a bath to go to an X-ray examination can frustrate and embarrass a person. Following extensive diagnostic tests (e.g. a stress test), it may be best to delay hygiene and allow a person to rest. In the home, bathing may be planned to refresh the person before daily activities. Nurses should try to plan hygiene around tests, procedures and person needs. This can be difficult in a hospital because tests are often not scheduled for specific times.

• CRITICAL REFLECTION POINT

Mr Wilkes is a 54-year-old man with an advanced stage of lung cancer. The tumour has spread to the bone, causing Mr Wilkes considerable pain and predisposing him to pathological fractures (fractures that result when bone is weakened by tumour growth). He has been experiencing a high fever almost daily. What might you consider in anticipating Mr Wilkes's hygiene needs?

When a person needs assistance as a result of a self-care limitation, the family becomes a valuable resource to nurses. Family members can usually help with hygiene measures, but may need guidance in adapting techniques to fit their limitations. In devising a plan that involves family members, nurses try to match the family's schedule of availability with the person's needs. It is also important to have the family member with whom the person is most comfortable routinely involved (Paquay et al 2010).

Setting priorities

Although hygiene needs are not the top priority for saving lives, for the person these needs are often a higher priority than nurses perceive them to be. The discomfort and lowered self-esteem of knowing that your body odour is offensive or that your teeth feel thick and you have halitosis or that your skin is sweaty and uncomfortable cause hygiene needs to assume a high priority.

Continuity of care

Discharge planning involves alerting the community nurse to the person's needs and functional ability. Information sharing is crucial to people receiving seamless care from hospital to home. Social workers may need to become involved to provide funds for home aids or alterations. Occupational therapists are able to assess the person's home environment and suggest changes that would improve independent living. Nurses must plan for necessary assistance for people who are weakened or possess poor coordination. For example, a partially paralysed person who has had difficulty getting out of a bath should have a bath chair, handrails, a handheld shower or extra people available to help.

Nurses may need various community resources in planning hygiene care. For example, nurses involved in the care of a

homeless person may need to be aware of the location of clothing distribution centres for basic hygiene supplies or a shelter where bathing facilities are available. Frequently nurses will consult with social workers or staff in local churches and schools to be sure people have the resources they need to maintain hygiene.

PREPARING FOR AND TAKING ACTION

Providing hygiene is a very basic but important part of a person's care. Nurses learn to use caring practices that help to alleviate the person's anxiety and promote comfort and relaxation while performing each hygiene measure. For example, while giving a person a bath and changing a gown, nurses use a gentle approach in turning and repositioning. Using a soft, gentle voice while conversing with the person helps to relieve any fears or concerns. For people suffering symptoms such as pain or nausea, administering symptom relief therapies prior to hygiene will better prepare the person for any procedure.

• CRITICAL REFLECTION POINT

Thanos is an 18-year-old man admitted to the intensive care unit following a head injury. He is currently unconscious, responsive only to painful stimulus. What assessment is critical for nurses to perform before providing oral hygiene?

Another important part of nursing interventions are assisting and preparing people so that they are able to administer their own hygiene. This includes educating people in proper hygiene techniques and connecting people with the community resources necessary to enable them to perform hygiene care. People at risk of hygiene problems are the ones in greatest need of understanding their risks, knowing the implications and then having the information they need to make choices about when and how hygiene is performed.

Health promotion

In primary healthcare settings, nurses educate and counsel people and families on proper hygiene techniques. A new mother will need help to learn how to bathe her newborn infant. An older adult will need to be informed about the importance of regular ear care to avoid any hearing deficits resulting from accumulated cerumen. The hygiene skills described throughout this chapter provide standards for excellent physical care. When helping people, nurses try to maintain these standards and incorporate adaptations as needed to the person's lifestyle, living arrangements and preferences. Tips to help nurses educate people about hygiene include the following.

- *Make instructions relevant.* After assessing a person's knowledge, motivation, health beliefs and ability/capacity for self-care, provide information that relates to the person's situation and which will be most useful in resolving the person's problem. For example, when offering foot care instruction to a person with diabetes mellitus, explain how the circulation to the feet can be impaired and when the skin becomes cut or broken this poses a risk for poor healing and infection.
- *Adapt instruction of any techniques to the person's personal bathing facilities.* Not all people will have the ideal situation that exists in a healthcare setting (e.g. easily accessible shower or a bedside table to place over a bed). Use what facilities or equipment the person has so that personal care items are easy to reach, the person's safety is ensured and the person feels comfortable in performing hygiene. For example, a young mother may feel that bathing an infant will be safer (with more room) if she uses her kitchen sink and counter rather than her bathroom sink.
- *Be sure to teach the person steps to take to avoid injury.* Almost any hygiene procedure can pose risks (e.g. cutting a nail too close to the skin, failing to adjust the water temperature of the bath or using tap-water for contact lens care). Any instruction must clearly outline safety risks.
- *Reinforce infection control practices.* Damage to the skin, mucosa, eyes or other tissues creates an immediate risk of infection. Be sure the person understands the relationship between healthy and intact skin and tissues and the prevention of infection.

Acute and restorative care

In healthcare settings where people receive direct nursing care, nurses provide a variety of hygiene measures. Box 29-5

BOX 29-5 Hygiene care schedule in acute care and extended care settings

Early morning care

Nursing personnel on the night shift provide basic hygiene to people getting ready for breakfast, scheduled tests or early-morning surgery. This includes offering a bed pan or urinal if the person is not mobile, washing the person's hands and face and helping with oral care.

Morning, or after-breakfast, care

In care performed after breakfast, nurses help by offering a bed pan or urinal to people confined to bed; providing a bath or shower; providing oral, foot, nail and hair care; giving a back rub, changing the person's gown or pyjamas; changing the bed linen; and straightening the person's bedside unit and room.

Afternoon care

Hospitalised people often undergo many exhausting diagnostic tests or procedures in the morning. In rehabilitation centres, people may participate in physical therapy during the morning. Afternoon hygiene care includes washing the hands and face, helping with oral care, offering a bed pan or urinal and straightening bed linen.

Evening, or hour-before-sleep, care

Before bedtime, nurses offer personal hygiene care that can help a person relax to promote sleep. This may include changing soiled bedclothes, gowns or pyjamas; helping the person wash the face and hands; providing oral hygiene; giving a back massage; and offering a bed pan or urinal to non-mobile people. Some people may enjoy a drink such as juice.

describes the different hygiene care schedules commonly found in acute care and extended-care settings. Times may change because of factors affecting nurses' organisation or scheduling of care, such as personal preferences, planned diagnostic and treatment procedures, the person's need for more hygiene, or nurses' work assignments. In extended-care facilities and nursing homes, the schedule for hygiene may be less frequent.

Bathing and skin care

Bathing and skin care are a part of total hygiene. The extent of a person's bath and the methods used for bathing depend on the person's physical abilities, health problems and the degree of hygiene required. If a person is physically dependent or cognitively impaired, more attention must be given by nurses in providing thorough, preventive skin care.

A **complete bed bath** is for people who are totally dependent and require total hygiene care (Skill 29-1). It can be exhausting for a person, even if nurses provide all of the care. Nurses must assess whether a person is physically able to tolerate a complete bath. Measuring heart rate before, during and after the bath provides a measure of the person's physical tolerance.

SKILL 29-1

Bathing a person

Delegation considerations

Bathing may be undertaken by nurse assistants under the guidance of the registered nurse.

- Inform caregiver about early signs of impaired skin integrity, and tell caregiver to have nurse reassess the skin when changes are noted.
- Warn against massaging reddened areas.
- Review type of bath, person's ability to participate and any safety precautions needed.

Equipment

- Two washcloths
- Two bath towels
- Bath blanket
- Soap and soap dish
- Toiletry items (deodorant, powder, lotion, cologne)
- Clean hospital gown or person's own pyjamas or gown
- Dirty linen bag
- Disposable gloves (when risk of contacting body fluids)

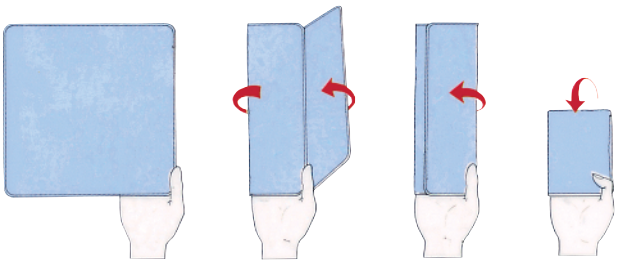
Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

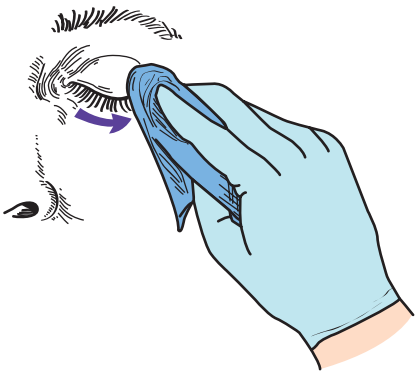
STEPS	RATIONALE
1. Assess person's tolerance for activity, discomfort level, cognitive ability and musculoskeletal function.	Determines person's ability to perform self-care and level of assistance required from nurse. Also determines type of bath to administer (e.g. tub bath or partial bed bath).
2. Review orders for specific precautions concerning person's movement or positioning.	Prevents accidental injury to person during bathing activities. Determines level of assistance required by person.
3. Explain procedure, and ask person for suggestions on how to prepare supplies. If partial bath, ask how much of bath person wishes to complete.	Promotes person's cooperation and participation.
4. Adjust room temperature and ventilation, close room doors and windows and draw room divider curtain.	A warm room that is free of drafts prevents rapid loss of body heat during bathing. Privacy ensures person's mental and physical comfort.

STEPS	RATIONALE
5. Prepare equipment and supplies.	Avoids interrupting procedure or leaving person unattended to retrieve missing equipment.
6. Bathe the person.	
A. Complete or partial bed bath	
(1) Offer the person bed pan or urinal. Provide towel and washcloth.	Person will feel more comfortable after voiding. Prevents interruption of bath.
(2) Wash your hands. If the person's skin is soiled with drainage or body secretions, wear disposable gloves. Ensure the person is not allergic to latex.	Reduces transmission of microorganisms.
(3) Lower side rail closest to you, and help the person into a comfortable position, maintaining body alignment. Bring the person towards the side closest to the nurse. Place hospital bed in high position.	Aids nurse's access to person. Maintains person's comfort throughout procedure. Nurse does not have to reach across bed, thus minimising strain on back muscles.
(4) Loosen top covers at foot of bed. Place bath blanket over top sheet. Fold and remove top sheet from under blanket. If possible, have the person hold the bath blanket while withdrawing the sheet. Optional: Use top sheet when bath blanket is not available.	Removal of top covers prevents them from becoming soiled or moist during bath. Blanket provides warmth and privacy.
(5) If the top sheet is to be reused, fold it for replacement later. If not, place in dirty linen bag, taking care not to allow linen to contact uniform.	Proper disposal prevents transmission of microorganisms.
(6) Remove the person's gown or pyjamas. If an extremity is injured or has reduced mobility, begin removal from unaffected side. If the person has intravenous (IV) tube, remove gown from arm without IV first; then lower IV container or remove from pump and slide gown covering affected arm over tubing and container. Rehang IV container and check flow rate or reset pump rate. Do not disconnect tubing.	Provides full exposure of body parts during bathing. Undressing unaffected side first allows easier manipulation of gown over body part with reduced range of motion (ROM).
(7) Pull side rail up. Fill washbasin two-thirds full with warm water. Have the person place their fingers in the water to test temperature tolerance. Place plastic container of bath lotion in bathwater to warm, if desired.	Raising side rail maintains person's safety as nurse leaves bedside. Warm water promotes comfort, relaxes muscles and prevents unnecessary chilling. Testing temperature prevents accidental burns. Bathwater warms lotion for application to person's skin.

STEPS	RATIONALE
(8) Remove pillow if allowed, and raise head of bed 30–45 degrees. Place bath towel under the person's head. Place second bath towel over the person's chest.	Removal of pillow makes it easier to wash person's ears and neck. Placement of towels prevents soiling of bed linen and bath blanket.
(9) Fold washcloth around fingers of nurse's hand to form mitt (see illustration). Immerse mitt in water and wring thoroughly.	Mitt retains water and heat better than loosely held washcloth; keeps cold edges from brushing against person and prevents splashing.
(10) Wash the person's eyes with plain warm water. Ask whether the person is wearing contact lenses. If so, perform eye care as described in Skill 29-8. Use different section of mitt for each eye. Move mitt from inner to outer canthus (see illustration). Soak any crusts on eyelid for 2–3 minutes with a damp cloth before attempting removal. Dry eye thoroughly but gently.	Soap irritates eyes. Use of separate sections of mitt reduces infection transmission. Bathing eye from inner to outer canthus prevents secretions from entering nasolacrimal duct. Pressure can cause internal injury.



Step 6A(9) Steps for folding washcloth to form a mitt.



Step 6A(10) Wash eye from inner to outer canthus.



Step 6A(13) Washing arms.

(11) Ask whether the person prefers to use soap on face. Wash, rinse and dry well forehead, cheeks, nose, neck and ears. (Men may wish to shave at this point or after bath.)	Soap tends to dry face, which is exposed to air more than other body parts.

STEPS	RATIONALE
(12) Remove bath blanket from the person's arm that is closest to nurse. Place bath towel lengthwise under their arm.	Prevents soiling of bed.
(13) Wash arm with soap and water using long, firm strokes from distal to proximal areas (fingers to axilla; see illustration). Raise and support arm as needed while thoroughly washing axilla.	Soap lowers surface tension and facilitates removal of debris and bacteria when friction is applied during washing. Long, firm strokes stimulate circulation. Movement of arm exposes axilla and exercises joint's normal ROM.
(14) Rinse and dry arm and axilla thoroughly. If person uses deodorant or talcum powder, apply it.	Alkaline residue from soap discourages growth of normal skin bacteria. Excess moisture causes skin maceration or softening. Deodorant controls body odour.
(15) Fold bath towel in half, and lay it on bed beside the person. Place basin on towel. Immerse the person's hand in water. Allow hand to soak for 3–5 minutes before washing hand and fingernails (see Skill 29-5). Remove basin and dry hand well.	Soaking softens cuticles and calluses of hand, loosens debris beneath nails and enhances feeling of cleanliness. Thorough drying removes moisture from between fingers.
(16) Raise side rail, and move to other side of bed. Lower side rail, and repeat Steps 12–15 for other arm.	
(17) Check temperature of bathwater, and change water if necessary.	Warm water maintains person's comfort. Clean water reduces microorganism transmission.
(18) Cover the person's chest with bath towel, and fold bath blanket down to umbilicus. With one hand, lift edge of towel away from chest. With mitted hand, bathe chest using long, firm strokes. Take special care to wash skinfolds under a female's breasts. It may be necessary to lift breast upwards while washing underneath it. Keep person's chest covered between wash and rinse periods. Dry well.	Draping prevents unnecessary exposure of body parts. Towel maintains warmth and privacy. Secretions and dirt collect easily in areas of tight skinfolds. Skinfolds are susceptible to excoriation if breasts are pendulous.
(19) Place bath towel lengthwise over chest and abdomen. (Two towels may be needed.) Fold blanket down to just above pubic region.	Prevents chilling and exposure of body parts.
(20) With one hand, lift bath towel. With mitted hand, bathe abdomen, giving special attention to umbilicus and abdominal folds. Stroke from side to side. Keep abdomen covered between washing and rinsing. Dry well.	Moisture and sediment that collect in skinfolds predispose skin to maceration and irritation.
(21) Dress the person in a clean gown or pyjama top. If one extremity is injured or immobilised, always dress affected side first. This step may be omitted until completion of bath; gown should not become soiled during remainder of bath.	Maintains person's warmth and comfort. Dressing affected side first allows easier manipulation of gown over body part with reduced ROM.

STEPS	RATIONALE
(22) Cover chest and abdomen with top of bath blanket. Expose near leg by folding blanket towards midline. Be sure perineum is draped.	Prevents unnecessary exposure.
(23) Bend the person's knee by positioning nurse's arm under leg. While grasping the person's heel, elevate leg from mattress slightly and slide bath towel lengthwise under leg. Ask the person to hold foot still. Place bath basin on towel on bed and secure its position next to foot to be washed.	Towel prevents soiling of bedclothes. Support of joint and extremity during lifting prevents strain on musculoskeletal structures. Sudden movement by person could spill bathwater. (Omit this step if person is unable to hold leg in basin.)
(24) With one hand supporting the lower leg, raise it and slide the basin under lifted foot. Make sure the foot is firmly placed on bottom of basin. Allow the foot to soak while washing leg. If the person is unable to hold leg, do not immerse it; simply wash with washcloth (see illustration).	Proper positioning of foot prevents pressure being applied from edge of basin against calf. Soaking softens calluses and rough skin.
(25) Unless contraindicated, use long, firm strokes in washing from the ankle to knee and from knee to thigh. Dry well.	Promotes venous return.

■ **Critical decision point: People with history of deep-vein thromboses or hypercoagulation disorders should not have their lower extremities washed with long, firm strokes.**

(26) Clean foot, making sure to wash between toes. Clean and clip nails as needed (see Skill 29-5). Dry well. If skin is dry, apply lotion. Do not massage any reddened area on person's skin.	Secretions and moisture may be present between toes. Lotion helps retain moisture and soften skin.



Step 6A(24) Washing leg of person unable to hold foot in basin.



Step 6A(31) Washing back.

(27) Raise side rail, and move to other side of the bed. Lower side rail, and repeat Steps 22–26 for other leg and foot.	
(28) Cover the person with a bath blanket, raise the side rail for the person's safety and change bathwater.	Decreased bathwater temperature can cause chilling. Clean water reduces microorganism transmission.

STEPS	RATIONALE
(29) Lower side rail. Help person into a prone or side-lying position (as applicable). Place towel lengthwise along the person's side.	Exposes back and buttocks for bathing.
(30) Put on disposable gloves if not done previously.	Prevents contact with microorganisms in body secretions.
(31) Keep the person draped by sliding bath blanket over shoulders and thighs. Wash, rinse and dry back from neck to buttocks using long, firm strokes (see illustration). Clean buttocks and anus (see Skill 29-2). Give a back rub (see Skill 29-4). Change bathwater.	Maintains warmth, and prevents unnecessary exposure. Skinfolds near buttocks and anus may contain faecal secretions that harbour microorganisms. Changing water prevents transfer of microorganisms from anal area to genitalia.
(32) Help the person into a side-lying or supine position. Cover the chest and upper extremities with towel and lower extremities with bath blanket. Expose only genitalia. (If the person can wash, covering entire body with bath blanket may be preferable.) Wash, rinse and dry perineum (see Skill 29-2). Pay special attention to skinfolds. Apply water-repellent ointment to area exposed to moisture.	Maintains person's privacy. People capable of performing partial bath usually prefer to wash their own genitalia. Water-repellent ointments protect skin from moisture.
(33) Dispose of gloves in receptacle.	Prevents transmission of infection.
(34) Apply additional body lotion or oil as desired.	Moisturising lotion prevents dry, chapped skin.
(35) Help the person to dress. Comb person's hair. Women may want to apply make-up.	Promotes person's body image.
(36) Make the person's bed (see Skill 29-9).	Provides clean environment.
(37) Remove soiled linen, and place in dirty linen bag. Clean and replace bathing equipment. Replace call light and personal possessions. Leave room as clean and comfortable as possible.	Prevents transmission of infection. Clean environment promotes person's comfort. Keeping call light and articles of care within reach promotes person's safety.
(38) Wash hands.	Reduces transmission of microorganisms.
B. Bath or whirlpool bath or shower	
(1) Consider the person's condition, and review orders for precautions concerning the person's movement or positioning.	Prevents accidental injury to person during bathing.
(2) Check bath or shower for cleanliness. Use cleaning techniques outlined in agency policy. Place rubber mat on bath or shower bottom. Place disposable bath mat or towel on floor in front of bath or shower.	Cleaning prevents transmission of microorganisms. Mats prevent slipping and falling.

STEPS	RATIONALE
(3) Collect all hygiene aids, toiletry items and linen requested by person. Place within easy reach of the bath or shower.	Placing items close at hand prevents possible falls when person reaches for equipment.
(4) Help the person to the bathroom if necessary. Have the person wear dressing gown and slippers to bathroom.	Assistance prevents accidental falls. Wearing dressing gown and slippers prevents chilling.
(5) Demonstrate how to use call signal for assistance.	Bathrooms are equipped with signalling devices in case person feels faint or weak or needs immediate assistance. People prefer privacy during bath if safety is not jeopardised.
(6) Place 'occupied' sign on bathroom door.	Maintains person's privacy.
(7) Provide shower seat or bath chair if needed (see illustration). Fill bath halfway with warm water. If the person's sensations are normal, ask them to test the water and adjust the temperature if the water is too warm. Explain which tap controls hot water. If the person is taking a shower, turn the shower on and adjust the water temperature before they enter the shower unit.	Adjusting water temperature prevents accidental burns. Older adults and people with neurological alterations (e.g. spinal cord injury) are at high risk of burns as a result of reduced sensation. Use of aids facilitates bathing and minimises physical exertion.



Step 6B(7) Shower seat for personal safety.

(8) Instruct person to use safety bars when getting into and out of bath or shower. Caution person against use of bath oil in bathwater.	Prevents slipping and falling. Oil causes bath surfaces to become slippery.
(9) Instruct the person not to remain in bath longer than 20 minutes. Check on them every 5 minutes.	Prolonged exposure to warm water may cause vasodilation and pooling of blood, leading to lightheadedness or dizziness.
(10) Return to the bathroom when the person signals, and knock before entering.	Provides privacy.

STEPS	RATIONALE
(11) For an unsteady person, drain bath of water before person attempts to get out of it. Place bath towel over the person's shoulders. Help the person get out of bath as needed, and help them with drying. If the person is weak or unstable, have a nurse assistant help.	Prevents accidental falls. Person may become chilled as water drains.
(12) Help the person as needed to don clean gown or pyjamas, slippers and dressing gown. (In a home setting, the person may wear ordinary clothing.)	Maintains warmth to prevent chilling.
(13) Help the person to their room and into a comfortable position in bed or on a chair.	Maintains relaxation gained from bathing.
(14) Clean the bath or shower according to agency policy. Whirlpool baths may require special cleaning. Remove soiled linen and place in a dirty linen bag. Discard disposable equipment in the proper receptacle. Place 'unoccupied' sign on bathroom door. Return supplies to storage area.	Prevents transmission of infection through soiled linen and moisture.
(15) Wash hands.	Reduces transfer of microorganisms.
7. Observe skin, paying particular attention to areas that were previously soiled, reddened or showed early signs of breakdown.	Techniques used during bathing should leave skin clean and clear.
8. Observe ROM during bath.	Measures joint mobility.
9. Ask person to rate level of comfort.	

RECORDING AND REPORTING

- Record bath on flow sheet. Note level of assistance required.
- Record condition of skin and any significant findings (e.g. reddened areas, bruises, naevi or joint or muscle pain).
- Report evidence of alterations in skin integrity to nurse in charge or doctor.

HOME CARE CONSIDERATIONS

- Assess person's bath and shower area – are grab bars, shower chair or handheld shower needed?

A **partial bed bath** involves bathing only body parts that would cause discomfort or odour if left unbathed. An ageing or dependent person in need of only partial hygiene or a self-sufficient bedridden person unable to reach all body parts receive partial bed baths. Carefully assess to determine whether the person can sufficiently bathe other body parts on their own, so as to promote independence.

When administering either a complete or a partial bath, it is important for nurses to assess the condition of the skin in determining whether soap is necessary or whether the person requires daily bathing. People with excessively dry skin are predisposed to skin impairment. Nurses may decide to skip a bath for a day or bathe only badly soiled areas. Using soaps that contain emollients or using bath gels rather than soap are other

options. Lubricating the skin with lotion can also help reduce dryness.

The *bath or shower* gives a more thorough bath than a bed bath. Safety is the main concern because the surface of a bath or shower unit is slippery. In some agencies, showers are equipped with a chair for people with weakness or poor balance. Most extended-care facilities have showers that permit the person to be brought into the shower on a specialised wheeled chair. Both baths and showers should be equipped with grab-bars for people to hold on to during entry, exit and manoeuvring. People vary in how much help they will need.

Regardless of the type of bath the person receives, nurses should use the following guidelines.

- *Provide privacy.* Close the door, or pull room curtains around the bathing area. While bathing the person, expose only the areas being bathed.
- *Maintain dignity.* Keep the approach to the person professional and dignified.
- *Maintain safety.* Keep side rails up while away from the person's bedside. (This is critical for dependent and unconscious people.) Place the call light within the person's reach if leaving the room temporarily.
- *Maintain warmth.* The room should be kept warm because the person is partially uncovered and may easily be chilled. Wet skin causes an excess loss of heat through convection. Control drafts and keep windows closed. Keep the person covered, exposing only the body part being washed.
- *Promote independence.* Encourage the person to participate in as many of the bathing activities as possible. Offer assistance when needed.
- *Anticipate needs.* Help the person to use the toilet before bathing. Bring a new set of clothing and hygiene products to the bedside or bathroom.

BAG BATHS An innovative approach to the traditional bed bath was developed because of concern for people who are predisposed to dry skin and the risk of infection. The advantages of the 'bag bath' include less cross-contamination from one body part to another, less growth of organisms in the bath or basin and reduced residue on the skin from soap, resulting in fewer skin reactions and improved skin integrity. It has also been shown to improve person satisfaction and reduce staff time and costs (Lentz 2003). The 'bag bath' is a specially prepared package containing 10 washcloths that are premoistened in a mixture of water and a non-rinseable cleanser. A bag is warmed in a microwave before use, and then a different cloth is used for each part of the person's body. In this technique the skin is allowed to air-dry, since towel-drying removes the emollient that is left behind after the water/cleanser solution evaporates.

PERINEAL CARE is usually part of the complete bed bath (Skill 29-2). People most in need of **perineal care** are those at greatest risk of acquiring an infection (e.g. uncircumcised males, people who have indwelling urinary catheters, people who are recovering from rectal or genital surgery or childbirth and people who are incontinent of either urine or faeces). In addition, women who are having a menstrual period will require

SKILL 29-2

Perineal care

Delegation considerations

Perineal care can be undertaken by nurse assistants under the guidance of the registered nurse.

- Instruct caregiver in proper way to position male and female people.
- Inform caregiver about proper positioning of indwelling catheter during perineal care.
- Instruct caregiver to inform nurse if any perineal drainage, excoriation or rash is observed.

Equipment

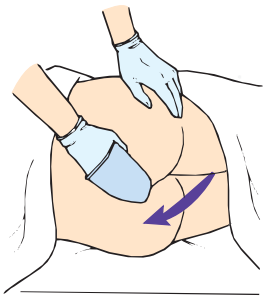
- Washbasin
- Soap dish with soap
- Two or three washcloths
- Bath towel
- Bath blanket
- Waterproof pad or bed pan
- Toilet paper or nappy wipes
- Disposable gloves

Additional supplies are needed when perineal care is given other than during a bath:

- Cotton balls or swabs
- A solution bottle or container filled with warm water or prescribed rinsing solution
- Waterproof bag

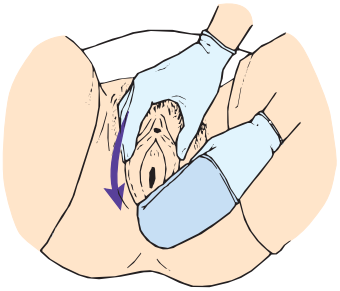
Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Identify people at risk of developing infection of genitalia, urinary tract or reproductive tract (e.g. uncircumcised male, presence of indwelling catheter, faecal incontinence).	Secretions that accumulate on surface of skin surrounding genitalia act as reservoirs for infection. Tissues traumatised by surgery or by presence of foreign object provide route for introduction of infectious organisms.
2. Assess the person's cognitive and musculoskeletal function.	Determines person's ability to perform self-care and determines level of assistance required from nurse.
3. Assess genitalia for signs of inflammation, skin breakdown or infection (see Chapter 29).	Determines extent of perineal care required by person.
4. Assess the person's knowledge of importance of perineal hygiene.	People at risk of infection in perineal area may be unaware of importance of cleanliness. Reflects person's need for education.
5. Explain procedure and its purpose to the person.	Helps minimise anxiety during procedure that is often embarrassing to nurse and person.
6. Prepare necessary equipment and supplies.	As used when administering a bed bath.
7. Pull curtain around the person's bed, or close room door. Assemble supplies at bedside.	Maintains person's privacy and ensures orderly procedure.
8. Raise bed to comfortable working position. Lower side rail, and help the person into a side-lying position, placing towel lengthwise along the person's side and keeping them covered with a bath blanket or top sheet.	Facilitates good body mechanics. Provides easy access to genitalia.
9. Put on disposable gloves.	Eliminates transmission of microorganisms.
10. If faecal material is present, enclose in a fold of underpad or toilet paper, and remove with disposable wipes or toilet paper. Clean buttocks and anus, washing front to back (see illustration). Clean, rinse and dry area thoroughly. If needed, place an absorbent pad under the person's buttocks. Remove and discard underpad and replace with clean one.	Cleaning reduces transmission of microorganisms from anus to urethra or genitalia.  Step 10 Cleanse buttocks (and anus) from front to back.
11. If the person has had urinary or bowel incontinence, apply thin layer of skin barrier containing petrolatum or zinc oxide over anal and perineal skin.	Protects skin from maceration and irritants in urine or stool.
12. Change gloves when they are soiled.	
13. Prepare to undertake perineal care.	

STEPS	RATIONALE
a. Raise side rail. Fill washbasin with warm water.	Prevents person from falling. Proper water temperature prevents burns to perineum.
b. Place washbasin and toilet paper on overbed table. Place washcloths in basin.	Equipment placed within nurse's reach prevents accidental spills.
14. Provide perineal care.	
A. Female perineal care	
(1) Help the person to dorsal recumbent position.	Provides easy access to genitalia.
(2) Lower the side rail, and help the person flex knees and spread legs. Work within restrictions or limitations in the person's ability to assume this position.	Provides full exposure of female genitalia. Minimise degree of abduction in female if position causes pain because of arthritis or reduced joint mobility.
(3) Fold top sheet down towards foot of bed, and raise the person's gown above genital area.	Exposes perineal area for easy accessibility.
(4) 'Diamond' drape the person by placing the bath blanket with one corner between the person's legs, one corner pointing towards each side of bed, and one corner over the person's chest (see illustration). Tuck side corners around the person's legs and under the hips.	Prevents unnecessary exposure of body parts and maintains person's warmth and comfort during procedure.  Step 14A(4) Draping person for perineal care.
(5) Fold lower corner of bath blanket up between the person's legs onto abdomen. Wash and dry the person's upper thighs.	Minimises transmission of microorganisms. Keeping person draped until procedure begins minimises anxiety. Build-up of perineal secretions can soil surrounding skin surfaces.
(6) Wash labia majora. Use non-dominant hand to gently retract labia from thigh; with dominant hand, wash carefully in skinfolds. Wipe in direction from perineum to rectum (front to back). Repeat on opposite side using separate section of washcloth. Rinse and dry area thoroughly.	Skinfolds may contain body secretions that harbour microorganisms. Wiping from perineum to rectum (front to back) reduces chance of transmitting faecal organisms to urinary meatus.

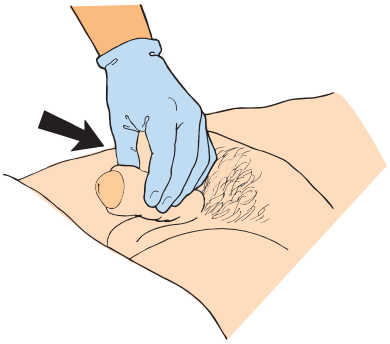
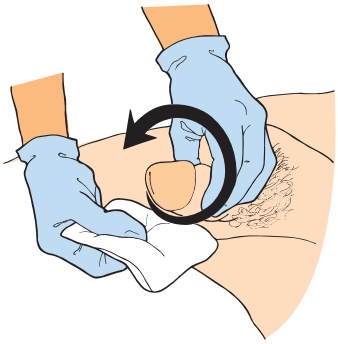
STEPS	RATIONALE
(7) Separate labia with non-dominant hand to expose urethral meatus and vaginal orifice. With dominant hand, wash downwards from pubic area towards rectum in one smooth stroke (see illustration). Use separate section of cloth for each stroke. Clean thoroughly around labia minora, clitoris and vaginal orifice.	Cleaning method reduces transfer of microorganisms to urinary meatus. (For menstruating women or people with indwelling urinary catheters, clean with cotton balls.)
(8) If the person uses bed pan, pour warm water over perineal area. Dry perineal area thoroughly, using front-to-back method.	Rinsing removes soap and microorganisms more effectively than wiping. Retained moisture harbours microorganisms.
(9) Fold lower corner of bath blanket back between the person's legs and over perineum. Ask the person to lower legs and assume comfortable position.	



Step 14A(7) Cleanse from perineum to rectum.

B. Male perineal care

(1) Lower side rails, and help person into supine position. Note restriction in mobility.	Provides full exposure of male genitalia.
(2) Fold top sheet down towards foot of bed, and raise the person's gown above genital area. Drape the person with bath blanket.	Exposes perineal area for easy accessibility. Draping promotes comfort and minimises a person's anxiety.
(3) Fold top half of bath blanket down below the penis. Wash and dry the person's upper thighs.	Minimises transmission of microorganisms. Keeping person draped until procedure begins minimises anxiety. Build-up of perineal secretions can soil surrounding skin surfaces.
(4) Gently raise penis, and place bath towel underneath. Gently grasp the shaft of penis. If the person is uncircumcised, retract foreskin (see illustration). If the person has an erection, defer procedure until later.	Towel prevents moisture from collecting in inguinal area. Gentle but firm handling reduces chance of person having an erection. Secretions capable of harbouring microorganisms collect underneath foreskin.
(5) Wash the tip of the penis at urethral meatus first. Using a circular motion, clean from meatus outwards (see illustration). Discard washcloth, and repeat with clean cloth until the penis is clean. Rinse and dry gently.	Direction of cleaning moves from area of least contamination to area of most contamination, preventing microorganisms from entering urethra.

STEPS	RATIONALE
 Step 14B(4) Retract foreskin.	 Step 14B(5) Use circular motion to cleanse tip of penis.
(6) Return foreskin to its natural position.	Tightening of foreskin around shaft of penis can cause local oedema and discomfort.
(7) Wash shaft of penis with gentle but firm downward strokes. Pay special attention to underlying surface of penis. Rinse and dry penis thoroughly. Instruct the person to spread legs apart slightly.	Vigorous massage of penis can lead to erection, which can embarrass person and nurse. Underlying surface of penis may have greater accumulation of secretions. Abduction of legs provides easier access to scrotal tissues.
(8) Gently clean scrotum. Lift it carefully, and wash underlying skinfolds. Rinse and dry.	Pressure on scrotal tissues can be painful to person. Secretions collect between skinfolds.
(9) Fold bath blanket back over person's perineum, and help the person into side-lying position.	Draping promotes comfort and minimises a person's anxiety. Side-lying position provides access to anal area.
15. Remove disposable gloves, and dispose of in proper receptacle.	Moisture and body secretions on gloves can harbour microorganisms.
16. Help the person into a comfortable position, and cover with sheet.	Person's comfort helps to minimise stress of procedure.
17. Remove bath blanket, and dispose of all soiled bedclothes. Return unused equipment to storage area.	Reduces transmission of microorganisms.
18. Inspect surface of external genitalia and surrounding skin after cleaning.	Thick secretions may cover underlying skin lesions or areas of breakdown. Evaluation determines need for additional hygiene.
19. Ask whether the person feels clean.	Evaluates person's comfort level.
20. Observe for abnormal drainage or discharge from genitalia.	Evaluates presence of infection.

RECORDING AND REPORTING

- Record procedure and presence of any abnormal findings (e.g. character and amount of discharge or condition of genitalia).
- Record appearance of suture line, if present.
- Report any break in suture line or presence of abnormalities to nurse in charge or doctor.

HOME CARE CONSIDERATIONS

- For people who require bathing, assess perineum at every visit because of the risk of infection and skin breakdown. When appropriate, teach caregiver how to make this assessment, and instruct caregiver to do this assessment daily.

BOX 29-6 Menstrual care

Choice of sanitary products depends on the comfort needs of the woman and her menstrual flow. Manufacturers have introduced a wide variety of products. Essentially three types are available: external, internal and re-useable.

- *External:* Commonly known as pads or panty liners; obtainable worldwide. Usually the pad has a cotton-fibre cover with an absorbent inner layer. Pads are available in a range of absorbent capacities (light to heavy blood flow). Most of these pads have an adhesive strip, which attaches to the underwear gusset.
- *Internal:* Tampons are available in a range of absorbencies and permit absorption of menstrual flow within the vaginal canal. The tampon is cylindrical in shape and made of compacted absorbent cotton, approximately 5–8 cm in length and 12–15 mm in diameter. A string-like cord attached to one end enables location and removal of the tampon from the vagina following use. Tampons can be inserted into the vagina with the finger or by using a brand of tampon which provides a cardboard tube applicator to guide appropriate insertion into the vagina.
- *Re-useable:* Washable external pads are an environmentally friendly option for women. Another option is the menstrual cup, which fits around the cervix to collect the blood loss. These cups are available in either silicon or latex and are also washable and re-useable (see www.mooncup.co.uk).

Developed by Laura Robertson and Catherine Ward.

good perineal care (see Box 29-6). Menstrual hygiene can be attended to during perineal care (Skill 29-3). A person able to perform self-care should do so. Nurses can become embarrassed about providing perineal care, particularly to people of the opposite sex. Similarly, the person usually feels embarrassed. This should not result in the person's hygiene needs being overlooked. It may help to have present in the room a nurse of the same sex as the person when providing perineal care. A professional, dignified and sensitive approach can reduce embarrassment and put the person at ease.

If a person performs self-care, various problems such as vaginal and urethral discharge, skin irritation and unpleasant odours may go unnoticed. Ask about or be alert for complaints of burning during urination or localised soreness, excoriation, or pain in the perineum. Also inspect the person's bedclothes for signs of discharge. People most at risk of skin breakdown in the perineal area are those with urinary or faecal incontinence, rectal and perineal surgical dressings, indwelling urinary catheters and the morbidly obese.

SKILL 29-3

Menstrual hygiene

Delegation considerations

The client may wish to perform self-care with partial assistance.

Menstrual hygiene can be undertaken by nurse assistants under the guidance of the registered nurse.

- Registered nurse (RN) should discuss with client preferred products.
- Inform caregiver to report any heavy discharge.

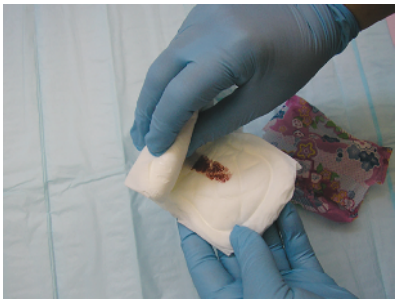
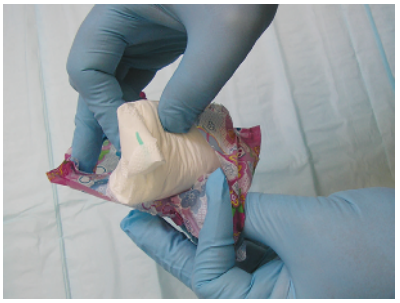
Equipment

- Disposable gloves
- Sanitary pads or tampons
- Rubbish bag
- Toilet paper
- Washcloth(s) (consider use of disposable washcloth)
- Towel
- Change of underwear
- Waterproof pad
- Wash bowl
- Warm water

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

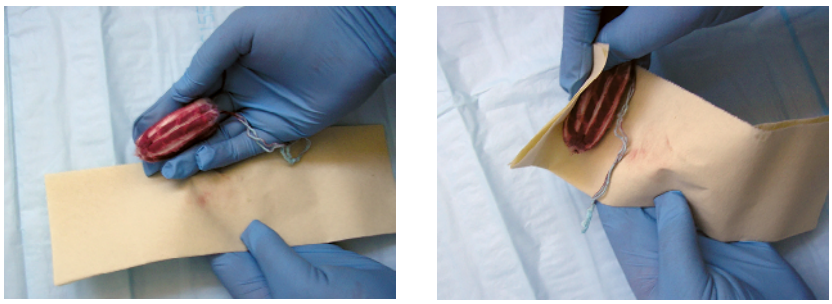
STEPS	RATIONALE
1. Close curtains or door to room.	Ensures client privacy.
2. Assemble supplies at the bedside. Fold down the top of the rubbish bag to form a cuff.	Ensures orderly procedure and facilitates disposal of contaminated material.
3. Assess client's cognitive and musculoskeletal function.	Determines client's ability to perform self-care and determines level of assistance required from nurse. Pain relief may be required for positioning.
4. Explain procedure and its purpose to client.	Minimises anxiety and embarrassment about need for assistance.
5. Ask client about her normal pattern of menstrual care and whether she would prefer to change sanitary ware herself.	Involves client in own care, gives sense of control over preferences.
6. Position bed to a comfortable working height.	Facilitates good body mechanics, provides good access to the perineal area.
7. Wash hands. Apply disposable gloves.	Reduces transmission of infectious organisms. Gloves prevent contact with microorganisms contained in blood and body fluids.
8. Use of sanitary pads a. Lower or remove underwear. b. Remove used sanitary pad. Assess per vagina (PV) loss and dispose of pad in rubbish bag (see illustrations).	Based on area of pad saturated, time taken to soak pad.

Step 8b Sanitary pad disposal.

c. Assess perineal area for extra perineal care/ washing required.	Determines extent of care required by client.
d. If washing is required, place a waterproof pad under the client, wash perineum with a washcloth and dry with a towel (see Skill 29-2).	
e. Apply clean pad to underwear using self-adhesive strips.	
f. Replace underwear.	

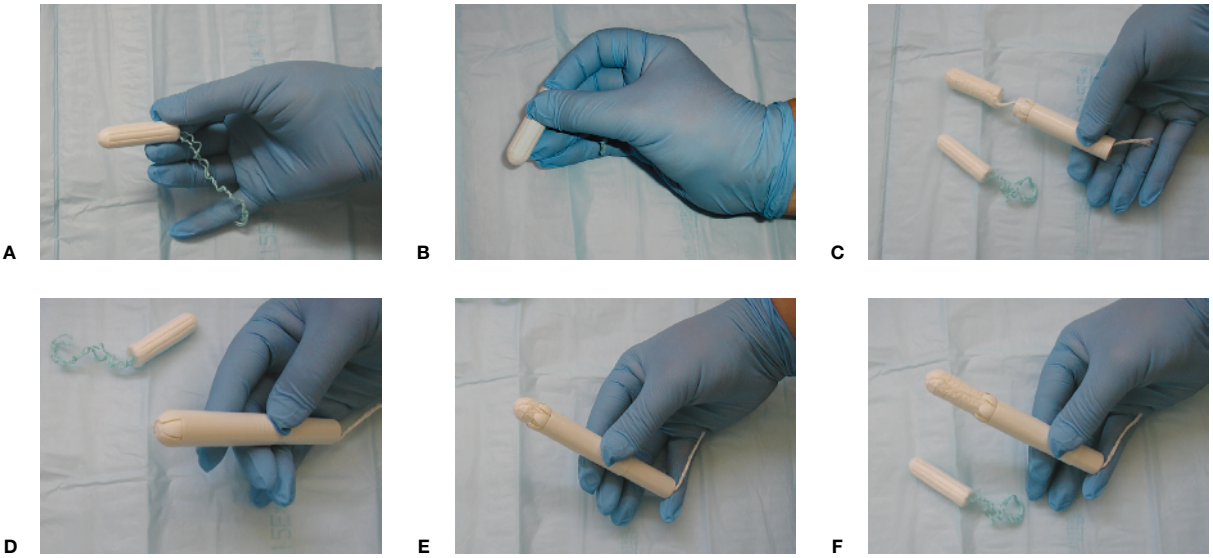
STEPS	RATIONALE
g. Remove gloves and dispose in rubbish bag. Wash hands.	Reduces transmission of infectious organisms.
h. Help client return to a comfortable position.	Promotes comfort and reduces embarrassment.
9. Use of tampons	
a. Lower or remove underwear.	Provides access to perineum.
b. With client lying on her side, part labia with non-dominant hand to view the outlet of the vagina.	
c. Remove used tampon by grasping the cord with fingers of dominant hand. Draw the cord outwards and downwards (towards client's feet) until the tampon emerges.	
d. Assess PV loss. Wrap tampon in toilet paper and dispose of in rubbish bag (see illustrations).	Based on saturation of tampon, time taken to soak tampon.



Step 9d Tampon disposal.

e. Hold the tampon by cord end, with cord across palm of hand and index finger guiding the cord-end dimple of tampon. Illustrations 9fA and 9fB show non-applicator tampons and illustration 9fC compares non-applicator tampon with applicator tampon. Once applicator tampon is inserted into the vagina, gentle finger pressure on sliding cylinder causes tampon to be released into the distal part of the vagina. Cardboard cylinder is then removed and discarded (see illustrations 9fD–F).	

STEPS	RATIONALE



Steps 9e A,B, Non-applicator tampon. C, Comparison of non-applicator tampon to applicator tampon. D–F, Operation of applicator to release tampon.

f. Insert the tampon in the vagina, angling upwards and backwards, following the vaginal canal.	
g. Insert to the length of the index finger or applicator tube.	
h. Cord will emerge externally as a guide to placement and to facilitate removal.	
i. Replace underwear.	
j. Remove gloves and dispose of in rubbish bag. Wash hands.	Reduces transmission of infectious organisms.
k. Help client return to a comfortable position.	Promotes comfort and reduces embarrassment.
10. If client has participated in care, offer her a bowl and washcloth for her own handwashing.	Promotes hygiene and comfort, reduces microorganism transmission from body fluids to linens and furniture.
11. Ask if client feels sense of cleanliness.	Evaluates client's comfort levels.
12. Ask about and observe for any signs of pain, dysfunction or infection in perineal area.	

RECORDING AND REPORTING

- Record PV loss in fluid charts if heavy; estimate volume.
- Adjust the nursing care plan regularly to accommodate the changing need for menstrual care.

SAFETY CONSIDERATIONS

- At night, care should include a pad of extra absorbency to facilitate an undisturbed sleep for the client. Super-absorbent tampons should be avoided due to the link with toxic shock syndrome.

BACK RUB A back rub or back massage usually follows the person's bath (Skill 29-4). It promotes relaxation, relieves muscular tension and stimulates skin circulation. Harris and Richards (2010) evaluated research-based massage studies; slow-stroke back massage had positive effects on the physiological measures of relaxation, with people generally reporting that they were more comfortable following a back rub regardless of the length of the massage. Walton (2009) showed that the long, slow, gliding strokes (**effleurage**) of a massage are associated with a reduction in blood pressure, heart rate, respiratory rate and reported pain level.

When providing a back rub, nurses can enhance relaxation by reducing any noise and ensuring the person is comfortable. It is important to ask whether a person would like a back rub, or if the person prefers gentle instead of heavy massage, because some individuals dislike physical contact. Nurses should consult the medical record for any contraindications to a massage (e.g. fractured ribs, burns of the skin and heart surgery).

SKILL 29-4

Administering a back rub

Delegation considerations

Administering a back rub can be delegated to nurse assistants under the guidance of the registered nurse.

- Registered nurse (RN) should assess for any possible contraindication to back rub.
- Inform caregiver to report any change in vital signs or behaviour during back rub.

Equipment

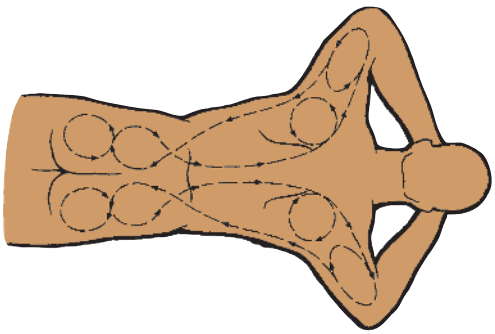
- Moisturising lotion or lubricant
- Sphygmomanometer and stethoscope
- Bath towel
- Bath blanket

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Identify factors or conditions such as rib or vertebral fractures, burns, reddened areas on the skin or open wounds and status post-coronary artery (CA) bypass that contraindicate back rub.	Massage of sensitive tissues might lead to further tissue injury. Massaging reddened areas of skin increases breaks in capillaries in underlying tissues. An increase in heart rate and systolic and diastolic blood pressure occurs in post-CA bypass people.
2. Explain procedure and desired position to person. Determine whether the person is comfortable with heavy massage stroke.	Helps promote relaxation.
3. Adjust bed to high, comfortable position.	Ensures proper body mechanics and prevents strain on back muscles.
4. Adjust light, temperature and sound within room.	Environmental distractions can prevent person from relaxing.
5. Lower side rail and help the person into a prone or side-lying (Sims') position with back towards you. Close curtain around the bed.	Position makes it easier to apply necessary pressure to back muscles. Privacy promotes relaxation.

STEPS	RATIONALE
6. Assess the person's heart rate (HR), respiratory rate (RR) and blood pressure (BP).	Decreased HR, RR and BP are usual following even a 3-minute back rub. Assessment establishes baseline.
7. Expose person's back, shoulders, upper arms and buttocks. Cover remainder of body with bath blanket. Lay towel alongside person's back.	Prevents unnecessary exposure of body parts and prevents excess lotion from touching bedclothes.
8. Wash hands in warm water. Warm lotion in hands or by placing container under warm water. Place small amount of lotion in hands.	Cold causes muscle tension.
9. Explain to person that lotion will feel cool and wet.	Warning person reduces startled response.
10. Apply hands first to sacral area, massaging in circular motion. Stroke upwards from buttocks to shoulders. Massage over scapulae with smooth, firm stroke. Continue in one smooth stroke to upper arms and laterally along sides of back down to iliac crests (see illustration). Do not allow your hands to leave person's skin. Continue massage pattern for at least 3 minutes.	Gentle, firm pressure applied to all muscle groups promotes relaxation. Continuous contact with skin's surface is soothing and stimulates circulation to tissues.



Step 10 Massage pattern; use smooth, firm strokes.





Step 11 Massaging skin.

STEPS	RATIONALE
11. Knead skin by gently grasping tissue between your thumb and fingers. Knead upwards along one side of spine from buttocks to shoulders and around nape of neck. Knead or stroke downwards towards sacrum. Repeat along other side of back.	Kneading increases circulation. Motion is soothing and relieving.
12. End massage with long stroking movements for an additional 3 minutes, and tell the person you are ending the massage.	Long stroking is most soothing.
13. If lying on their side, ask the person to turn to opposite side, and massage other hip.	
14. Wipe excess lubricant from person's back with bath towel. Re-tie gown or help with pyjamas. Help the person to comfortable position. Raise side rails as needed, and open curtain. Lower bed.	Excess lotion can be an irritant. Comfortable position enhances back rub's effects.
15. Dispose of soiled towel and wash hands.	Promotes infection control.
16. Ask person about comfort. Note any areas of muscle pain or tension.	Degree of relief gained depends on length of massage, person's ability to relax and degree of discomfort before massage.
17. Reassess pulse and BP.	Gentle back massage may increase HR and systolic BP.

RECORDING AND REPORTING

- Record response to massage and condition of skin.

HOME CARE CONSIDERATIONS

- Massage is an easy technique to teach a family member to promote person's relaxation at any time of the day.

BATHING AN INFANT An infant can be bathed in much the same order as an adult, by a sponge bath or in a small bathtub. However, there are special precautions. Because an infant's temperature-control mechanisms are still immature, prolonged exposure of body parts may cause cooling. When giving a bath, keep the infant covered as much as possible and work quickly. It is important to be sure the water temperature is warm enough to prevent chilling.

The surface of an infant's skin has a pH of about 5 soon after birth (Hockenberry & Wilson 2011). This acidic covering helps prevent bacterial growth on the skin's surface. Thus only plain warm water is used for the bath. As the infant becomes older and soiling is more common, it is appropriate to use a gentle soap with very little rubbing (Hockenberry & Wilson 2011). Alkaline soaps, oils, powder and lotions are not to be used.

Give the bath in a head-to-toe direction using a clean washcloth. First nurses wash the eyes, face, ears and scalp before removing the infant's shirt and nappy. The eyes are carefully washed from the inner to the outer canthus. The washcloth is used and then turned so that a clean part touches the skin with each stroke. It may be necessary to shampoo the scalp and hair. The infant can be positioned (wrapped with only the head exposed) over a small basin. Lather the scalp with a mild soap, and rinse by pouring water from a small container into the basin. A washcloth can be used to wash and rinse as well. The infant is kept covered during shampooing. A rolled wisp of dampened cotton or the twisted end of the washcloth works well to clean the external ear. Pat dry the scalp gently but well.

After undressing the infant for the remainder of the bath, nurses give special attention to around the neck, where food that has been regurgitated collects, and in skin folds of the axillae and joints. Genitalia of both sexes require careful and gentle cleansing. For a girl, it is important to retract the labia fully to remove the vernix caseosa after it has dried. With successive baths the vernix caseosa will disappear. The vulva is cleaned front to back to prevent the spread of infection. In male infants, wash carefully around the penis and scrotum. To complete the bath, nurses wash the buttocks and anal area thoroughly. After bathing, the infant must be completely rinsed, dried and a clean nappy put on.

Care of the umbilical cord is a special consideration for the newborn. The umbilical stump is a good medium for bacterial growth. Sponge baths are given until the cord falls off and the skin heals. A nappy should be positioned below the cord to avoid wetness and irritation. Give special care to infants who have been circumcised. A small amount of bleeding normally occurs from the penis. The doctor places a ring between the penis and foreskin; the latter remains in situ until it falls off in 7–10 days. Vaseline is applied to the tip of the penis and the nappy liner to decrease irritation. Circumcision is usually carried out between 6 and 8 weeks of age.

Infants can be given a tub bath after the umbilicus has healed. Supplies are the same as those used in the sponge bath. The face, neck, ears, eyes and scalp are washed before the infant is undressed and placed in the baby bath. Lowering the infant slowly into the bath avoids startling. The infant must always be held firmly with one hand (Figure 29-7). Never leave the child unattended. Body creases are much easier to clean and rinse in a bath. After the bath, wrap the infant completely in a towel and gently pat the infant dry.

In hospitals where the infant and mother are in the same room, the infant's bath is an excellent opportunity to involve the parents in the child's care. The parents can examine the infant's body parts and learn about normal variation in skin characteristics. This is also a good time to stress the importance of safety in terms of water temperature and supervision of the infant.

FOOT AND NAIL CARE Foot and nail care should be incorporated into a person's regular hygiene routine. Routine care involves soaking to soften cuticles and layers of horny cells, thorough cleansing, drying and proper nail trimming. The exception involves people with diabetes mellitus, who do not soak their nails due to the risk of infection. When care is being administered, the person may remain in bed or sit in a chair (Skill 29-5).



Figure 29-7 Holding an infant during a bath.

Shutterstock/michaeljung.

Nurses should take time during the procedure to teach the person and family proper techniques for cleaning and nail trimming. Measures to prevent infection and promote good circulation should be stressed. People learn to protect the feet from injury, keep the feet clean and dry and wear footwear that fits properly. Instruct people on the proper way to inspect all

SKILL 29-5

Performing nail and foot care

Delegation considerations

Nail and foot care of the non-diabetic person can be undertaken by nurse assistants under the guidance of the registered nurse. If the person is diabetic, this should not be delegated.

- Instruct caregiver in proper way to use nail clippers.
- Instruct caregiver to report immediately any cuts in skin.

Equipment

- Washbasin
- Emesis basin
- Washcloth
- Bath or face towel
- Nail clippers
- Orange stick
- Emery board or nail file
- Body lotion
- Disposable bath mat
- Paper towels
- Disposable gloves

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

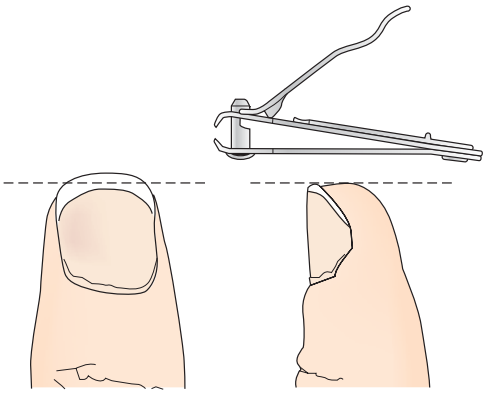
STEPS	RATIONALE
1. Inspect all surfaces of fingers, toes, feet and nails. Pay particular attention to areas of dryness, inflammation or cracking. Also inspect areas between toes, heels and soles of feet.	Integrity of feet and nails determines frequency and level of hygiene required. Heels, soles and sides of feet are prone to irritation from ill-fitting shoes.
2. Assess colour and temperature of toes, feet and fingers. Assess capillary refill of nails. Palpate radial and ulnar pulse of each hand and dorsalis pedis pulse of foot; note character of pulses.	Assesses adequacy of blood flow to extremities. Circulatory alterations may change integrity of nails and increase person's chance of localised infection when break in skin integrity occurs.
3. Observe person's gait. Have person walk down hall or walk straight line (if able).	Painful disorders of feet can cause limping or unnatural gait.
4. Ask female people whether they use nail polish and polish remover frequently.	Chemicals in these products can cause excessive dryness.
5. Assess type of footwear worn by people. Are socks worn? Are shoes tight or ill-fitting? Are garters or knee-high stockings worn? Is footwear clean?	Types of shoes and footwear may predispose person to foot and nail problems (e.g. infection, areas of friction, ulcerations).
6. Identify person's risk of foot or nail problems:	Certain conditions increase likelihood of foot or nail problems.
a. Older adult	Poor vision, lack of coordination or inability to bend over contribute to difficulty in performing foot and nail care. Normal physiological changes of ageing also result in nail and foot problems.
b. Diabetes mellitus	Vascular changes associated with diabetes mellitus reduce blood flow to peripheral tissues. Break in skin integrity places diabetic at high risk of skin infection.
c. Heart failure, renal disease	Both conditions can increase tissue oedema, particularly in dependent areas (e.g. feet). Oedema reduces blood flow to neighbouring tissues.
d. Cerebrovascular accident, stroke	Presence of residual foot or leg weakness or paralysis results in altered walking patterns. Altered gait pattern causes increased friction and pressure on feet.
7. Assess type of home remedies person uses for existing foot problems:	Certain preparations or applications may cause more injury to soft tissue than initial foot problem.
a. Over-the-counter liquid preparations to remove corns	Liquid preparations can cause burns and ulcerations.
b. Cutting of corns or calluses with razor blade or scissors	Cutting of corns or calluses may result in infection caused by break in skin integrity.
c. Use of oval corn pads	Oval pads may exert pressure on toes, thereby decreasing circulation to surrounding tissues.

STEPS	RATIONALE
d. Application of adhesive tape	Skin of older adult is thin and delicate and prone to tearing when adhesive tape is removed.
8. Assess person's ability to care for nails or feet: visual alterations, fatigue, musculoskeletal weakness.	Determines person's ability to perform self-care and degree of assistance required from nurse.
9. Assess person's knowledge of foot and nail care practices.	Determines person's need for health teaching.
10. Explain procedure to person, including fact that proper soaking requires several minutes.	Person must be willing to place fingers and feet in basins for 10–20 minutes. Person may become anxious or fatigued.
Critical decision point: Diabetic people do not soak hands and feet. Soaking increases risk of infection in diabetics.	
11. Obtain doctor's order for cutting nails if agency policy requires it.	Person's skin may be accidentally cut. Certain people are more at risk of infection, depending on their medical condition.
12. Wash hands. Arrange equipment on overbed table.	Easy access to equipment prevents delays.
13. Pull curtain around bed or close room door (if desired).	Maintaining a person's privacy reduces anxiety.
14. Help mobile person to sit in bedside chair. Help bed-bound person to supine position with head of bed elevated. Place disposable bath mat on floor under person's feet or place towel on mattress.	Sitting in chair facilitates immersing feet in basin. Bath mat protects feet from exposure to soil or debris.
15. Fill washbasin with warm water. Test water temperature.	Warm water softens nails and thickened epidermal cells, reduces inflammation of skin and promotes local circulation. Proper water temperature prevents burns.
16. Place basin on bath mat or towel, and help person place feet in basin. Place call light within person's reach.	People with muscular weakness or tremors may have difficulty positioning feet. Person's safety is maintained.
17. Adjust overbed table to low position, and place it over person's lap. (Person may sit in chair or lie in bed.)	Easy access prevents accidental spills.
18. Fill emesis basin with warm water, and place basin on paper towels on overbed table.	
19. Instruct person to place fingers in emesis basin and place arms in comfortable position.	Prolonged positioning can cause discomfort unless normal anatomical alignment is maintained.
20. Allow person's feet and fingernails to soak for 10–20 minutes. Rewarm water after 10 minutes.	Softening of corns, calluses and cuticles ensures easy removal of dead cells and easy manipulation of cuticle.

STEPS	RATIONALE
STEPS	**RATIONALE**
21. Clean gently under fingernails with orange stick after fingers have been soaked (see illustration). Remove emesis basin, and dry fingers thoroughly.	Orange stick removes debris under nails that harbours microorganisms. Thorough drying impedes fungal growth and prevents maceration of tissues.
22. With nail clippers, clip fingernails straight across and even with tops of fingers (see illustrations). Shape nails with emery board or file. If person has circulatory problems, do not cut nail; file the nail only.	Cutting straight across prevents splitting of nail margins and formation of sharp nail spikes that can irritate lateral nail margins. Filing prevents cutting nail too close to nail bed.



Step 21 Cleaning under fingernails.



Step 22 Clip nails straight across.

23. Push cuticle back gently with orange stick.	Reduces incidence of inflamed cuticles.
24. Move overbed table away from person.	Provides easier access to feet.
25. Put on disposable gloves, and scrub calloused areas of feet with washcloth.	Gloves prevent transmission of fungal infection. Friction removes dead skin layers.
26. Clean gently under nails with orange stick. Remove feet from basin, and dry thoroughly.	Removal of debris and excess moisture reduces chances of infection.
27. Clean and trim toenails using procedures in Steps 22 and 23. Do not file corners of toenails.	Shaping corners of toenails may damage tissues.
28. Apply lotion to feet and hands, and help person back to bed and into comfortable position.	Lotion lubricates dry skin by helping to retain moisture.
29. Remove disposable gloves and place in receptacle. Clean and return equipment and supplies to proper place. Dispose of soiled linen. Wash hands.	Reduces transmission of infection.
30. Inspect nails and surrounding skin surfaces after soaking and nail trimming.	Evaluates condition of skin and nails. Allows nurse to note any remaining rough nail edges.
31. Ask person to explain or demonstrate nail care.	Evaluates person's level of learning techniques.
32. Observe person's walk after toenail care.	Evaluates level of comfort and mobility achieved.

STEPS	RATIONALE
33. Record procedure and observations (e.g. breaks in skin, inflammation, ulcerations).	Documents procedure, person's response and presence of abnormalities requiring additional therapy.
34. Report any breaks in skin or ulcerations to nurse in charge or doctor.	These abnormalities can seriously increase person's risk of infection and must be carefully observed.

RECORDING AND REPORTING

- Record procedure and observations (e.g. breaks in skin, inflammation, ulcerations).
- Report any breaks in skin or ulcerations to nurse in charge or doctor. These are serious in person with peripheral vascular disease and illnesses in which person's circulation is impaired. Special foot care treatments may be needed.

HOME CARE CONSIDERATIONS

- Alternative therapies: moleskin applied to areas of feet that are under friction is less likely to cause pressure than corn pads; spot adhesive bandages can guard against friction, but they do not have padding to protect against pressure; wrapping small pieces of lamb's wool around toes reduces irritation of soft corns between toes.
- If person is mobile, instruct to soak feet in bathtub. When person's mobility is limited, a large basin or pan can be used.

surfaces of the feet and hands for lesions, dryness or signs of infection. It is important for people to know the appearance of any abnormalities and the importance of reporting these conditions to their caregiver.

A person with diabetes mellitus or peripheral vascular disease is at risk of foot and nail problems as a result of poor peripheral blood supply to the feet. In addition, sensation in the feet can be reduced. These people are especially at risk of developing chronic foot ulcers, which typically heal very slowly and, once present, are difficult to treat. Over time, circulation can become sufficiently compromised to cause ischaemia and sloughing of tissue. Ongoing foot care can help prevent toe amputation, but many people need to be shown proper care. The following risk conditions are associated with an increased risk of amputation: peripheral neuropathy; altered biomechanics; evidence of increased pressure from callus, erythema or haemorrhage under a callus; limited joint mobility, bony deformity or severe nail pathological condition; peripheral vascular disease; a history of ulcers or amputation.

Nurses observe for changes that would indicate peripheral neuropathy or vascular insufficiency. The person must be given information to understand how circulation directly affects the health and integrity of tissues. Nurses advise people to use the following guidelines in a routine foot and nail care program:

- Inspect the feet daily, including the tops and soles of the feet, the heels and the areas between the toes. Use a mirror to help inspect the feet thoroughly, or ask a family member to check daily.
- All people with diabetes mellitus should receive a 12-monthly foot assessment by a podiatrist (Australasian Podiatry Council 2011). People with one or more high-risk foot conditions should be evaluated frequently. People with neuropathy should have a visual inspection of their feet at every visit to a healthcare professional.
- Wash the feet daily using lukewarm water; do not soak. People with reduced sensation may want to use a bath thermometer at home to test water temperature. Thoroughly pat the feet dry, and dry well between toes.
- Do not cut corns or calluses or use commercial removers. Consult a doctor or podiatrist.
- If dryness is noted along the feet or between the toes, apply lanolin or baby oil and rub gently into the skin.
- File the toenails straight across and square; do not use scissors or clippers. Consult a podiatrist as needed.
- Do not use over-the-counter preparations to treat athlete's foot or ingrown toenails. Consult a doctor or podiatrist.
- Avoid wearing elastic stockings, knee-high stockings or constricting garters and do not cross the legs while sitting. These impair circulation to the lower extremities.
- Wear clean cotton socks or stockings daily. Change socks twice a day if feet perspire heavily. Lightly apply an unscented foot powder. Socks should be dry and free of holes or darns that might cause pressure.
- Do not walk barefoot.
- Wear properly fitted shoes. The soles of shoes should be flexible and non-slipping. Small amounts of lamb's wool can be used between toes that rub or overlap. Shoes should be sturdy, closed in and not restrictive to the feet. People with increased plantar pressure (e.g. erythema, callus) should use footwear or orthotics (individualised formed insoles) that cushion and redistribute pressure. People with bony deformity (e.g. bunion or Charcot's joint) may need extra-wide or extra-deep shoes with cushioned or orthotic insoles.
- Do not wear new shoes for an extended time. Wear them for short periods over several days to break them in.

- Exercise regularly to improve circulation to the lower extremities. Elevate, rotate, flex and extend the feet at the ankles. Walking slowly also improves the circulation.
- Avoid applying hot-water bottles or heating pads to the feet; use extra coverings instead.
- Minor cuts should be washed immediately and dried thoroughly. Use only mild antiseptics (e.g. Neosporin ointment). Avoid iodine or mercurochrome. Contact a doctor to treat cuts or lacerations.

Generally, any person who requires regular, thorough foot care should have a family member able to provide care during times when the person is incapacitated. People with visual difficulties, physical constraints preventing movement, or cognitive problems that impair their ability to assess the condition of the feet will need family assistance.

Oral hygiene

Oral hygiene helps maintain the healthy state of the mouth, teeth, gums and lips. Brushing cleans the teeth of food particles, plaque and bacteria. It also massages the gums and relieves discomfort resulting from unpleasant odours and tastes. Flossing further helps remove food particles, plaque and tartar from between teeth to reduce gum inflammation and infection. Complete oral hygiene enhances wellbeing and comfort and stimulates the appetite. People also benefit from a proper diet, which excludes foods promoting plaque formation and tooth decay and promotes healthy periodontal structures. Nurses help people maintain good oral hygiene by teaching the importance of correct techniques and a routine daily schedule. People of all ages, including infants and children (see *Working with diversity* below), should have a dental check-up at least every 6 months. Education about common gum and tooth disorders and methods of prevention can motivate people to follow good oral hygiene practices. Nurses also help perform hygiene for weakened or disabled people. When people have variations in oral mucosal integrity, nurses adapt hygiene techniques to ensure thorough and effective care (see *Working with diversity* below).

WORKING WITH DIVERSITY

Focus on infants and children

- *Oral hygiene* – the parent/caregiver should be instructed to brush the child's teeth thoroughly twice daily (morning and evening) and to floss at least once every day from the time the first tooth erupts.
- *Diet* – the parent/caregiver should be instructed to provide fruit juices only at meals and to avoid all carbonated beverages during the first 30 months of the infant's life.
- *Fluoride* – the parent/caregiver should be instructed to use fluoride toothpaste and rinse every night with an alcohol-free over-the-counter mouth rinse containing 0.05% sodium fluoride. Tap-water should be given (rather than bottled water) in areas where the water supply is fluoridated.
- *Caries removal* – parents/caregivers should be referred to a dentist for an examination and removal of all active decay as soon as feasible.
- *Delay of colonisation* – parents/caregivers should be educated to prevent early colonisation of dental flora in their infants by avoiding sharing spoons or cleaning a dropped dummy with their saliva, and so on.

References

Adapted from Weiss P et al 2003 Oral health risk assessment timing and establishment of the dental home. Pediatrics 11(5):1113.

WORKING WITH DIVERSITY

Focus on older adults

- 50% of people over age 65 are edentulous (without teeth), and teeth that are present are often diseased or decayed.
- The periodontal membrane weakens, making it more prone to infection.
- Partial plates or dentures may not fit properly, causing pain and discomfort.
- Weaker jaw muscles and a shrinkage of the bony structure of the mouth may increase the work of chewing and lead to increased fatigue when eating.
- There is a decrease in saliva, once thought to be associated with ageing, but now considered to be related to medication therapy that may cause mucous membranes to become drier.

Reference

Adapted from Touhy TA, Jett KF 2011 Ebersole and Hess' toward healthy aging: human needs and nursing response, 8th edn. Mosby, St Louis.

BRUSHING TEETH Thorough brushing of teeth, ideally four times a day (after meals and at bedtime), is basic to an effective oral hygiene program. A toothbrush should have a straight handle and a brush small enough to reach all areas of the mouth. An even, rounded brushing surface with soft, multi-tufted nylon bristles is best. Rounded soft bristles stimulate the gums without causing abrasion and bleeding. Older adult people with reduced dexterity and grip may require an enlarged handle with an easier grip or an electric toothbrush. Simple ways to devise an enlarged brush handle are to pierce a soft rubber ball and push the brush handle through, or glue a short piece of plastic tubing around the handle. People should be advised to obtain a new toothbrush every 3 months or following a cold or streptococcal infection of the throat to minimise growth of microorganisms on the brush surfaces and subsequent reinfection.

Commercially made foam-rubber toothbrushes are useful for people with sensitive gums. However, swabbing fails to clean teeth adequately because plaque accumulates around the base of the teeth (Huskinson & Lloyd 2009). Foam-rubber swabs should be used in moderation. Electric toothbrushes can be used, but nurses working in an agency setting should check for electrical hazards. All tooth surfaces should be brushed thoroughly using fluoride toothpaste. Whether a brush or sponge is used, thorough rinsing after brushing is important to remove dislodged food particles and excess toothpaste. Some people enjoy using mouthwash for its pleasant taste. Used over a long period, however, mouthwash dries mucosa (Huskinson & Lloyd 2009).

When teaching people about mouth care, nurses should recommend they do not share toothbrushes with family members or drink directly from a bottle of mouthwash. Cross-contamination occurs easily. The use of disclosure tablets or drops to stain the plaque that collects at the gum line can be useful for showing people, and particularly children, how effectively they brush.

The amount of assistance needed by the person when brushing the teeth may vary (Skill 29-6). Many people can perform their own oral care and should be encouraged to do so. Nurses observe the person to be sure proper techniques are used.

People will experience conditions that threaten the integrity of oral mucosa. For example, mucosal changes associated with ageing, use of chemotherapeutic drugs or dehydration require

SKILL 29-6

Providing oral hygiene

Delegation considerations

Brushing teeth can be delegated to nurse assistants under the guidance of the registered nurse (RN).

- Instruct caregiver in proper way to provide toothbrushing.
- Instruct caregiver in how to recognise impaired integrity of oral mucosa.

Equipment

- Soft-bristled toothbrush
- Non-abrasive fluoride toothpaste
- Dental floss
- Glass with cool water
- Normal saline or fluoride mouthwash (optional; follow person's preference)
- Emesis basin
- Face towel
- Paper towels
- Disposable gloves

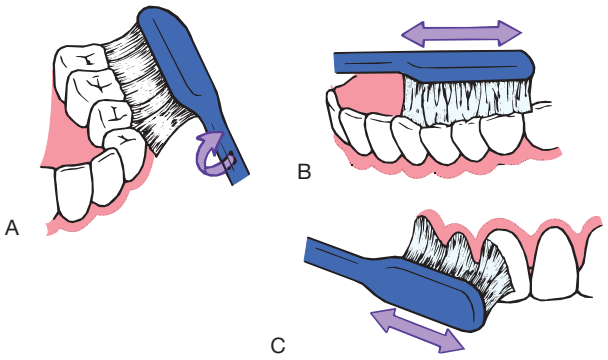
Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

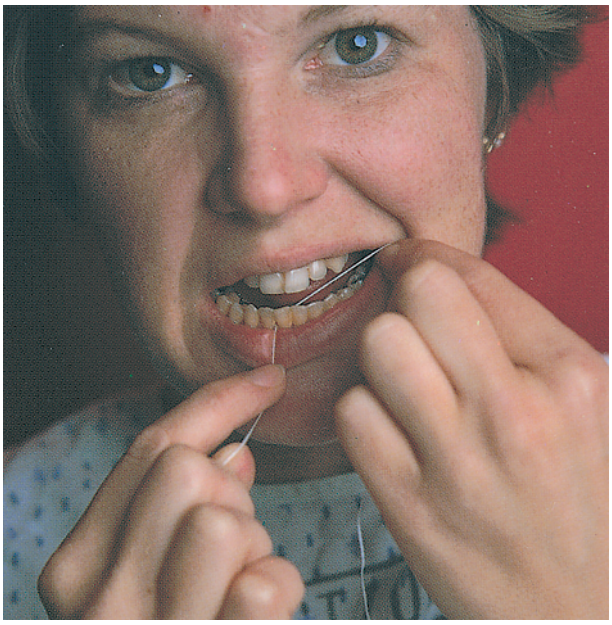
STEPS	RATIONALE
1. Wash hands and put on disposable gloves.	Reduces transmission of microorganisms.
2. Inspect integrity of lips, teeth, buccal mucosa, gums, palate and tongue (see Chapter 27).	Determines status of the person's oral cavity and extent of need for oral hygiene.
3. Identify presence of common oral problems: a. Dental caries – chalky white discolouration of tooth or presence of brown or black discolouration b. Gingivitis – inflammation of gums c. Periodontitis – receding gum lines, inflammation, gaps between teeth d. Halitosis – bad breath e. Cheilosis – cracking of lips f. Stomatitis – inflammation of the mouth	Helps determine type of hygiene the person requires and information they require for self-care.
4. Remove gloves and wash hands.	Prevents spread of microorganisms.

STEPS	RATIONALE
5. Assess risk of oral hygiene problems (see Table 29-7).	Certain conditions increase likelihood of impaired oral cavity integrity and need for preventive care.
6. Determine the person's oral hygiene practices: a. Frequency of toothbrushing and flossing b. Type of toothpaste used c. Last dental visit d. Frequency of dental visits	Allows the nurse to identify errors in technique, deficiencies in preventive oral hygiene and the person's level of knowledge regarding dental care.
e. Type of mouthwash or moistening preparation.	Lemon–glycerin preparations can be detrimental. Glycerin is an astringent that dries and shrinks mucous membranes and gums. Lemon exhausts salivary reflex and can erode tooth enamel. Mouthwash provides pleasant aftertaste but can dry mucosa after extended use if it has an alcohol base.
7. Assess the person's ability to grasp and manipulate toothbrush. (For an older adult, try 30 seconds of toothbrush assessment.)	Determines level of assistance required. Toothbrush test useful in assessing dexterity and strength.
8. Prepare equipment at bedside.	
9. Explain the procedure to the person and discuss preferences regarding use of hygiene aids.	Some people feel uncomfortable about having nurses care for their basic needs. Anxiety is minimised by involving the person in the procedure.
10. Place paper towels on overbed table and arrange other equipment within easy reach.	
11. Raise bed to comfortable working position. Raise head of bed (if allowed) and lower side rail. Move the person, or help them move closer. Side-lying position can be used.	Raising bed and positioning the person prevents the nurse from straining muscles. Semi-Fowler's position helps prevent the person from choking or aspirating.
12. Place towel over the person's chest.	Keeps the person's clothing clean and dry.
13. Apply gloves.	Prevents contact with microorganisms or blood in saliva.
14. Apply toothpaste to the brush, holding brush over emesis basin. Pour small amount of water over toothpaste.	Moisture helps distribute toothpaste over tooth surfaces.
15. The person may help by brushing. Hold toothbrush bristles at 45-degree angle to gum line (see illustration). Be sure tips of bristles rest against and penetrate under gum line. Brush inner and outer surfaces of upper and lower teeth by brushing from gum to crown of each tooth. Clean biting surfaces of teeth by holding top of bristles parallel with teeth and brushing gently back and forth (see illustration). Brush sides of teeth by moving bristles back and forth (see illustration).	Angle allows brush to reach all tooth surfaces and to clean under gum line where plaque and tartar accumulate. Back-and-forth motion dislodges food particles caught between teeth and along chewing surfaces.

STEPS	RATIONALE
16. Have the person hold brush at 45-degree angle and lightly brush over surface and sides of tongue. Avoid initiating gag reflex.	Microorganisms collect and grow on tongue's surface and contribute to bad breath. Gagging may cause aspiration of toothpaste.
17. Allow the person to rinse mouth thoroughly by taking several sips of water, swishing water across all tooth surfaces and spitting into emesis basin.	Irrigation removes food particles.
18. Allow the person to gargle to rinse mouth with mouthwash as desired.	Mouthwash leaves pleasant taste in mouth.
19. Help wipe the person's mouth.	Promotes sense of comfort.
20. Allow the person to floss (see illustration).	Reduces tartar on tooth surfaces.



Step 15 Direction for toothbrush placement.
A, 45-degree angle brushes gum line. B, Parallel position brushes biting surfaces. C, Lateral position brushes sides of teeth.



Step 20 Flossing between front teeth.

21. Allow the person to rinse mouth thoroughly with cool water and spit into emesis basin. Help wipe person's mouth.	Irrigation removes plaque and tartar from oral cavity.
22. Help the person into comfortable position, remove emesis basin and bedside table, raise side rail and lower bed to original position.	Provides for person comfort and safety.
23. Wipe off overbed table, discard soiled linen and paper towels in appropriate containers, remove soiled gloves and return equipment to proper place.	Proper disposal of soiled equipment prevents spread of infection.
24. Wash hands.	Reduces transmission of microorganisms.
25. Ask the person whether any area of oral cavity feels uncomfortable or irritated.	Pain indicates more chronic problem.

STEPS	RATIONALE
26. Put on gloves and inspect condition of oral cavity.	Determines effectiveness of hygiene and rinsing.
27. Ask the person to describe proper hygiene techniques.	Evaluates the person's learning.
28. Observe the person brushing.	Evaluates the person's ability to use correct technique.

RECORDING AND REPORTING

- Record procedure on flow sheet. Note condition of oral cavity in nurses' notes.
- Report bleeding or presence of lesions to nurse in charge or doctor.

HOME CARE CONSIDERATIONS

- Assess oral cavity at each visit to determine the effects of medications on the structures of the oral cavity.

nurses to adapt oral hygiene approaches. More-frequent mouth care and use of anti-infective agents are examples of ways nurses can revise approaches to meet personal needs.

FLOSSING Flossing involves inserting waxed or unwaxed dental floss between the teeth. The seesaw motion used to pull floss between teeth removes plaque and tartar from tooth enamel. To prevent bleeding, people who are receiving chemotherapy or radiation or are on anticoagulant therapy should use unwaxed floss and avoid vigorous flossing near the gum line. If toothpaste is applied to the teeth before flossing, fluoride can come in direct contact with tooth surfaces, aiding in cavity prevention. Flossing once a day is sufficient. Because it is important to clean all teeth surfaces thoroughly, nurses should not rush to complete flossing. Placing a mirror in front of the person will help nurses to demonstrate the proper method for holding the floss and cleaning between the teeth. Floss holders are available for people who have difficulty manipulating the floss.

PEOPLE WITH SPECIAL NEEDS Some people require special oral hygiene methods because of their level of dependence on nurses or the presence of oral mucosa problems. Unconscious people are susceptible to drying of mucous-thickened salivary secretions because they are unable to eat or drink, frequently breathe through the mouth and often receive oxygen therapy. The unconscious person also cannot swallow salivary secretions that accumulate in the mouth. These secretions often contain Gram-negative bacteria that can cause pneumonia if aspirated into the lungs. While providing hygiene to an unconscious person, nurses must protect the person from choking and aspiration. The safest technique is to have two nurses provide the care. One nurse does the actual cleaning, while the other removes secretions with suction equipment.

While cleaning the oral cavity, nurses should never use fingers to hold the person's mouth open. A human bite is highly contaminated. It may be necessary to perform mouth care at least every 2 hours. The nurse explains the steps of mouth care and the sensations the person will feel. The nurse also advises the person when the procedure is completed (Skill 29-7).

SKILL 29-7

Performing mouth care for an unconscious or debilitated person

Delegation considerations

Brushing teeth of an unconscious or debilitated person can be delegated to nurse assistants under the supervision of the registered nurse (RN).

- After RN checks for gag reflex, inform caregiver about proper way to position people for mouth care.
- Instruct caregiver in how to use the oral suction catheter for clearing oral secretions.
- Instruct caregiver in how to recognise impaired integrity of oral mucosa.

Equipment

- Anti-infective solution (e.g. diluted hydrogen peroxide) that loosens crusts
- Small soft-bristled toothbrush
- Sponge toothette or tongue blade wrapped in single layer of gauze
- Padded tongue depressor
- Face towel
- Paper towels
- Emesis basin

- Water glass with cool water
- Water-soluble lip lubricant
- Small-bulb syringe (optional)
- Suction machine equipment (optional)
- Disposable gloves (three pairs)
- Eye shield or goggles

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Wash hands. Put on disposable gloves and goggles or eye shield.	Reduces transmission of microorganisms. Gloves prevent contact with microorganisms in blood or saliva.
2. Test for presence of gag reflex by placing tongue blade on back half of tongue. People with impaired gag reflex require oral care as well. The nurse determines the type of suction apparatus needed at the bedside to protect the person's airway against aspiration.	Reveals whether person is at risk of aspiration.
3. Inspect condition of oral cavity (see Chapter 27).	Determines condition of oral cavity and need for hygiene.
4. Remove gloves. Wash hands.	Prevents spread of infection.
5. Assess the person's risk of oral hygiene problems (see Table 29-7).	Certain conditions increase likelihood of alterations in integrity of oral cavity structures and may require more frequent care.
6. Position person on side (Sims' position) with head turned well towards dependent side and head of bed lowered. Raise side rail.	Allows secretions to drain from mouth instead of collecting in back of pharynx. Prevents aspiration.
7. Explain procedure to the person.	Allows debilitated person to anticipate procedure without anxiety. Unconscious person may retain ability to hear.
8. Wash hands and apply disposable gloves.	Reduces transfer of microorganisms.
9. Place paper towels on overbed table and arrange equipment. If needed, turn on suction machine and connect tubing to suction catheter.	Prevents soiling of table top. Equipment prepared in advance ensures smooth, safe procedure.
10. Pull curtain around bed, or close room door.	Provides privacy.
11. Raise bed to its highest horizontal level; lower side rail.	Use of good body mechanics with bed in high position prevents injury.
12. Position person close to side of bed; turn person's head towards mattress.	Proper positioning of head prevents aspiration.

STEPS	RATIONALE
13. Place towel under the person's head and emesis basin under chin.	Prevents soiling of bedclothes.
14. Carefully separate upper and lower teeth with padded tongue blade by inserting blade, quickly but gently, between back molars. Insert when the person is relaxed, if possible. Do not use force. Never use fingers to separate the person's teeth.	Prevents the person from biting down on nurse's fingers and provides access to oral cavity.
15. Clean mouth using brush or sponge toothettes moistened with peroxide and water (see illustration). Clean chewing and inner tooth surfaces first. Clean outer tooth surfaces. Swab roof of mouth, gums and inside cheeks. Gently swab or brush tongue but avoid stimulating gag reflex (if present). Moisten clean swab or toothette with water to rinse. (Bulb syringe may also be used to rinse.) Repeat rinse several times.	Brushing action removes food particles between teeth and along chewing surfaces. Swabbing helps remove secretions and crusts from mucosa and moistens mucosa. Repeated rinsing removes peroxide that can be irritating to mucosa.



Step 15 Using toothette to clean mouth of person with oral airway.



Step 17 Applying water-soluble moisturiser to lips.

16. Suction secretions as they accumulate, if necessary.	Suction removes secretions and fluid that can collect in posterior pharynx.
17. Apply thin layer of water-soluble jelly to lips (see illustration).	Lubricates lips to prevent drying and cracking.
18. Inform the person that the procedure is completed.	Provides meaningful stimulation to unconscious or less responsive person.
19. Remove gloves and discard in proper receptacle.	Prevents transmission of infection.
20. Reposition the person comfortably, raise side rail and return bed to original position.	Maintains the person's comfort and safety.
21. Clean equipment and return to its proper place. Place soiled linen in proper receptacle.	Proper disposal of soiled equipment prevents spread of infection.
22. Wash hands.	Reduces transmission of microorganisms.

STEPS	RATIONALE
23. Put on gloves, and inspect oral cavity.	Determines efficacy of cleansing. Once thick secretions are removed, underlying inflammation or lesions may be revealed.
24. Ask debilitated person if mouth feels clean.	Evaluates level of comfort.
25. Assess the person's respirations on an ongoing basis.	Ensures early recognition of aspiration.

RECORDING AND REPORTING

- Record procedure, including pertinent observations (e.g. presence of bleeding gums, dry mucosa, ulcerations, crusts on tongue).
- Report any unusual findings to nurse in charge or doctor.

HOME CARE CONSIDERATIONS

- Irrigate cavity with bulb syringe.
- Mouth care should be given at least twice a day. Caregivers can get non-prescription oral care solutions (e.g. carbamide peroxide solutions) at most chemists/pharmacies. Have caregivers demonstrate positioning person to prevent aspiration.

Those who receive chemotherapy, radiation or nasogastric tube intubation or who have an infection of the mouth can suffer from stomatitis. Inflammation of the oral mucosa can cause oral burning, pain and change in food tolerance. Gentle brushing and flossing are important in preventing bleeding of the gums. The person should be advised to avoid alcohol and commercial mouthwash and to stop smoking. Normal saline rinses (approximately 30 mL) on waking in the morning, after each meal and at bedtime can effectively clean the oral cavity. The rinses can be increased to every 2 hours if necessary. The doctor may order a mild oral analgesic for pain control.

People with diabetes mellitus often have periodontal disease. They will need to visit the dentist every 3–4 months. All tissues should be handled gently to minimise further periodontal trauma. A person should learn to follow rigid cleaning schedules, at least four times a day.

DENTURE CARE A person should be encouraged to clean their dentures on a regular basis to avoid gingival infection and irritation. When a person becomes disabled, a nurse or family caregiver can assume responsibility for denture care (Box 29-7).

Dentures are the person's personal property and need to be handled with care because, apart from being easily broken, they are expensive items. Dentures must be removed at night to give the gums a rest and prevent bacterial build-up. To prevent warping, dentures should be kept covered in water when they are not worn, and they should always be stored in an enclosed, labelled cup with the cup placed on the person's bedside stand. Discourage the person from removing their dentures and placing them on a serviette or tissue because they could easily be thrown away.

Hair and scalp care

A person's appearance and feeling of wellbeing often depend on the way the hair looks and feels. Illness or disability may prevent a person from maintaining daily hair care. An immobilised person's hair soon becomes tangled. Dressings may leave sticky blood or antiseptic solutions on the hair. In the clinic and home care settings, nurses will encounter people who have head lice. Proper hair care is important to the person's body image. Brushing, combing and shampooing are basic hygiene measures for all people.

BRUSHING AND COMBING Frequent brushing helps to keep hair clean and distributes oil evenly along hair shafts. Combing prevents hair from tangling. The person should be encouraged to maintain routine hair care. However, people with limited mobility or weakness and those who are confused require help. People in a hospital or extended-care facility appreciate the opportunity to have their hair brushed and combed prior to visiting hours.

When caring for people from different cultures, it is important to learn as much as possible from them or their family about preferred hair care practices. Cultural preferences will also affect how hair is combed and styled.

Long hair can easily become matted after a person is confined to bed, even for a short period. When lacerations or incisions involve the scalp, blood and topical medications can also cause tangling. Frequent brushing and combing keep long hair neatly groomed. Plaiting can help to avoid repeated tangles, but plaits should be unplaited periodically and hair combed to ensure good hygiene. Plaits made too tightly can lead to discomfort and, ultimately, bald patches. Nurses obtain permission from the person before plaiting hair.

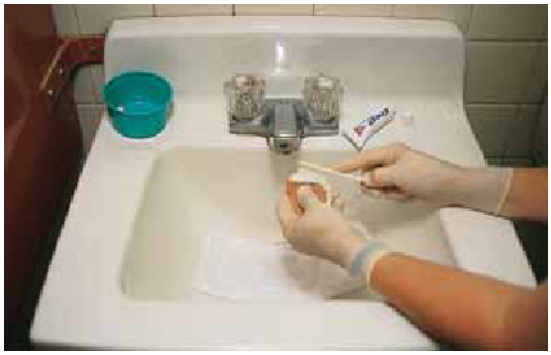
To brush hair, part the hair into several sections. It is easier to brush smaller sections of hair. Brushing from the scalp towards the hair ends minimises pulling. Moistening the hair with water or alcohol frees tangles for easier combing. Never cut a person's hair without written consent.

A person who develops head lice (*Pediculosis capitis*) requires special considerations in the way combing is performed. The lice are small, about the size of a sesame seed. Bright light or natural sunlight is necessary for the lice to be visible. Thorough

BOX 29-7 Procedural guidelines for cleaning dentures

Equipment: Soft-bristled toothbrush, denture toothbrush, emesis basin or sink, denture toothpaste, glass, 10 cm × 10 cm gauze, washcloth, denture cup, disposable gloves.

1. Clean dentures for person during routine mouth care. Dentures need to be cleaned as often as natural teeth.
2. Fill emesis basin with tepid water. (If using sink, place washcloth in bottom of sink and fill sink with approximately 2.5 cm of water.)
3. Remove dentures. If person is unable to do this independently, don gloves, grasp upper plate at front with thumb and index finger wrapped in gauze and pull downwards. Gently lift lower denture from jaw, and rotate one side downwards to remove from person's mouth. Place dentures in emesis basin or sink.
4. Apply toothpaste to dentures, and brush surfaces of dentures (see illustration). Hold dentures close to water. Hold brush horizontally, and use back-and-forth motion to clean biting surfaces. Use short strokes from top of denture to biting surfaces of teeth to clean outer tooth surface. Hold brush vertically, and use short strokes to clean inner tooth surfaces. Hold brush horizontally, and use back-and-forth motion to clean undersurface of dentures.
5. Rinse dentures thoroughly in tepid water.
6. Return dentures to person, or store in tepid water in denture cup. Keep denture cup inside bedside cabinet.



Step 4 Applying toothpaste and brushing the sides of the dentures.

combing is recommended and may be more effective than use of pediculicidal shampoos, which are often toxic and ineffective against resistant lice. Thick white conditioners have been demonstrated to stun lice for sufficient time for them, along with their eggs (nits), to be combed out with a nit comb (Martinez-Diaz & Mancini 2010). Follow these steps:

- Liberally apply a thick, white conditioner.
- Use a grooming comb or hairbrush to remove tangles.
- Divide the person's hair into sections and fasten off hair that is not being combed.
- Comb out from the scalp to the end of the hair (special combs are available in pharmacies).
- Dip the comb in a cup of water or use a paper towel to remove lice between each pass.
- After combing, look through the hair carefully for attached lice.
- Live lice may be caught with tweezers or comb.
- Move to next section of hair after combing thoroughly.
- Rinse hair thoroughly.
- Clean the comb with an old toothbrush and dental floss, and boil the comb (if possible).
- Instruct family to comb and screen for lice daily.

When a person is being treated for head lice, the doctor will often prescribe a pediculicidal shampoo. Have the person consult with the doctor or a pharmacist carefully if they have questions about the toxicity of the shampoo.

SHAMPOOING Frequency of shampooing depends on a person's daily routines and the condition of the hair. Nurses should remind people in hospitals or extended-care facilities that staying in bed, excessive perspiration, or treatments that leave blood or solutions in the hair may necessitate more-frequent shampooing. For those at home, it can be a challenge for nurses to find ways in which the person can shampoo the hair without causing discomfort or even injury.

If the person is able to take a shower or bath, the hair can usually be shampooed without difficulty. A shower or bath chair may be used for the mobile, weightbearing person who becomes tired or faint. Handheld shower nozzles allow a person to easily wash their hair in the bath or shower. The person who can sit in a chair may choose to be shampooed in front of a sink or over a washbasin. However, bending can be limited or contraindicated in certain conditions (e.g. eye surgery or neck injury). In these situations nurses need to teach the person the degree of bending allowed.

If a person is unable to sit but can be moved, they may be transferred to a bath trolley for transport to a sink or shower equipped with a handheld nozzle. Extended-care facilities are commonly equipped with this option. Caution is again needed when the person's head and neck are positioned, particularly in people with any form of head or neck injury.

In some agencies a doctor's order is necessary for shampooing the hair of a totally dependent person. If the person is unable to sit in a chair or be transferred to a trolley, shampooing must be done with the person in bed (Box 29-8). A special shampoo trough can be positioned under the person's head to catch water and suds. This method makes rinsing at the back of the head difficult.

After rinsing, most people like having their hair styled and dried. Most healthcare centres have portable hair dryers. Dry shampoos that reduce the need to wet the person's hair are also available, but are not very effective.

SHAVING Shaving facial hair can be done after the bath or shampoo. Women may prefer to shave their legs or axillae while bathing. When helping a person, nurses should take care to avoid cutting the person with a razor blade. People prone to bleeding (e.g. those receiving anticoagulants or high doses of aspirin, or those with low platelet counts) should use an electric razor. Before using an electric razor, nurses should check for

BOX 29-8 Procedural guidelines for shampooing hair of bed-bound person

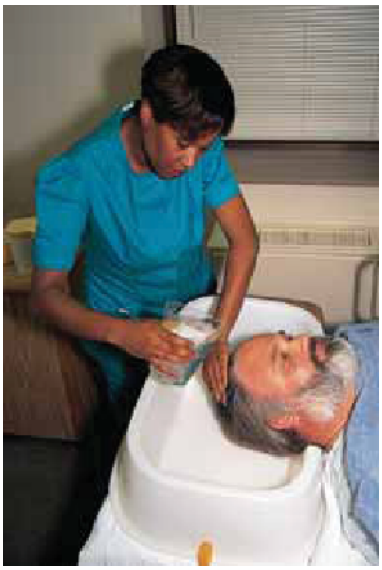
Equipment

Bath towels, washcloths, shampoo and hair conditioner (optional), water jug, plastic apron, plastic shampoo trough, washbasin, bath blanket, waterproof pad, clean comb and brush, hair dryer (optional).

1. Before washing person's hair, determine that there are no contraindications to this procedure. Certain medical conditions, such as head and neck injuries, spinal cord injuries and arthritis, could place the person at risk of injury during shampooing because of positioning and manipulation of person's head and neck.
2. Inspect the hair and scalp before starting the procedure. This determines the presence of any conditions that may require the use of special shampoos or treatments (e.g. for dandruff or the removal of dried blood).
3. Place waterproof pad under person's shoulders, neck and head. Position person supine, with head and shoulders at top edge of bed. Place plastic trough under person's head and washbasin at end of trough. Be sure trough spout extends beyond edge of mattress (see illustration).



4. Place rolled towel under person's neck and bath towel over person's shoulders.
5. Brush and comb person's hair.
6. Obtain warm water.
7. Offer person the option of holding face towel or washcloth over eyes.
8. Slowly pour water from jug over hair until it is completely wet (see illustration). If hair contains matted blood, don gloves and eye shield, apply peroxide to dissolve clots and then rinse hair with saline. Apply small amount of shampoo.



9. Work up lather with both hands. Start at hairline, and work towards back of neck. Lift head slightly with one hand to wash back of head. Shampoo sides of head. Massage scalp by applying pressure with fingertips.
10. Rinse hair with water. Make sure water drains into basin. Repeat rinsing until hair is free of soap. Take care that hair at back of head is thoroughly rinsed.
11. Apply conditioner or cream rinse if requested, and rinse hair thoroughly.
12. Wrap person's head in bath towel. Dry person's face with cloth used to protect eyes. Dry off any moisture along neck or shoulders.
13. Dry person's hair and scalp. Use second towel if first becomes saturated.
14. Comb hair to remove tangles, and dry with dryer if desired.
15. Apply oil preparation or conditioning product to hair, if desired by person.
16. Help person into comfortable position, and complete styling of hair.

frayed cords or other electrical hazards. Electric razors should be used on only one person because of infection-control considerations.

When a razor blade is used for shaving, the skin must be moisturised to prevent pulling, scraping or cuts; for example, placing a warm washcloth over the male person's face for a few seconds, followed by application of shaving cream/gel/foam or a lathering of mild soap, decreases friction. If the person is unable to shave, a nurses may perform the shave. To avoid causing discomfort or razor cuts, the nurse gently pulls the skin taut and uses short, firm razor strokes in the direction the hair grows (see Figure 29-8). Short downward strokes work best to



Figure 29-8 Shave in the direction of hair growth. Use longer strokes on the larger areas of the face. Use short strokes around the chin and lips.

Sorrentino SA, Remmert LN 2012 Mosby's textbook for nursing assistants, 8th edn. Mosby, St Louis.

remove hair over the upper lip. The man can usually explain to nurses the best way to move the razor across the skin.

MOUSTACHE AND BEARD CARE Men with moustaches or beards require daily grooming. Keeping these areas clean is important because food particles and mucous can easily collect in the hair. If the man is unable to carry out self-care, nurses should do so at their request. Beards can be gently combed out. A shaggy or unkempt moustache or beard can be trimmed. Shaving off a moustache or beard cannot be performed without the person's consent.

HAIR AND SCALP CARE To best promote and restore hair and scalp health, people should be instructed how to keep hair clean, combed and brushed regularly. People may also need to know how to check for and remove parasites (see Table 29-4). Nurses should tell people that they need to notify their primary caregiver of changes in the texture and distribution of hair, which may indicate a serious systemic problem.

Care of the eyes, ears and nose

Special attention is given to cleaning the eyes, ears and nose during a routine bath and when drainage or discharge accumulate. This aspect of hygiene not only makes the person more comfortable, but also improves sensory reception (see Chapter 19). Care focuses on preventing infection and maintaining normal sensory function. In addition, care of the eyes, ears and nose requires approaches that consider the person's special needs (see *Working with diversity*).

BASIC EYE CARE Cleaning the eyes simply involves washing with a clean washcloth moistened in water. Soap or shower gel may cause burning and irritation (see Skill 29-1). Direct pressure should never be applied over the eyeball because it may cause serious injury.

WORKING WITH DIVERSITY

Focus on older adults

- Maintaining and improving eyesight are important aspects of an independent and satisfying life for older adults.
  - Encourage regular eye examinations.
  - Discuss vision changes that occur naturally with ageing.
  - Describe signs and symptoms of major eye diseases associated with ageing.
- 30% of people 65 years of age and 40–50% of those over age 75 years have hearing loss, so speak slowly and articulate carefully. However, do not shout, and do not assume that all older people have difficulty hearing.
- Earwax tends to be drier in older people, impacts more easily and takes longer to soften. Treatment includes a topical emollient instilled in the ear canal once a week, or syringing the ear canal to remove the impacted earwax. This should only be performed by someone who is experienced in this area (Linton & Lach 2007).

References

Linton A, Lach H 2007 Matteson and McConnell's Gerontological nursing: concepts and practice, 3rd edn. Saunders, St Louis.

Unconscious people often require more-frequent eye care. Secretions may collect along the lid margins and inner canthus when the blink reflex is absent or when the eye does not totally close. It may be necessary to place an eye patch over the involved eye to prevent corneal drying and irritation. Lubricating eye drops may be given according to the doctor's orders.

Unconscious people have lost the ability to protect their own corneas. Care must be taken to ensure that the eyelid covers the cornea or that the eyes are properly patched to prevent abrasion from bedclothes.

GLASSES Glasses are made of hardened glass or plastic that is impact-resistant to prevent shattering. Nevertheless, because of the expense, nurses should be careful when cleaning glasses and should protect them from breakage or other damage when they are not worn. Glasses should be put in a case in a drawer of the bedside table when not in use.

Cool water is sufficient for cleaning glass lenses. A soft cloth is best for drying to prevent scratching the lens; paper towels can scratch a lens. Plastic lenses in particular are scratched easily, and special cleaning solutions and drying tissues are available. Use whatever the person's eye-care specialist recommends.

CONTACT LENSES A contact lens is a small, round, transparent and sometimes coloured disk that fits directly over the cornea of the eye. Contact lenses are designed specifically to correct refractive errors of the eye or abnormalities in the cornea's shape. They are relatively easy to apply and remove.

There are three basic types of contact lenses: *rigid* (hard), *soft* and *rigid gas-permeable* (RGP), also known as oxygen-permeable. They differ in size, material, and the amount of oxygen flow they permit to the eye's surface. For example, rigid lenses ride on the tear-film layer of the cornea and are held in place by surface tension. The tear film moves under and over

BOX 29-9 Teaching contact lens care

Objectives

- Person will be able to identify warning signs of corneal irritation and eye infection.
- Person will be able to clean and care for contact lenses correctly.

Teaching strategies

- Encourage person to see a vision care specialist (ophthalmologist or optometrist) regularly: every 3–5 years before age 40, every 2 years after age 40 and yearly after age 65.
- Plastic lenses scratch easily. Special cleaning solutions and drying tissues are recommended.
- Never use fingernail on lens to remove dirt or debris that does not loosen during washing.
- Follow recommendations of lens manufacturer or eye-care practitioner when cleaning and disinfecting lenses.
- Encourage person to remember the mnemonic RSVP: Redness, Sensitivity, Vision problems and Pain. If one of these problems occurs, remove contact lenses immediately. If problems continue, contact vision care specialist.
- Lenses become very slippery once cleaning solution is applied.
- If lens is dropped on a hard surface, moisten finger with cleaning or wetting solution and gently touch lens to pick it up. Then clean, rinse and disinfect lens.
- Lens should be kept moist or wet when not worn.
- Use fresh solution daily when storing and disinfecting lenses.
- Do not wipe lens with tissue or towel.
- Thoroughly wash and rinse lens storage case on a daily basis. Clean periodically with soap or liquid detergent; rinse thoroughly with warm water and air dry.
- To avoid mix-up, always start with the same lens when removing or inserting lenses.
- Disposable or planned replacement lenses should be thrown away after prescribed wearing period.

Evaluation

- Have person identify warning signs of corneal irritation and eye infection.
- Ask person to describe methods of contact lens care that can lead to infection.
- Ask person to describe techniques to use in cleaning and storing contact lens.

the lens during blinking to provide oxygen to the cornea. Soft lenses cover the entire cornea and a small rim of the sclera; they do not ride on the corneal tear film. The cornea receives oxygen through the soft lens, which is oxygen-permeable. RGP lenses are made of plastic that allows oxygen to pass through to the cornea. All three lenses are available as clear (untinted) or tinted.

Contact lenses are available for daily wear or extended wear and may be disposable. In terms of a person's hygiene care, it is important to know that all lenses must be removed periodically to prevent ocular infection and corneal ulcers or abrasions. Common infectious agents are *Pseudomonas aeruginosa* and staphylococci. Education must include a discussion of proper lens care techniques (Box 29-9). *Daily-wear lenses* should be removed overnight for cleaning and disinfection and should not be worn for more than 10–14 hours daily (Lemp & Bielory 2008). Although it is recommended that *extended-wear lenses* be worn no longer than 6 consecutive nights without cleaning and disinfecting, there is a 30-day/night continued-wear lens available. *Disposable lenses* are available for daily wear and extended wear and are usually replaced every 1–2 weeks. Pain, eye-watering, discomfort and redness of the conjunctivae may be symptoms of lens overwear for any type of lens. Persistence of symptoms even after lens removal is abnormal, however, and may indicate serious ocular damage.

As contact lenses are worn, they accumulate secretions and foreign matter. This material deteriorates and then irritates the eye, causing distorted vision and risk of infection. Once removed, contact lenses should be cleaned and thoroughly disinfected. People should be cautioned never to use saliva, homemade saline or tap-water when cleaning lenses, as these solutions may contain microorganisms that can cause serious infection. Skill 29-8 reviews steps for contact lens removal, cleaning and reinsertion.

SKILL 29-8

Caring for the person with contact lenses

Delegation considerations

Caring for eye prostheses can be delegated to nurse assistants.

- Instruct caregiver in proper way to care for eye prostheses.
- Stress to caregiver that careful handling of these devices is of utmost importance to prevent physical injury to the person and damage to the devices.
- Inform caregiver of types of findings to report (e.g. eye pain, eye socket drainage).

Equipment

- Clean lens storage container
- Bath towel
- Suction cup (optional)
- Sterile saline solution
- Sterile lens cleaning solution
- Sterile lens rinsing solution
- Sterile lens disinfectant
- Sterile enzyme solution (depends on care regimen)
- Sterile wetting solution (depends on care regimen)
- Cotton ball or cotton bud
- Emesis basin
- Disposable gloves

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Place towel just below the person's face.	Catches lens if one should accidentally fall from eye.
2. Stand at the person's side. Inspect eye, or ask person whether contact lens is in place. Unconscious or confused people should be carefully assessed; lenses are often difficult to assess if clear (untinted).	Lenses are generally comfortable to wear, and person may forget they are in place. Prolonged wear may cause injury to eye.
3. Ask whether the person feels any eye discomfort, and assess length of time the person normally wears lenses.	Scratched lenses can cause corneal irritation and abrasion. Accumulation of dust or debris between lens and cornea causes irritation. Continuous wearing of certain types of lenses can irritate cornea.
4. Ask whether the person is able to manipulate and hold contact lens.	Determines level of assistance required in care.
5. Assess the person for any unusual visual signs/symptoms (reduced visual acuity, blurred vision, pain, photophobia).	May indicate underlying visual alteration or need to change lens prescription. A reduction in visual acuity calls for referral.
6. Assess types of medications prescribed for person: sedatives, hypnotics, muscle relaxants, antihistamines, anticholinergics and antidepressants.	Sedatives, hypnotics and muscle relaxants reduce blink reflex and thus reduce lubrication of cornea. Antihistamines, anticholinergics and antidepressants can reduce tear production.
7. After lenses are removed (see Step 11), inspect eye for signs of corneal irritation (e.g. redness, pain, swelling of eyelids and conjunctivae, discharge and excess watering). If pain persists or worsens after removal of lenses, an immediate referral to the ophthalmologist should be made.	Signs/symptoms indicate corneal irritation or abrasion. Severe pain may indicate corneal epithelium disruption or infection.
8. Discuss procedure with the person.	Person can help plan by explaining technique that may aid removal and insertion. Person may be anxious as nurse retracts eyelids and manipulates lenses.

STEPS	RATIONALE
9. Have the person assume supine or sitting position in bed or chair.	Provides easy access for nurse while retracting eyelids and manipulating lenses.
10. Assemble supplies at bedside.	Provides easy access to supplies.
11. **Remove lenses.** **A. Soft lenses**	
(1) Wash hands. Put on disposable gloves if there are cuts, scratches or dermatological lesions on nurse's hands.	Reduces transmission of microorganisms.
(2) Add a few drops of sterile saline solution to the person's eye.	Lubricates eye to facilitate lens removal.
(3) Tell the person to look straight ahead.	Eases tipping of lens during removal.
(4) Using middle finger, retract lower eyelid.	Exposes lower edge of lens.
(5) With pad of index finger of same hand, slide lens off cornea onto white of eye.	Positions lens for easy grasping. Use of finger pad (rather than fingernail) prevents injury to cornea and damage to lens.
(6) Pull upper eyelid down gently with thumb of other hand, and compress lens slightly between thumb and index finger.	Causes soft lens to double up. Air enters underneath lens to release suction.
(7) Gently pinch lens, and lift out.	Protects lens from damage. Avoid allowing lens edges to stick together. Soft lenses can be easily torn.



Step 11A(8) Ensure lenses are placed in correct storage compartments.

(8) Clean and rinse lens. Place lens in proper storage case compartment: R for right lens and L for left lens (see illustration).	Ensures proper lens will be reinserted into correct eye. Proper storage prevents cracking or tearing.
(a) After removing one lens from case, apply one or two drops of cleaning solution to lens in palm of hand (use cleaner recommended by lens manufacturer or eye-care practitioner).	Removes tear components, including mucous, lipids and proteins that collect on lens.

STEPS	RATIONALE
(b) Rub lens gently but thoroughly on both sides for 20–30 seconds. Use index finger (soft lenses) or little finger or cotton bud soaked with cleaning solution (rigid lenses) to clean inside lens. Be careful not to turn lens wrong side out or touch or scratch lens with fingernail.	It is easier to manipulate and clean lens using fingertips. Cleans microorganisms from all surfaces.
(c) Holding lens over emesis basin, rinse thoroughly with manufacturer-recommended rinsing solution (soft lenses) or cold tap water (rigid lenses).	Removes debris and cleaning solution from lens surface. Rinsing methods and solutions differ for each type of lens.
(d) Place lens in proper storage case compartment and fill with storage solution recommended by manufacturer or eye-care practitioner.	Disinfects lens, removes residue, enhances wetability of lens and prevents scratches to lens that can be caused by a dry case.
(9) Repeat Steps (2) to (8) for other lens. Secure cover over storage case. Label with person's name and room number.	Proper storage prevents damage to or loss of lenses.
(10) Dispose of towel, remove gloves and wash hands.	Reduces transmission of infection.
B. Rigid lenses	
(1) Wash hands, and put on gloves if needed.	Reduces transmission of microorganisms.
(2) Be sure lens is positioned directly over cornea. If lens is not positioned directly over cornea, have the person close their eyelids, place index and middle fingers of one hand on the eyelid just beside the lens and beneath it and gently but firmly massage lens back into place.	Correct position of lens allows easy removal from eye.
(3) Place index finger on outer corner of the person's eye, and draw skin gently back towards ear.	Tightens eyelid against eyeball.
(4) Tell the person to blink. Do not release pressure on the eyelid until blink is completed.	Manoeuvre should cause lens to dislodge and pop out. Lid margins must clear top and bottom of lens until the blink.
(5) If lens fails to pop out, gently retract eyelid beyond edges of lens. Press lower eyelid gently against lower edge of lens.	Pressure causes upper edge of lens to tip forwards.
(6) Allow both eyelids to close slightly, and grasp lens as it rises from eye. Cup lens in hand.	Manoeuvre causes lens to slide off easily. Protects lens from breakage.

STEPS	RATIONALE
(7) A lens suction cup can be used to remove lenses from the eyes of confused or unconscious people. Gently apply suction cup to lens surface, and lift out.	
(8) Clean and rinse lens (see Step 11A(8)). Place lens in proper storage case compartment: R for right lens and L for left lens. Centre lens in storage case, convex side down.	The lenses may not have the same prescription. Proper storage prevents breaking, scratching, chipping and discolouration.
(9) Repeat Steps (2) to (8) for other lens. Secure cover over storage case. Label with person's name and room number.	Proper storage prevents damage to or loss of lenses.
(10) Dispose of towel, remove gloves and wash hands.	Reduces spread of infection and keeps person's environment neat.
12. Insert lenses.	
A. Soft lenses	
(1) Remove right lens from storage case and rinse with recommended rinsing solution; inspect lens for foreign materials, tears or other damage.	
(2) Check that lens is not inverted (inside out). Apply wetting agent (sterile saline).	Soft lens is inverted if the edge has a lip; it is in proper position if curve is even from base to rim.
(3) Using middle or index finger of opposite hand, retract upper lid until iris is exposed.	
(4) Use middle finger of the hand holding lens to pull down lower lid.	
(5) Tell the person to look straight ahead; gently place lens directly on cornea; release lids slowly, starting with lower lid.	Ensures lens is centred, free of trapped air and comfortable.
(6) Tell the person to close their eyes slowly and roll them towards lens if not on the cornea.	
(7) Tell person to blink a few times.	
(8) Ask the person to open their eyes. Check for blurred vision or discomfort.	
(9) Repeat Steps (1) to (8) for left eye.	
(10) Discard used solution in the storage case.	
(11) Wash lens case with soap and a scrubber. Rinse case in sterile saline or a known disinfectant. Store dry.	Prevents multiplication of amoebae and bacteria.

STEPS	RATIONALE
B. Rigid lenses	
(1) Remove right lens from storage case; attempt to lift lens straight up (see illustration).	Sliding lens out of case can cause scratches on the surface.
(2) Rinse with recommended rinsing solution; inspect lens for foreign material or chips.	Hot water causes lens to warp.
(3) Wet lens on both sides, using prescribed wetting solution.	
(4) Place right lens concave side up on tip of index finger of dominant hand (see illustration).	Inner surface of lens should face up so that it is applied against cornea.
(5) Instruct the person to look straight ahead while retracting both upper and lower lids; place lens gently over centre of cornea (see illustration).	
(6) Ask the person to close their eyes briefly and avoid blinking.	Helps to secure position of lens.
(7) Ask the person to open their eyes. Check for blurred vision or discomfort.	
(8) Repeat Steps (1) to (7) for left eye.	
(9) Discard used solution. See Step 12A(11) for case cleansing.	



Step 12B(1) Rinsing lens lifted from storage case.



Step 12B(4) Placement of rigid lens on index finger of dominant hand.

STEPS	RATIONALE
 Step 12B(5) Person looks straight ahead as lens is placed over centre of cornea.	
13. Ask the person whether the lens feels comfortable after removal and reinsertion of lenses.	Determines if any debris is caught between lens and cornea. Lens should be removed if person experiences discomfort.
14. Inspect the eye (over time) for signs of ocular infection.	
15. Assess the person's visual acuity (see Chapter 27).	Determines improvement in visual perception.
16. Observe the person for signs of eye injury.	

RECORDING AND REPORTING

- Record or report any signs/symptoms of visual alterations or corneal irritation noted during procedure.
- Record on nursing care plan times of lens insertion and removal if person is going to surgery or special procedure.

HOME CARE CONSIDERATIONS

- People must be taught not to wear lenses in presence of noxious or irritating vapours or fumes because these irritants can cause damage to lens surface.

ARTIFICIAL EYES People with artificial eyes have had an **enucleation** of an entire eyeball as a result of tumour growth, severe infection or eye trauma. Some artificial eyes are permanently implanted. Others can be removed for routine cleaning. A person with artificial eyes usually prefers to care for their own eyes. Nurses should respect the person's wishes and help by assembling needed equipment.

A person may at times require assistance in prosthesis removal and cleaning. To remove an artificial eye, the nurse retracts the lower eyelid and exerts slight pressure just below the eye (Figure 29-9). This action causes the artificial eye to rise from the socket because the suction holding the eye in place has been broken. A small, rubber bulb syringe or medicine dropper bulb may also be used to create a suction effect. The suction created by placing the bulb tip directly over the eye and squeezing lifts the eye from the socket.

The artificial eye is usually made of glass or plastic. Warm Normal saline cleans the prosthesis effectively. Also clean the edges of the eye socket and surrounding tissues with soft gauze moistened in saline or clean tap-water. Signs of infection should be reported immediately because bacteria can spread to the neighbouring eye, underlying sinuses or even underlying brain tissue. To reinsert the eye, retract the upper and lower lids and gently slip the eye into the socket, fitting it neatly under the upper eyelid. An artificial eye may be stored in a labelled container filled with tap-water or saline.

Ear care

Routine ear care involves cleaning the ear with the end of a moistened washcloth, rotated gently into the ear canal. When cerumen is visible, gentle, downward retraction at the entrance of the ear canal may cause the wax to loosen and slip out. People must be cautioned never to use sharp objects such as

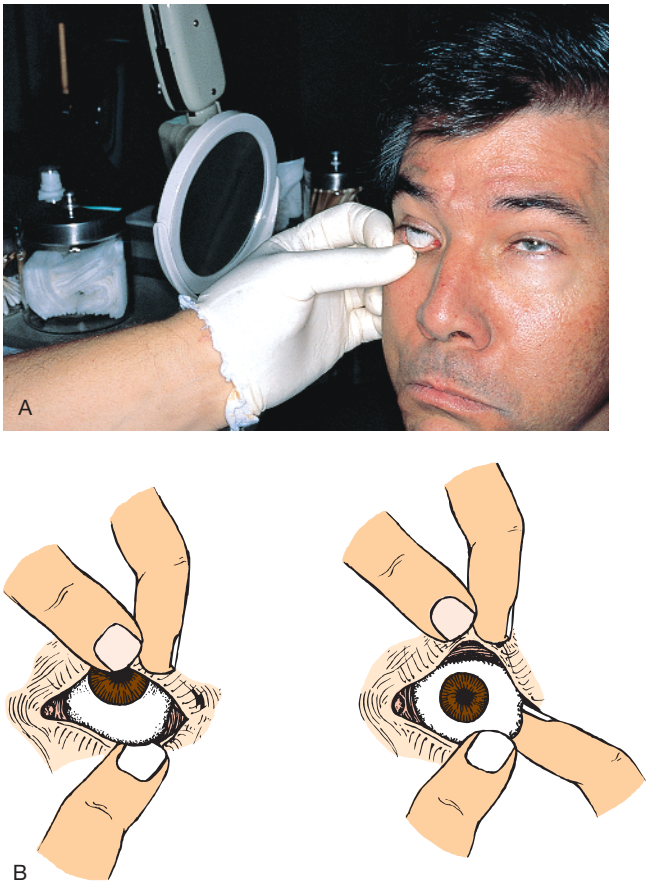


Figure 29-9 Removal of prosthetic eye.

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bobby pins or paper clips to remove earwax. The use of such objects can traumatise the ear canal and rupture the tympanic membrane. Use of cotton-tipped applicators should also be avoided because they can cause earwax to become impacted within the canal.

Children and older adults commonly have impacted cerumen. Excessive or impacted cerumen can usually be removed only by irrigation. If a person has a history of a perforated eardrum or if perforation is discovered during assessment, the procedure is contraindicated. The initial part of the procedure is the administration of prescribed ear drops to soften and loosen the wax, which is commenced 3–5 days before the irrigation component (Stevenson 2010). Then the instillation of approximately 250 mL of warm water (37°C) into the ear canal mechanically washes away loosened wax. Cold or hot water causes nausea or vomiting. The person may sit or lie on the side with the affected ear up. A small curved basin is placed under the affected ear to catch the irrigating solution. A Water Pik (set on No. 2 setting) or a bulb-irrigating syringe can be used to irrigate the ear canal. The tip of the syringe or Water Pik should not occlude the canal, to avoid exerting pressure against the tympanic membrane. Gentle irrigation directed at the top of the canal loosens the cerumen from the sides of the canal. After the canal is clear, nurses wipe off any moisture from the ear and inspects the canal for remaining cerumen.

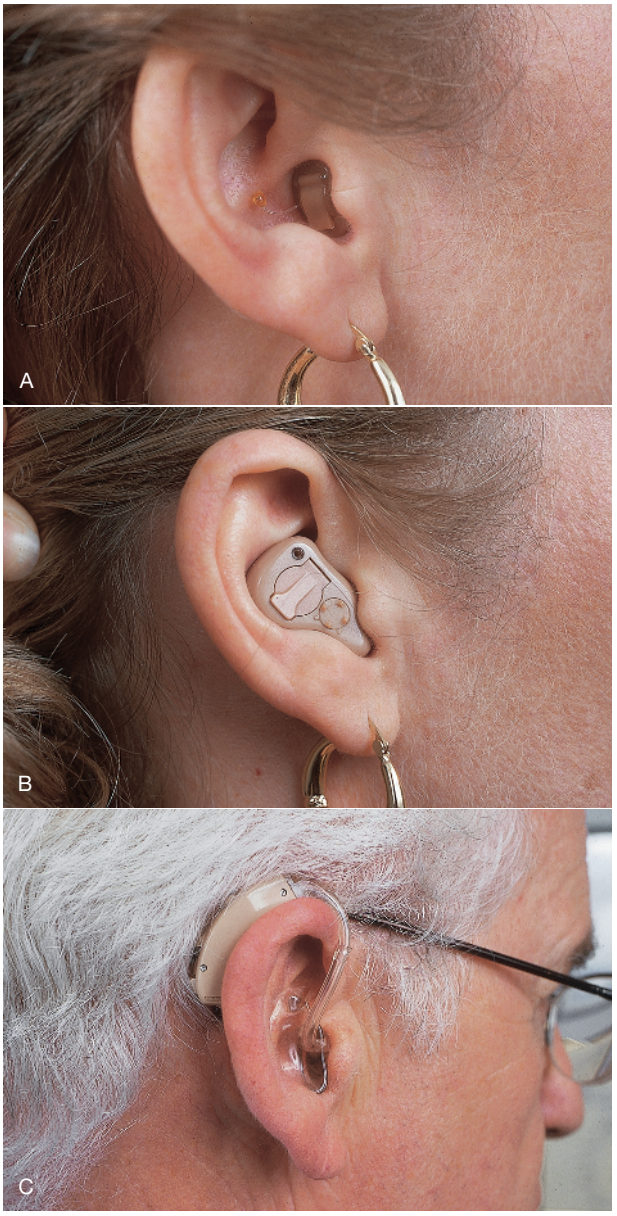

Figure 29-10 Three common types of hearing aids.

A, In-the-canal (ITC). B, In-the-ear (ITE). C, Behind-the-ear (BTE).

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HEARING-AID CARE Hearing aids are instruments made up of miniature parts working together as a system to amplify sound in a controlled manner. The aid receives normal low-intensity sound inputs and delivers them to the person's ear as louder outputs. Newer classes of hearing aids can reduce background noise interference; computer chips placed in the aids allow for fine adjustments to the specific person's hearing needs. Hearing aids are used by people both hard-of-hearing (slight or moderate hearing loss) and deaf (severe hearing loss).

There are three popular types of hearing aids. An in-the-canal (ITC) aid (see Figure 29-10A) is the newest, smallest and least visible and fits entirely in the ear canal. It has cosmetic appeal, is easy to manipulate and place in the ear, does not interfere with

wearing glasses or using the telephone and can be worn during most types of physical exercise. However, it requires adequate ear diameter and depth for proper fit. It does not accommodate progressive hearing loss, and it requires manual dexterity to operate, insert and remove, and change batteries. Also, cerumen tends to plug this model more than the others.

An in-the-ear (ITE, or intra-aural) aid (see Figure 29-10B) fits into the external auditory canal and allows for more fine-tuning. The auditory augmentation is more powerful and stronger, and it is therefore useful for a wider range of hearing loss than the ITC aid. It is easy to position and adjust and does not interfere with wearing glasses. It is, however, more noticeable than the ITC aid and is not recommended for people with moisture or skin problems in the ear canal.

A behind-the-ear (BTE, or post-aural) aid (see Figure 29-10C) hooks around and behind the ear and is connected by a short, clear, hollow plastic tube to an ear mould inserted into the external auditory canal. It allows for fine-tuning. It is the largest of the three aids and is useful for people with rapidly progressive hearing loss or manual dexterity difficulties, or those who find partial ear occlusion intolerable. Disadvantages are that it is more visible and may interfere with wearing glasses and using a phone and it is more difficult to keep in place during physical exercise.

Box 29-10 reviews guidelines for the care and cleaning of a hearing aid.

BOX 29-10 Hearing aids – care and use

- Initially wear a hearing aid for 15–20 minutes; then gradually increase time up to 10–12 hours.
- Once inserted, turn the aid slowly to one-third or half volume.
  - A whistling sound indicates incorrect ear mould insertion.
  - Adjust volume to a comfortable level for talking at a distance of 1 metre.
- Sit close to speaker in noisy situations. Continue to be observant of non-verbal cues.
- Do not wear aid in bath, under heat lamps or an overhead hair dryer or in very wet, cold weather.
- Batteries last 1 week with daily wearing of 10–12 hours.
  - Remove or disconnect battery when not in use.
  - Routinely check battery compartment: Is it clean? Are batteries inserted properly? Is compartment shut all the way?
- Replace ear moulds every 2–3 years.
- Dials on hearing aid should be clean and easy to rotate, creating no static during adjusting.
- Routinely check cord or tubing (depending on type of aid) for cracking, fraying and poor connections.
- It takes time to adapt to using a hearing aid but, with patience, the wearer will be rewarded.

Modified from Touhy TA, Jett KF 2011 Ebersole and Hess' toward healthy aging: human needs and nursing response, 8th edn. Mosby, St Louis.

Nasal care

The person can usually remove secretions from the nose by gently blowing into a soft tissue. Caution the person against harsh blowing that creates pressure capable of injuring the eardrum, nasal mucosa and even sensitive eye structures. Bleeding from the nares is a sign of harsh blowing.

If the person is unable to remove nasal secretions, nurses assist by using a wet washcloth or a cotton-tipped applicator moistened in water or saline. The applicator should never be inserted beyond the length of the cotton tip. Excessive nasal secretions can also be removed by gentle suctioning.

Oxygen via nasal prongs dries and irritates the nasal tissues. Removing crusted secretions with damp gauze or a fine washcloth should be followed by applying a non-petroleum-based lubricating ointment.

When a person has nasogastric, feeding or endotracheal tubes inserted through the nose, the tape anchoring the tube should be changed by nurses at least once a day.

Person's room environment

Attempting to make a person's room as comfortable as the home is one of the priorities of nurses. The person's room should be comfortable, safe and large enough to allow the person and visitors to move about freely. Nurses can control room temperature, ventilation, noise and odours to create a more comfortable environment. Keeping the room neat and orderly also contributes to the person's sense of wellbeing.

MAINTAINING COMFORT The nature of what constitutes a comfortable environment depends on the person's age, severity of illness and level of normal daily activity. Depending on the person's age and physical condition, the room temperature should be maintained between 20°C and 23°C. Infants, older adults and the acutely ill may need a warmer room. However, certain ill people benefit from cooler room temperatures to lower the body's metabolic demands.

A good ventilation system keeps stale air and odours from lingering in the room. Nurses must protect the acutely ill, infants and older adults from drafts by ensuring that they are adequately dressed and covered with a lightweight blanket.

Good ventilation also reduces lingering odours caused by draining wounds, vomitus, bowel movements and unemptied urinals. Nurses should always empty and rinse bed pans or urinals promptly. Thorough hygiene measures are the best way to control body or breath odours. Healthcare institutions prohibit smoking within the facility. Room deodorisers can help remove many unpleasant odours but should be used with discretion in consideration of the person's possible embarrassment. As well, many people who are ill seem to be more sensitive to odours. Before using room deodorisers nurses should determine that the person is not allergic to or sensitive to the deodoriser itself. Strong personal odours on nurses (perfumes, lingering cigarette odours, halitosis, body odour) are offensive and disturbing to many ill people, and nurses need to practise excellent hygiene as well.

Ill people seem to be more sensitive to common hospital noises (e.g. intravenous pump alarms, suction apparatus or trolleys leaving a lift). Until the person is familiar with hospital noises, nurses should try to control the noise level. This can help the person gain necessary sleep. Explaining the source of any

unfamiliar noise to the person and family members can also be helpful.

Proper lighting is necessary for everyone's safety and comfort. A brightly lit room is usually stimulating, but a darkened room is best for rest and sleep. Room lighting can be adjusted by closing or opening curtains, regulating overbed and floor lights and closing or opening room doors. When entering a person's room at night, refrain from abruptly turning on an overhead light unless necessary.

ROOM EQUIPMENT A typical hospital room contains the following basic pieces of furniture: overbed table, bedside locker, chairs, lamp and bed (Figure 29-11). Extended-care and rehabilitation facilities may have similar equipment. The overbed table rolls on wheels and can be adjusted to various heights over the bed or a chair. Usually two storage areas are under the tabletop. The table provides an ideal working space for nurses performing procedures. It also provides a surface on which to place meal trays, toiletry items and objects frequently used by the person. The bed pan and urinal should not be placed on the overbed table. The bedside locker is used to store the person's personal possessions and hygiene equipment. The telephone, water jug and drinking cup are commonly found on a bedside locker.

Most hospital rooms contain an armless straight-backed chair and an upholstered lounge chair with arms. The lounge chair is used by the person and visitors and is usually placed at the foot of the bed or beside it. Straight-backed chairs are convenient when temporarily transferring the person from the bed, such as during bedmaking.

Each room usually has an overbed light and a floor or table lamp. Movable lights that extend over the bed from the wall should be positioned for easy reach but moved aside when not in use. Gooseneck or special examination lights are portable standing lamps used to provide extra light during bedside procedures.

Other equipment usually found in a person's room includes a call light, a television set, a blood-pressure gauge, oxygen and vacuum wall outlets and personal-care items. Special equipment designed for comfort or positioning people includes foot boots (Figure 29-12) and footboards, special mattresses (see Chapter 26) and bed boards.



Figure 29-11 Typical hospital room.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

BEDS A seriously ill person may remain in bed for a long time. Because a bed is the piece of equipment used most by a hospitalised person, it should be designed for comfort, safety and adaptability for changing positions.

The typical hospital bed has a firm mattress on a metal frame that can be raised and lowered horizontally. More and more hospitals are converting the standard hospital bed to one in which the mattress surface can be electronically adjusted for person comfort. Different bed positions are used to promote person comfort, minimise symptoms, promote lung expansion and improve access during certain procedures (Table 29-8).

The position of a bed is usually changed by electrical controls incorporated into the person's call light and in a panel on the side or foot of the bed. It is important for nurses to become familiar with use of the bed controls. Ease in raising and lowering a bed and in changing position of the head and foot eliminates undue musculoskeletal strain on nurses. Nurses should instruct the person in the proper use of controls and caution them against raising the bed to a position that might cause harm.

Beds contain safety features, such as locks on the wheels or castors. Wheels should be locked when the bed is stationary to prevent accidental movement. Side rails usually protect people

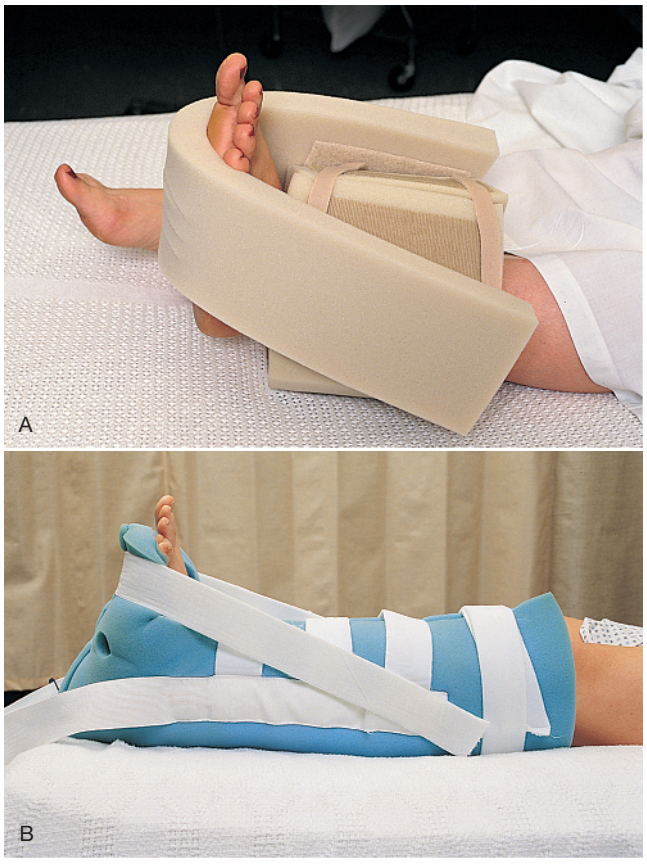
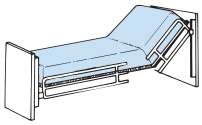
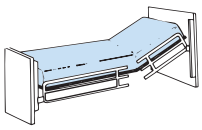
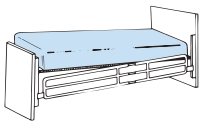
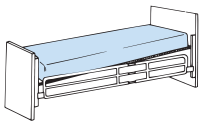
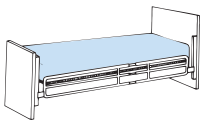


Figure 29-12 Types of foot boot.

A, Foot boot. B, Foot boot with lower leg extension.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

TABLE 29-8 Common bed positions

Fowler's 	Head of bed raised to angle of 45 degrees or more; semi-sitting position; foot of bed may also be raised at knee	Preferred while person eats Used during nasogastric tube insertion and nasotracheal suction Promotes lung expansion
Semi-Fowler's 	Head of bed raised approximately 30 degrees; inclination less than Fowler's position; foot of bed may also be raised at knee	Promotes lung expansion Used when people receive gastric feedings to reduce regurgitation and risk of aspiration
Trendelenburg's 	Entire bed frame tilted with head of bed down	Used for postural drainage Facilitates venous return in people with poor peripheral perfusion
Reverse Trendelenburg's 	Entire bed frame tilted with foot of bed down	Used infrequently Promotes gastric emptying Prevents oesophageal reflux
Flat 	Entire bed frame horizontally parallel with floor	Used for people with vertebral injuries and in cervical traction Used for people who are hypotensive Generally preferred by people for sleeping

from accidental falls, but they may actually cause a confused person to fall (as the person tries to climb over them). The headboard can be removed from most beds – this is important when the medical team needs easy access to the head, such as during cardiopulmonary resuscitation.

BEDMAKING A person's bed should be kept clean and comfortable. This requires frequent inspections to be sure linen is clean, dry and free of wrinkles. When people are diaphoretic, have draining wounds or are incontinent, nurses should check often for soiled bedclothes, and change them accordingly.

Nurses usually make a bed in the morning after the person's bath or while the person is showering, sitting in a chair eating or out of the room for procedures or tests. Throughout the day nurses straighten bedclothes that become loose or wrinkled. The bedclothes should be checked for food particles after meals and for wetness or soiling. Bedclothes that are soiled or wet should be changed.

When changing bedclothes, nurses follow principles of medical asepsis by keeping soiled sheets away from the uniform (Figure 29-13). Soiled linen is placed in special linen bags before discarding in a dirty linen basket. To avoid air currents, which can spread microorganisms, never fan linen. To avoid transmitting infection, do not place soiled linen on the floor. If clean linen touches the floor, it is immediately discarded.



Figure 29-13 Holding sheets away from the uniform prevents contact with microorganisms.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Nurses must use proper body mechanics when making a bed (see Chapter 33). The bed should always be raised to the nurse's hip-level, or if two nurses are making the bed, to the level of the

hip of the shorter of the two nurses. This should be done before changing linen so that the nurses do not have to bend or stretch over the mattress. Nurses move back and forth to opposite sides of the bed when applying new linen. Body mechanics also become important when turning or repositioning the person in bed.

When a person is confined to bed, bedmaking activities should be organised to conserve time and energy (Skill 29-9). The person's privacy, comfort and safety are all-important when making a bed. Using side rails, keeping call lights within the person's reach and maintaining the proper bed position help promote comfort and safety. After making a bed, always return it to the lowest horizontal position to prevent accidental falls should the person get in and out of the bed alone.

When possible, nurses should make the bed while it is unoccupied (Box 29-11 on p. 982). Use judgement in choosing

SKILL 29-9

Making an occupied bed

Delegation considerations

Making an occupied bed can be undertaken by nurse assistants under the guidance of the registered nurse (RN).

- Inform caregiver how to properly position people during occupied bedmaking procedure.
- Tell caregiver what to do if wound drainage, dressing material, drainage tubes or intravenous (IV) tubing becomes dislodged or is found in the bedclothes.
- Instruct caregiver on what to do if person becomes tired.
- Stress safety procedures, e.g. location of call system for easy access in the event that staff assistance is needed.
- Instruct caregiver to report any changes in person's level of consciousness, breathing patterns, level of pain or dizziness.

Equipment

- Dirty linen bag(s)
- Mattress pad (needs to be changed only when soiled)
- Bottom sheet (flat or fitted)
- Drawsheet
- Top sheet
- Blanket
- Bedspread
- Waterproof pads and/or bath blankets (optional)
- Pillowcases
- Bedside chair or table
- Disposable gloves (optional)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Determine whether person is incontinent or has excess drainage on bedclothes.	Determines need for protective waterproof pads or extra bath blankets on bed.
2. Check chart for orders or specific precautions for movement and positioning.	Ensures safety and use of proper body mechanics for nurse and person.
3. Explain procedure to person, noting that person will be asked to turn on side to roll over bedclothes.	Minimises anxiety and promotes cooperation.
4. Prepare needed equipment and supplies.	
5. Wash hands.	Minimises spread of infection.

STEPS	RATIONALE
6. Assemble and arrange equipment on bedside chair or table. Remove unnecessary equipment.	Provides for smooth procedure and ensures comfort.
7. Draw room curtain around bed or close door.	Maintains privacy, thus promoting emotional and physical comfort.
8. Lower side rail on near side of bed. Remove call light.	Provides easy access to bed and bedclothes.
9. Adjust bed height to comfortable working position.	Minimises strain on nurse's back. It is easier to remove and apply bedclothes evenly to bed in flat position.
10. Loosen top sheet at foot of bed.	Makes bedclothes easier to remove.
11. Remove bedspread and blanket separately by folding them into squares and placing them in dirty linen bag (if not to be reused). Do not allow bedclothes to contact uniform. Do not fan or shake bedclothes.	Reduces transmission of microorganisms.
12. If blanket and bedspread are to be reused, fold by bringing top and bottom edges together. Fold into neat squares and place over back of chair.	Facilitates replacement and prevents wrinkling.
13. Cover person with bath blanket in following manner. Unfold bath blanket over top sheet. Ask person to hold top edge of bath blanket. If person is unable to help, tuck top of bath blanket under shoulder. Grasp top sheet under bath blanket at person's shoulders, and bring down to foot of bed. Remove, and discard it into linen bag. *Optional:* Person may be covered with loosened top sheet if bath blanket is not available.	Bath blanket provides warmth and keeps body parts covered during bedclothes removal.
14. With help from another nurse, slide mattress towards head of bed.	If mattress slides towards foot of bed when head of bed is raised, it is difficult to tuck bedclothes in and is uncomfortable for person.
15. Position person on their side on far side of bed, facing away. Adjust pillow under head. Be sure furthest side rail is up.	Provides space for placement of clean linen. Side rail ensures safety.
16. Loosen bottom sheet, moving from head to foot of bed.	
17. Fanfold first drawsheet and then bottom sheet towards person (see illustration). Tuck edges of linen just under buttocks, back and shoulders. Do not fanfold mattress pad if it is to be reused.	Provides maximum work space for placing clean linen. Later, when person turns to other side, soiled linen can easily be removed.
18. Wipe off moisture on mattress with towel and appropriate disinfectant.	Reduces transmission of microorganisms.
19. Apply clean linen to exposed half of bed:	

STEPS	RATIONALE
a. Place clean mattress pad on bed by folding it lengthwise with centre crease in middle of bed. Fanfold top layer over mattress. (If pad is reused, simply smooth out wrinkles.)	Applying linen over bed in successive layers minimises energy and time nurse uses in bedmaking.
b. Unfold bottom sheet lengthwise so centre crease is situated lengthwise along centre of bed. Fanfold sheet's top layer towards centre of bed alongside person (see illustration). Smooth bottom layer of sheet over mattress, and bring edge over near side. Allow sheet's edge to hang about 25 cm over mattress edge. Lower hem of bottom sheet should lie seam down and even with bottom edge of mattress.	Proper positioning of linen on one side ensures that adequate linen will be available to cover opposite side of bed. Keeping seam edges down eliminates irritation to person's skin.



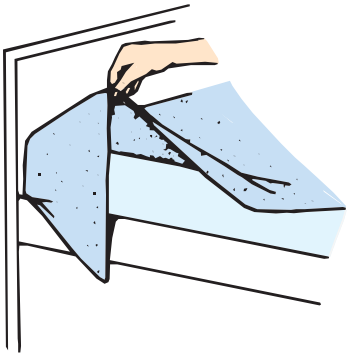
Step 17 Fanfold used linen and tuck under person.



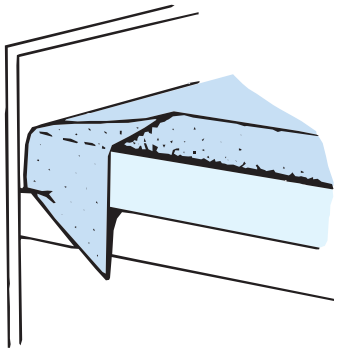
Step 19b Fanfold clean linen towards centre of bed.

20. Mitre bottom sheet at head of bed: a. Face head of bed diagonally. Place hand away from head of bed under top corner of mattress, near mattress edge, and lift. b. With other hand, tuck top edge of bottom sheet smoothly under mattress so side edges of sheet above and below mattress would meet if brought together. c. Face side of bed, and pick up top edge of sheet at approximately 45 cm down from top of mattress (see illustration). d. Lift sheet, and lay it on top of mattress to form neat triangular fold, with lower base of triangle even with mattress side edge (see illustration). e. Tuck lower edge of sheet, which is hanging free below mattress, under mattress (see illustration). Tuck with palms down without pulling triangular fold. f. Hold part of sheet covering side edge of mattress in place with one hand. With other hand, pick up top of triangular linen fold, and bring it down over side of mattress. Tuck this portion of sheet under mattress (see illustrations).	Mitred corner cannot be loosened easily, even if person moves about frequently in bed.

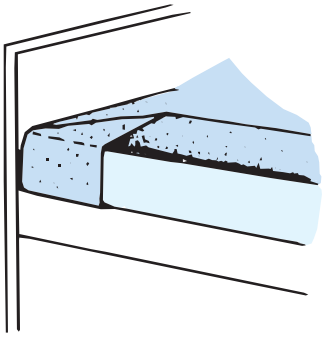
STEPS	RATIONALE



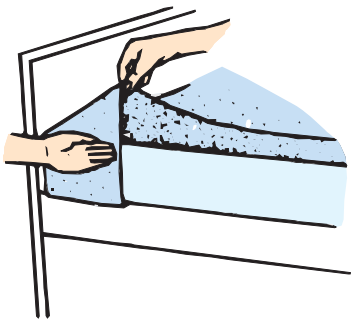
Step 20c Pick up top edge of sheet.

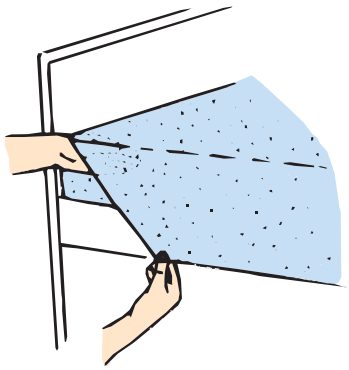


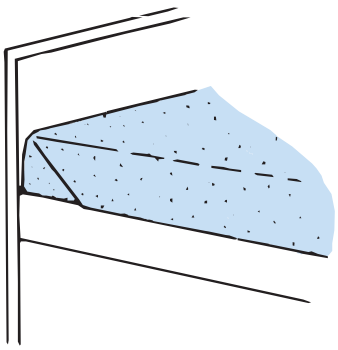
Step 20d Lay sheet over bed to form triangular fold.



Step 20e Tuck free end of sheet under.

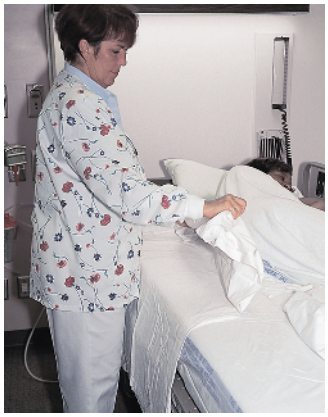
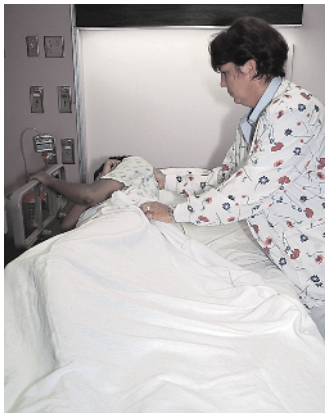


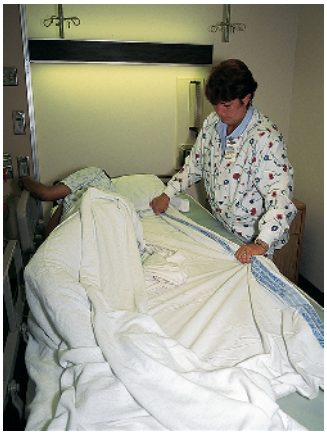
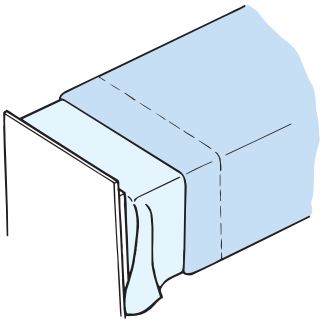




Step 20f Bring triangular fold neatly down over side of mattress and tuck in.

21. Tuck remaining part of sheet under mattress, moving towards foot of bed. Keep sheet smooth.	Folds of sheet are a source of irritation.
22. *Optional:* Open drawsheet so it unfolds in half. Lay centre fold along middle of bed lengthwise, and position sheet so it will be under buttocks and torso (see illustration). Fanfold top layer towards person with edge alongside back. Smooth bottom layer out over mattress and tuck excess edge under mattress (keep palms down).	Drawsheet is used to lift and reposition person. Placement distributes most of bodyweight over sheet.
23. Place waterproof pad over drawsheet with centre fold against person's side. Fanfold far half towards person.	Used to protect bedclothes from soiling.
24. Raise side rail on working side, and go to other side.	Maintains safety.
25. Lower side rail. Help person to roll slowly onto other side, over folds of linen (see illustration).	Exposes opposite side of bed for removal of soiled linen and placement of clean linen.

STEPS	RATIONALE
 Step 22 Positioning drawsheet.	 Step 25 Assisting person to roll onto other side to expose folds of clean linen.
26. Loosen edge of soiled linen from underneath mattress.	Makes linen easier to remove.
27. Without allowing dirty linen to touch uniform, remove soiled linen by folding it into a bundle or square, with soiled side turned in. Discard it into linen bag.	Reduces transmission of microorganisms.
28. Spread clean, fanfolded linen smoothly over edge of mattress from head to foot of bed (see illustration).	Smooth linen will not irritate person's skin.
29. Help person roll back into supine position. Reposition pillow.	Person's comfort is maintained.
30. Mitre corner of bottom sheet at foot of bed (see Step 20). When tucking corner, be sure sheet is smooth and free of wrinkles.	Wrinkles and folds can cause mechanical irritation to skin.
31. Facing side of bed, grasp remaining edge of bottom sheet, keep back straight, and pull as excess linen is tucked under mattress. Proceed from head to foot of bed. (Avoid lifting mattress during tucking to ensure fit.) Mitre remaining corners, keeping bottom sheet smooth.	Proper use of body mechanics while tucking linen prevents injury to nurse.
32. Smooth fanfolded drawsheet over bottom sheet. Grasp edge of sheet with palms down, lean back and tuck sheet under mattress. Tuck from middle to top and to bottom.	Tucking first at top or bottom may pull sheet sideways, causing poor fit.
33. Place top sheet over person with centre fold lengthwise down middle of bed. Open sheet from head to foot, and unfold it over person (see illustration).	Sheet should be equally distributed over bed by correctly positioning centre fold.

STEPS	RATIONALE
 Step 28 Spreading out folds of clean linen over other half of bed.	 Step 33 Unfolding top sheet over person
34. Without allowing dirty linen to touch uniform, ask person to hold clean top sheet, or tuck sheet around shoulders. Remove bath blanket, and discard it into linen bag.	Sheet prevents exposure of body parts. Having person hold sheet encourages participation in care.
35. Place blanket on bed, unfolding it so that crease runs lengthwise along middle of bed. Unfold blanket to cover person. Top edge should be parallel with edge of top sheet and 15–20 cm down from top sheet's edge.	Blanket should be placed to cover person completely and provide adequate warmth.
36. Place bedspread over bed according to Step 35. Be sure top edge extends about 2.5 cm above blanket's edge. Tuck top edge over and under top edge of blanket.	Bedspread gives bed neat appearance and provides extra warmth.
37. Make cuff by turning edge of top sheet down over top edge of blanket and bedspread.	Smooth cuff protects person's face from rubbing against blanket or bedspread.
38. Standing on one side at foot of bed, lift mattress corner slightly with one hand, and tuck top bedclothes under mattress. Top sheet and blanket are tucked under together. Be sure they are loose enough to allow for movement of person's feet. Horizontal toe pleat may be made (see illustration).	Tucking all top bedclothes together gives neat appearance. Pressure sores can develop on person's toes and heels from feet rubbing between tight-fitting bed sheets.  Step 38 Optional toe pleat.

STEPS	RATIONALE
39. Make modified mitred corner with top sheet, blanket and bedspread: a. Pick up side edge of top sheet, blanket and bedspread approximately 45 cm up from foot of mattress. Lift to form triangular fold, and lay it on bed. b. Tuck lower edge of sheet, which is hanging free below mattress, under mattress. Do not pull triangular fold. c. Pick up triangular fold, and bring it down over mattress while holding bedclothes in place along side of mattress. Do not tuck tip of triangle.	Modified mitred corner secures top bedclothes but keeps an even edge of blanket and top sheet draped over mattress.
40. Raise side rail. Make other side of bed; spread top sheet, blanket and bedspread out evenly; fold top edge of bedspread over blanket, and make cuff with top sheet (see Step 37); make modified mitred corner at foot of bed (see Step 39).	Side rail protects person from accidental falls.
41. Change pillowcase:	
a. Have person raise head. While supporting neck with one hand, remove pillow.	Prevents injury during flexion and extension of neck.
b. Remove soiled case and discard into linen bag.	
c. Grasp clean pillowcase at centre of closed end. Gather case, turning it inside out over hand holding it. With same hand, pick up middle of one end of pillow. Pull pillowcase down over pillow with other hand and be sure pillow corners fit evenly in corners of pillowcase.	Method makes it easy to slide pillowcase over pillow. Poorly fitting case constricts fluffing and expansion of pillow.
42. Support person's head under neck, and place pillow under head.	Prevents hyperextension of neck muscles.
43. Place call light within person's reach; return bed to comfortable position.	Ensures safety and comfort.
44. Open room curtains. Rearrange furniture. Place personal items within easy reach on overbed table or bedside stand. Return bed to comfortable height.	Promotes sense of wellbeing.
45. Place dirty linen in main dirty linen bag or chute; wash hands.	Prevents transmission of microorganisms.

RECORDING AND REPORTING

- Bedmaking need not be documented. Record the person's vital signs and symptoms only if there are changes.

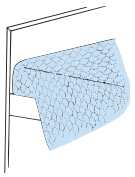
HOME CARE CONSIDERATIONS

- Assess the primary caregiver's ability to safely make an occupied bed.
- Assess the home laundry facilities to plan for the frequency with which the linen can be laundered.
- Assess the amount of linen in the home for the anticipated amount of linen changes needed.

BOX 29-11 Procedural guidelines for making an unoccupied bed

Equipment: Linen bag, mattress pad (change only when soiled), bottom sheet (flat or fitted), drawsheet (optional), top sheet, blanket, bedspread, waterproof pads (optional), pillowcases, bedside chair or table, disposable gloves (if linen is soiled), washcloth and antiseptic cleanser.

1. Determine whether the person has been incontinent or whether excess drainage is on sheets. Gloves will be necessary.
2. Assess activity orders or restrictions in mobility in planning whether person can get out of bed for procedure. Assist to bedside chair or recliner.
3. Lower side rails on both sides of bed and raise bed to comfortable working position.
4. Remove soiled linen and place in laundry bag. Avoid shaking or fanning linen.
5. Reposition mattress and wipe off any moisture using a washcloth moistened in antiseptic solution. Dry thoroughly.
6. Apply all bottom linen on one side of bed before moving to opposite side.
7. Be sure fitted sheet is placed smoothly over mattress. To apply a flat unfitted sheet, allow about 25 cm to hang over mattress edge. Lower hem of sheet should lie seam down, even with bottom edge of mattress. Pull remaining top portion of sheet over top edge of mattress.
8. While standing at head of bed, mitre top corner of bottom sheet (see Skill 33-9, Step 20).
9. Tuck remaining portion of unfitted sheet under mattress.
10. Optional: Apply drawsheet, laying centre fold along middle of bed lengthwise. Smooth drawsheet over mattress and tuck excess edge under mattress, keeping palms down.
11. Move to opposite side of bed and spread bottom sheet smoothly over edge of mattress from head to foot of bed.
12. Apply fitted sheet smoothly over each mattress corner. For an unfitted sheet, mitre top corner of bottom sheet, making sure corner is taut.
13. Grasp remaining edge of unfitted bottom sheet and tuck tightly under mattress while moving from head to foot of bed. Smooth folded drawsheet over bottom sheet and tuck under mattress, first at middle, then at top and then at bottom.
14. If needed, apply waterproof pad over bottom sheet or drawsheet.
15. Place top sheet over bed with vertical centre fold lengthwise down middle of bed. Open sheet out from head to foot, being sure top edge of sheet is even with top edge of mattress.
16. Make horizontal toe pleat: stand at foot of bed and fanfold sheet 5–10 cm across bed. Pull sheet up from bottom to make fold approximately 15 cm from bottom edge of mattress (see Skill 29-9, Step 38).
17. Tuck in remaining part of sheet under foot of mattress. Then place blanket over bed with top edge parallel to top edge of sheet and 15–20 cm down from edge of sheet. (Optional: Place additional blanket over bed.)
18. Make cuff by turning edge of top sheet down over top edge of blanket and bedspread.
19. Standing on one side at foot of bed, lift mattress corner slightly with one hand, and with other hand tuck top sheet, blanket and bedspread under mattress. Be sure toe pleats are not pulled out.
20. Make modified mitred corner with top sheet, blanket and bedspread. After triangular fold is made, do not tuck tip of triangle (see illustration).



21. Go to other side of bed. Spread sheet, blanket and bedspread out evenly. Make cuff with top sheet and blanket. Make modified corner at foot of bed.
22. Apply clean pillowcase.
23. Place call light within the person's reach on bed rail or pillow and return bed to height allowing for person transfer. Help the person into bed.
24. Arrange the person's room. Remove and discard supplies. Wash hands.

the best time to have the person sit up in a chair while the bed is made. When making an unoccupied bed, nurses follow the same basic principles as for when the bed is occupied.

An unoccupied bed can be open or closed. In an *open bed*, the top covers are folded back so that a person can easily get into bed. In a *closed bed*, the top edges of the top sheet, blanket and bedspread are drawn up to the head of the mattress and under the pillows. A closed bed is prepared in a hospital room before a new person is admitted to that room. A surgical, recovery or postoperative bed is a modified version of the open bed. The top bedclothes are arranged for easy transfer of the person from a stretcher to the bed. The top sheets and bedspread are not tucked in or mitred at the corners. Instead, the top sheets are folded to one side or fanfolded to the bottom third of the bed (Figure 29-14). This makes it easier to transfer the person into the bed.

LINEN In any healthcare agency, it is important to have an adequate supply of linen to care appropriately for people. Many agencies have what are called 'nurse servers' either within or just outside a person's room, where a daily supply of linen is

SKILL 29-10

Making a postoperative bed

Delegation considerations

Making a postoperative (post-op) bed can be undertaken by nurse assistants under the direction of the registered nurse (RN).

- Dirty linen bag(s)
- Mattress pad
- Bottom sheet (flat or fitted)
- Drawsheet
- Top sheet
- Blanket
- Bedspread
- Pillowcases

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. The entire bed requires clean linen.	
2. Know the type of surgical procedure the person is having, to determine bedmaking.	
3. Remove soiled linen and place in laundry bag. Avoid shaking or fanning linen.	Minimises spread of infection.
4. Wash hands.	Minimises spread of infection.
5. Assemble and arrange equipment on bedside chair or table. Remove unnecessary equipment.	Provides for smooth procedure and ensures comfort.
6. Adjust bed height to comfortable working position.	Minimises strain on nurse's back. It is easier to remove and apply bedclothes evenly to bed in flat position.
7. Reposition mattress and wipe off any moisture using a washcloth moistened in antiseptic solution. Dry thoroughly.	
8. Apply all bottom linen on one side of bed before moving to opposite side.	
9. Be sure fitted sheet is placed smoothly over mattress. To apply a flat unfitted sheet, allow about 25 cm to hang over mattress edge. Lower hem of sheet should lie seam down, even with bottom edge of mattress. Pull remaining top portion of sheet over top edge of mattress.	

STEPS	RATIONALE
10. While standing at head of bed, mitre top corner of bottom sheet (see Skill 29-9, Step 20).	
11. Tuck remaining portion of unfitted sheet under mattress.	
12. *Optional:* Apply drawsheet, laying centre fold along middle of bed lengthwise. Smooth drawsheet over mattress and tuck excess edge under mattress, keeping palms down.	
13. Move to opposite side of bed and spread bottom sheet smoothly over edge of mattress from head to foot of bed.	
14. Apply fitted sheet smoothly over each mattress corner. For an unfitted sheet, mitre top corner of bottom sheet, making sure corner is taut.	
15. Tuck remaining part of sheet under mattress, moving towards foot of bed. Keep sheet smooth.	Folds of sheet are a source of irritation.
16. Grasp remaining edge of unfitted bottom sheet and tuck tightly under mattress while moving from head to foot of bed. Smooth folded drawsheet over bottom sheet and tuck under mattress, first at middle, then at top and then at bottom.	
17. Place top sheet over bed with vertical centre fold lengthwise down middle of bed. Open sheet out from head to foot, being sure top edge of sheet is even with top edge of mattress.	
18. Place blanket over bed with top edge parallel to top edge of sheet and 15–20 cm down from edge of sheet.	
19. Make cuff by turning edge of top sheet down over top edge of blanket.	Smooth cuff protects person's face from rubbing against blanket or bedspread.
20. Place bedspread over bed with top edge parallel to cuff of sheet.	

■ **Critical decision point: Edges of top bedding are not tucked under the mattress.**

21. The head and foot corners of the untucked top bedding are brought to the centre of bed to form right angles. The right angles are folded vertically and then horizontally, to resemble a package, which is placed in the centre of the bed.	Tucking the top bedding under the mattress may hamper the patient to enter the bed from a trolley.
22. Apply clean pillowcase.	

STEPS	RATIONALE
23. Apply bed brakes.	To prevent moving the bed accidentally when the client is shifted from a stretcher to the bed.
24. When the patient is transferred to the bed post-op, cover the patient by the top bedding immediately. Tuck top bedding and mitre corners at the end of the bed.	To prevent the patient from chilling and/or developing hypothermia.

RECORDING AND REPORTING

- Post-op bedmaking need not be documented. Record the person's vital signs and symptoms immediately following transfer into the post-op bed.

HOME CARE CONSIDERATIONS

- Nil



Figure 29-14 Surgical or recovery bed.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

stored. Because of the importance of cost control in health care, it is important not to bring excess linen into a person's room, because even if it is unused, it must be discarded for washing. This can increase an agency's costs. Excess linen lying around a person's room creates clutter and obstacles for personal care activities.

Before making the bed, it is important to collect the necessary bedclothes and the person's personal items. In this way nurses will have all equipment accessible to prepare the bed and room. Linen is pressed and folded to prevent the spread of microorganisms and to make bedmaking easier. When fitted sheets are not available, flat sheets are usually pressed with a centre crease to be placed down the centre of the bed. The sheets unfold easily to the sides, with creases often fitting over the mattress edge. A complete bedclothes change is not always necessary. Nurses may reuse the mattress pad, sheet, blanket and bedspread for the same person if they are not wet or soiled.

Linen must be disposed of correctly to minimise the spread of infection (see Chapter 25). Agency policies provide guidelines for the proper way to bag and dispose of soiled linen. When a person is discharged, all the bedclothes are sent to the laundry, the mattress and bed are cleaned by housekeeping staff and fresh bedclothes are put on the bed.

EVALUATING IMPACTS AND OUTCOMES

Person care

Evaluation of hygiene measures occurs both during and after performance of each particular skill. For example, as the person is being bathed, closely inspect the skin to see whether drainage or other soiling has been effectively removed from the skin's surface. Once the bath is complete, ask whether the person's comfort and relaxation have improved. When evaluating the effectiveness of hygiene measures, observe for changes in the person's behaviour. Do they assume a more relaxed position? Is the person free of body odour? Is the person able to fall asleep? Does the person's facial expression convey a sense of comfort?

Often it takes time for hygiene care to result in an improvement in the person's condition. The presence of oral lesions, a scalp infestation or skin excoriation will often require repeated measures and a combination of nursing interventions. Nurses will evaluate for improvement in the person's condition over time and determine whether existing therapies are effective.

Throughout evaluation, nurses consider the goals of care and gauge whether expected outcomes are achieved. A critical-thinking approach ensures that nurses consider all factors when evaluating the person's care (Figure 29-15). Nurses' knowledge base and experience provide important perspectives when they analyse observations made about a person. For example, if nurses see how dehydration of the oral mucosa clears with repeated hygiene, this helps in recognising when another person's progress is slow. The standards for evaluation are the expected outcomes established in the planning stage of the person's care. If outcomes are not met, the care plan may need to be revised. Nurses continue to apply critical-thinking attitudes when considering all evaluation findings.

Person expectations

The final part of the evaluation considers whether the person's expectations were met through hygiene care. Nurses might

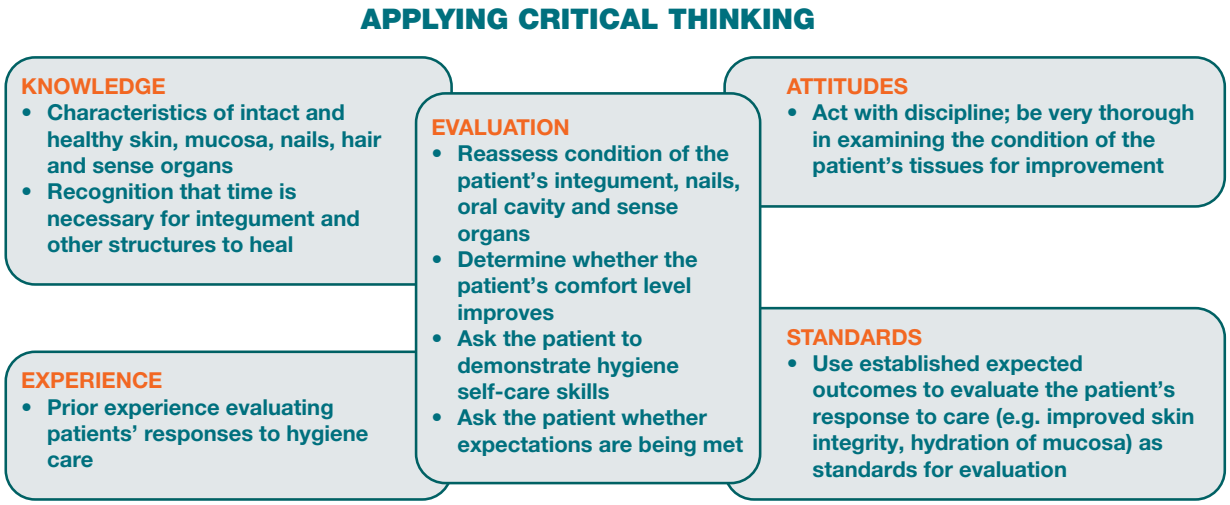


Figure 29-15 **Critical thinking associated with the evaluation phase for hygiene.**

ask: 'How do you feel since your bath and massage?', 'Are there ways you feel we can do a better job with your foot care?', 'What further measures do you think are necessary to keep your mouth clean and refreshed?'

The person's expectations are important guidelines in determining person satisfaction. Nurses must feel comfortable discussing the person's concerns and expectations. A caring approach can help facilitate discussion of these issues.

Key concepts

- Nurses determine a person's ability to perform self-care, and provide hygiene care according to the person's needs and preferences.
- During hygiene, nurses integrate other activities such as physical assessment and range-of-motion exercises.
- While providing daily hygiene needs, nurses use teaching and communication skills in developing a caring relationship with the person.
- Proper hygiene care requires an understanding of anatomy and physiology and sociocultural, economic and developmental factors.
- People's health beliefs indicate the likelihood of assuming health promotion behaviour, such as the maintenance of good hygiene.
- Nurses assess a person's physical and cognitive ability to perform basic hygiene measures, including muscle strength, flexibility and dexterity, balance, coordination, activity tolerance and ability to attend.
- Nurses maintain a person's privacy, comfort and safety when providing hygiene care.
- Culture plays a significant role in hygiene practices and preferences.
- Standard precautions should be observed by nurses during hygiene care when the risk of contacting body fluids is high, and always during perineal care.
- For people suffering symptoms such as pain or nausea, administering symptom relief therapies prior to hygiene will better prepare the person for any procedure.
- People with diabetes mellitus require special hygiene measures such as foot and nail care.
- Family members can usually help with hygiene measures but may need guidance in adapting techniques to fit person limitations.
- The person's room should be comfortable and safe, and large enough to allow the person and visitors to move about freely.
- Evaluation of hygiene care is based on the person's sense of comfort, relaxation, wellbeing and understanding of hygiene techniques.

Online resources

Diabetes foot care; information from Diabetes Australia, www.diabetesaustralia.com.au/foot-care

Oral health guidelines for Victorians; applicable to all states in Australia, www.health.vic.gov.au/healthpromotion/downloads/guidelines_oralhealth.pdf

Therapeutic guidelines; skin care in palliative care, www2.health.vic.gov.au/public-health/preventive-health/oral-health-promotion

References

Australian Institute of Health and Welfare (AIHW) 2008 Rural, regional and remote health – indicators of health, Rural Health Series No 9. AIHW, Canberra.

Australasian Podiatry Council 2011 Pamphlet: your podiatrist talks about diabetes. Online. Available: www.apodc.com.au/brochures-and-pamphlets; accessed 6 Jul 2012.

Bluestein D, Javaheri A 2008 Pressure ulcers: prevention, evaluation, and management. Am Fam Phys 78(10):1186–94.

Giger JN 2013 Transcultural nursing: assessment and intervention, 6th edn. Mosby, St Louis.

Gillibrand R, Stevenson J 2006 The extended health belief model applied to the experience of diabetes in young people. Br J Health Psychol 11(1):155–69.

Harris D et al 2008 Evidence-based interventions for the management of oral mucositis. Clin J Oncol Nurs 12(1):141–52.

Harris M, Richards K 2010 The physiological and psychological effects of slow-stroke back massage and hand massage on relaxation in older people. J Clin Nurs 19:917–26.

Hockenberry M, Wilson D 2011 Wong's nursing care of infants and children, 9th edn. Mosby, St Louis.

Huskinson W, Lloyd H 2009 Oral health in hospitalised people: assessment and hygiene. Nurs Stand 23(36):43–7.

Kwan R et al 2010 The effect of aging on the biomechanical properties of plantar soft tissues. Clin Biomech 25(6):601–5.

Lemp M, Bielory L 2008 Contact lenses and associated anterior segment disorders: dry eye disease, blepharitis, and allergy. Immunology Allerg Clin N Am 28(1):105–17.

Lentz J 2003 Daily baths: torment or comfort at end of life? J Hosp Palliat Nurs 5(1):29–9.

Martinez-Diaz G, Mancini A 2010 Head lice: diagnosis and therapy. Dermatol Nurs 22(4):2–8.

Miegel K, Wachtel T 2009 Improving the oral health of older people in long-term residential care: a review of the literature. Int J Older People Nurs 4(2):97–113.

Paquay L et al 2010 Implementation of a guideline for pressure prevention in home care: pretest-post-test study. J Clin Nurs 19:1803–11.

Ridde V 2007 Reducing social inequalities in health: public health, community health or health promotion? Promot Educ 14(2):63–7.

Stevenson J 2010 Dealing with stubborn earwax. Pract Nurse 39(8):17–18.

Thibodeau GA, Patton KT 2013 Anatomy and physiology, 8th edn. Mosby, St Louis.

Touhy TA, Jett KF 2011 Ebersole and Hess' Toward healthy aging: human needs and nursing response, 8th edn. Mosby, St Louis.

Walton M 2009 Immediate effects of effleurage back massage on physiological and psychological relaxation. Nurs J India 100(10):4.

CHAPTER

30

Fostering sleep

Christopher J Gordon

Learning outcomes

Mastery of content will enable you to:

- characterise circadian rhythms and the 24-hour sleep–wake cycle
- discuss mechanisms that control sleep
- describe normal sleep cycle stages
- explain the functions of sleep
- compare and contrast the sleep requirements of different age groups
- identify factors that promote and disrupt sleep
- discuss characteristics of common sleep disorders, such as insomnia and sleep apnoea
- conduct a sleep history for a client
- identify nursing diagnoses appropriate for clients with sleep alterations
- identify nursing interventions designed to promote sleep for clients across the life span
- describe ways to evaluate sleep therapies.

KEY TERMS

Actigraphy, p. 1002
Circadian rhythm, p. 989
Continuous positive airway pressure, p. 995
Excessive daytime sleepiness (EDS), p. 997
Hypnotics, p. 1010
Insomnia, p. 994
Narcolepsy, p. 995
Non-rapid eye movement (NREM) sleep, p. 989
Parasomnias, p. 994
Polysomnography, p. 991
Rapid eye movement (REM) sleep, p. 989
Sedatives, p. 1012
Sleep, p. 989
Sleep apnoea, p. 994
Sleep deprivation, p. 998
Sleep hygiene, p. 994
Sleep pressure, p. 989
Slow wave sleep, p. 997

Sleep is fundamental to life. We spend approximately one-third of our life doing it, yet we do not have a full understanding of the functions of sleep. We do know that sleep is a complex, homeostatic process involved in learning, memory, immunity, hormonal, metabolic and cellular restorative functions. Sleep is a natural component of all people's lives and involves a change in consciousness and reduction in sensory awareness of surroundings. People need different amounts of sleep and rest, but without adequate amounts, people may be vulnerable to poor health and illness. Physical and emotional health depends on the ability to fulfil basic human needs, one of which is sleep. Without adequate amounts of sleep and rest, the ability to maintain biological, psychological and social functions becomes more difficult. Inadequate rest and sleep is known to affect morbidity, and is likely to be contributory to mortality. As such, sleep is a fundamental need of all humans.

Seeking to understand sleep has been recognised for millennia, with the first documented text by the Greek physician Alcmaeon (c. 500 BC) stating that sleep was a loss of consciousness that coincided with blood flow away from the body surface. This description was extended by Hippocrates (c. 300 BC) who further related sleep to health (Kirsch 2011). The essential and unavoidable nature of sleep points to an evolutionary and adaptive role, and there are different theories of sleep which can be broadly classified into adaptation and restoration theories. Achieving optimum sleep quantity and quality is important for the promotion of good health, as well as recovery from illness. Nurses care for clients with a range of sleep problems, such as sleep disturbances, clients with sleep disorders and those who may develop sleep problems as a result of illness or hospitalisation. In addition, people may seek health care because they have a sleep problem that cannot be remediated without intervention. Illness can require people to need more sleep and rest than healthy people. The nature of illness, however, may prevent clients from gaining adequate sleep and recovery. The institutional environment of a hospital or long-term care facility and the activities of healthcare personnel can make sleep difficult and need to be addressed.

Identifying and treating clients' sleep problems is an important goal for nurses. To help clients, nurses need to understand the nature of sleep, the factors influencing sleep, and the clients' sleep habits. Impaired sleep impacts significantly on health and this risk is increased in clients with sleep disorders. Clients require an individualised approach based on their personal habits and patterns of sleep, as well as on the particular problem interrupting their sleep. Nursing interventions can be effective in resolving short- and long-term sleep disturbances.

Physiology of sleep

Sleep is a cyclical physiological process that alternates with longer periods of wakefulness, in an approximately one to two (wake to sleep) ratio. Sleep is a state of lower responsiveness to extrinsic stimuli compared to wakefulness. Sleep is not a passive state but a dynamic biological state characterised by distinct physiological responses over the course of the sleep bout. These are broadly divided into **non-rapid eye movement (NREM) sleep** and **rapid eye movement (REM) sleep** which can be quantified using electrophysiological measurements. In addition, there are changes in cardiovascular, endocrine, renal and respiratory function during sleep, with a general reduction in activity; however, the endocrine system releases several hormones during sleep which are influenced by the sleep state and circadian rhythms.

Sleep–wake cycle

An overarching feature of sleep regulation from a physiological perspective is the sleep–wake cycle. This cycle is regulated by two distinct physiological processes, one that promotes sleep, also called **sleep pressure**, and one that maintains wakefulness, which is controlled by the **circadian rhythm**. These two processes interact to regulate periods of sleep and wake in approximately 24-hour cycles. The two-process model was proposed to explain how the two separate mechanisms (sleep and wake) interact with each other (Borbély 1982). The model was constructed using a homeostatic drive for sleep, known as Process S, which builds up during the day and peaks prior to habitual bedtime (Figure 30-1). This causes an increase in sleep pressure, driving the individual to sleep and is related to the amount of time from the last sleep bout. In other words, the more you stay awake, the greater the Process S and the drive to produce sleep. Following sleep onset, this process dissipates rapidly as we sleep, thereby increasing the likelihood of awakening.

The other side of the equation is Process C, or the drive to awaken, which is regulated by the circadian system. In contrast, Process C builds up during the day such that individuals stay awake and alert (circadian drive for arousal), and declines in the evening when the alertness is decreased (Figure 30-1). At this time, the circadian release of melatonin promotes sleep initiation, which corresponds to peak sleep pressure. In the early morning period, melatonin secretion ceases and the circadian arousal drive is initiated, which eventually overpowers the sleep drive and awakening occurs.

These processes are complex and require other systems to be coordinated, such as the light–dark cycle

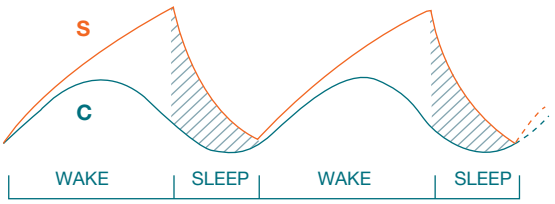


Figure 30-1 Two-process model of sleep regulation.

C is *Process C*, the circadian rhythm drive, which operates over approximately a 24-hour period and is governed by the master body clock. S is *Process S*, the sleep process, which is the change in sleep pressure and regulates sleep–wake homeostasis.

Adapted from Borbély, AA 1982 A two process model of sleep regulation. Hum Neurobiol 1(3):195–204.

of day and night. It should be noted that these processes are also influenced by genetics and external factors, such as shift work, stress, environmental temperature, and medications. When these processes are disturbed, the sleep–wake cycle can be impacted, leading to dysynchrony and potentially sleep disturbance and changes in arousal levels.

Circadian rhythms

People experience cyclical rhythms as part of their everyday life. Biological and psychological rhythms that oscillate around a 24-hour cycle are known as circadian rhythms (derived from Latin: *circa*, 'about', and *dies*, 'day'). The fluctuation and predictability of blood pressure, core body temperature, hormone secretion, sensory acuity and mood are all components of the 24-hour circadian cycle.

A master clock controls the intrinsic pattern of the circadian rhythms of the organs. This is located in the *suprachiasmatic nucleus* (SCN), which is above the optic chiasm behind the hypothalamus in the brain. It is important to note the location as the master clock receives cues from optic input (light–dark cycle) and the hypothalamus, which controls many autonomic nervous system functions. The SCN also controls the release of melatonin (produced by the pineal gland) and is also important in the sleep–wake cycle. In addition to the central master clock, there are a number of peripheral clocks which respond to inputs and are involved in the regulation of circadian rhythms and of the particular tissue where they are located.

As noted above, the circadian system is intricately involved in the sleep–wake cycle that assists with synchronisation of sleep. However, while these patterns may be entrained, the sleep–wake patterns of people vary widely and some people function best at different times of the day and night. This refers to an individual's chronotype, which can range from very early morning, to very late evening types (Roenneberg et al 2007). In extreme examples, an individual's chronotype can cause either an advance or delay in sleep such that the person either wakes too early or goes to sleep very late, and this can impact on their daytime function. These impacts are classified as circadian rhythm disorders and often are linked to melatonin release (Kanterman et al 2015).

Circadian rhythms can be disturbed when individuals are being cared for in healthcare facilities, as traditionally, these facilities fail to adapt care to an individual's sleep–wake cycle preferences. Routine-based nursing care can cause interruptions to sleep, or prevent clients from falling asleep at their usual time. For example, patient bed-bathing in intensive care units often occurs between 2.00 and 6.00 am, with 'freshen up' washes often given at 6.00 am (Coyer et al 2011). This suggests that nursing practice is being influenced by nursing shift times, rather than by patient sleep–wake cycles.

Circadian rhythms can be synchronised with other body functions. For example, changes in core body temperature have an intricate relationship with sleep. Typically, core body temperature peaks in the late afternoon, and decreases gradually in early evening with an accelerated drop prior to sleep onset. As such, nurses need to be aware of circadian rhythms to maximise the cycle rhythmicity of individuals despite their illness or hospitalisation.

Sleep state

Sleep involves a sequence of physiological states maintained by highly integrated central nervous system (CNS) activity that is associated with changes in the peripheral nervous, endocrine, cardiovascular, respiratory and muscular systems. Each sequence can be identified by specific physiological responses and patterns of brain activity. Instruments that measure brain activity and provide information about some structural physiological aspects of sleep are: *electroencephalogram* (EEG), which measures electrical activity in the cerebral cortex; *electromyogram* (EMG), which measures muscle tone; and *electro-oculogram* (EOG), which measures eye movements.

The initiation of sleep is not fully understood, but is thought to involve several discrete sections of the brain. It has been shown that the *ventrolateral preoptic area* (VLPO) in the hypothalamus acts like a 'sleep switch' which induces sleep following a build-up of metabolites during wake periods (Saper et al 2005). The VLPO together with the *reticular activating system* (RAS), located in the upper brainstem, and the other sites in the hypothalamus interact to maintain wakefulness and sleep.

Sleep stages

The quantity of sleep can be measured using self-reported sleep diaries. These provide a subjective assessment of how long the individual was asleep. For a more detailed and objective assessment of sleep, laboratory-based studies measuring several physiological signals are required. This is achieved using EEG, EMG and EOG signals that record brain, muscle and eye activity in the wake and sleep state. The synchronous measurement of cardiac and respiratory signals, including breathing frequency, oxygen saturations and heart rate, are also often included. Collectively, these signals are referred to as **polysomnography** (PSG), or in lay-terms, 'sleep studies'. Formal measurement of these signals is often required to diagnose sleep disorders (see later in the chapter).

The EEG, EMG and EOG signals are used to quantify different stages of sleep. Normal sleep involves two phases: non-rapid eye movement (NREM) sleep and rapid eye movement (REM) sleep (Box 30-1). The quality of sleep from stage 1 to stage 4 becomes increasingly deep. Lighter sleep is characteristic of stages 1 and 2, and a person is more easily woken. Stages 3 and 4 involve a deeper sleep, called *slow wave sleep*, from which it is more difficult to rouse a person. REM sleep is characteristically at the end of NREM periods and is greater in the latter phases of the entire sleep cycle. It should be noted that sleep stages do not display numerical sequencing from stages 1 to 4 with REM over the course of the sleep episode. Individuals vary as to the sequencing of the stages, and in fact, often have several arousals during the sleep episode (without conscious recognition). However, REM does not occur until 90 minutes following sleep onset, and the NREM and REM cycles generally occur over 90-minute cycles, which means that most adults have about five cycles (90 minutes over 8 hours) (Figure 30-2).

Normally, the routine sleep pattern of an adult begins with a *pre-sleep period*, during which the person is aware only of a gradually developing sleepiness. This period normally lasts less than 15 minutes. Once asleep, the person usually passes through approximately five complete sleep cycles per night, each consisting of NREM sleep and a period of REM sleep. With each successive cycle, stages 3 and 4 shorten and the period of REM lengthens. REM sleep may last up to 60 minutes during the last sleep cycle. Not all people progress consistently through the usual stages of sleep. For example, a sleeper may fluctuate for short intervals between NREM stages 2, 3 and 4 before entering the REM stage. The amount of time spent in each stage varies over the life span (see Figure 30-3). The number of sleep cycles depends on the total amount of time the person spends sleeping.

BOX 30-1 Sleep cycle stages

Stage 1: NREM sleep

- Lightest level of sleep
- Transitional phase from wake to sleep and only lasts up to 7 minutes
- Person is easily aroused by sensory stimuli such as noise
- Awakened, person feels as though daydreaming has occurred

Stage 2: NREM sleep

- Period of sound sleep
- Relaxation progresses
- Arousal is still relatively easy
- Stage lasts 10–25 minutes
- Increasing levels of biological function relaxation

Stage 3: NREM sleep

- Deep sleep
- Sleeper is difficult to arouse and rarely moves
- Muscles are completely relaxed
- Breathing, blood pressure and heart rate decline but remain regular
- Dreaming more common than stage 1 and 2
- Stage lasts 15–30 minutes

Stage 4: NREM sleep

- Deepest stage of sleep
- Very difficult to arouse sleeper
- If sleep loss has occurred, sleeper will spend considerable portion of night in this stage
- Vital signs are significantly lower than during waking hours
- Dreaming more common than stage 1 and 2
- Stage lasts approximately 20–440 minutes

REM sleep

- Usually commences about 90 minutes after sleep has begun
- Typified by autonomic response of rapidly moving eyes, fluctuating heart and respiratory rates and increased or fluctuating blood pressure
- Loss of skeletal muscle tone occurs
- Gastric secretions increase
- Very difficult to arouse sleeper
- Duration of REM sleep increases with each cycle and averages 20 minutes
- Dreaming most often associated with REM
- Dreams can be vivid especially if awoken from REM
- Memory consolidation

KEY: NREM = non-rapid eye movement; REM = rapid eye movement.

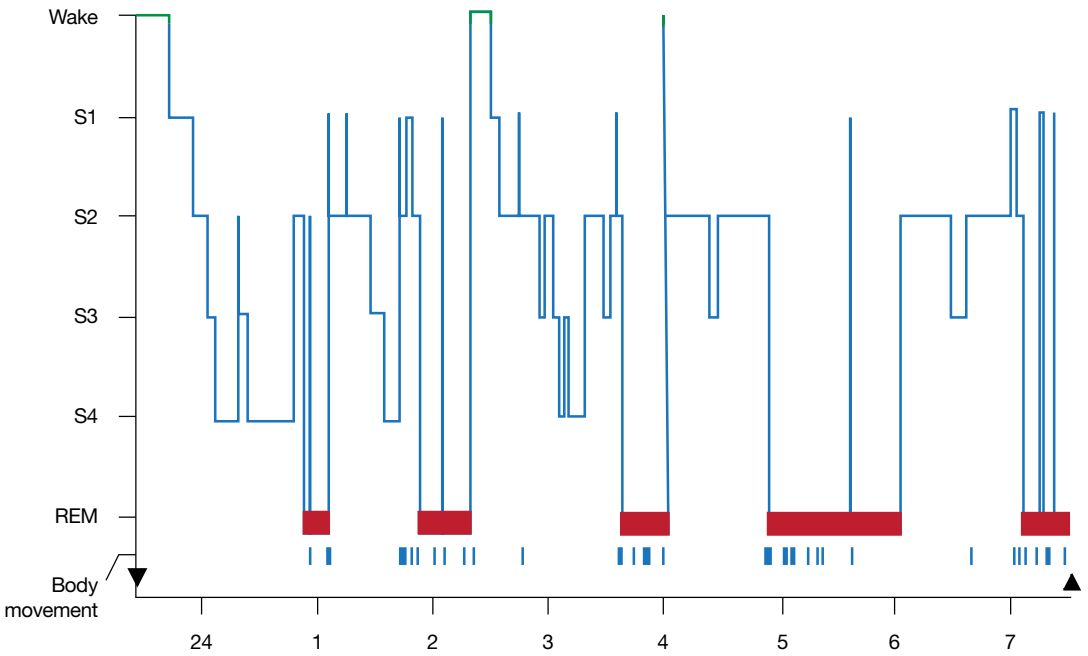


Figure 30-2 Sleep stage progression across an 8-hour sleep period.

This hypnogram displays sleep stages from an overnight in-laboratory polysomnography recording.

Carskadon MA, Dement W 2011 Normal human sleep: an overview. In MH Kryger, T Roth, WC Dement (eds), Principles and practices of sleep medicine, 5th edn. Elsevier Saunders, St Louis.

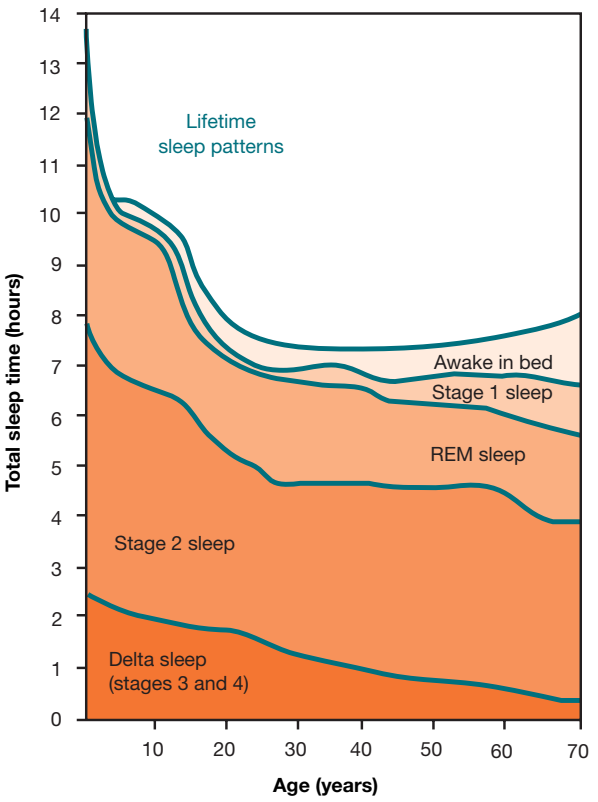


Figure 30-3 Distribution of sleep stages over the life span.

Adapted from Berman et al 1990 Sleep disorders: take them seriously. Patient Care 24:85.

Functions of sleep

Sleep is believed to contribute to physiological and psychological restoration. According to one theory, sleep is a time of restoration and preparation for the next period of wakefulness. During NREM sleep, biological functions slow; for example, a healthy adult's normal heart rate will be slower during sleep than during wakefulness. Clearly, restful sleep may be beneficial in preserving cardiac function.

Sleep appears to be needed to routinely restore biological processes. During deep slow wave (NREM stage 3 and 4) sleep, the body releases human growth hormone for the repair and renewal of epithelial and specialised cells such as neurons. Another theory about the purpose of sleep is that the body conserves energy during sleep. The skeletal muscles relax progressively, and the absence of muscular contraction preserves chemical energy for cellular processes. Lowering of the basal metabolic rate further conserves the body's energy supply.

REM sleep appears to be important for cognitive restoration. REM sleep is associated with changes in cerebral blood flow, increased cortical activity, increased oxygen consumption, and adrenaline release. This association may help with memory storage and learning. During sleep, the brain filters stored information about the day's activities.

The beneficial effects of sleep on behaviour often go unnoticed until a person develops a problem resulting from sleep deprivation. A loss of REM sleep can affect functioning of the CNS, with impacts on thought and behaviour. Some large-scale accidents resulting in significant loss of life, such as the 1986 nuclear accident in Chernobyl, have been attributed to human error associated with sleep deprivation. Traffic, home and work-related accidents caused by falling asleep cost millions of dollars a year – driving licence authorities in Australia and New Zealand require notification of any medical conditions that may affect driving before licences are issued, including conditions that may cause sleepiness.

Dreams

Although dreams occur during both NREM and REM sleep, the dreams of REM sleep are typically more vivid and elaborate. REM dreams may progress in content throughout the night from dreams about current events to emotional dreams of childhood or the past. Personality can influence the quality of dreams. For example, a creative person may have creative dreams, whereas a depressed person may dream of helplessness.

Most people dream about immediate concerns, such as an argument with a spouse, plans for a wedding or worries over work. Sometimes a person is unaware of fears represented in bizarre dreams. The ability to describe a dream and interpret its significance may help resolve personal concerns or fears.

Another theory suggests that dreams erase certain fantasies or nonsensical memories. Since most dreams are forgotten, many people have little dream recall and do not believe they dream at all. To remember a dream, a person must consciously think about it on waking. People who recall dreams vividly have usually woken just after a period of REM sleep.

• CRITICAL REFLECTION POINT

Take a moment to think about your own sleep patterns. What helps the quality and quantity of your sleep?

Effects of illness on sleep

Any illness that causes pain, physical discomfort (e.g. difficulty breathing) or mood problems (e.g. anxiety or depression) can result in sleep problems. People with physical or emotional alterations may have trouble falling or staying asleep. Illnesses may also force people to sleep in positions to which they are unaccustomed. For example, assuming an awkward position when an arm or leg has been immobilised in traction can interfere with sleep.

Respiratory disease often interferes with sleep. Clients with chronic lung diseases such as emphysema are short of breath and frequently cannot sleep without two or three pillows to raise their torso and head. Asthma, bronchitis and allergic rhinitis alter the rhythm of breathing and disturb sleep. A person with a common cold has nasal congestion, sinus drainage and a sore throat, which can all impair breathing and the ability to relax.

Coronary heart disease can be manifested by episodes of chest pain and abnormal heart rhythm which can occur at any time of day, including the early-morning hours. Hypertension often causes early-morning waking and increased fatigue. Hypothyroidism decreases stage 4 sleep, whereas hyperthyroidism causes people to take more time to fall asleep.

Nocturia, or the need to urinate during the night, disrupts sleep and leads to sleep fragmentation. This condition is most common in older adults with reduced bladder tone (see Chapter 18) or people with cardiac disease, diabetes or prostatic disease. After a person wakes repeatedly to urinate, returning to sleep may be difficult.

Older adults may experience restless legs syndrome (RLS), which is a neurological condition exacerbated at rest in which the individual is urged to move. People experience recurrent, rhythmical movements of the feet and legs and have an itching sensation deep in the muscles. Relief comes only from moving the legs, which prevents relaxation and subsequent sleep. RLS usually occurs before sleep onset when the individual is resting. Depending on how severely sleep is disrupted, RLS may be a relatively benign condition; however, it can have a significant impact on daytime functioning. RLS is likely to have a genetic component (Xiong et al 2010) with a consistent finding that people with RLS have iron deficiency anaemia (Kryger et al 2002). In contrast, people who have severe leg cramps during the night may have a problem with dietary imbalances, arterial circulation or spasticity from neurological problems.

Sleep disorders

Sleep disorders are relatively common in the Australian and New Zealand populations. Many adults have significant sleep problems ranging from inadequacy of sleep either in quantity or quality, through to disorders that have a significant health impact in terms of morbidity and mortality. These problems can be classified into six sleep disorders, with conditions related to insomnia, sleep-related breathing disorders, disorders of hypersomnolence, circadian rhythm disorders, parasomnias, and sleep-related movement disorders refer to Cleveland Clinic in *Online resources*.

Insomnia is a subjective report of a lack of sleep or non-restorative sleep and includes both short-term and chronic types. *Sleep-related breathing disorders* are those caused by obstruction of the upper airway, or are of central origin, such as sleep-related hypoventilation due to lung disease, other medical conditions or medication. *Disorders of hypersomnolence* refer to those disorders that cause daytime sleepiness, but cannot be attributed to problems with night-time sleep or circadian rhythm misalignment. Examples are narcolepsy and hypersomnia associated with psychiatric disorder, a medical condition or substance misuse.

Circadian rhythm sleep disorders arise from a misalignment between the timing of sleep and what is desired by the individual or as a societal norm; jet lag is a common example. The **parasomnias** are undesirable behaviours that occur predominantly during sleep: arousal disorders, partial arousals or disorders during transitions in the sleep cycle or from sleep to wakefulness. Common parasomnias are sleep walking, night terrors, tooth grinding (bruxism) or enuresis (Sateia 2014). The *sleep-related movement disorders* are those that cause simple, repetitive movement during sleep or wakefulness that causes sleep disturbance or affects bed partners. Finally, there are many medical and psychiatric sleep disorders that are associated with sleep and wake disturbances. These sleep disturbances are divided into those associated with psychiatric, neurological or other medical specialty disorders.

The total societal costs of the two most common sleep disorders, obstructive sleep apnoea (OSA) (see below) and insomnia, are substantial, with conservative estimates at more than $32 billion annually for Australian adults (Sleep Health Foundation 2011). As such, the nursing management of these clients, be it specifically for their sleep disorder or for another condition affecting sleep, needs to be focused and client-specific.

Insomnia

Insomnia is a complex, heterogeneous sleep disorder (Morin et al 2009, Vgontzas et al 2013) and is the most prevalent sleep disorder in Australia. Approximately 30% of Australians will be affected by the symptoms of insomnia, with 10% developing chronic insomnia (Bartlett et al 2008). Insomnia is described as a complaint of difficulty falling asleep, maintaining sleep, or having early-morning awakenings – or a combination of all three – with individuals reporting significant daytime impairment without any physical, mental or substance-related cause. Insomnia can be an acute (1 month) or chronic (greater than 3 months) condition. Insomnia may signal an underlying physical or psychological disorder and is more common in women (Zhang & Wing 2006).

People may experience transient insomnia as a result of situational stresses such as family, work or school problems, jet lag, illness, or loss of a loved one. Insomnia may recur, but between episodes the person is able to sleep well. An acute period of insomnia due to stressful situations may lead to chronic insomnia, which is often more difficult to treat.

Insomnia is also often associated with poor **sleep hygiene** habits and practices, such as eating large meals or drinking alcohol before going to bed. If the condition continues, the fear of not being able to sleep can be enough to cause wakefulness, and thus a cycle develops. During the day, people with chronic insomnia may have poor daytime performance, increased sleepiness, fatigue, anxiety and depression.

Due to the numerous aetiologies of insomnia, treatment is challenging and can involve several approaches (Unbehaun et al 2010). The ancient Egyptians recognised insomnia as a problem and used natural remedies to treat it (Kirsch 2011). It is important to identify any underlying physical or emotional problems that may be causing the night-time sleep problem and to offer appropriate solutions or treatment for these in the first instance. The most effective treatment regimen involves a 'stepped care' approach, whereby people with insomnia are provided a non-pharmacological approach using cognitive behavioural therapy (CBT). This focuses on assisting the individual to recognise and change behaviours and thoughts that may influence their sleep habits (Espie 2009). If this treatment is unsuccessful, individuals may then progress to more one-on-one individualised treatments prescribed by a sleep clinician. Treatment can also be symptomatic, including improving sleep hygiene measures, biofeedback and relaxation techniques. For individuals with acute insomnia, a short-term course of sedative–hypnotics in combination with CBT may be required (Schutte-Rodin et al 2005).

Sleep apnoea

Sleep apnoea is a disorder characterised by partial or complete upper-airway obstruction causing apnoea for periods of 10 seconds or longer with an associated oxygen desaturation during sleep. There are three types of sleep apnoea: central, obstructive and mixed apnoea (which has both a central and an obstructive component).

Obstructive sleep apnoea (OSA) is the second most prevalent sleep disorder in the middle-aged population (Punjabi 2008) with the moderate–severe form of OSA independently associated with an increase in morbidity

and mortality (Marshall et al 2014). OSA causes a serious decline in arterial oxygen level. People with OSA are at increased risk of cardiac dysrhythmia, right heart failure, pulmonary hypertension, angina, stroke and hypertension. Middle-aged men are usually thought to be more frequently affected; however, obesity-related hypertension and the metabolic syndrome (which can occur in both children and adults) can be associated with impaired respiratory mechanics and depressed respiratory control during sleep and with severe morbidity and high mortality.

OSA occurs when the muscles or structures of the oral cavity or throat relax during sleep. The upper airway becomes partially or completely blocked, and nasal airflow is diminished (hypopnoea) or stopped (apnoea). The severity of the disorder is characterised by the number of apnoeas and hypopnoeas per hour, with a threshold of 15 events per hour considered the gold standard for diagnosis of OSA (Balk et al 2011). The person still attempts to breathe because chest and abdominal movement continues, which often results in loud snoring and snorting sounds. When breathing is partially or completely diminished, each successive diaphragmatic movement becomes stronger until the obstruction is relieved.

Structural abnormalities, such as a deviated septum, nasal polyps, certain jaw configurations or enlarged tonsils, predispose a client to obstructive apnoea. The effort to breathe during sleep results in arousals from deep sleep, often to the stage 2 cycle. In serious cases, hundreds of hypopnoea/apnoea episodes can occur every hour, resulting in severe interference with deep sleep. Excessive daytime sleepiness (EDS) is the most common complaint of people with OSA. Those with severe OSA may report taking daytime naps and experiencing a disruption in their daily activities because of sleepiness, and in some cases the condition may predispose the client to accidents and injury.

Central sleep apnoea involves dysfunction in the brain's respiratory control centre. The impulse to breathe temporarily fails, and nasal airflow and chest wall movement cease. The oxygen saturation of the blood falls. This condition is seen in people with brainstem injury, muscular dystrophy and encephalitis and in people who breathe normally during the day. Less than 10% of sleep apnoea is predominantly central in origin. People with central sleep apnoea tend to wake during sleep and therefore complain of insomnia and EDS. Mild and intermittent snoring is also present.

The client with sleep apnoea is often significantly deprived of restorative sleep. In addition to complaints of EDS, sleep attacks, fatigue, car accidents and poor work performance are common (Basoglu & Tasbakan 2014). In Australia, private and commercial drivers who have sleep disorders require medical clearance to retain a driver's licence (Austroads 2014). Sleep apnoeas are a significant health problem and nurses need to be aware of the treatment options best suited to individual patients and clients. Treatment includes therapy for underlying cardiac or respiratory complications, and any emotional or other problems that may arise as a result of the symptoms of this disorder. Management usually begins with lifestyle changes and a weight-loss program. One of the most effective therapies for sleep apnoea is the use of a **continuous positive airway pressure** (CPAP) device, which requires the client to wear a mask over the nose or mouth during sleep. Room air is delivered through the mask at a high pressure to prevent upper-airway collapse and therefore prevents periods of hypopnoea and apnoea. The CPAP device is portable and is particularly effective for obstructive apnoea. In cases of severe sleep apnoea, the tonsils, uvula or portions of the soft palate may be surgically removed. However, the majority of patients do not need surgery and CPAP plays a key role in their management of sleep.

Narcolepsy

Narcolepsy is a dysfunction of the mechanisms that regulate the sleep and wake states. EDS is the most common complaint associated with this disorder. During the day a person may suddenly feel an overwhelming wave of sleepiness and fall asleep. REM sleep can occur within 15 minutes of falling asleep. Cataplexy, or sudden muscle weakness during intense emotions such as anger, sadness or laughter, may occur at any time during the day. If the cataplectic attack is severe, the client may lose voluntary muscle control and fall to the floor. A person with narcolepsy may have dreams that occur as the person is falling asleep and are difficult to distinguish from reality (called hypnagogic hallucinations). Sleep paralysis, or the feeling of being unable to move or talk just before waking or falling asleep, is another symptom of narcolepsy. Some studies suggest a genetic link for narcolepsy (Longstreth et al 2007).

A significant problem for the person with narcolepsy is that they fall asleep uncontrollably at inappropriate times. Unless this disorder is understood, a sleep attack can easily be mistaken for laziness, lack of interest in activities or drunkenness. Typically, the symptoms first begin to arise in adolescence and may be confused with the EDS that is thought to commonly occur in teens. Narcoleptics are treated with stimulants that may only partially increase wakefulness and reduce sleep attacks, and medications

that suppress cataplexy and the other REM-related symptoms. Brief daytime naps no longer than 20 minutes may help reduce subjective feelings of sleepiness. Factors that increase a narcoleptic's drowsiness should be avoided, for example, alcohol, heavy meals, exhausting activities, long-distance driving, long periods of sitting, hot stuffy rooms.

Parasomnias

The parasomnias are sleep problems that are more common in children than in adults. Parasomnias that occur among older children include somnambulism (sleepwalking), night terrors, nightmares, nocturnal enuresis (bed-wetting) and teeth grinding (bruxism). If an adult has any of these problems, they may be an indicator of a more serious disorder. Specific treatment for parasomnias varies; however, in all cases it is important to support clients and maintain their safety. For example, sleepwalkers are unaware of their surroundings and are slow to react, so the risk of falls is high.

Normal sleep requirements and patterns

As we saw in Figure 30-3, sleep is different across the life span and there are characteristic changes that occur both in sleep duration and the type of sleep. The sleep and rest patterns of people entering healthcare facilities, such as hospitals, can easily be affected by their illness, the unfamiliar surroundings and healthcare routines. The extent of change in usual sleep and rest patterns experienced by a patient or client in a healthcare facility depends on the client's physiological and psychological states and the physical environment, such as background noise and the work patterns of caregivers. Bed rest is considered different from sleep, but may also be a component of a client's health condition or treatment. Some critical care and acute care settings have introduced policies to restrict visiting and allow rest periods for patients in the afternoon to improve sleep. An Australian study investigating the effectiveness of a scheduled 'quiet time' intervention in acute wards found that it reduced perceived noise by half, and patients were more than twice as likely to be asleep during the quiet-time period compared with patients in the control ward (Gardner et al 2009).

Neonates

The neonate up to the age of 3 months averages about 16 hours of sleep a day with continuous sleep periods of up to 4 hours. The neonate experiences both non-REM and REM sleep but with a marked difference from adults. Neonates' sleep commences with REM, and this is related to the lack of entrainment of circadian rhythms (Davis et al 2004). Neonates wake often and become overly responsive to stimuli, such as hunger, pain or cold. For the first week of life, the neonate sleeps almost constantly.

Infants

Infants usually develop a night-time pattern of sleep by 3 months of age. By 3 months, circadian rhythms have been established leading to sleep concentration and sleep onset aligned with NREM sleep. The infant may take several naps during the day, but usually sleeps an average of 9–11 hours during the night for a total daily sleep time of 15 hours. About 30% of sleep time is spent in the REM cycle. Awakening commonly occurs early in the morning, although it is not unusual for an infant to wake during the night. If waking during the night becomes routine, the problem may be with diet because hunger frequently wakes a child. A breastfed infant usually sleeps for shorter periods, with more frequent awakenings than a bottle-fed infant. A large infant sleeps longer than a smaller one because of greater stomach capacity. Compared with older children, REM sleep makes up a larger proportion of infant sleep. In contrast with newborns in whom sleep and wakefulness alternate throughout a 24-hour period, by 3 months of age the longest sleep period is at night.

Toddlers

By the age of 2 years children are usually sleeping through the night and taking daily naps. Total sleep averages 12 hours a day and the percentage of REM sleep continues to fall. Children over 3 years of age often give up daytime naps and it is common for toddlers to wake during the night. Toddlers may be unwilling to go to bed at night. This unwillingness may be due to a need for autonomy or a fear of separation from parents. Toddlers have a need to explore and satisfy their curiosity, which may explain why some of them try to delay bedtime (see Chapter 16).

Preschoolers

On average, a preschooler sleeps about 12 hours a night (about 20% is REM). By the age of 5 years, the preschooler rarely takes daytime naps as social factors begin to influence their daytime activity (Jenni & O'Connor 2005). The preschooler usually has difficulty relaxing or quietening down after long, active days. A preschooler may also have problems with bedtime fears, waking up, nightmares or sleep terrors. Parents are most successful in getting a preschooler to bed by establishing a consistent ritual that includes some quiet activity before bedtime. Ordinarily,

experts do not recommend that a child be allowed to sleep with parents. However, in some cultures sharing a bed or room with parents is an accepted sleeping practice.

School-age children

The amount of sleep needed during the school years varies according to levels of activity, cultural and family norms and states of health. The school-age child enters a wakeful time in life and usually does not require a nap during the day. Sleep times are highly individualised, depending on activity levels, growth, age and state of health. The 7-year-old can usually be persuaded to go to bed by encouraging quiet activities, whereas an older child often resists sleeping because of unawareness of fatigue or their increasing need to be independent.

Adolescents

Pre-adolescence and adolescence is a time of substantial change in sleep patterns. At a time when sleep needs increase, the typical pre-adolescent (approx. 10–12 years) and adolescent (approx. 12–19 years) is subject to a number of social changes that often reduce the amount of time spent sleeping (Gradisar et al 2011). School and peer demands, after-school social activities, social media engagement and part-time jobs may result in compressed time available for sleep. Adolescents often go to bed later and rise earlier during the secondary school years. A common societal expectation is that adolescents require less sleep than pre-adolescents; however, epidemiological data indicate that many adolescents are not receiving adequate sleep (Gamble et al 2014). Because of lifestyle demands that shorten the time available for sleep and probable physiological need, teenagers often experience **excessive daytime sleepiness**. Performance in school, vulnerability to accidents, and behaviour and mood problems can be often be directly attributed to insufficient sleep. Parents, teachers and teens themselves often lack knowledge about what is adequate sleep, and may need education to improve what can become a significant health problem for teens.

WORKING WITH DIVERSITY

Focus on children

Snoring is relatively common in children and obstructive sleep apnoea is related to snoring. Obstructive sleep apnoea can have serious consequences in adults and also may affect children negatively. Studies have shown a strong link between childhood obesity and paediatric obstructive sleep apnoea. However, it is not known if obstructive sleep apnoea affects non-obese children's development. A recent study found that in non-obese twins (one with obstructive sleep apnoea and one without) that treatment with adeno-tonsillectomy improved growth and development. This means that obstructive sleep apnoea in non-obese children can impact on growth and development.

Reference

Zhang XM et al 2015 The effect of obstructive sleep apnoea syndrome on growth and development in nonobese children: a parallel study of twins. J Pediatr 166 (3):646–50.

• CRITICAL REFLECTION POINT

Anh is a 14-year-old who regularly engages with friends by social media after 11.00 pm. Some nights, especially over the weekend, he games or chats to friends – sometimes until 2.00 am. Anh is the captain of the school hockey team but is experiencing great difficulty getting up for early training and weekend games. Sometimes he arrives late for training. What sleep hygiene practices could you recommend to Anh?

Young adults

Most young adults (approximately 20–39 years) average 6–8½ hours of sleep a night, but this can vary widely. Young adults rarely take regular naps. Approximately 20% of sleep time is spent in REM sleep, a pattern which remains consistent through to middle adulthood. Healthy young adults require adequate sleep to participate in daily activities. However, it is common for lifestyle demands to interrupt usual sleep patterns. The stresses of jobs, family relationships and social activities may lead to insomnia (i.e. difficulties initiating and/or maintaining sleep) and the use of medication for sleep. Long-term use of such medications can disrupt sleep patterns and make the insomnia problem worse. Daytime sleepiness contributes to an increased number of accidents, decreased productivity and interpersonal problems in this age group. Obesity, depression and subjective sleep estimation are common risk factors for sleep problems in this age group (Bixler et al 2005).

Middle-aged adults

During middle adulthood (approx. 40–59 years) the total time spent sleeping at night begins to decline. The amount of **slow wave sleep** begins to fall – a decline that continues with advancing age. Sleep disturbances are often initially diagnosed among people in this age group, even when the symptoms of a disorder have been present for several years. Insomnia is particularly common, probably because of the physiological changes and stresses of middle age. Sleep disturbances can be caused by anxiety, depression or certain physical ailments. Women experiencing menopausal symptoms may have insomnia and increased sleep disturbances.

Older adults

The total amount of sleep decreases and the quality of sleep appears to deteriorate for many older adults. Episodes of REM sleep tend to shorten. There is a progressive decrease in slow wave sleep, and some older adults have almost no deep sleep at all. Older adults often wake earlier and fall asleep during the daytime, which is also thought to affect the quality of their night-time sleep.

Changes in an older person's sleep pattern may be due to changes in the central nervous system that affect sleep regulation. Sensory impairment, which is common with ageing, may also reduce an older person's sensitivity to time cues that maintain circadian rhythms. Variability in the sleep behaviours of older adults is common.

Factors affecting sleep

A number of factors affect the quantity and quality of sleep. Often a single factor may not be the only cause of a sleep problem. Physiological, psychological and environmental factors can alter the quality and quantity of sleep.

Sleep deprivation

Sleep deprivation is a problem many people experience as it is often related to sleep disturbances. Sleep deprivation involves decreases in the quantity and quality of sleep and inconsistency in the timing of sleep. When sleep becomes interrupted or fragmented, changes in the normal sequencing of the sleep cycles occur.

Families with a new baby will experience temporary sleep deprivation, for example. Healthcare workers may be particularly prone to sleep deprivation due to long work schedules and rotating shifts. Other causes may include illness (e.g. fever, difficulty breathing, pain), emotional stress, medications, environmental disturbances (e.g. noise, comfort, temperature) and variability in the timing of sleep due to caring roles or shift work. A cumulative sleep deprivation can develop even in patients who are sedated.

People's responses to sleep deprivation are highly variable. Clients may experience a variety of physiological and psychological symptoms (Box 30-2) with the severity of symptoms often related to the duration of sleep deprivation. The most effective treatment for sleep deprivation is elimination or correction of factors that disrupt the sleep pattern. Hospitalisation makes clients particularly vulnerable to sleep fragmentation and sleep deprivation leading to daytime drowsiness. Nurses can play an important role in identifying treatable sleep deprivation problems and planning care to improve the quality and quantity of sleep.

BOX 30-2 Sleep deprivation symptoms

Physiological symptoms

Ptosis, blurred vision
Fine motor clumsiness
Decreased reflexes
Slowed response time
Decreased reasoning and judgement
Decreased auditory and visual alertness
Cardiac arrhythmias

Psychological symptoms

Confusion and disorientation
Increased sensitivity to pain
Irritable, withdrawn, apathetic
Excessive sleepiness
Agitation
Hyperactivity
Decreased motivation

Drugs and other substances

Sleepiness and sleep deprivation are common side effects of some commonly prescribed medications (Box 30-3). These medications may alter sleep and impair daytime alertness (Bryant & Knight 2014). Sometimes, medications prescribed for sleep may cause more problems than benefits by locking the person into a cycle of dependence. Older adults often take a variety of drugs to control or treat chronic illness, and the combined effects of several drugs can also seriously disrupt sleep. Alcohol, caffeine, recreational drugs and the timing and type of food intake will also affect the quality of sleep in most people.

Lifestyle

A person's daily routine may influence their sleep patterns. Those who are inactive or nap frequently during the day may have difficulty sleeping at night. Similarly, other alterations in routine that can disrupt sleep patterns include performing unaccustomed heavy work, engaging in late-night social activities and changing evening mealtimes. A person working a rotating shift (e.g. 2 weeks of day shifts followed by a week of night shifts) often has difficulty adjusting to the altered sleep schedule. The body's internal clock might be set at 11.00 pm, but the work schedule forces sleep at 9.00 am instead. The person may be able to sleep only 3 or 4 hours because the body's clock perceives that it is time to be awake and active. Difficulties with maintaining alertness during work time can result in decreased and even hazardous performance

BOX 30-3 Drugs and their effects on sleep

Hypnotics
- Interfere with reaching deeper sleep stages
- Provide only temporary (1 week) increase in quantity of sleep
- Eventually cause 'hangover' during day: excessive drowsiness, confusion, decreased energy
- May worsen sleep apnoea in older adults

Diuretics
- Cause nocturia

Antidepressants and stimulants
- Suppress rapid eye movement (REM) sleep
- Decrease total sleep time

Alcohol
- Speeds onset of sleep
- Disrupts REM sleep
- Awakens person during night and causes difficulty returning to sleep

Caffeine
- Prevents person from falling asleep
- May cause person to awaken during night

Beta-adrenergic blockers
- Cause nightmares
- Cause insomnia
- Cause awakening from sleep

Benzodiazepines
- Increase sleep time
- Increase daytime sleepiness

Steroids
- Can affect circadian rhythm regulation
- Exacerbate existing sleep disorders

Narcotics
- Suppress REM sleep
- Cause increased daytime drowsiness

Anticonvulsants
- Decrease REM sleep time
- May cause daytime drowsiness

but after several weeks of working a night shift, a person's biological clock usually does adjust.

Usual sleep patterns and excessive daytime sleepiness

As noted above, EDS often results in impairment of waking function, poor work or school performance, accidents while driving or using equipment, and behavioural or emotional problems. Feelings of sleepiness are usually most intense on waking from sleep, or just before going to sleep, and about 12 hours after the mid-sleep period.

Sleepiness becomes pathological when it occurs at times when people need or want to be awake. People who experience temporary sleep deprivation as a result of an active social evening or lengthened work schedule usually feel sleepy the next day. However, they may be able to overcome these feelings even though they have difficulty performing tasks and remaining attentive. Chronic lack of sleep is much more serious than temporary sleep deprivation, and can cause serious alterations in the ability to perform daily functions. EDS tends to be most difficult to overcome during sedentary tasks.

Emotional stress

Worry over personal problems or situations can disrupt sleep. Emotional stress or distress causes a person to be tense and often leads to frustration when sleep does not come. Stress may also cause a person to try too hard to fall asleep, to wake frequently during the sleep cycle, or to oversleep. Continued stress may cause poor sleep habits.

Environment

The physical environment in which a person sleeps has a significant influence on their ability to fall asleep and remain asleep. Good ventilation is essential for restful sleep. The size, firmness and position of the bed can affect the quality of sleep. Hospital beds are often smaller and harder than those at home. If a person usually sleeps with another individual, sleeping alone can cause wakefulness. On the other hand, sleeping with a restless or snoring bed partner can also disrupt sleep.

Light levels may affect the ability to fall asleep. Some people may prefer a dark room, whereas others, such as children or older adults, may prefer keeping a soft light on during sleep. People may have trouble sleeping because of the temperature of a room – a room that is too warm or too cold often causes restlessness.

Sound also influences sleep. The level of noise needed to wake people depends on the stage of sleep. Low noises are more likely to arouse a person from stage 1 sleep, whereas louder noises wake people in stage 3 or 4 sleep. Some people require silence to fall asleep, whereas others prefer background noise such as soft music or television.

In hospitals and other inpatient facilities, noise creates a problem for clients. Noise in hospitals is usually new or strange, so clients are prone to waking up. This problem is greatest the first night of hospitalisation, when clients often experience increased total wake time, increased

awakenings and decreased REM sleep and total sleep time. The level of noise in hospitals can be very high. Normal conversation measures about 50 decibels. Sound becomes noise at 35–40 decibels. Noise from people (e.g. health professionals, patients, families, service areas) are all sources of increased sound levels. Intensive care units and other acute care environments have high noise levels. Close proximity of clients and families, noise from confused and ill clients, the ringing of alarm systems and telephones, and disturbances caused by emergencies make the environment loud and unpleasant. Noise is also related to the subjective quality of sleep.

Exercise and fatigue

A person who is moderately fatigued usually achieves restful sleep, especially if the fatigue is the result of enjoyable work or exercise. Exercise should be completed 2 hours or more before bedtime to allow the body to relax and cool down and maintain a state of fatigue. However, excess fatigue resulting from exhausting or stressful work can make falling asleep difficult. This can be a common problem for primary school children and adolescents.

Food and kilojoule intake

Following good eating habits is important for health and people sleep better when they are healthy. Eating a large, heavy and/or spicy meal late at night may result in indigestion that interferes with sleep. Caffeine and alcohol consumed in the evening have insomnia-producing effects. A reduction or avoidance of these substances, especially late at night, is an important strategy that people can use to improve sleep.

Food allergies may cause insomnia. In infants, night-time waking and crying (or colic) may be caused by a milk allergy, requiring that breast milk or a non-milk formula be used. Besides milk, some foods that often result in an insomnia-producing allergy among both children and adults include corn, wheat, nuts, chocolate, eggs, seafood, red and yellow food dyes and yeast. Restoration of normal sleep may take up to 2 weeks when the particular food that is causing the difficulty has been eliminated from the diet.

Weight loss or gain influences sleep patterns. When a person gains weight, sleep periods become longer with fewer interruptions. Weight loss can cause short and fragmented sleep. Certain sleep disorders may be the result of the semi-starvation diets popular in a weight-conscious society. Conversely, some research suggests that sleeping problems may contribute to the development of weight gain (Knutson 2007).

CLINICAL REASONING PROCESS

Successful critical thinking requires a synthesis of knowledge, experience, information gathered from clients and/or their families, critical-thinking attitudes and intellectual and professional standards. Clinical reasoning and judgements require the nurse to anticipate the information necessary, gather relevant information and data, analyse the data and make decisions regarding client care. Critical thinking is always changing in response to the needs and wishes of the client and their family, and the evidence available. During the process of gathering relevant information and data from the client or family (Figure 30-4), the nurse must consider all elements that build towards identifying priority problems in order to make appropriate judgements and decisions with the client.

In the case of sleep, the nurse integrates knowledge from many disciplines, previous experiences, and information gathered from clients to understand the client's sleep problem and its effect on the client and family.

CLINICAL EXAMPLE

Dudley is a 54-year-old truck driver who presents after a recent driving accident at work, which he attributes to difficulty with concentrating and excessive daytime sleepiness. Dudley's wife also convinced him to discuss his sleeping problems. His wife has commented on his loud snoring, and Dudley sleeps in a separate room due to the noise. On assessment, Dudley is centrally obese with a body mass index (BMI) of 39. He is a non-smoker and drinks about a 6-pack of beer per night.

• CRITICAL REFLECTION POINT

1. **What is the likely sleep disorder that Dudley has? What are the implications for his health if it is left untreated?**
2. **In undertaking a focused sleep assessment, what other information and data not given in the *Clinical example* above would you want to collect? How would you assess these data – that is, what questions would you ask or what physical assessments would you conduct?**

GATHERING RELEVANT INFORMATION AND DATA

Sleep is essentially a subjective experience. Only the client can report whether they believe it is sufficient and restorative. If the client is satisfied with the quantity and quality of sleep received, it may be considered normal. If a client identifies a sleep problem or the nurse suspects it, a more detailed history is needed (Figure 30-4). To promote normal sleep for clients, the first step is to gather relevant information and data about factors that usually influence sleep for the client. If the client perceives that sleep is adequate, the nursing history can be brief.

Assessing sleep

Most people can provide a reasonably accurate estimate of their sleep patterns, particularly if any recent changes have

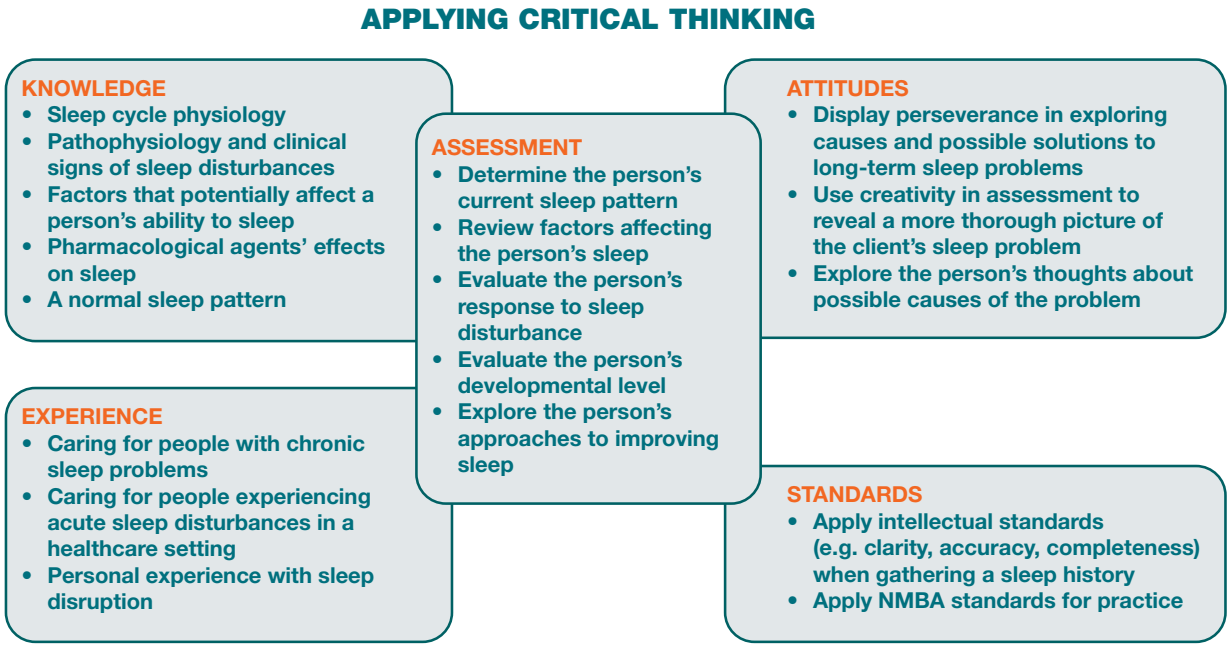


Figure 30-4 **Critical thinking associated with the assessment phase for fostering sleep.**

occurred. The nursing assessment is aimed at understanding the characteristics of any sleep problem and the client's usual sleep habits so that the client's priority problem can be identified and ways of promoting sleep can be incorporated into care. For example, if the nursing history reveals that a client always reads before falling asleep, it makes sense to offer reading material at bedtime.

Sources of sleep assessment

Usually clients are the best resource for describing a sleep problem and the extent to which a problem represents a change from their usual sleep and waking patterns. It is important to note that age affects the time and requirements for sleeping. For example, it has been shown that older women living in the community who have more sleep disturbances (waking after sleep onset and spend longer time in bed without sleep) are more likely to be placed in a nursing home (Spira et al 2012) (see *Research highlight*).

Often the client knows the cause of sleep problems, such as a noisy environment or anxiety due to financial stress. Additionally, bed partners may be able to provide information on the client's patterns that may reveal the nature of certain sleep disorders. For example, partners of clients with obstructive sleep apnoea often note that their sleep is disturbed by their partner's snoring. Often the partners report sleeping in different beds or rooms to obtain adequate sleep. It is useful to ask bed partners whether the client has pauses in their breathing during sleep and how frequently these apnoeic attacks occur. Some partners mention becoming fearful when clients apparently stop breathing for periods during sleep.

Information about the sleep patterns of children should also be sought from parents. However, some parents may not realise that there is a wide variability in the sleeping patterns of infants and may need reassurance if their infant seems to sleep less than others but is otherwise healthy and thriving (Matricciani et al 2012). Hunger, excessive warmth and separation anxiety are factors that may contribute to an infant's difficulty in going to sleep or frequent awakening during the night. Older children are usually able to relate fears or worries that inhibit their ability to fall asleep. If children frequently wake in the middle of bad dreams, parents can identify the problem but perhaps may not understand the meaning of the dreams. Parents can usually describe the typical behaviour patterns that foster or impair sleep in their child, such as excessive stimulation from active play or visiting friends. With chronic sleep problems, parents can relate the duration of the problem, its progression and their child's responses to intervention. Parents of infants may need to keep a 24-hour log of their infant's waking and sleeping behaviour for several days to determine what may be causing the problem. The infant's eating pattern and sleeping environment also need to be described, since these may influence sleeping behaviour.

Tools for sleep assessment

There are several subjective and objective sleep assessment tools available. *Subjective sleep assessment tools* include the visual analogue scale, and subjective rating scales where clients are asked to place a mark on a horizontal line, marked 0–10 or 0–100, at the point corresponding to their perceptions of the previous night's sleep. These scales can be administered repeatedly to determine if there is change over time. Such scales are useful for assessing an individual client, but not for comparing clients. Other validated sleep assessment tools are brief and simple enough to be administered in the clinical setting, such as the Epworth Sleepiness Scale (ESS) (freely available at http://epworthsleepinessscale.com). Other commonly used scales include the Insomnia Severity Index (ISI), which is used to detect insomnia cases and to determine treatment effectiveness (Morin et al 2011) and the Pittsburgh Sleep Quality Index (PSQI), which ascertains sleep quality in

RESEARCH HIGHLIGHT

Research focus

Disturbed sleep is common among older people and has been linked to an increase in disability and impairment of activities of daily living in older adults. While the reasons are multifactorial, older adults placed in long-term care facilities, such as nursing homes, are likely to have changes in their sleep habits with increasing amounts of disturbed sleep. Older adults are often moved to nursing homes because of the amount of nocturnal care personal carers are required to perform. This is usually poorly tolerated by carers and necessitates more permanent sources of support for the older adult.

Research abstract

The focus of this prospective cohort study was to determine if sleep measured in community settings was predictive of subsequent placement in a nursing home. The study was conducted on 1664 community-dwelling women (average age 83 years) whose objective sleep was measured at baseline and followed up 5 years later. Sleep was measured using an actigraphy, a wrist-based device that measures activity and light, thereby allowing quantification of total sleep time, time in bed and the amount of waking after sleep commencement. Sleep was measured over three consecutive nights. Additional measures determined whether the participants lived alone, with a spouse, were a new resident in a nursing home, or required personal home care. Reports of disability and mobility were also included.

It was shown that older women at baseline who had more waking after sleep commencement were three times more likely to be placed in a nursing home or require personal home care support. Those women who spent more time in bed without sleep also had a three times greater risk of being admitted to a nursing home within the next five years.

These data demonstrate clearly that sleep disturbances in older women expose them to greater risk of placement in a nursing home or requiring greater personal home care support.

Evidence-based practice

- Sleep disturbances in older people are common. Older women who are independently living but have more sleep disturbance are at greater risk of requiring extra carer support, such as nursing home care.
- Sleep education should be provided to older people to lower risk of increased carer support.

Reference

Spira A, Covinsky K, Rebok GW et al 2012 Objectively measured sleep quality and nursing home placement in older women. J Am Geriatr Soc 60(7):1237–43.

clinical populations (Buysee et al 1989). Despite being reliable and valid tools used extensively in sleep assessment, these tools are not always effective and more objective measures may be required.

Objective sleep assessment tools most commonly include wrist-based **actigraphy** and polysomnography. A wrist actigraphy assessment is a monitoring device attached to the client's non-dominant wrist, which measures body movements (using accelerometry) at regular short intervals. Some wrist actigraphy devices also measure environmental factors such as light, as well as having the ability to record the client's input about sleep, for example, when they tried to go to sleep. Wrist actigraphy is considered an objective tool which is non-invasive and can be used in the client's normal sleep environment. Polysomnography records brain and muscle activity via electrodes attached to the client's body. Although polysomnography is considered to be the gold standard in objective sleep assessment tools, its main disadvantage is that usually it is performed in a sleep laboratory, which removes clients from their normal sleep environment. There is now a trend to undertake home-sleep assessment using a modified polysomnography; however, evidence about effectiveness in clinical populations is lacking.

Sleep history

If clients report that they enjoy adequate sleep, the sleep history can be brief (Box 30-4). A determination of usual bedtime, normal bedtime rituals, preferred environment for sleeping and what time the client usually rises gives the nurse information for collaboratively setting priorities and establishing goals for planning care conducive to sleep. When a sleep problem is suspected, the quality and characteristics of sleep are explored in greater depth.

BOX 30-4 Components of a sleep history

- Satisfaction with quality and quantity of sleep
- Description of client's sleep problem
- Usual sleep pattern prior to sleep problem
- Recent changes in sleep pattern
- Bedtime routines and sleeping environment
- Use of sleep and other prescription medications and over-the-counter drugs
- Pattern of dietary intake and amount of substances (e.g. alcohol, caffeine) that influence sleep
- Symptoms experienced during waking hours
- Concurrent physical illness
- Recent life events
- Current emotional and mental status

Description of sleeping problems

When a sleep problem is identified, the nursing history must be sufficiently detailed so that appropriate judgements and decisions about therapeutic care can be made. Open-ended questions help a client describe a problem more fully. A general description of the problem followed by more-focused questions usually reveals specific characteristics that can be used in planning therapies.

To begin, the nurse needs to understand the nature of the sleep problem, its signs and symptoms, its onset and duration, its severity, any predisposing factors or causes and the overall effect on the client. Questions might include the following:

- *Nature of the problem:* What type of problem do you have with your sleep? Why do you think your sleep is inadequate? Describe a recent typical night's sleep. How is this sleep different from what you are used to?
- *Signs and symptoms:* Do you have difficulty falling asleep, staying asleep or waking up? Have you been told that you snore loudly? Do you have headaches when waking? Does your child wake from nightmares?
- *Onset and duration:* When did you notice the problem? How long has this problem lasted?
- *Severity:* How long does it take you to fall asleep? How often during the week do you have trouble falling asleep? How many hours of sleep a night did you get this week? Compare that with what is usual for you. What do you do when you wake during the night or too early in the morning?
- *Quality of sleep:* Do you wake up refreshed?
- *Predisposing factors:* What do you do just before going to bed? Have you recently had any changes at work or at home? How is your mood, and have you noticed any changes recently? What medications or recreational drugs do you take on a regular basis? Are you taking any new prescription or over-the-counter medications? How long have you been taking medications? Do you eat spicy or greasy foods or drink alcohol or caffeine that could be interfering with your sleep? Do you have a physical illness that might be interfering with your sleep? Does anyone in your family have a history of sleep problems?
- *Effect on client:* How has the loss of sleep affected you? (Ask a partner or friend whether they have noticed any changes in behaviour since the sleep problem started.) Do you feel excessively sleepy, irritable or have trouble concentrating during waking hours? Do you have trouble staying awake or have you fallen asleep at inappropriate times, such as while driving, sitting quietly in a meeting or watching TV?

Proper questioning helps the nurse and their client to determine the type of sleep disturbance and the nature of the problem. Table 30-1 gives examples of some other questions to ask when specific sleep disorders are suspected.

As an adjunct to the sleep history, a client and bed partner may be asked to keep a sleep–wake diary for a specified period of

TABLE 30-1 Questions to ask to assess for sleep disorders

Assessment questions	Rationale
Insomnia	
How easily do you fall asleep?	Determine nature and severity of insomnia
Do you fall asleep and have difficulty staying asleep? How many times do you wake up?	Help in selection of sleep therapies
Do you wake early from sleep?	
What time do you wake up for good? What causes you to wake early?	
What do you do to prepare for sleep? to improve your sleep?	
What do you think about as you try to fall asleep?	
How often do you have trouble sleeping?	
Sleep apnoea	
Do you snore?	Reveal presence of sleep apnoea
Has anyone ever told you that you often stop breathing for short periods during sleep? (Spouse or bed partner/room-mate may report this)	
Do you experience headaches after waking?	
Do you have difficulty staying awake during the day?	
Does anyone else in your family snore or stop breathing during sleep?	
Narcolepsy	
Are you tired during the day?	Help diagnose narcolepsy and influence on daily activities
Do you fall asleep at inopportune times? (Friends or relatives may report this)	
Do you have episodes of losing muscle control or falling to the floor?	
Have you ever had the feeling of being unable to move or talk just before falling asleep?	
Do you have vivid, lifelike dreams when going to sleep or waking up?	

time, usually 1–2 weeks (Carney et al 2012). The sleep–wake diary is completed daily to provide information on day-to-day variations in sleep–wake patterns over extended periods. Diary entries often include 24-hour information about various waking and sleeping health behaviours, such as physical activities, meal-times, type and amount of intake (alcohol and caffeine), time and length of daytime naps, evening and bedtime routines, the time the client tries to fall asleep, night-time waking and the time of waking up in the morning. A partner can help record the estimated times the client falls asleep or wakes. Although the log is helpful, the client must be motivated to participate in its completion. Ordinarily it is not used with acutely ill clients who have short hospital stays.

Usual sleep pattern

Normal sleep is difficult to define because people vary in the quantity and quality of sleep that they perceive as adequate for them. It is important, however, to have clients describe their usual sleep pattern to determine the significance of the changes created by a sleep disorder. Knowing a client's usual, preferred sleep pattern allows a nurse to try to match sleeping conditions in a healthcare setting with those in the home. To determine the client's sleep pattern, the nurse might ask the following questions:

1. What time do you usually go to bed each night?
2. What time do you usually fall asleep? Do you do anything special to help you fall asleep?
3. How many times do you wake at night? Why?
4. What time do you typically wake up in the morning?
5. What time do you get out of bed for good once you have woken?
6. What is the average number of hours you sleep each night?

Comparing these data with the predominant pattern found for other clients of the same age, the nurse can begin to recognise identifiable patterns such as those of insomnia. Clients with sleep problems may show patterns that are drastically different from their usual, or the change may be relatively minor. Hospitalised clients usually need or want more sleep as a result of illness. However, some may require less sleep because they are less active. Clients who are ill may think that it is important to try to sleep more than is usual for them, eventually making sleeping difficult.

Illness

Determining whether the client has any pre-existing health problems that might interfere with sleep is an important part of information gathering. For example, a client with bipolar disorder sleeps more when depressed than when manic. A depressed client often experiences fragmented sleep that is inadequate. Chronic diseases, such as chronic obstructive pulmonary disease and chronic pain problems, interfere with sleep. If a client takes medications to aid sleep, the nurse gathers information about the type and amount of medication that is being used, as well as daily caffeine intake.

If the client has recently undergone surgery, the nurse can expect the client to experience some disturbance in sleep due to discomfort. Clients may wake frequently during the first night after surgery and receive little deep or REM sleep. Depending on the type of surgery, it may take several days for a normal sleep cycle to return.

Current life events

Recent changes in lifestyle may be disrupting sleep or a person's occupation may offer a clue to the nature of the sleep problem. Changes in job responsibilities, rotating shifts or long hours can contribute to a sleep disturbance. Questions about social activities, recent travel or meal-time schedules help clarify the sleep assessment.

Emotional and mental health

If a client is anxious, excitable or angry, mental preoccupations can seriously disrupt sleep. The client may be experiencing emotional stress related to illness or situational crises such as loss of job or a loved one. Thus the client's emotions may affect the ability to sleep.

Bedtime routines

Many people have a routine to prepare for sleep. For example, the client may drink a glass of milk, take a sleeping tablet, eat a snack or watch television. Health professionals can assess and advise on habits that are beneficial and those that have been found to disturb sleep. Not all clients are alike. Watching television may promote sleep for one person, whereas another person may be stimulated to stay awake. Sometimes pointing out that a particular habit may be interfering with sleep can help clients find ways to change or eliminate habits that may be disrupting sleep. Special attention should be given to a child's bedtime rituals, especially if the child is hospitalised. Parents can report whether it is necessary, for example, to read the child a bedtime story, rock the child to sleep or engage in quiet play. Some young children need a special blanket or stuffed animal when going to sleep.

Bedtime environment

The nurse can ask the client to describe their preferred bedroom conditions. The bedroom may be dark or light, and the door to the room may be open or closed. The client may listen to the radio or watch television, or prefer a quiet environment. In addition, a child may require the company of a parent to fall asleep. The nurse may learn that changes in the home or institutional environment will be necessary to promote sleep. In a healthcare environment there may be environmental distractions, such as a room-mate's television, an electronic monitor in the hallway, a noisy nurses' station or another client who cries out at night. The nurse identifies factors that can be reduced or controlled.

Behaviours of sleep deprivation

Some clients may be unaware of how their sleep problems affect their behaviour. Behaviours such as irritability, disorientation, frequent yawning and slurred speech may be indicators of sleep deprivation. If sleep deprivation has lasted a long time, psychotic behaviour such as delusions and paranoia may develop (see Box 30-5). For example, a client may report seeing strange objects or colours in the room, or may seem afraid when the nurse enters the room.

Clients hospitalised in ICUs for an extended time may experience sensory overload (Lusk & Lash 2005). Constant environmental stimuli within the ICU, such as strange noises from equipment, the frequent monitoring and care given by nurses and doctors, ever-present lights and lack of colour stimulation, confuse clients. Repeated environmental stimuli and the client's poor physical status lead to sleep deprivation. Nurses can attempt to cluster episodes of care, particularly at

BOX 30-5 Symptoms of long-term sleep disturbance

Anxiety
Altered breathing patterns
Confusion, acute
Poor family relationships
Ineffective coping by an individual
Fatigue
Protection, altered
Sensory/perceptual alteration
Sleep pattern disturbance: insomnia, sleep apnoea

night, to reduce the frequency of disturbance and minimise sleep deprivation (Kamdar et al 2012).

Client expectations

It is important to understand clients' expectations regarding their sleep pattern. People who suffer from insomnia often focus their pre-sleep thinking on negative thoughts, including the inability to sleep, causing a vicious circle of sleeplessness. A skilled and caring approach should be used to assess clients' sleep needs. It is useful to ask what practices clients currently use to get to sleep and how successful they are. The nurse can also ask clients what other ways of promoting sleep they prefer and how they might be implemented.

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

Gathering relevant information reveals clusters of data that include defining characteristics for a sleep problem that results from disturbed sleep (Ackley & Ladwig 2013). If a sleep pattern disturbance is identified as a priority problem for the client, appropriate judgements can be made to specify the nature of the sleep disturbance and to design more-effective interventions. For example, different therapies are used for clients who are unable to fall asleep from those for clients with obstructive sleep apnoea. Box 30-6 demonstrates how to use clinical reasoning to identify and cluster defining characteristics to identify a priority problem with the client.

CLINICAL EXAMPLE

Dudley is diagnosed with obstructive sleep apnoea (OSA) after referral to a sleep specialist who ordered an overnight sleep study which demonstrated significant periods of apnoea accompanied by oxygen desaturation to 78%. As part of his medical management, Dudley is prescribed continuous positive airway pressure (CPAP).

Assessment and clinical reasoning should also identify the related factors or probable causes of the sleep disturbance, such as a noisy environment, a high intake of caffeinated drinks in the evening, or stress involving a marital relationship. These causes become the focus of interventions for minimising or eliminating the problem. For example, if a client is experiencing sleep disturbance due to a noisy healthcare environment, the nurse could offer some recommendations for helping sleep, such as controlling the noise of hospital equipment, reducing interruptions or keeping doors closed. If the sleep disturbance is related to worry over a threatened marital separation, the nurse's actions may involve introduction of coping strategies and creation of an environment for sleep. If the probable cause or related factors are incorrectly defined, the client may not benefit from care.

Sleep problems may affect clients in other ways. For example, a nurse may find that a client with sleep apnoea has problems with a spouse who is tired and frustrated over the client's snoring. In addition, the spouse is concerned that the client is breathing improperly and thus is in danger. The priority problem in this scenario is one of family coping and relationships. Appropriate decisions would include providing support to the client and spouse so that they can understand sleep apnoea and obtain the medical treatment needed.

CRITICAL REFLECTION POINT

1. **What other interventions will you need to plan with Dudley as part of the management of his OSA?**
2. **What lifestyle modifications will help improve sleep (think about obesity and alcohol consumption in this case)?**
3. **What relationship and body image concerns relating to CPAP may need to be addressed?**

BOX 30-6 Identifying priority problem(s)

Assessment activities	Defining characteristics	Priority problem(s)
Ask client to explain nature of sleep problem. Use prompts to refine assessment.	Client reports difficulty in falling asleep, taking up to an hour. Client reports waking up 2–3 times nightly, with difficulty returning to sleep.	Sleep pattern disturbance, difficulty falling and/or remaining asleep related to worry over job loss.
Observe client's behaviour and ask bed partner if behaviour changes have been noted.	Client admits to not feeling well rested. Partner describes episodes of client being lethargic and irritable.	
Determine whether client has had recent lifestyle changes.	Partner reports client recently lost job, has concern over finding new position.	

SETTING PRIORITIES AND ESTABLISHING GOALS

The synthesis of information from multiple resources enables the setting of priorities and goals for intervention or treatment (Figure 30-5). From this, an individualised plan of care can be developed with the client (see *Sample student nursing care plan* as an example).

Setting priorities

In a healthcare setting the nurse should attempt to plan treatments or routines so that the client is able to rest. For example, in the ICU, nurses can check available electronic monitors to track trends in vital signs without waking a client each hour. Other staff and family should be aware of the care plan so that they can cluster activities at certain times to reduce awakenings. In a nursing home setting, the focus of the plan may involve better planning of rest periods around the activities of the other residents. Often the schedule of one room-mate may not coincide with that of another.

Goals and outcomes

Goals should be individualised and realistic with measurable outcomes (e.g. achieving a sleep pattern normal for the client). The success of sleep therapy depends on an approach that fits the client's lifestyle and the nature of the sleep disorder. The goals of any care plan for a client needing sleep or rest include elements of the following:

- a sense of restfulness and renewed energy following sleep
- a healthy sleep pattern
- understanding of factors that promote or disrupt sleep
- development of self-care behaviours to eliminate factors contributing to the sleep disturbance.

Outcomes for the goal of establishing a healthy sleep pattern involve evaluating the client's knowledge of sleep hygiene and their ability to implement these practices, and discussion with the client and partner about their effectiveness. It is important for the plan of care to include strategies that are appropriate for the client's living environment and lifestyle. An effective plan includes outcomes established over a realistic time that focus on the goal of improving the quantity and quality of sleep in the home. This type of plan may require many weeks to accomplish. Working closely with the client and their significant others ensures that any therapies, such as a change in the sleep schedule or changes to the bedroom environment, are realistic and achievable.

Continuity of care

The nature of the sleep disturbance determines whether referrals to additional healthcare providers are necessary. For example, if a sleep problem is related to a situational crisis or emotional problem, the client may be referred to a mental health nurse or clinical psychologist for counselling. When chronic insomnia is the problem, a medical referral or referral to a sleep centre may be beneficial. In an inpatient setting, the client may benefit from a referral from the home health nurse or general practitioner for continued care for their sleep problem after discharge.

PREPARING FOR AND TAKING ACTION

Interventions designed to improve the quality of a person's rest and sleep focus largely on promoting health and wellbeing. Clients need adequate sleep and rest to maintain active and productive lifestyles. During times of illness, rest and sleep are important for recovery. An acute care, restorative care or continuing care setting will differ from the environment in a client's home. The main differences are in the environment and the nurse's ability to support normal rest and sleep habits within this environment. The client's age also influences the types of therapies that are most effective. The *Working with diversity* box provides principles for promoting sleep in older clients.

APPLYING CRITICAL THINKING

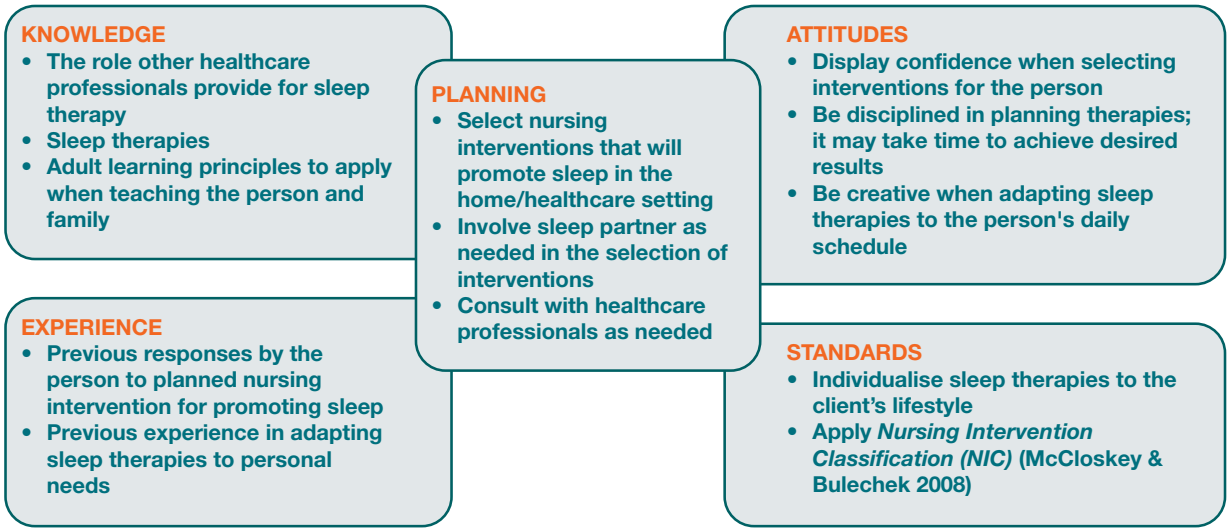


Figure 30-5 **Critical thinking associated with the planning phase for fostering sleep.**

SAMPLE STUDENT NURSING CARE PLAN

Gathering relevant information and data*

Julie Arnold, a 42-year-old solicitor, is the first client of the morning at the neighbourhood health clinic where you work. When you ask her how she is, she tells you she is having difficulty sleeping. She tells you this started several days after she began **feeling pressured at work** to complete an important case. On further questioning you find out she is **going to bed between midnight and 1.00 am**, which is 2 hours **later than her normal bedtime** and it **takes her almost an hour to fall asleep**. Julie normally gets 7 hours of sleep a night. Because she is having trouble falling asleep, Julie has been **drinking a glass of wine before bedtime**. She has **2–3 cups of coffee after dinner** to stay awake while working on her case before bedtime. Julie also reports that she wakes up at least once during the night. Julie states, '**I feel tired when I wake up**, and sometimes I have **trouble concentrating in the afternoon** at work. I have **stopped my routine of walking a kilometre a day**.' As you observe Julie, you notice she has dark circles under her eyes, shifts her position in the chair multiple times and yawns frequently. Julie also says she seems to have less patience with her children at home.

** Important data to cluster in setting priorities in bold.*

Priority problem(s)

Sleep pattern disturbance related to psychological stress from job pressures.

Making appropriate judgements and decisions

Setting priorities and establishing goals	Expected outcomes
Julie Arnold will achieve an improved sense of adequate sleep. Julie will achieve a more normal sleep pattern.	Julie will report waking up less frequently during the night and feeling rested. Julie will state adherence to a regular bedtime routine. Julie will fall asleep within 30 minutes of going to bed. Julie will report sleeping 7 hours nightly.
Preparing for and taking action	**Rationale**
Sleep enhancement • Encourage Julie to establish a bedtime routine and a regular sleep pattern. • Instruct Julie to limit caffeine, nicotine and alcohol before bedtime. • Help Julie identify ways to eliminate stressful concerns about work before bedtime (e.g. taking time before actual sleep time to read a light novel). • Adjust environment; have Julie control noise, temperature and light in the bedroom. *Exercise promotion* • Encourage Julie to reinstitute walking routinely during the day, but not 2–3 hours before bedtime. *Simple relaxation therapy* • Instruct Julie on how to perform muscle relaxation before bedtime.	A consistent routine promotes sleep. Caffeine and nicotine are stimulants and cause difficulty in falling asleep. Alcohol lightens and fragments sleep. Excess worry and intense activities before bedtime may stimulate client and prevent sleep. A quiet, comfortable environment fosters sleep. Exercise can increase activity levels and the need for sleep. Exercise just before bedtime is a stimulant that prevents sleep. Relaxation therapy can help reduce anxiety and block arousing thoughts which interfere with sleep.

Evaluating impacts and outcomes

- Ask whether Julie is successful in falling and staying asleep.
- Ask Julie to describe waking behaviours at work or home during the day.
- Observe the waking non-verbal expressions and behaviour of Julie.

Reference

Lushington K, Lack L 2002 Non-pharmacological treatment of insomnia. J Psychiatry Relat Sci 39(1):36-49; Rogers AE 1997 Nursing management of sleep disorders, II. Behavioral interventions, ANNA J 24(6):672.

WORKING WITH DIVERSITY

Focus on older adults

Sleep–wake pattern

- Keep a regular schedule for bedtime and rising the following morning.
- Eliminate naps unless they are a routine part of the schedule.
- If naps are used, limit to 20 minutes or less twice a day.
- Go to bed when sleepy.
- Use relaxation techniques to promote sleep.
- If unable to sleep in 15–30 minutes, get out of bed.

Environment

- Maintain usual patterns and rituals when preparing to sleep.
- Sleep where you sleep best.
- Keep noise to minimum; use soft music to mask noise if necessary.
- Use night-light and keep path to bathroom free of obstacles.
- Set room temperature to preference; wear socks to promote warmth.

Medications

- Use sedatives and hypnotics as last resort and then only short term if absolutely necessary.
- Adjust medications being taken for other conditions and look for drug interactions that may cause insomnia or excessive daytime sleeping.

Diet

- Restrict stimulants such as alcohol, caffeine and nicotine in late afternoon and evening.
- Consume carbohydrates or milk as a light snack before bedtime.
- Try to reduce the need for urinary elimination during the night by decreasing fluids 2–4 hours before sleep.

Physiological/illness factors

- Elevate head of bed and provide extra pillows as preferred.
- Ensure the client's position in the bed promotes comfort.
- Offer complementary therapies that are recognised in promoting sleep, such as aromatherapy.
- Pain relief for chronic or acute conditions is given 30 minutes prior to the client settling for the night.

Reference

Mezey M, Kobayashi M, Grossman S 2004 Nurses improving care to healthsystem elders (NICHE): implementation of best practice models. J Nurs Admin 34(10):451–7.

• CRITICAL REFLECTION POINT

Mr Kanaris, aged 55, is recovering on your ward following cardiac surgery. You find him awake at 2.00 am, and he tells you he has been having trouble sleeping since surgery 3 days ago. Develop a plan of care for Mr Kanaris to promote sleep while he is in hospital.

Promoting health and wellbeing

Many factors affect the ability to gain adequate rest and sleep. In community health and home settings, helping clients to develop behaviours conducive to rest and relaxation may include suggesting changes in their environment or certain lifestyle habits. To develop good sleep habits at home, clients and their bed partners can learn techniques that promote sleep and note conditions that interfere with sleep (Ackley & Ladwig 2013) (Box 30-7). Parents can also learn how to promote good sleep habits in their children. Clients benefit most from instructions based on information that is relevant to their homes, culture and lifestyles. Similarly, they are more likely to apply information that is useful and valued.

Environmental controls

All clients require a sleeping environment with a comfortable room temperature and proper ventilation, minimal sources of noise, a comfortable bed and proper lighting. Cots should be positioned away from open windows or drafts. The infant is covered with a light, warm blanket. Children and adults vary widely in regard to comfortable room temperature; however, bedding temperatures are best when slightly above average skin temperature (34–35°C) (van Someren 2006). Older adults often require extra blankets or covers due to changes in skin blood flow as people age. Many older clients sleep wearing socks to keep extremities warm (Raymann et al 2008).

Distracting noise needs to be eliminated so that the bedroom is as quiet as possible. In the home the television, telephone, mobile phone, or the intermittent chiming of a clock may disrupt a client's sleep. The family is an important part of the care plan, especially if there are several family members with different schedules for going to sleep and waking. At home it may require the cooperation of several people living with the client to reduce noise. It is also important to remember that some clients are used to sleeping with familiar inside noises, such as the hum of a fan.

The bed and mattress should provide support and comfortable firmness. Sometimes extra pillows are important to help a person position comfortably in bed. The position of the bed in the room may also make a difference for some clients. Infants' beds must be safe. To reduce the chance of suffocation, pillows, stuffed toys or the ends of loose blankets should not be placed in cots. Loose-fitting plastic mattress covers should not be used because infants might pull them over their faces and suffocate. Infants are usually placed on their backs to prevent suffocation or on their sides to prevent aspiration of stomach contents.

For a client prone to confusion or falls, safety is critical. In the home, a small night-light might help the client orientate to the room environment before rising to go to the bathroom. Beds set lower to the floor may lessen the chance of a person falling when first standing. Clutter and rugs should always be

BOX 30-7 Promoting sleep hygiene

Objective

- Improve home sleep hygiene habits.

Education strategies

- Suggest client tries to exercise daily, preferably in morning or afternoon, and to avoid vigorous exercise in the evening within 3 hours of bedtime.
- Caution client against sleeping long hours during weekends or holidays to prevent disturbance of normal sleep–wake cycle.
- Advise client to avoid daytime naps of longer than 1 hour or after 3.00 pm.
- Make aware of adverse effects of sleeping medications. Caution client not to take sleeping medications unless prescribed and for the shortest possible time.
- Advise client to go to bed and get up at the same time each day.
- Explain that, if possible, the bedroom should not be used for intensive studying, eating, watching TV or other non-sleep activity, besides sex.
- Explain that client should try to avoid thinking about problems when going to bed and should use relaxation exercises.
- Advise client to get out of bed and do some quiet activity until feeling sleepy enough to go back to bed if client does not fall asleep within 30 minutes of going to bed.
- Recommend client limit caffeine to morning coffee and limit alcohol intake (more than 1–2 drinks a day can interrupt sleep cycle).
- Ask client to examine environment: keep room dark, well ventilated, quiet and at a comfortable temperature. Use of earplugs and eyeshades may be helpful.
- Instruct client to avoid heavy meals for 3 hours before bedtime; a light snack may help.

Evaluation

- Ask the client to complete sleep–wake log for 1 week, and compare it with previous sleep–wake log.
- Ask client to periodically complete sleep rating scale for perceptions of quality of sleep.

removed from the path a client uses to walk from the bed to the bathroom. If a client needs help going from a bed to the bathroom, a small bell at the bedside can be used to call family members.

Clients vary in regard to the amount of light that they prefer at night. Infants and older adults sleep best in softly lit rooms. Light should not shine directly on their eyes. Small table lamps prevent total darkness. For older adults this reduces the chance of confusion and prevents falls enroute to the bathroom. If street lights shine through windows, heavy curtains or venetian blinds are helpful.

Promoting bedtime routines

Bedtime routines relax people in preparation for sleep and it is important for people to go to sleep when they feel tired or sleepy, but clearly this is not always possible. Going to bed while fully awake and thinking about other things can cause insomnia. Newborns and infants sleep through so much of the day that a specific routine is hardly necessary. However, quieting activities, such as holding them snugly in blankets, singing or talking softly and gentle rocking, help infants fall asleep. A bedtime routine (e.g. same hour for bedtime, snack or quiet activity) used consistently helps young children avoid delaying sleep. Toddlers and preschoolers may be too excited and full of energy to go to bed. Patterns of preparing for bedtime need to be reinforced. Reading stories or allowing children to sit in a parent's lap while listening to music are routines that can be associated with preparing for bed. Quiet activities such as colouring and reading work well with school-age children.

Adults should try to avoid excessive mental stimulation just before bedtime. Reading a light novel, watching a relaxing television program or listening to music helps a person relax. Relaxation exercises can be useful at bedtime. Slow, deep breathing for 1 or 2 minutes induces calm, and guided imagery and meditation may also promote sleep. At home, a client should not try to finish office work or resolve family problems before bedtime. The bedroom should not be used as a place to work and should always be associated with rest and sleep. Working towards a consistent time for sleep and waking helps most clients gain a healthy sleep pattern and strengthen the rhythm of the sleep–wake cycle.

Promoting comfort

People fall asleep only after feeling comfortable and relaxed. Minor irritations can keep people awake. Soft cotton nightclothes keep infants or small children warm and comfortable. An extra blanket may be all that is needed to prevent a person from feeling chilled and being unable to fall asleep. Clients should be instructed to wear loose-fitting nightwear, and to void before retiring so they are not kept awake by a full bladder.

Establishing periods of rest and sleep

In the home it may help to encourage clients to stay physically active during the day so that they are more likely to sleep at night. Increasing daytime activity lessens problems with falling asleep. Rigorous exercise should always occur at least several hours before bedtime so as not to stimulate the sympathetic nervous system prior to bedtime.

Although older adults get less deep night-time sleep, some often take short naps during the day. This change in pattern associated with ageing may not represent a decrease in need for sleep, but rather a redistribution of sleeping behaviour during a 24-hour period. Naps should be taken at the same time each day to maintain a consistent schedule. For clients with chronic illness, the care plan might include setting aside afternoons for rest to promote optimal health. The nurse can help with adjusting medication schedules and instructing clients to turn off mobile phones and void regularly, so that rest periods are uninterrupted.

Stress reduction

The inability to sleep because of emotional stress or distress can also make a person feel irritable and tense. When clients

are emotionally upset, they should be encouraged not to force sleep, otherwise insomnia may develop and soon bedtime is associated with the inability to relax. A client who has difficulty falling asleep can be helped by getting up and pursuing a relaxing activity, such as sewing or reading, rather than staying in bed and thinking about sleep.

Many preschoolers have bedtime fears (fear of the dark or strange noises), wake during the night or have nightmares. After nightmares, parents should go into the child's room immediately and talk briefly about fears to provide a cooling-down period. One approach is to comfort children but leave them in their own beds so that their fears are not used as excuses to delay bedtime or to sleep with parents. Keeping a light on in the room may also help. Cultural traditions among families will dictate different approaches to sleep practices (see *Working with diversity*).

Bedtime snacks

Some people enjoy bedtime snacks, whereas others cannot sleep after eating. A dairy-product snack such as warm milk that contains L-tryptophan may be helpful in promoting sleep. A full meal before bedtime can often cause gastrointestinal upset and interfere with the ability to fall asleep. Generally, clients should be encouraged to refrain from drinking or ingesting caffeine before bedtime. Coffee, tea, cola, chocolate and alcohol act as stimulants or diuretics, causing a person to stay awake or wake up during the night. Alcohol can also interrupt sleep cycles and reduce the amount of deep sleep.

Infants require special measures to minimise night-time awakenings for feeding. It is common for children to need a middle-of-the-night bottle or breastfeed. It is recommended to offer the last feeding as late as possible and to seek advice on when to introduce solid food. Infants should not be given bottles in bed.

Pharmacological approaches

The liberal use of drugs to manage the symptoms of sleep problems is quite common in Western culture. In sleep, the main use of medications is in the short-term treatment of insomnia. Central nervous system (CNS) stimulants such as amphetamines, caffeine, nicotine, terbutaline and theophylline should be used sparingly under medical management (Bryant & Knight 2014). In addition, withdrawal from CNS depressants such as alcohol, barbiturates, tricyclic antidepressants and benzodiazepines can exacerbate insomnia and must be managed carefully.

Medications used to induce sleep are typically called **hypnotics**, or sedative hypnotics. These medications produce a calming, soothing effect and somnolence. A client who takes sleep medications should know about their proper use as well as the risks and possible side effects. However, extended use of sedative hypnotic agents can disrupt sleep architecture and lead to more serious problems. The main use of short-term medication is for the treatment of chronic insomnia. There are a number of drug groups that are used (Table 30-2). Traditionally, benzodiazepines were used to induce sleep as they work by enhancing the effect of gamma-aminobutyric acid (GABA) in the brain which causes relaxation, anti-anxiety and hypnotic effects, thereby inducing sleep (Riemann & Perlis 2009). They are usually prescribed for short-term use; however,

WORKING WITH DIVERSITY

Focus on cultural care

Practices and patterns of sleep and rest vary among cultures. Co-sleeping, in which infants and children sleep with their parents and later with their siblings, is the expected practice in many cultures. For example:

1. Cross-cultural differences exist in the sleep habits of children around the world. For example, it was found that Asian children had later bedtimes and shorter night-time sleep compared to children from Caucasian countries (Mindell et al 2013). In addition, parental perception of sleep problems was greater in Asian countries. However, Asian children tended to have more daytime nap opportunities, resulting in similar total sleep time over 24 hours in Asian and Caucasian children.
2. Farming communities in developing countries (e.g. Cameroon) adopt co-sleeping practices with their children, while those who work for a wage have taken on the Western cultural values of separateness and individuality in their sleeping behaviours (Yovsi & Keller 2007).

References

Mindell JA, Sadeh A, Kwon R, Goh DYT 2013 Cross-cultural differences in the sleep of preschool children. Sleep Med 14(12):1283–9; Yovsi R, Keller H 2007 The architecture of cosleeping among wage-earning and subsistence farming Cameroonian Nso families. Ethos 35(1):65–84.

TABLE 30-2 Pharmacological management of insomnia

Generic name	Trade name	Half-life (hours)	Oral dosage (mg)
Benzodiazepines			
Flunitrazepam	Hypnodorm, Rohypnol, Apo-Flurazepam	18–26	0.5–2
Lorazepam	Ativan, Apo-Lorazepam	6–12	1–2
Nitrazepam	Alodorm, Mogadon	16–48	5–10
Oxazepam	Alepam, Murelax, Serepax	6–10	7.5–30
Temazepam	Normison	5–15	10–30
Non-benzodiazepines			
Zolpidem	Stilnox	1.5–4	5–10
Zopiclone	Imovane	5–7.5	3.75–7.5
Antidepressants			
Amitriptyline	Endep	10–50	50–100
Nortriptyline	Allergon	8–24	75–150
Melatonin			
Melatonin	Circadin	0.5–2	2–5

they can impair cognition and cause a hangover effect and in some cases rebound insomnia, which exacerbates insomnia when weaning off the medication. The other main problem with benzodiazepines is the client can develop dependence and great care needs to be taken in their prescription. Benzodiazepines are used cautiously with children under 12 years of age and are contraindicated in infants less than 6 months. Pregnant clients should avoid benzodiazepines because their use is associated with risk of congenital anomalies. Nursing mothers should not receive the drugs because they will be excreted in breast milk. Older adults are susceptible to side effects of any anti-anxiety or sedative agent because of physiological changes in metabolism. Initial doses of benzodiazepines should be small, and increments are added gradually, based on client response, for a limited period of time. Clients should be warned not to take more than the prescribed dose, especially if the medication seems to become less effective after initial use. If older clients who were recently continent, mobile and alert become incontinent, confused and/or demonstrate impaired mobility, the use of benzodiazepines should be considered a possible cause.

A newer group of drugs are the non-benzodiazepines or commonly called Z drugs (Table 30-2). These drugs are quick-acting by acting on the same benzodiazepine receptor to induce sleep without the anti-anxiety effect. While they appear to have a lower dependence risk than benzodiazepines, they are not without side effects and need to be taken only for short periods of time. Clients need to be aware of the added risks of taking sedative hypnotics which can cause disorientation, amnesia and dependence. Antidepressant medication can also be used to treat insomnia and manage anxiety and depression, which is common in clients with insomnia. Melatonin, a naturally occurring hormone, can also be taken exogenously for treating insomnia.

Regular use of any sleep medication can lead to tolerance, and rebound insomnia can occur after stopping the medication. Immediately administering a sleeping medication when a hospitalised client complains of being unable to sleep may have longer term consequences that may do the client more harm than good. Alternative approaches to promoting sleep must be considered. Routine monitoring of client response to sleeping medications is important.

The use of non-prescription sleeping medications is not advisable. Clients should be made aware of the risks of such drugs as, over the long term, they can lead to further sleep disruption even when they initially seem to be effective. There are an increasing number of behavioural and environmental sleep hygiene options to establish sleep patterns that do not require the use of drugs.

• CRITICAL REFLECTION POINT

You are asked to help develop a health promotion brochure for senior citizens that includes information on how to promote sleep. The brochure will be available in clinics and senior citizens centres. What general information should be included in the brochure for sleep enhancement in this group?

Acute care

Clients in an acute care setting will have their normal rest and sleep routine disrupted; therefore, nursing interventions should focus on controlling factors in the environment that disrupt sleep, relieving physiological or psychological disruptions to sleep, and providing for uninterrupted rest and sleep periods. The nurse should also consider iatrogenic causes of sleep disturbance, such as diuretics prescribed to be given at night.

Environmental controls

A nurse can control the environment in a hospital in several ways. Nurses can close the curtains between clients in shared rooms. Lights in a hospital nursing unit can be dimmed at night. Noise can be reduced by conducting conversations and reports in a private area away from clients' rooms and keeping necessary conversation to a minimum, especially at night. Box 30-8 lists additional ways to control noise in the hospital.

Promoting sleep in healthcare facilities

Compared with beds at home, hospital beds are often harder and of a different height, length or width. Keeping beds clean and dry and in a comfortable position may help clients relax. Some clients suffer painful illnesses, requiring special comfort measures such as application of dry or moist heat, use of supportive dressings or splints and proper positioning before retiring. Pain is a frequent symptom that requires control using both non-pharmacological and pharmacological measures (see Chapter 36).

• CRITICAL REFLECTION POINT

Jo is a registered nurse working on night duty. What are some of the methods Jo could use to control noise and other environmental factors in the ward to make the area more conducive to good quality sleep?

Establishing sleep

In a hospital it is often difficult to provide clients with the time needed to rest and facilitate sleep. However, care can be planned to avoid waking clients for non-essential tasks.

BOX 30-8 Control of noise in the hospital

- Close doors to client's room when possible.
- Keep doors to work areas on unit closed when in use.
- Reduce volume of nearby telephone and paging equipment.
- Wear rubber-soled shoes. Avoid noisy shoes.
- Turn off bedside oxygen and other equipment that is not in use.
- Turn down alarms and beeps on bedside monitoring equipment.
- Turn off room TV and radio unless client prefers soft music.
- Avoid abrupt loud noise such as flushing a toilet or moving a bed.
- Keep necessary conversations at low levels, particularly at night.
- Conduct conversations and reports in a private area away from client rooms.

The nurse can help by scheduling assessments, treatments, procedures and routines for times when clients are awake. For example, if a client's physical condition has been stable, the nurse should avoid waking the client to check vital signs. Rest can be promoted by allowing clients to determine the timing and methods of delivery of basic care measures. Baths and routine hygiene measures should not be given during the night for nursing convenience. Ideally, non-urgent blood samples should be drawn at a time when the client is awake. Unless maintaining a drug's therapeutic blood level is essential, medications should be given during waking hours.

When a client's condition demands more-frequent monitoring, the nurse can plan activities to allow extended rest periods. This means planning activities so that instead of a nurse or other health professional returning to the room every few minutes, the client may have up to an hour or more to rest quietly. For example, if a client needs frequent dressing changes, is receiving physiotherapy and intravenous therapy and has drainage tubes from several sites, the nurse and physiotherapist should try to avoid making separate entries into the room to check or deliver care for each problem. Instead, the nurse should use a single visit to change the dressing, regulate the intravenous system and empty the drainage tubes, communicating with the physiotherapist about when this care will be given. Because of their constant presence, nurses can become the client's advocate for promoting sleep, which may occasionally mean becoming a gatekeeper by monitoring and controlling disturbances.

Stress reduction

Clients who are hospitalised often have difficulty resting or sleeping because of physical and psychological stress. If time permits, a nurse on the night shift should take time to sit and talk with clients who unable to sleep to help determine the factors keeping the client awake. Back rubs or hand massage can also help clients relax. If a sedative is indicated, the nurse will generally administer the lowest dose initially. Discontinuing a sedative as soon as possible prevents creating a dependence that may seriously disrupt the normal sleep cycle. Older adults can be vulnerable to the side effects of **sedatives**, hypnotics or analgesics because the medications are metabolised slowly.

Restorative or continuing care

Nursing interventions to promote sleep in the acute care setting can also be used in the restorative or continuing care environment. Controlling the environment, especially noise, establishing periods of rest and sleep and promoting comfort are important considerations. Nursing interventions related to stress reduction and controlling physiological disturbances are also implemented in these settings.

Promoting comfort

Providing for personal hygiene often improves a client's sense of comfort. A warm bath or shower before bedtime can be relaxing. Clients restricted to bed should be offered the opportunity to void and wash their face and hands. Brushing teeth and taking care of dentures also help to prepare the client for sleep. The nurse can recommend and use several additional measures to promote comfort in these clients (Box 30-9).

BOX 30-9 Comfort measures in restorative care

- Administer hygiene measures for clients on bed rest.
- Encourage client to wear loose-fitting nightwear.
- Remove or change any irritants against the client's skin, such as moist dressings or drainage tubing.
- Position and support dependent body parts to protect pressure points and aid muscle relaxation.
- Provide caps and socks for older adults and those prone to feeling cold.
- Encourage client to void before going to sleep.
- Administer analgesics or sedatives about 30 minutes before bedtime.

Controlling physiological disturbances

For clients with physical illness, the nurse can help control symptoms that disrupt sleep. For example, a client with respiratory abnormalities should sleep with two pillows or in a semi-sitting position to ease the effort to breathe. The client may benefit from taking prescribed bronchodilators before sleep to prevent airway obstruction. A client with a hiatus hernia also needs special care. After meals, the client may experience a burning sensation as a result of gastric reflux. To prevent sleep disturbances, the client should eat a small meal several hours before bedtime and sleep in a semi-sitting position. Clients with pain, nausea or other recurrent symptoms should receive any symptom-relieving medication timed so that the drug takes effect at bedtime.

• CRITICAL REFLECTION POINT

Jo has been experiencing some difficulty sleeping during the day following night duties. Outline some strategies she could use to help her sleep.

EVALUATING IMPACTS AND OUTCOMES

With regard to problems with sleep, the client is the best source for evaluating outcomes as each client has a unique and personal need for sleep and rest. The client is the only one who will know whether their sleep problems are improved and which interventions or therapies are most successful in promoting sleep (Figure 30-6). To determine whether expected outcomes of nursing interventions have been met, however, it is possible to make comparisons with baseline sleep assessment data to see whether evaluative measures of sleep have improved.

Evaluative measures may be used shortly after a therapy has been tried (e.g. observing whether a client falls asleep after reducing noise and darkening a room). Other evaluative measures may be used after a client wakes (e.g. asking how many times the client woke during the previous night). The client and bed partner can usually provide accurate evaluative information. Over longer periods, the nurse may use assessment tools such as the visual analogue scale or sleep rating scale to determine whether sleep has progressively improved or changed.

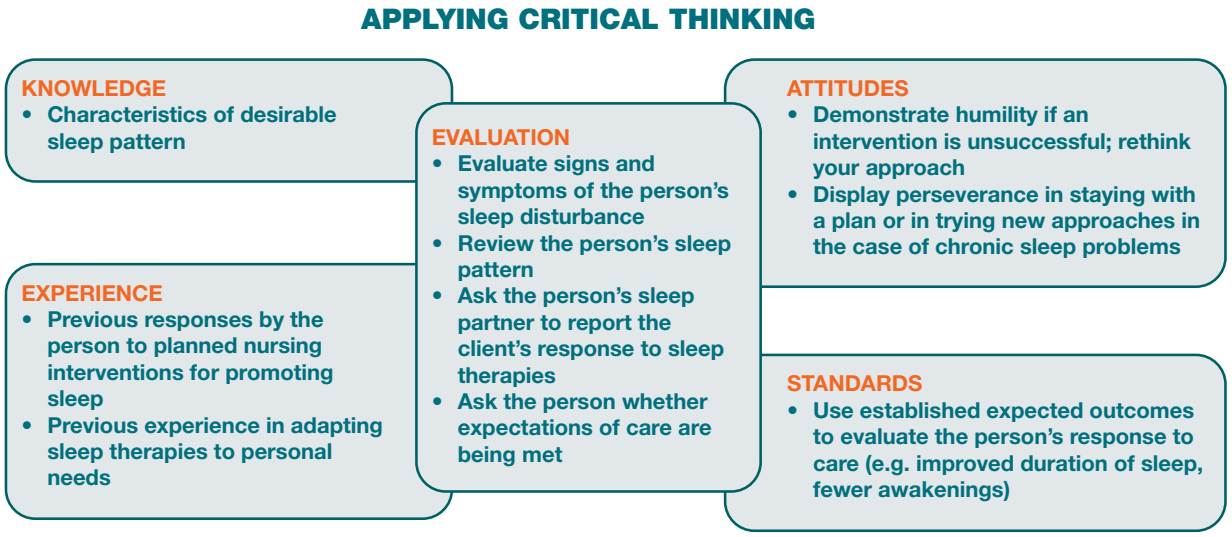


Figure 30-6 Critical thinking associated with the evaluation phase for fostering sleep.

An important part of outcome assessment is to assess the level of understanding that clients or family members have gained after receiving instruction and discussion of sleep habits. Compliance with new sleep practices may best be measured during a home visit, when the environment can be observed. When expected outcomes are not met or the client's situation changes, the nurse and client work together to revise expected outcomes based on the client's needs or preferences.

Client expectations

If the nurse has successfully developed a good relationship with a client and has devised a therapeutic plan of care, subtle behaviours often indicate the level of the client's satisfaction. The nurse may note the absence of signs of sleep problems, such as lethargy, frequent yawning or position changes, in the client. It is important for the nurse to ask the client if sleep needs have been met. For example, ask 'Are you feeling more rested?' or 'Do you feel we have done all we can to help improve your sleep?' If the client's expectations have not been met, the nurse needs to spend more time trying to understand the client's needs and preferences. Working closely with the client and bed partner will ensure that expectations can be realistically met within the limits of the client's condition and treatment.

Key concepts

- Sleep is an essential component of humans' biology and provides physiological and psychological restoration.
- Circadian rhythms are biological processes that oscillate approximately around a 24-hour cycle. They are regulated by a circadian clock and control the sleep–wake cycle.
- The total number of hours of sleep needed by individuals is variable.
- Sleep can be restorative or non-restorative depending on a range of factors (physiological and behavioural). Only the client can report whether sleep is restful.
- Neonates, infants, children and adolescents require more sleep than adults.
- A large number of conditions and diseases, such as anxiety, cancer and pain, can disrupt sleep.
- The most common type of sleep disorder is insomnia, which can be characterised by the inability to fall asleep, maintain sleep or frequently waking during the night or go back to sleep after waking earlier than desired.
- Sleep problems are considered a disorder when they produce significant anxiety or distress, or daytime impairment.
- Diagnosing sleep problems depends on identifying factors that impact or change sleep patterns.
- When planning interventions to promote sleep, the healthcare team should consider the usual characteristics of the client's home environment and normal lifestyle.
- One of the most important nursing interventions for promoting sleep in the hospitalised client is establishing prescribed periods for uninterrupted sleep and rest.
- Noise and pain control is essential to promote sleep.
- Long-term use of sleeping pills, mainly sedative hypnotics, may lead to difficulty in initiating and maintaining sleep.

Acknowledgement

The authors acknowledge the contribution of Sharon Merritt to this chapter in the previous edition of this text.

Online resources

American Academy of Sleep Medicine; the leading professional body in the United States that sets standards about sleep disorders, www.aasmnet.org

Australasian Sleep Association; the Australian and New Zealand peak scientific body representing clinicians, scientists and researchers in the area of sleep, www.sleep.org.au

Cleveland Clinic, provides a comprehensive list of sleep disorders, www.clevelandclinicmeded.com/medicalpubs/diseasemanagement/neurology/sleep-disorders/

European Sleep Research Society; an international scientific organisation that promotes sleep research and sleep medicine, www.esrs.eu

Sleep Health Foundation; an Australian foundation which increases awareness about sleep health, www.sleephealthfoundation.org.au

World Sleep Federation; an international organisation comprising a conglomeration of over 50 sleep groups and societies including the Australasian Sleep Association, worldsleepfederation.org

References

Ackley BJ, Ladwig GB 2013 Nursing diagnosis handbook: an evidence-based guide to planning care, 10th edn. Mosby, St Louis.

Austroads 2014 Assessing fitness to drive for commercial and private vehicle drivers. Online. Available: www.austroads.com.au/about-austroads; accessed 7 March 2016.

Balk EM, Moorthy D, Obadan NO et al 2011 Diagnosis and treatment of obstructive sleep apnea in adults, comparative effectiveness reviews, No. 32. Agency for Healthcare Research and Quality (US), Rockville, Maryland.

Bartlett DJ, Marshall NS, Williams A, Grunstein RR 2008 Sleep health New South Wales: chronic sleep restriction and daytime sleepiness. Intern Med J 38(1):24–31.

Basoglu OK, Tasbakan MS 2014 Elevated risk of sleepiness-related motor vehicle accidents in patients with obstructive sleep apnea syndrome: a case-control study. Traffic Inj Prev 15(5):470–6.

Bixler EO, Vgontzas AN, Lim H-M et al 2005 Excessive daytime sleepiness in a general population sample: the role of sleep apnea, age, obesity, diabetes, and depression The Journal of Clinical Endocrinology & Metabolism (2005):4510–15.

Borbély AA 1982 A two process model of sleep regulation. Hum Neurobiol 1(3):195–204.

Bryant B, Knight K 2014 Pharmacology for healthcare professionals, 4th edn. Elsevier, Sydney.

Buysse D, Reynolds CF, Monk TH et al 1989 The Pittsburgh sleep quality index: a new instrument for psychiatric practice and research. Psych Res 28(2):192–213.

Carney CE, Buysee D, Ancoli-Israel S et al 2012 The consensus sleep diary: standardizing prospective sleep self-monitoring. Sleep 35(2):287–302.

Coyer FM, O'Sullivan J, Cadman N 2011 The provision of patient personal hygiene in the intensive care unit: a descriptive exploratory study of bed-bathing practice. Aust Crit Care 24(3):198–209.

Davis KF, Parker KP, Montgomery GL 2004 Sleep in infants and young children: part one: normal sleep. Journal of Pediatric Health Care 18(2):65–71.

Espie CA 2009 'Stepped care': a health technology solution for delivering cognitive behavioral therapy as a first line insomnia treatment. Sleep 32(12):1549–58.

Gamble AL, D'Rozario AL, Bartlett DJ et al 2014 Adolescent sleep patterns and night-time technology use: results of the Australian Broadcasting Corporation's Big Sleep Survey. PLoS One 9(11):1–9.

Gardner G et al 2009 Creating a therapeutic environment: a non-randomised controlled trial of a quiet time intervention for patients in acute care. Int J Nurs Stud 46:778–86.

Gradisar M, Gardner G, Dohnt H 2011 Recent worldwide sleep patterns and problems during adolescence: a review and meta-analysis of age, region, and sleep. Sleep Med 12(2):110–18.

Jenni OG, O'Connor BB 2005 Children's sleep: an interplay between culture and biology. Pediatrics 115(1 Suppl):204–16.

Kamdar BB, Needham DM, Collop NA 2012 Sleep deprivation in critical illness: its role in physical and psychological recovery. J Intensive Care Med 27(2):97–111.

Kanterman T, Sung H, Burgess H 2015 Comparing the Morningness-Eveningness Questionnaire and Munich ChronoType Questionnaire to the Dim Light Melatonin Onset. J Biol Rhythms. doi: 10.1177/0748730415597520.

Kirsch DB 2011 There and back again, a current history of sleep medicine. Chest 139(4):939–46.

Knutson KL 2007 Impact of sleep and sleep loss on glucose homeostasis and appetite regulation. Sleep Med Clin 2:187–97.

Kryger MH, Otake K, Foerster J 2002 Low body stores of iron and restless legs syndrome: a correctable cause of insomnia in adolescents and teenagers. Sleep Med 3(2):127–32.

Longstreth WT, Koepsell TD, Ton TG et al 2007 The epidemiology of narcolepsy. Sleep 30(1):13–26.

Lusk B, Lash AA 2005 The stress response, psychoneuroimmunology, and stress among ICU patients. Dimens Crit Care Nurs 24(1):25–31.

Marshall NS, Wong KK, Cullen SR et al 2014 Sleep apnea and 20 year follow-up for all-cause mortality, stroke, and cancer incidence and mortality in the Busselton Health Study cohort. J Clin Sleep Med 10(4):355–62.

Matricciani L, Olds T, Petkov J 2012 In search of lost sleep: secular trends in the sleep time of school-aged children and adolescents. Sleep Med Rev 16(3):203–11.

Mezey M, Kobayashi M, Grossman S 2004 Nurses improving care to healthsystem elders (NICHE): implementation of best practice models. J Nurs Admin 34(10):451–7.

Mindell JA, Sadeh A, Kwon R, Goh DYT 2013 Cross-cultural differences in the sleep of preschool children. Sleep Med 14(12):1283–9.

Morin CM, Daley M, LeBlanc M et al 2009 The economic burden of insomnia: direct and indirect costs for individuals with insomnia syndrome, insomnia symptoms, and good sleepers. Sleep 32:55–64.

Morin C, Belleville G, Bélanger L, Ivers H 2011 The Insomnia Severity Index: psychometric indicators to detect insomnia cases and evaluate treatment response. Sleep 34(5):601–08.

Nursing and Midwifery Board of Australia 2016 Registered Nurse Standards for Practice. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional--standards.aspx; accessed 27 July 2016.

Punjabi NM 2008 The epidemiology of adult obstructive sleep apnea. Proc Am Thorac Soc 5:136–43.

Raymann RJ, Swaab DF, van Someren EJ 2008 Skin deep: enhanced sleep depth by cutaneous temperature manipulation. Brain 131(part 2):500–13.

Riemann D, Perlis ML 2009 The treatments of chronic insomnia: a review of benzodiazepine receptor agonists and psychological and behavioral therapies. Sleep Med Rev 13(3):205–14.

Roenneberg T, Kuehnle T, Juda M et al 2007 Epidemiology of the human circadian clock. Sleep Med Rev 11(6):429–38.

Saper CB, Scammell TE, Lu J 2005 Hypothalamic regulation of sleep and circadian rhythms. Nature 437:1257–63.

Sateia MJ 2014 International classification of sleep disorders – third edition: Highlights and modifications. Chest 146(5):1387-94.

Schutte-Rodin S, Broch L, Buysse D et al 2008 Clinical guideline for the evaluation and management of chronic insomnia in adults. J Clin Sleep Med Oct 4(5):487–504

Sleep Health Foundation, Deloitte Access Economics 2011 Re-awakening Australia: the economic cost of sleep disorders in Australia.

Spira A, Covinsky K, Rebok GW et al 2012 Objectively measured sleep quality and nursing home placement in older women. J Am Geriatr Soc 60(7):1237–43.

Unbehaun T, Spiegelhalder K, Hirscher V, Riemann D 2010 Management of insomnia: update and new approaches. Nat Sci Sleep 2:127–38.

Van Someren EJ 2006 Mechanisms and functions of coupling between sleep and temperature rhythms. Prog Brain Res 153: 309–24.

Vgontzas AN, Fernandez-Mendoza J 2013 Objective measures are useful in subtyping chronic insomnia. Sleep 36(8):1125.

Xiong L, Montplaisir J, Desautels A et al 2010 Family study of restless legs syndrome in Quebec, Canada: clinical characterization of 671 familial cases. Arch Neurol 67(5):617–22.

Yovsi R, Keller H 2007 The architecture of cosleeping among wage-earning and subsistence farming Cameroonian Nso families. Ethos 35(1):65–84.

Zhang B, Wing YK 2006 Sex differences in insomnia: a meta-analysis. Sleep 29(1):85–93.

Zhang XM, Shi J, Meng GZ et al 2015 The effect of obstructive sleep apnea syndrome on growth and development in nonobese children: a parallel study of twins. J Pediatr 166(3):646–50.

CHAPTER

31

Sustaining nutrition

Andrea Marshall and Shelley Roberts

Learning outcomes

Mastery of content will enable you to:

- explain why each nutrient is necessary for health
- understand the importance of balancing energy intake and energy output
- describe the role of macronutrients (carbohydrate, protein, fat) and their different types
- understand the different micronutrients and their roles in the body
- describe the digestive system and how nutrients are digested, absorbed, metabolised and stored in the body
- be aware of Australian and New Zealand dietary guidelines
- understand the importance of nutrition throughout different stages of the life cycle
- explain steps of the nutrition care process, including nutritional screening, assessment, intervention and monitoring
- describe the different types of nutrition support, including oral, enteral and parenteral nutrition
- describe the procedure for initiating and maintaining enteral nutrition
- discuss nutrition therapy specific to different disease processes

KEY TERMS

Amino acid, p. 1018
Anabolism, p. 1026
Anthropometry, p. 1039
Basal metabolic rate (BMR), p. 1017
Body mass index (BMI), p. 1039
Carbohydrates, p. 1018
Catabolism, p. 1026
Complementary proteins, p. 1019
Complete protein, p. 1019
Complex carbohydrates, p. 1018
Complex proteins, p. 1018
Dysphagia, p. 1023
Enteral nutrition, p. 1040
Enzymes, p. 1023
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Gluconeogenesis, p. 1026
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Recommended dietary intake (RDI), p. 1026
Resting energy expenditure (REE), p. 1017
Saccharides, p. 1018
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Vitamins, p. 1020

Nutrition: the basics

Food provides essential sustenance for life. Humans require many nutrients from the diet to provide energy, maintain life and stimulate growth and repair. Adequate nutrition is important for general health and wellbeing, as well as for the prevention and treatment of many diseases. A healthy diet can reduce the risks of diet-related conditions, such as high cholesterol, insulin resistance and obesity, and of chronic diseases such as type 2 diabetes, cardiovascular disease and some types of cancers (NHMRC 2006). Most of these conditions are the result of over-nutrition or obesity. Most chronic diseases and acute illnesses require medical nutrition therapy to help in their management or treatment. For example, diet is often used to manage blood glucose and blood lipids in patients with type 2 diabetes and cardiovascular disease, respectively. Also, acute illness or injury often requires extra nutrition (i.e. high energy/high protein diet) for recovery. In the hospital setting, under-nutrition (i.e. protein energy malnutrition) is a major problem, due to increased needs and decreased intakes of patients during acute illness. This section will describe the nutrients required by the body and how they are digested, absorbed and utilised; the *Australian Dietary Guidelines*; nutrition throughout the life cycle; and nutrition care for hospitalised patients.

Units of nutrition

Energy

The human body requires fuel, or energy, for cellular metabolism and repair, organ function, growth and body movement. Energy provided to and expended by the body is measured in kilocalories (kcal), commonly called calories, or kilojoules (kJ). While both measure energy, they are different units; one kcal is equivalent to 4.18 kJ. In Australia and New Zealand, kJ is the common unit used to describe energy. A variety of terms are used to describe individual energy expenditure, which is influenced by many factors (see Table 31-1).

In healthy individuals, a neutral energy balance (i.e. energy output = energy input) is recommended to maintain normal bodyweight. In this case, our energy requirements are equal to our **total energy expenditure** (TEE). If a positive energy balance exists (i.e. energy input > energy output), weight gain will result, except during times of growth, pregnancy or lactation, when a positive energy balance is needed. A negative energy balance (i.e. energy input < energy output) results in weight loss.

Energy requirements

Estimated energy requirement (EER) is the dietary energy intake predicted to maintain a neutral energy balance in healthy adults; hence, should directly reflect TEE. Many factors affect energy requirements, such as age, gender, body mass and composition, acute and chronic illness, injury, fever, infection, pregnancy and lactation, starvation and activity level. EER calculations should therefore account for such factors.

In hospital, energy requirements may be estimated (usually by dietitians) using predictive equations or indirect calorimetry. The Harris-Benedict, Schofield or Mifflin-St Jeor equations are examples of predictive equations that account for different patient-related factors such as age, gender, weight, height, temperature or activity. Static equations may also be used, which only account for bodyweight and disease state. While relatively quick and easy to use, the accuracy of predictive equations in estimating individual energy requirements is generally poor due to large individual variation in requirements, even between seemingly similar individuals (NHMRC 2006). For certain patient groups, such as the elderly, acutely and critically ill, and overweight and obese, these equations become even less accurate. Alternatively, **resting energy expenditure** (REE) or TEE can be determined through indirect calorimetry, a process that measures oxygen consumption and carbon dioxide production (using a metabolic cart) to calculate energy expenditure. While highly accurate, this method requires expensive and

TABLE 31-1 Measures of energy expenditure

Measure	Description
Basal metabolic rate (BMR)	The **basal metabolic rate** is the energy expenditure of a person at rest. This is the energy needed to maintain life-sustaining activities (breathing, circulation, heart rate and temperature) for a specific period of time and accounts for around 45–70% of total daily energy expenditure.
Resting energy expenditure (REE)	REE accounts for BMR plus energy needed to digest meals and perform mild activity. This is a baseline energy requirement that accounts for approximately 60–75% of our daily needs.
Total energy expenditure (TEE)	TEE is the measure of total daily energy usage. It encompasses BMR, REE and all other physical activities or bodily processes that require energy. TEE accounts for 100% of our energy output.

specialised equipment and trained operators; hence is used mainly for seriously-to-critically-ill patients in the hospital setting.

• CRITICAL REFLECTION POINT

Many clinicians believe that obese patients require fewer calories because they are overweight. All patients, regardless of BMI, can have increased energy requirements associated with illness. Determining resting energy expenditure in this patient population is challenging and should involve an interdisciplinary discussion (Kee et al 2012).

Energy is provided to the body through consumption of food and drink, and can be sourced from three macronutrients: carbohydrates, proteins and fats. Each macronutrient provides a different amount of energy (kJ) per gram and is absorbed, metabolised and used in the body in different ways. Alcohol also provides energy; however, due to the well-documented acute and chronic health consequences associated with its use, alcohol consumption is recommended to be kept to a minimum.

Macronutrients

Carbohydrate

Carbohydrates are the main source of energy in the diet, providing fuel for the brain, nervous system, skeletal muscles and cellular processes. Carbohydrates yield around 17 kJ per gram and in foods, are present as sugars, starches or fibre. Carbohydrates are classified according to their chemical units, called **saccharides** or sugars, and the most basic form of carbohydrate is often referred to as simple or complex (Gropper & Smith 2012). The types of carbohydrates consumed are very important for health outcomes (NHMRC 2006).

Simple carbohydrates

Simple carbohydrates are those that contain one or two sugars. *Monosaccharides* are the most basic unit of carbohydrate, containing only one molecule. They include fructose, galactose and glucose, which are absorbed directly from the gut into the bloodstream and used by the body for energy. Besides fructose (fruit sugar), monosaccharides are rarely found in foods on their own but are the products of broken-down chains of larger carbohydrates.

Disaccharides consist of two molecules, and include:

- Lactose: glucose + galactose (the sugar found in milk)
- Maltose: glucose + glucose (found in beer and some vegetables)
- Sucrose: glucose + fructose (common table sugar).

Complex carbohydrates

Complex carbohydrates, also called *polysaccharides*, contain three or more sugars. In the body, carbohydrate is stored as glycogen, a long-chain polysaccharide found in skeletal muscle and the liver. In food, complex carbohydrates include starches, which are found in breads, cereals, rice, and vegetables. Starches are digested to varying degrees and some, such as fibre, cannot be digested because humans do not have the enzymes capable of breaking them down.

Fibre is found in plant-based foods and is essential for proper functioning of the gastrointestinal tract by promoting regular bowel habits and preventing constipation. Fibre intake is also associated with reduced risk of chronic diseases such as heart disease, certain cancers and diabetes. **Insoluble fibres** are not digestible and include cellulose, hemicellulose and lignin. These aid in adding bulk to faeces for easier bowel movements. **Soluble fibres** include pectins, gums and mucilage. Soluble fibre is beneficial for the digestive system and also reduces cholesterol by binding to it and carrying it out of the body.

Protein

Proteins can be metabolised to release energy, yielding 17 kJ per gram. However, their main purpose is for synthesis (building) of body tissue in growth, maintenance and repair. Collagen, hormones, enzymes, immune cells, DNA and RNA are all composed of protein. In addition, blood clotting, fluid regulation and acid–base balance require proteins. Nutrients and many pharmacological substances are transported in the blood by proteins (Gropper & Smith 2012).

The simplest form of protein is the **amino acid**. There are 20 amino acids that constitute proteins (Box 31-1). Of these, some can be synthesised in the body from other substrates (**non-essential amino acids**). Others cannot be synthesised and therefore must be provided from the diet (**essential amino acids**). Conditionally essential amino acids are needed by the body in special situations when the body has undergone stress, trauma or illness. Amino acids can be linked together to form dipeptides, tripeptides and oligopeptides. Albumin and insulin are **simple proteins** because they contain only amino acids or their derivatives. The combination of a simple protein with a non-protein substance produces a **complex protein**, such as lipoprotein, formed by a combination of a lipid and a simple protein (Gropper & Smith 2012).

Protein is 16% nitrogen and serves as the only source of nitrogen for the body. Nitrogen balance is achieved when the intake and output of nitrogen are equal. When nitrogen intake is greater than nitrogen output, the body

BOX 31-1 Amino acids required in nutrition

Essential amino acids

Histidine
Isoleucine
Leucine
Lysine
Methionine
Phenylalanine
Threonine
Tryptophan
Valine

Non-essential amino acids

Alanine
Asparagine
Aspartic acid
Glutamic acid
Serine

Conditionally essential amino acids

Arginine
Cysteine
Glutamine
Glycine
Proline
Tyrosine

Adapted from Lutz C, Przytulski K 2011 Nutrition and diet therapy: evidence-based applications, 5th edn. FA Davis, Philadelphia.

is in a positive nitrogen balance and hence there is an increase in total body protein. This is normally observed during periods of growth, pregnancy or healing. The nitrogen retained by the body is used for building, repair and replacement of body tissues. Negative nitrogen balance (i.e. nitrogen intake < nitrogen output) indicates a total loss of body protein, which is not normal, but may occur during acute illness, trauma, infection or malnutrition. The increased nitrogen loss is the result of body-tissue destruction or loss of nitrogen-containing body fluids. Nutrition during this period must provide protein to put patients into positive balance for healing.

In the diet, there are different types and quality of proteins:

- A **complete protein** contains all essential amino acids in sufficient quantity for protein synthesis in the body, to allow growth and maintain **nitrogen balance**. Complete proteins are also referred to as high-quality proteins and are mostly sourced from animal-based foods such as meat, poultry, fish, eggs and dairy. This is because the amino acid profiles of animal foods are closer to that of humans; however, some plant-based foods, such as soy, are also considered complete proteins.
- **Incomplete proteins** lack one or more of the nine essential amino acids and include those found in plant-based foods, such as cereals, grains, nuts, legumes (beans, peas) and vegetables. All essential amino acids can be provided from plant sources, given they are adequately complemented in the diet.
- **Complementary proteins** are pairs of incomplete proteins, which, when combined, supply adequate amounts of amino acids for protein synthesis.

Protein can be used to provide energy, but because of protein's essential role in growth, maintenance and repair, adequate kilojoules should be provided in the diet from non-protein sources. Protein is spared as an energy source when there is sufficient carbohydrate in the diet to meet the energy needs of the body. When there is insufficient energy from other sources, the body metabolises dietary protein and body protein (such as skeletal muscle) for energy, leading to muscle wasting. This is commonly seen in protein-energy malnutrition. Protein requirements are higher during growth, healing, pregnancy, lactation and certain disease states.

Fat

Fats (**lipids**) are the most concentrated source of energy, yielding 38 kJ per gram. Most fats in foods are **triglycerides**, comprised of a glycerol and three fatty acids. The combinations of fatty acids, which may be three of the same or different fatty acids, usually determine the type of triglyceride. Fatty acids are composed of chains of carbon and hydrogen atoms with an acid group at one end, and a methyl group at the other end of the chain. The main types of fatty acids are saturated, monounsaturated and polyunsaturated (Gropper & Smith 2012).

Saturated fatty acids are saturated with hydrogen; so each carbon atom in the chain is linked by a single bond and has two hydrogen atoms attached. These fats are more rigid and are therefore solid at room temperature (e.g. butter, lard, coconut oil). As saturated fats can be synthesised by the body, they are not required in the diet.

Unsaturated fatty acids contain double bonds between the carbon atoms and hence have fewer hydrogen atoms in the chain. These fatty acid chains are more fluid, hence are liquid at room temperature (e.g. most oils). *Monounsaturated fats* have one double bond, while *polyunsaturated fats* contain two or more double bonds. The main monounsaturated fatty acid is oleic acid, which is found in olive, canola and peanut oils. The most common

polyunsaturated fat is linoleic acid (omega 6), which can be manufactured in the body or sourced from sunflower, safflower and corn oils. Omega 3 fatty acids cannot be produced by the body and therefore must be provided by the diet. They are found in legumes, canola oils and margarines, linseed oil and walnuts (alpha-linoleic acid) and oily fish such as mackerel, herrings, sardines, salmon and tuna (long-chain omega 3 acids).

Fats are needed in the diet for the absorption of fat-soluble vitamins and have numerous physiological and structural functions in the body. Some fats have beneficial properties for health; for example, high intakes of polyunsaturated fats are associated with reduced risk of heart disease and improved blood lipid profiles. These fats help to reduce total cholesterol and 'bad' low-density lipoprotein (LDL) cholesterol, as well as increase 'good' high-density lipoprotein (HDL) cholesterol in the blood. However, other types of fats may be detrimental when consumed in large quantities, such as saturated fats and trans fats. Trans fats are formed by partial hydrogenation of polyunsaturated fats during cooking and mimic saturated fats in the body. These types of fats can increase total and LDL cholesterol and lower HDL cholesterol, increasing the risk of heart disease. Also, because fat contributes a significant amount of energy per gram, a high total fat intake can lead to overconsumption of energy (or kilojoules), which over time leads to weight gain. Hence, the amount and types of dietary fats are extremely important to consider for general health and disease prevention (NHMRC 2006).

Water

Water is considered an essential nutrient as it is required in greater amounts than can be produced by the body. Water constitutes 50–80% of total bodyweight, depending on age, gender and lean body mass. The percentage of total body water decreases with age and is higher in men due to their higher proportion of lean body mass. All cell functions and biochemical reactions in the body depend on a fluid environment, and water is required for digestion, absorption and transportation of nutrients, elimination of waste and thermoregulation. Unlike all other nutrients, a person cannot survive for more than a few days without water. Fluid needs differ depending on age, gender, physical activity level and individual metabolism and health. Water is provided in the diet from the ingestion of liquids such as free water and/or other fluids, which account for around 80% of fluid intake. The remainder is provided by solid foods that contain water, such as fruits, vegetables and dairy foods. Water is also produced during digestion when food is oxidised, although in inadequate amounts to meet the body's needs (Gropper & Smith 2012).

Dehydration can be caused from high water losses and/or low fluid intake (see Chapter 34). Normal water losses occur from the lungs and skin (i.e. breathing and sweating) and are highly dependent on environmental factors. Water is also lost through urine and faeces, and these losses may be higher in some disease states or with certain medications (e.g. diarrhoea, diuretics). Inadequate fluid intake may occur due to a poor thirst mechanism, difficulty swallowing or dislike of the taste of water. These are particularly common problems among elderly people, who are at higher risk of dehydration. Depending on the degree of water loss and the length of time in negative fluid balance, dehydration can be a very serious condition that can result in acute impairments in physiological and cognitive function, and in chronic diseases or problems such as kidney stones and constipation.

People can also become fluid overloaded, which is usually due to a decreased ability to excrete fluid (e.g. in patients with congestive cardiac failure or renal disease). This often results in the need to restrict fluid intake to avoid high blood pressure, oedema and potentially fatal changes in blood electrolyte concentrations. Maintaining fluid balance is extremely important in a range of clinical conditions.

Vitamins

Vitamins are organic compounds that are required in small amounts for metabolic and physiological processes. As the body is unable to synthesise vitamins in sufficient amounts, humans depend on their dietary intake for vitamins. Vitamins are affected by processing, storage and preparation; hence vitamin content is usually highest in fresh foods that are used quickly after minimal exposure to heat, air or water. Vitamins are classified as either fat-soluble or water-soluble (Gropper & Smith 2012).

Fat-soluble vitamins

The fat-soluble vitamins (A, D, E and K) are mostly provided by the diet and require the ingestion of dietary fat for absorption; however, some can be synthesised in the body. Fat-soluble vitamins are stored in the body (in the liver and adipose/fat tissue) and are not readily excreted; therefore, daily consumption is not necessary but megadoses (usually due to overconsumption of supplemental vitamins or fortified foods) can result in toxicity. Fat-soluble vitamins have a variety of roles and functions in the body and can be sourced from a range of foods.

Vitamin A is essential for reproduction, vision and immune function in the body. It helps to maintain the integrity of epithelial and retinal cells, regulate gene expression and plays an integral role in embryonic development. Sources of vitamin A in the diet include

retinol (true vitamin A), found in animal foods such as eggs, meat, liver, dairy and fish; and also dietary precursors to retinol such as beta-carotene, found in plant foods such as pumpkin, sweet potato, carrots, spinach, apricots and mangoes.

Vitamin D plays an important role in maintaining serum calcium concentrations in the body by enhancing calcium absorption in the small intestine. Vitamin D maintains blood calcium at high concentrations so calcium is deposited into the bone; and when dietary calcium intake is inadequate it assists with mobilising calcium stores from the bone. Vitamin D is mostly produced by the action of sunlight on the skin. While limited amounts are also provided by the diet, in oily fish such as herring, salmon and sardines and milk and dairy products, it is almost impossible to obtain enough vitamin D from food alone.

Vitamin E acts as an antioxidant in the body by protecting polyunsaturated fatty acids from oxidation and free radical damage in the lipid phase of cell membranes. The main source of vitamin E is fats and oils such as sunflower, safflower, canola, olive and soybean oils. It is also found in the fats of meat, poultry and fish, some vegetables, and dairy foods.

Vitamin K is important for normal blood coagulation due to its requirement for the synthesis of coagulant and anticoagulant proteins. Most vitamin K needed by the body is produced by bacteria in the gut, but some is provided from dietary sources such as green leafy vegetables (i.e. spinach, broccoli, cabbage) and fats such as soybean and canola oils and margarines made from these oils.

• CRITICAL REFLECTION POINT

Parents often augment their children's diet with dietary supplements such as multivitamins. A recent review of over-the-counter paediatric multivitamin supplements identified that more than two-thirds of those available exceeded the recommended daily amount of vitamin A. Vitamins D and E were also above the recommended daily amount for children and toddlers. These increased amounts pose a risk of toxicity, particularly if overconsumption is encouraged. A balanced diet should be the main source of micronutrients (Samuel et al 2015).

Water-soluble vitamins

The water-soluble vitamins are the B-complex, which consists of eight vitamins, and vitamin C. Being water-soluble they are easily absorbed (by simple diffusion). Most water-soluble vitamins are not stored in the body in sufficient amounts so must be consumed on a regular basis, although toxicity may still occur. B-complex vitamins have important roles in energy metabolism in the body, as they are used to form a number of co-enzymes for metabolic reactions such as carbohydrate, fat and protein metabolism. Folate and vitamin B_{12} are also vital for DNA synthesis.

Vitamin C is an antioxidant and acts as an electron donor for a number of enzymes involved in collagen synthesis and is required for the growth and repair of tissues such as skin, tendons, ligaments, blood vessels and bone. It also promotes iron and copper absorption in the intestine and protects against infection due to its immunologic roles. Table 31-2 describes common food sources of each of the water-soluble vitamins.

TABLE 31-2 Water-soluble vitamins

Vitamin	Sources
Thiamine (vitamin B_1)	Wholegrains[a]
Riboflavin (vitamin B_2)	Milk and dairy products, fortified breads and cereals
Niacin (vitamin B_3)	Lean meats, poultry, fish, eggs, milk, wholegrains
Pantothenic acid (vitamin B_5)	Meats (particularly organ meats), poultry, egg yolks, potato, tomato products
Vitamin B_6	Meats (muscle and organ meats), wholegrain cereals, vegetables, fruits, nuts
Biotin (vitamin B_7)	Liver, eggs, dairy, nuts, soy
Folate (vitamin B_9)	Cereals and cereal products, green leafy vegetables, liver, lean beef, legumes
Vitamin B_{12}	Milk and dairy products, eggs, fish, meats (muscle and organ meats)[b]
Vitamin C	Fruits and vegetables (berries, citrus and kiwifruit; green leafy vegetables)

a Thiamine is lost in milling and refining of flours, therefore Australia introduced mandatory enrichment of baking flour in 1991 to prevent deficiency.

b Humans must obtain vitamin B_{12} from animal sources.

National Health and Medical Research Council, Australian Government Department of Health and Ageing, New Zealand Ministry of Health 2006 Nutrient Reference Values for Australia and New Zealand. Canberra, ACT.

Minerals

Minerals are inorganic elements essential to the body as catalysts in biochemical reactions. Minerals are classified as macrominerals (daily requirement 100 mg or more) or microminerals (daily requirement < 100 mg). The function and sources of common dietary minerals are summarised in Table 31-3.

TABLE 31-3 Minerals

Mineral	Function	Sources
Trace minerals (macro and microminerals)		
Calcium	Structural component of bones and teeth, cellular and extracellular functions (cell membrane transport, nerve transmission, skeletal and cardiac muscle signalling)	Milk and dairy products, edible bones of fish (i.e. sardines and canned salmon), legumes, green leafy vegetables
Copper	Component of many enzymes involved in oxidising iron before it is transported in the plasma, cross-linking collagen and elastin for connective tissue, electron transport, and antioxidants	Meats (especially organ meats), seafood, nuts, seeds, wholegrains, legumes
Iron	Component of haemoglobin (needed to transport oxygen around the body), myoglobin (oxygen reservoir within muscle) and enzymes involved in redox reactions. Also required for red blood cell and DNA synthesis and immune system function	Meats (especially liver), poultry, seafood, fortified cereals, legumes, green leafy vegetables
Magnesium	Contained in bone, muscle, soft tissues and body fluids. Cofactor for >300 enzyme systems and important for energy production and metabolism	Legumes, nuts, seeds, wholegrains, green leafy vegetables, some shellfish
Phosphorous	Present in the skeleton (as calcium phosphate), soft tissues, in cells (as phospholipids in every cell membrane) and in extracellular fluids. Used in DNA and RNA, ADP, acid–base balance, energy storage and transport, and catalytic proteins	Meat, poultry, fish, eggs, milk and dairy products, nuts, legumes, cereals, grains
Potassium	Essential for osmotic balance between cells and interstitial fluid; and for electrical communication of nerve and muscle cells	Fruits and vegetables (green vegetables, tomatoes, pumpkin, apples, oranges, bananas), milk and dairy products, meats
Sodium	Maintenance of extracellular volume, serum osmolality and membrane potential of cells; and active transport across cell membranes	Found widely in foods as sodium chloride (salt)[a]
Zinc	Component of >300 enzymes involved in synthesis or degradation of carbohydrates, fats, proteins and alcohol; regulation of gene expression; and maintaining structural integrity of proteins	Meat, poultry, seafood, fortified cereals, milk and dairy products
Ultratrace minerals (microminerals)		
Chromium	Potentiates insulin action and influences carbohydrate, protein and fat metabolism	Yeast, seafood, potatoes, wholegrains, meat, poultry
Fluoride	Mineralisation of bones and teeth, protection against dental caries	Fluoridised water, tea, coffee, rice, soybeans, some fish
Iodine	Synthesis of thyroid hormones, which are important for growth, metabolism and cellular processes	Iodised salt, seafood (clams, lobsters, oysters, sardines and other saltwater fish), milk, eggs[b]
Manganese	Formation of bone and tissues; carbohydrate, protein and fat metabolism	Wholegrains, legumes, nuts, tea, vegetables
Molybdenum	Cofactor for several enzymes that catalyse redox reactions and catabolise amino acids	Legumes, wholegrains, milk and dairy products, nuts, green leafy vegetables[b]
Selenium	Antioxidant, redox reactions and thyroid metabolism	Brazil nuts, seafood, poultry, eggs, meats[b]

a Usually overconsumed due to high intakes of packaged and fast foods.

b Amounts of the mineral in foods depend on soil content of the mineral and/or the animal's diet (except seafood).

National Health and Medical Research Council, Australian Government Department of Health and Ageing, New Zealand Ministry of Health 2006 Nutrient Reference Values for Australia and New Zealand. Canberra, ACT.

Anatomy and physiology of the digestive system

The main role of the digestive system is to extract macro- and micronutrients from ingested food and fluids for use in the body. The digestive system also acts as a physical and immunological barrier to ingested microorganisms, antigens or other foreign materials. The digestive system (Figure 31-1) is made up of the gastrointestinal (GI) tract, which runs from the mouth to the anus and includes the oropharangeal structures, oesophagus, stomach and small and large intestine; and accessory organs, including the liver, gallbladder and pancreas. All of these organs have a vital role in processing food and fluids, which occurs in several steps: digestion, absorption, transport and utilisation or storage (Gropper & Smith 2012).

Digestion

Digestion consists of mechanical, chemical and hormonal activities that are interdependent. Mechanical breakdown of food results from chewing, churning and mixing and is required to increase the surface area of food for chemical action. Chemical reactions by which food is reduced to its simplest form are facilitated by **enzymes** – protein-based molecules that act as catalysts to speed up these reactions (see Table 31-4). Hormones regulate digestive processes locally or distally by affecting GI motility, secretions and blood flow and are signalled by the GI tract itself or from the central nervous system (see Table 31-5).

Digestion begins in the mouth, where food is mechanically broken down by chewing. The food is mixed with saliva, which contains ptyalin (salivary amylase), an enzyme that starts to break down starches into shorter chain polysaccharides. The longer food is chewed, the more starch digestion occurs in the mouth. Proteins and fats are broken down physically by chewing, but remain unchanged chemically because enzymes in the mouth do not react with these nutrients. Chewing allows food to be broken down into smaller particles and saliva provides lubrication, both of which assist swallowing.

The epiglottis is a flap of skin that closes over the trachea to prevent aspiration (i.e. food going into the lungs) as swallowing occurs. Difficulty with swallowing is referred to as **dysphagia** and is common among certain patients, such as those who have had a stroke, those experiencing dementia or with a neurodegenerative disease such as Parkinson's disease. Swallowed food enters the oesophagus and is moved along by wavelike muscular contractions (*peristalsis*) to the base of the oesophagus, above the lower oesophageal (cardiac) sphincter. Pressure from a bolus of food at the lower oesophageal sphincter causes it to relax, allowing the food to enter the fundus, or uppermost portion, of the stomach. The lower oesophageal sphincter also prevents the reflux of gastric contents into the oesophagus. Around 9% of Australians suffer from gastro-oesophageal reflux disease (GORD), in which gastric reflux causes symptoms or complications that impact on a person's wellbeing, such as heartburn, regurgitation, oesophageal ulcers or Barrett's oesophagus.

TABLE 31-4 Summary of enzymatic digestion of macronutrients

Place of digestion	Nutrient	Enzyme: action
Mouth	Carbohydrate	Salivary amylase: starch → shorter chain polysaccharides
Stomach	Protein	Pepsin: protein (peptide bonds) → polypeptides and amino acids
	Fat	Gastric lipase: fat → free fatty acids
Small intestine (pancreatic secretions)	Carbohydrate	a-Amylase: starch → dextrins and maltose
	Protein	Trypsin, chymotrypsin, carboxypepsidase and elastase: proteins, peptides and polypeptides → polypeptides and amino acids
	Fat	Pancreatic lipase: fat → monoglycerides and fatty acids
		Cholesterol esterase: cholesterol → cholesterol esters and fatty acids
Small intestine (primarily brush border enzymes)	Protein	Peptidases[a]: peptides → amino acids
	Carbohydrate	Sucrase: sucrose → glucose and fructose
		Maltase: maltose → glucose
		Lactase: lactose → glucose and galactose
		a-Dextrinase (isomaltase): dextrin → glucose

→ hydrolysed to

a carboxypeptidase, aminopeptidase and dipeptidase

TABLE 31-5 Major gastrointestinal hormones and their functions

Hormone (site of release)	Stimulants for release	Effects
Gastrin (stomach, duodenum)	Ingestion of proteins, caffeine, some alcoholic beverages	Stimulates secretion of hydrochloric acid (HCl) and pepsinogen in the stomach; increases gastric motility and lower oesophageal sphincter tone
Secretin (duodenal mucosa)	Acid in small intestine	Increases output of water, bicarbonate, insulin and some enzymes from the pancreas; decreases duodenal motility and increases duodenal mucous output
Cholecystokinin (proximal small intestine)	Ingestion of proteins, fats and presence of HCl	Stimulates secretion of pancreatic enzymes; contraction of gallbladder; slows gastric emptying; increases colon motility
Glucose-dependent insulinotropic polypeptide (small intestine)	Ingestion of glucose, fat	Stimulates insulin release from the pancreas
Glucagon-like peptide (small intestine)	Ingestions of glucose, fat	Slows gastric emptying; inhibits glucagon release; stimulates insulin release
Motilin (stomach, small and large intestine)	Biliary and pancreatic secretions	Promotes gastric emptying and GI motility

In the stomach (Figure 31-1), food is mixed and churned with gastric secretions by wavelike contractions. Gastric secretions contain hydrochloric acid (HCl), mucous, intrinsic factor, the hormone gastrin (see Table 31-5) and a number of enzymes (see Table 31-4). These components act in different ways to chemically break down food or assist with absorption. For example, HCl is important for activating pepsin and killing ingested microorganisms; mucous protects the stomach lining from autodigestion; and intrinsic factor is required for downstream absorption of vitamin B_{12}. The stomach acts as a reservoir for ingested food and slowly releases the mixture of partially digested food and gastric secretions (i.e. chyme) into the small intestine in tiny amounts. Most of a solid meal is emptied from the stomach within 3 hours; however, this can range from 1 to 7 hours depending on the amount and types of foods/fluids consumed. In a mixed meal, liquids are emptied from the stomach the fastest, followed by carbohydrate, protein, fat and lastly, fibre. Large food particles empty more slowly than smaller particles, and concentrated sources of energy empty more slowly than low-calorie meals. These factors tend to have an effect on an individual's satiety (i.e. feeling of fullness after a meal).

Chyme leaves the antrum, or distal stomach, via the pyloric sphincter and enters the duodenum (Figure 31-1). Peristalsis continues in the small intestine, mixing the acidic chyme with bile, intestinal juices and pancreatic secretions. The majority of digestion occurs in the small intestine. Bicarbonate-containing secretions from the pancreas raise the pH of chyme to become more neutral, inhibiting the action of gastric enzymes and promoting the action of duodenal secretions. Bile is manufactured in the liver and stored in the gallbladder, and acts as a detergent by emulsifying fat to permit enzyme action. Pancreatic secretions contain a number of enzymes that act to break down carbohydrates, proteins and fats (see Table 31-4). Intestinal contents are moved slowly along the small intestine by peristalsis and may take between 3–8 hours to reach the ileocaecal valve, where they pass from the small intestine into the colon (Gropper & Smith 2012).

Absorption

The small intestine is the primary absorption site for nutrients. It is lined with finger-like projections called *villi*, which are themselves covered with even smaller projections called *microvilli*, also known as the brush border (see Figure 31-1). The purpose of the villi and microvilli is to create a large surface area (around 200–300 m^2) within the small intestine to facilitate nutrient absorption. Nutrients are absorbed by means of passive diffusion, osmosis, active transport and pinocytosis. Diffusion involves the movement of nutrients through mucosal cell membranes and may be simple (using channel proteins) or facilitated (using carrier proteins). Active transport requires energy (i.e. ATP) to move substances across cell membranes. Pinocytosis allows larger particles such as whole proteins to be absorbed by the epithelial cell membrane engulfing them. Figure 31-1 describes the site, means and route of absorption of major nutrients.

The small intestine reabsorbs the majority of fluids secreted from the GI tract and around 95% of bile salts for recycling. The small intestine also absorbs most of the fluids

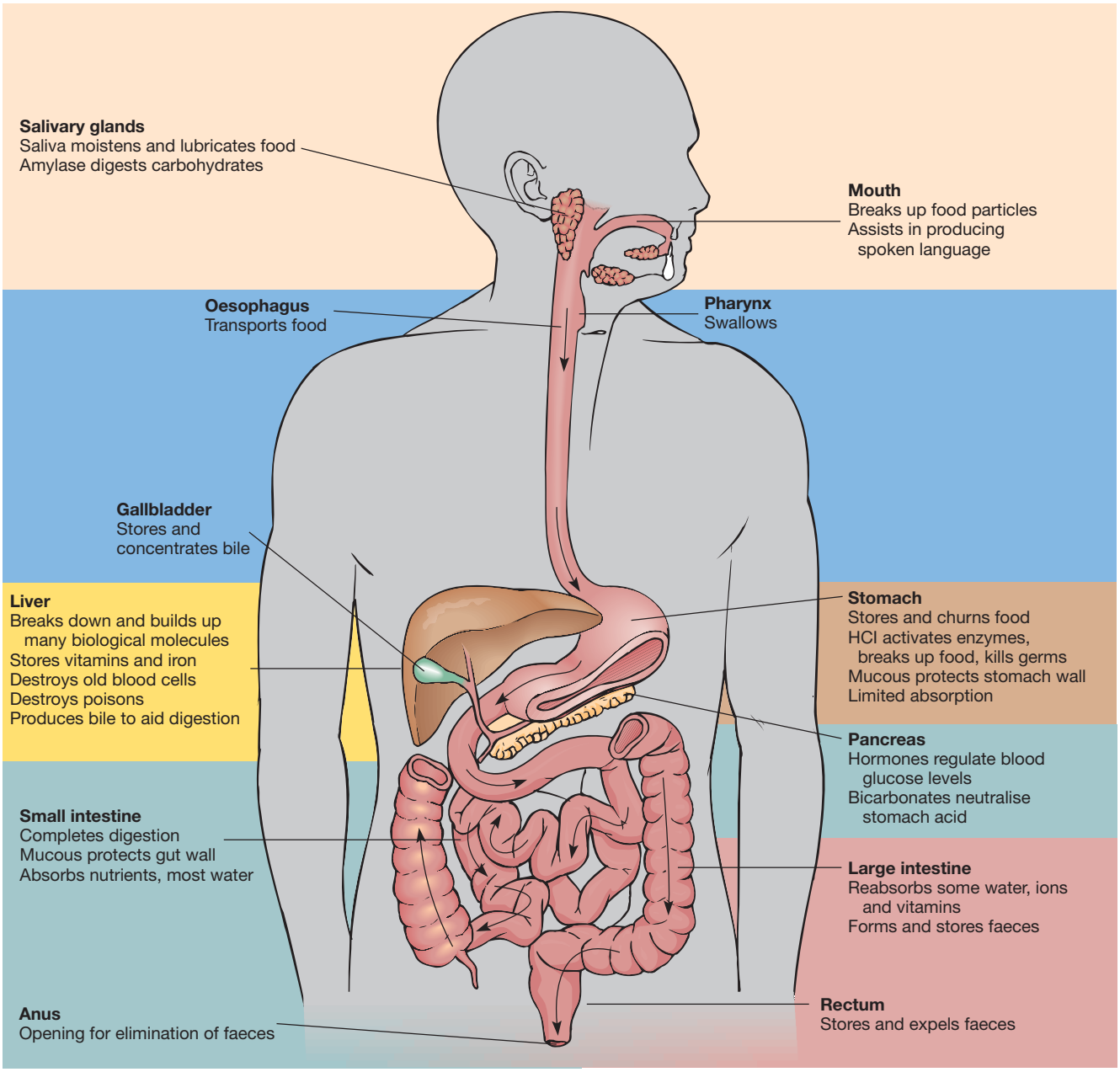


Figure 31-1 Summary of digestive system anatomy/organ function.

Drawn by Rolin Graphics.

ingested through the diet and the large intestine absorbs the remaining water and some electrolytes (sodium and potassium) in the process of producing faeces. In the large intestine, bacterial fermentation and production of vitamin K also occurs. Faeces are the waste product of ingested foods and fluids and are expelled at the anus, the end of the GI tract (Gropper & Smith 2012).

• CRITICAL REFLECTION POINT

Patients who have had surgical resection, a congenital defect or loss of absorption related to acute or chronic illnesses are unable to maintain protein-energy, micronutrient and fluid/electrolyte balance. Typically these patients are managed with intravenous artificial nutrition, although development of advanced medical therapies, such as small bowel transplantation, holds potential for allowing these patients to become nutritionally independent.

Metabolism and storage of nutrients

Metabolism refers to all the biochemical reactions within the cells of the body. Metabolic processes can

be anabolic (building) or catabolic (breaking down). **Anabolism** is the building of more complex biochemical substances by synthesis of nutrients; for example, when lean muscle mass is built or body tissues are repaired. Amino acids are anabolised into tissues, hormones and enzymes. **Catabolism** is the breakdown of biochemical substances such as carbohydrates, proteins and fats into simpler substances to be used for energy. Starvation is an example of catabolism, when wasting of body fat and muscle mass occurs. Normal metabolism and anabolism are physiologically possible when the body is in positive nitrogen balance, whereas catabolism occurs during physiological states of negative nitrogen balance (Gropper & Smith 2012).

Nutrients absorbed in the intestines, including water, are transported through the circulatory system to body tissues. Through the chemical changes of metabolism, nutrients are converted into a number of substances required by the body. Carbohydrates, protein and fat undergo metabolism to produce chemical energy and to maintain a balance between anabolism and catabolism. Chemical energy is converted to other types of energy by different tissues to be used for various body processes. For example, muscle contraction involves mechanical energy, nervous system function involves electrical energy and heat production involves thermal energy. All these forms of energy originate in metabolism.

Some of the nutrients absorbed by the body are not utilised immediately and are stored in tissues. When excesses of macronutrients (i.e. carbohydrate, protein and fat, providing energy) are consumed, they are stored in the body for energy reserves. The body's major form of energy reserve is fat, stored as adipose tissue. To a certain extent, excess protein is stored in muscle mass and excess carbohydrate is stored as glycogen in small amounts in skeletal muscle and the liver. However, most excess energy consumed (regardless of its source) is eventually stored as fat if it is not used (i.e. positive energy balance), leading to weight gain.

Nutrient metabolism consists of three main processes:

- Catabolism of glycogen into glucose, carbon dioxide and water (**glycogenolysis**)
- Anabolism of glucose into glycogen for storage (**glycogenesis**)
- Catabolism of amino acids and glycerol into glucose for energy (**gluconeogenesis**).

When the body's energy expenditure exceeds energy intake (i.e. negative energy balance), stored energy is utilised. Monoglycerides from the digested portion of fats can be converted to glucose by gluconeogenesis. Amino acids can be converted to fat and stored or catabolised into energy via gluconeogenesis. All body cells, except red blood cells and neurons, can oxidise fatty acids into ketones for energy in the absence of dietary carbohydrates. Glycogen (stored carbohydrate) provides energy during brief periods of fasting, maintaining blood glucose levels during sleep.

Dietary guidelines

Nutrient reference values

In Australia the National Health and Medical Research Council (NHMRC) developed *nutrient reference values (NRV)* to provide recommendations for nutritional intake based on the best available scientific knowledge (NHMRC 2006). NRVs are presented in a number of ways, depending on the nutrient and the evidence available for its requirement (see Table 31-6).

For macronutrients, the acceptable macronutrient distribution range (AMDR) is used to suggest levels of intakes and is presented as the percentage of each macronutrient's contribution to total daily energy intake (see Table 31-7). So, if the intake of one nutrient (e.g. protein) is increased, the relative proportions of the other nutrients that contribute to energy intake (e.g. carbohydrate and fat) will decrease. AMDRs were developed based on the best evidence for minimising chronic disease risk and ensuring adequate micronutrient intakes. They are recommendations for healthy people aiming to maintain their current bodyweight.

To calculate the contribution of a macronutrient to total daily energy intake, divide the daily energy provided by that nutrient by the total daily energy intake. For example, if an individual consumes a total of 9000 kJ on a given day, which includes a total of 85 g of fat, the total energy contribution of fat is calculated as:

Total daily grams of fat (85 g) multiplied by its energy content per gram (i.e. 38 kJ per gram):

$$85\ \text{g} \times 38\ \text{kJ/g} = 3230\ \text{kJ provided by fat}$$

Then, divide this number by the total daily energy intake for the percentage of energy coming from fat:

$$3230\ \text{kJ} \div 9000\ \text{kJ} = 35.9\%\ \text{of total energy is provided by fat}$$

As you can see, this falls just outside of the AMDR for fat. For some macronutrients, **recommended daily intake (RDI)** or adequate intake (AI) is age- and gender-dependent (see Table 31-8). Tables 31-9 to 31-11 show the NRVs for fat and water-soluble vitamins and minerals.

TABLE 31-6 Nutrient reference values

Nutrient reference value	Description
RDI (Recommended Dietary Intake)	The average daily level of intake considered adequate to meet the nutrient requirements of practically all (97–98%) healthy people in a particular life stage and gender group. RDIs exceed the actual nutrition requirement of most healthy persons
EAR (Estimated Average Requirement)	The daily level of intake estimated to meet the requirements of half the healthy individuals in a particular life stage and gender group
AI (Adequate Intake)	Used when RDI cannot be determined. This is the average daily level of nutrient intake based on observed or experimentally determined approximations or estimates of nutrient intake by a group or groups of apparently healthy people that are assured to be adequate
UL (Upper Level of intake)	The highest average daily level of nutrient intake likely to pose no adverse health effects to almost all individuals in the general population. As intake increases above the UL, the risk of adverse health effects increases
AMDR (Acceptable Macronutrient Distribution Range)	An estimate of the range of intake for each macronutrient (i.e. carbohydrate, protein, fat), expressed as a percentage of contribution to total energy intake, which would allow for an adequate intake of all other nutrients while maximising general health outcome
SDT (Suggested Dietary Target)	A daily average intake from food and beverages for certain nutrients that may help in the prevention of chronic disease

National Health and Medical Research Council, Australian Government Department of Health and Ageing, New Zealand Ministry of Health 2006 Nutrient Reference Values for Australia and New Zealand. Canberra, ACT.

TABLE 31-7 Acceptable macronutrient distribution ranges

Carbohydrate[a] (g)	Protein (g) RDI	Fat[b] (g)
45–65%	15–25%	20–35%

a Types of carbohydrates consumed are of high importance to health.

b With no more than 10% total energy coming from saturated and trans fats.

NB: Alcohol can also contribute to dietary energy; however, due to its adverse effects on health outcomes, an intake of < 5% total daily energy is recommended.

National Health and Medical Research Council, Australian Government Department of Health and Ageing, New Zealand Ministry of Health 2006 Nutrient Reference Values for Australia and New Zealand. Canberra, ACT.

TABLE 31-8 Recommended or adequate dietary intakes: macronutrients

Group/Age		Protein[a] (g)	Fibre[b] (g)	Water[b] (L)
Infants	0–6 months	10	N/A	0.7
	7–12 months	14		0.8
Children	1–3 years	14	14	1.4
	4–8 years	20	18	1.6
Boys	9–13 years	40	24	2.2
	14–18 years	65	28	2.7
Girls	9–13 years	35	20	1.9
	14–18 years	45	22	2.2
Men	19–70 years	64	30	3.4
	> 70 years	81	30	3.4
Women	19–70 years	46	25	2.8
	> 70 years	57	25	2.8
	Pregnant	60	28	3.1
	Breastfeeding	67	30	3.5

a RDI (Recommended dietary intake)

b AI (Adequate intake)

National Health and Medical Research Council, Australian Government Department of Health and Ageing, New Zealand Ministry of Health 2006 Nutrient Reference Values for Australia and New Zealand. Canberra, ACT.

Australian Dietary Guidelines

The *Australian Dietary Guidelines* have been developed by the NHMRC based on the best available scientific evidence (NHMRC 2013). They give advice on dietary habits to promote health and wellbeing and reduce the risk of dietary-related conditions and chronic diseases. The guidelines are aimed at health professionals, researchers, policy-makers and food manufacturers, in order to promote healthy eating among Australians. See Box 31-2 for the general *Australian Dietary Guidelines*.

The *Australian Guide to Healthy Eating* is a visual guide representing the proportion of the five food groups recommended to be consumed each day (see Figure 31-2). The guide was developed using a modelling system to translate the NRVs into dietary models – that is, it describes the amounts of foods within each food group required to meet the estimated nutrient requirements of

TABLE 31-9 Recommended dietary intakes: fat soluble vitamins

Group/Age		Vitamin A (µg)	Vitamin D (µg)[a]	Vitamin E (mg)	Vitamin K(µg)
Infants[b]	0–6 months	250	5	4	2.0
	7–12 months	430	5	5	2.5
Children	1–3 years	300	5	5	25
	4–8 years	400	5	6	35
Boys	9–13 years	600	5	9	45
	14–18 years	900	5	10	55
Girls	9–13 years	600	5	8	45
	14–18 years	700	5	8	55
Men	> 18 years	900	5–15[c]	10	70
Women	> 18 years	700	5–15[c]	7	60
	Pregnant	800	5	7	60
	Breastfeeding	1100	5	11	60

a In Australia and New Zealand, vitamin D is primarily produced in the body from exposure to the sun and dietary intake contributes minimally. Groups at risk of inadequate sun exposure are older persons living at home or in residential care, those who cover their skin when outside for cultural reasons and people with dark skin.

b Adequate intakes (AI), based on milk concentrations in healthy women and average volumes breastfed

c RDI for men and women aged: 19–50 years is 5µg, 51–70 years is 10µg, and > 70 years is 15µg

µg – micrograms

National Health and Medical Research Council, Australian Government Department of Health and Ageing, New Zealand Ministry of Health 2006 Nutrient Reference Values for Australia and New Zealand. Canberra, ACT.

TABLE 31-10 Recommended dietary intakes: water-soluble vitamins

Group/Age		Thiamine (mg)	Riboflavin (mg)	Niacin (mg)	Pantothenic acid (mg)	Vitamin B_6 (mg)	Biotin (µg)	Folate (µg)	Vitamin B_{12} (µg)	Vitamin C (mg)
Infants[a]	0–6 months	0.2	0.3	2	1.7	0.1	5	65	0.4	25
	7–12 months	0.3	0.4	4	2.2	0.3	6	80	0.5	30
Children	1–3 years	0.5	0.5	6	3.5	0.5	8	150	0.9	35
	4–8 years	0.6	0.6	8	4.0	0.6	12	200	1.2	35
Boys	9–13 years	0.9	0.9	12	5	1.0	20	300	1.8	40
	14–18 years	1.2	1.3	16	6	1.3	30	400	2.4	40
Girls	9–13 years	0.9	0.9	12	4	1.0	20	300	1.8	40
	14–18 years	1.1	1.1	14	4	1.2	25	400	2.4	40
Men	> 18 years	1.2	1.3–1.6[b]	16	6	1.3–1.7[d]	30	400	2.4	45
Women	> 18 years	1.1	1.1–1.3[c]	14	4	1.3–1.5[e]	25	400	2.4	45
	Pregnant	1.4	1.4	18	5	1.9	30	600	2.6	60
	Breastfeeding	1.4	1.6	17	6	2.0	35	500	2.8	85

a Adequate intakes (AI), based on milk concentrations in healthy women and average volumes breastfed

b RDI for men aged 19–70 years is 1.3 mg and > 70 years is 1.6 mg

c RDI for women aged 19–70 years is 1.1 mg and > 70 years is 1.3 mg

d RDI for men aged 19–50 years is 1.3 mg and for men aged > 50 years is 1.7 mg

e RDI for women aged 19–50 years is 1.3 mg and > 50 years is 1.5 mg

µg – micrograms

National Health and Medical Research Council, Australian Government Department of Health and Ageing, New Zealand Ministry of Health 2006 Nutrient Reference Values for Australia and New Zealand. Canberra, ACT.

TABLE 31-11 Recommended dietary intakes: minerals

Group/Age		Calcium (mg)	Iodine (mg)	Iron (mg)	Magnesium (mg)	Phosphorus (mg)	Potassium (mg)*	Sodium (mg)*	Zinc (mg)
Infants[a]	0–6 months	210	90	0.2	30	100	400	120	2
	7–12 months	270	110	11	75	275	700	170	3
Children	1–3 years	500	90	9	80	460	2000	200–400	3
	4–8 years	700	90	10	130	500	2300	300–600	4
Boys	9–13 years	1000–1300[b]	120	8	240	1250	3000	400–800	6
	14–18 years	1300	150	11	410	1250	3600	460–920	13
Girls	9–13 years	1000–1300[b]	120	8	240	1250	2500	400–800	6
	14–18 years	1300	150	15	360	1250	2600	460–920	7
Men	> 18 years	1000–1300c	150	8	400–420[f]	1000	3800	460–920	14
Women	> 18 years	1000–1300[d]	150	8–18[e]	310–320[g]	1000	2800	460–920	8
	Pregnant	1000	220	27	350–360[h]	1000	2800	460–920	11
	Breastfeeding	1000	270	9	310–320[g]	1000	3200	460–920	12

*Adequate intake (AI)

a Adequate intakes (AI), based on milk concentrations in healthy women and average volumes breastfed

b RDI for boys and girls aged: 9–11 years is 1000 mg, 12–13 years is 1300 mg

c RDI for men aged 19–70 years is 1000 mg, > 70 years is 1300 mg

d RDI for women aged 19–50 years is 1000 mg, > 50 years is 1300 mg

e RDI for women aged 19–50 years is 18 mg, > 50 years is 8 mg

f RDI for men aged 19–30 years is 400 mg and for men aged 31–50 is 420 mg

g RDI for women aged 19–30 years is 310 mg, > 31years is 320 mg

h RDI for women aged 19–30 years is 350 mg, 31–50 years is 360 mg

National Health and Medical Research Council, Australian Government Department of Health and Ageing, New Zealand Ministry of Health 2006 Nutrient Reference Values for Australia and New Zealand. Canberra, ACT.

BOX 31-2 General dietary guidelines

- To achieve and maintain a healthy weight, be physically active and choose amounts of nutritious foods and drinks to meet your energy needs
- Enjoy a wide variety of nutritious foods from the five food groups every day
- Limit intake of foods containing saturated fat, added salt, added sugars and alcohol
- Encourage, support and promote breastfeeding
- Care for your food; prepare and store it safely

National Health and Medical Research Council (NHMRC) 2013 Australian Dietary Guidelines. Canberra.

groups of individuals, based on age, gender, activity etc using the best available evidence. The number of serves within each food group for individuals based on age and gender are shown in Table 31-12. Definitions of what constitutes a serve for each food group follow.

A serve of grains/cereals is around 500 kJ and is equivalent to:

- 1 slice of bread, ½ a medium roll or flat bread (40 g)
- ½ cup cooked rice, pasta, noodles or other grains (75–120 g)
- ½ cup cooked porridge (120 g), ⅔ cup wheat cereal flakes (30 g) or ¼ cup muesli (30 g)
- 1 crumpet (60 g) or 1 small English muffin or scone (35 g)
- 3 crispbreads (35 g) or ¼ cup flour (30 g)

A serve of vegetables or legumes is around 100–350 kJ and is equivalent to:

- ½ cup (75 g) cooked vegetables (i.e. carrots, broccoli, cauliflower)
- ½ cup (75 g) cooked dried or canned legumes (e.g. beans, chickpeas or lentils)
- 1 cup (75 g) raw green leafy vegetables
- 75 g starchy vegetables (e.g. ½ medium potato, or equivalent of sweet potato or corn)
- 75 g other vegetables (e.g. 1 medium tomato)



To eat a healthy diet:

1. Eat enough food from each of the five food groups every day.
2. Choose different varieties of foods from within each of the five food groups from day to day, week to week and at different times of the year.
3. Eat:
   - plenty of plant foods (bread, cereal, rice, pasta, noodles, vegetables, legumes and fruit)
   - moderate amounts of animal foods (milk, yoghurt, cheese, meat, fish, poultry, eggs) in the proportions shown in the *Guide*
   - small amounts of the extra foods, and margarines and oils.
4. Drink plenty of water.

The five food groups are:
- bread, cereals, rice, pasta, noodles
- vegetables, legumes
- fruit
- milk, yoghurt, cheese
- meat, fish, poultry, eggs, nuts, legumes.

These foods provide the important nutrients the body needs.

Figure 31-2 Australian Guide to Health Eating.

National Health and Medical Research Council.

A serve of fruit is around 100–350 kJ and is equivalent to:
- 1 piece (150 g) of medium-sized fruit (e.g. apple, banana, orange, pear)
- 2 pieces (150 g) of small fruit (e.g. apricot, kiwi fruit, plum)
- 1 cup (150 g) diced, cooked or canned fruit
- ½ cup (125 mL) 100% fruit juice
- 30 g dried fruit (only to be substituted for fresh fruit occasionally)

A serve of protein foods is around 500–600 kJ and is equivalent to:
- 65 g cooked lean red meat, ½ cup lean mince, 2 small chops or 2 slices roast meat
- 80 g cooked poultry
- 100 g cooked fish or 1 small can of fish
- 2 large eggs (120 g)
- 1 cup (150 g) cooked dried or canned legumes (e.g. beans, chickpeas or lentils)
- 170 g tofu
- 30 g nuts or seeds or nut/seed paste

A serve of dairy is around 500–600 kJ and is equivalent to:
- 1 cup (250 mL) milk or ½ cup (120 mL) evaporated unsweetened milk
- ¾ cup (200 g) yoghurt
- 2 slices (40 g) hard cheese (e.g. cheddar) or ½ cup (120 g) ricotta cheese
- 1 cup (250 mL) soy, rice or other cereal drink with added calcium

TABLE 31-12 Recommended average daily food groups and servings

Group/age		Grains (cereals)	Vegetables & legumes	Fruit	Dairy[a]	Protein[b]	Extras[c]
Children	2–3 years	4	2.5	1	1.5	1	1–2
	4–8 years	4	4.5	1.5	1.5–2[d]	1.5	1–2
	9–11 years	4–5[d]	5	2	2.5–3[e]	2.5	1–3
	12–13 years	5–6[d]	5–5.5[d]	2	3.5	2.5	
	14–18 years	7	5–5.5[d]	2	3.5	2.5	
Men	19–50 years	6	6	2	2.5	3	0–3
	51–70	6	5.5	2	2.5	2.5	0–2.5
	> 70 years	4.5	5	2	3.5	2.5	
Women	19–50 years	6	5	2	2.5	2.5	0–2.5
	51–70 years	4	5	2	4	2	0–2
	> 70 years	3	5	2	4	2	0–2.5
	Pregnant	8.5	5	2	2.5	3.5	0–2.5
	Breastfeeding	9	7.5	2	2.5	2.5	

a Includes milk, yoghurt, cheese and/or alternatives (mostly reduced fat recommended)

b Includes lean meats, poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans

c Includes high energy, low nutrient foods such as biscuits, cake, confectionary, crisps, fats (butter, oil, cream), pastries, processed meats, soft drinks, etc

d Upper end of range for boys, lower end of range for girls

e Upper end of range for girls, lower end of range for boys

National Health and Medical Research Council (NHMRC) 2013 Australian Dietary Guidelines. Canberra.

Food labels

In Australia and New Zealand, food labelling is mandatory and is controlled by Food Standards Australia New Zealand (FSANZ). Information provided on a food label must be accurate and in a standard format, helping consumers to understand the food's origin, ingredients and nutritional content. Most foods in Australia require country of origin labelling, which may relate to where the food was made, produced or grown; or where the food was manufactured or packaged (which may contain a mix of local and/or imported ingredients). The label must show all the ingredients contained in the food, arranged in descending order of content (by weight). Food colours and preservatives must be identified by reference to the International Numbering System for food additives (Food Standards Australia New Zealand 2015). The nutrition information panel must state the normal serving size and express the nutritional information per serve and per 100 g of the food. This usually includes the energy (kJ), protein, fat (including saturated fat), carbohydrate (including sugar) and sodium content of the food. Other nutrients, such as fibre, vitamins and minerals, may also be reported. If the food packaging makes a claim about the food (i.e. 'source of fibre'), the fibre content of the food must be reported. Vitamins and minerals may also be expressed as a percentage of the RDI. Figure 31-3 shows an example of a nutrition information panel.

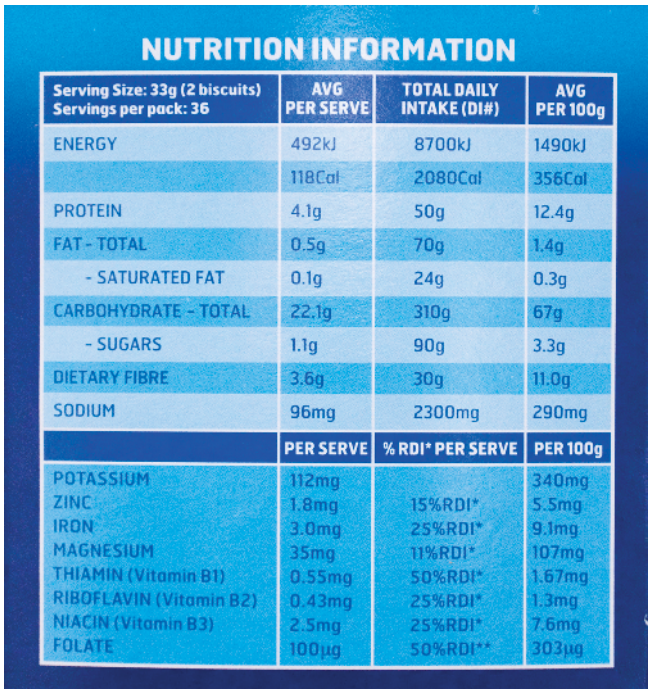


Figure 31-3 Nutrition information panel.

National Measurement Institute.

Nutrition during the life cycle

Infants

Infancy is marked by rapid growth and high nutrient requirements. The average birthweight of an Australian baby is 3370 g (ABS 2007), which doubles by 6 months and increases by 2.5 times by 1 year (NHMRC 2012). Normal weight gain is between 150–200 g per week for the first 3 months; 100–150 g per week from 3–6 months; and 70–90 g per week from 6–12 months. Adequate nutrition during infancy is vital for optimal growth and development. The *NHMRC Infant Feeding Guidelines* contain information for health workers to guide practice when educating or supporting families around infant feeding (NHMRC 2012).

Breastfeeding

Breastfeeding is recognised as the safest, most effective and best source of nutrition for babies. The World Health Organization (2011) states that 'breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants' and to 'encourage, support and promote breastfeeding' is one of the *Australian Dietary Guidelines*. There are many benefits of breastfeeding for both the infant and mother (see Table 31-13).

Australian and New Zealand guidelines recommend exclusive breastfeeding for the first 6 months of age. Introduction of solids is recommended at 6 months, with continued breastfeeding to up to 12 months of age. While initiation rates of breastfeeding are high in Australia (over 90%), rates decline to around 50% at 6 months and 25% at 12 months (NHMRC 2012). Similarly, in New Zealand, breastfeeding rates at six weeks are 86% but decline to 66% by 6 months (Plunket 2015). The *Australian National Breastfeeding Strategy 2010–2015* was developed by the Australian Government as a framework to protect, promote and support breastfeeding (Australian Health Ministers' Conference 2009). That is, mothers should be protected and enabled to breastfeed anywhere with confidence and safety and without harassment; breastfeeding should be promoted through education and social marketing; and mothers should be supported in the initiation and maintenance of breastfeeding. In addition, non-government organisations such as the Australian Breastfeeding Association and the New Zealand Breastfeeding Authority provide information and support for breastfeeding mothers (see *Online resources*) and many hospitals now have nurse lactation consultants to support mothers in successful breastfeeding.

There are few contraindications to breastfeeding; even when the mother is a smoker, has a moderate alcohol intake

WORKING WITH DIVERSITY

Focus on breastfeeding

Breastfeeding is recommended solely for the first 6 months of life and encouraged to be continued for 2 years. There are different cultural beliefs about breastfeeding. In a study of over 120 cultures more than half of infants were not breastfed for the first 48 hours because it was believed that colostrum was 'dirty' or 'not real milk'. The reluctance to breastfeed in the first 48 hours is not necessarily a contraindication to further successful breastfeeding.

TABLE 31-13 Benefits of breastfeeding

Infant	Mother
Breast milk: • provides optimal nutrition and is uniquely formulated to adapt to baby's needs • nutrients are easily digested and absorbed • contains important substances for infant's immune system development • is hygienic and readily available Breastfeeding results in: • improved visual, psychomotor and cognitive development • protection against allergies, asthma and infections (gastrointestinal, respiratory and urinary tract) • reduces risks of reflux, sudden infant death syndrome (SIDS) and some childhood cancers • reduces risk of chronic diseases later in life, including obesity, diabetes, cardiovascular disease, bowel disease	Breastfeeding is associated with decreased risks of: • ovarian and breast cancer • type 2 diabetes • postpartum haemorrhage Breastfeeding: • prolongs amenorrhea and hence results in improved fertility control and iron status • may help mothers return to pre-pregnancy bodyweight • has economic benefits, being the most cost-effective and time efficient way of feeding an infant

National Health and Medical Research Council (NHMRC) 2012 Infant feeding guidelines: information for health workers. Eat for Health. Canberra, ACT.

or takes prescription medications, breastfeeding is still usually considered the best option. However, caution should be taken in these instances and smoking and drinking should be minimised. An appropriate health professional should also individually assess the safety of prescription medications in breastfeeding. Infection with hepatitis C, human immunodeficiency virus (HIV) or cytomegalovirus (CMV) are true contraindications to breastfeeding, as these viruses have been isolated in breast milk, increasing the chance of infectious transmission to the infant.

Infant formula

According to the *Australian Infant Feeding Guidelines*, health professionals must always promote breastfeeding first, given the known benefits to both mother and infant. However, if a mother is unable to breastfeed or makes an informed decision not to breastfeed, this should be respected, and education and support around the use of infant formula should be provided. Infant formulas are designed to contain the approximate nutrient composition of human milk. While formula is considered to contain adequate nutrients for infants, it lacks many components of human milk such as living cells, enzymes and bioactive substances. Protein in formula is usually provided as casein or whey, but soy-based formulas are also available. Cow's milk should not be used as infant formula in the first year of life as it may cause GI bleeding or kidney damage.

Health professionals can educate parents on the safe preparation of infant formula, including using safe/clean water for mixing; using an accurate ratio of formula to water; sterilisation of equipment; hygiene in preparation; and effective refrigeration and storage. Other factors to consider are teats and flow rates and how much formula to give an infant at each feed and over each day. Specific information for health workers around these issues is detailed in *Australia's Infant Feeding Guidelines: Information for Health Workers* (NHMRC 2012).

Introduction to solid food

The NHMRC's *Infant Feeding Guidelines* (NHMRC 2012) recommend the following:

- Solids (of appropriate texture and consistency for infant's developmental stage) should be introduced from around 6 months. This includes cooked cereals (i.e. rice, oats), cooked, mashed vegetables and pureed meats from around 6 months; and the introduction of cooked or raw vegetables, fruits, eggs, cereals, bread, pasta, cheese, custards and yoghurts up to 12 months.
- Early on, foods should be iron-rich (such as iron-fortified cereals; pureed meats, poultry and fish; or cooked tofu and legumes) and the variety and quantity of foods should be increased over time, so that by 12 months the infant is consuming a wide range of family foods including vegetables, fruits, and dairy products (such as full-fat yoghurt, cheese and custard).
- Breast milk or infant formula should be continued until 12 months old, alongside solids, and other drinks (except cooled, boiled tap water) should be avoided during the first 12 months.

The introduction of solids at 6 months is based on evidence suggesting that at this age, appetite and requirements are not met with breast milk or infant formula alone and developmentally, infants are able to bite, chew and digest more complex nutrients. Despite these guidelines, research shows that the introduction of solids tends to occur early in Australia, with the median age for introducing solids being 4.7 months (AIHW 2011). Introducing solids too early or too late can be detrimental to nutritional status, growth and development, and risk of allergies. A wide range of foods from the five food groups (cereals/grains, vegetables, fruits, dairy/alternatives and meat/alternatives) should be offered on a regular basis by the age of 12 months. However, some foods should be avoided due to choking risk (e.g. nuts or other hard, small foods) or other risks (e.g. honey should not be fed to infants less than 12 months in order to prevent botulism from spores contained in some honey). In addition, cow's milk should not be given as a main drink to infants under 12 months due to the high renal solute load and risk of iron deficiency.

Toddlers and preschoolers

From around 12 months of age, toddlers should be eating a variety of family foods as per the *Australian Dietary Guidelines*. From this age, water and pasteurised full-cream milk are recommended as drinks, and complementary milks or formulas are not required for healthy children. However, mothers are encouraged to breastfeed as often as the child requires and the mother is able to maximise the benefits of breastfeeding for the infant up to 24 months of age. While cow's milk is an excellent source of protein, calcium and other nutrients and is recommended as a drink from 12 months of age onwards, it can impede iron absorption and may displace other foods; hence, too much milk can lead to iron deficiency in toddlers. For this reason, milk should be limited to 500 mL per day and iron-fortified foods and meats, poultry and fish (or iron-rich alternatives) should continue to be offered regularly. Consumption of low nutrient, energy dense foods such as cakes, biscuits, confectionary and potato chips should be avoided or limited. In addition, whole nuts and similar hard foods that may be a choking hazard should be avoided

until three years of age. See Table 31-8 for a summary of recommended dietary intakes for young children.

School-age children and adolescents

Children and adolescents require adequate nutrition for normal growth and development (see Chapters 16 and 17). Relative to their bodyweight, children have higher energy and nutrient requirements than adults, and need to be in a positive energy balance in order to grow. Growth rate is rapid up until around the age of 5, after which it becomes slower and steadier. Requirements for specific nutrients are shown in Tables 31-7 to 31-11 and for food groups in Table 31-12. Childhood and adolescence is an integral time to establish eating behaviours that may persist throughout the child's life. Therefore, education around nutrition and modelling of healthy eating behaviours are extremely important for the development of good nutrition practices for life. Parents have a significant influence on their child's diet through food access (i.e. foods that are provided at home); parents' food and nutrition beliefs, perceptions and values; and their own dietary behaviours. Both over- and under-nutrition are serious problems that can occur among children and adolescents as a result of poor dietary intakes.

In Australia, 21–25% of children and adolescents are overweight or obese (ABS 2009). In New Zealand, 23% of children aged 2–14 years are overweight and a further 10% are obese (Ministry of Health 2014). Over the past 20 years this number has significantly increased and is causing major implications for individuals, healthcare systems and economies in terms of chronic disease burden and mortality. Overweight children and adolescents are more likely to develop sleep apnoea, breathlessness and reduced exercise tolerance, hypertension, hyperinsulinaemia, hypertriglyceridaemia and type 2 diabetes. Importantly, overweight children are more likely to be overweight or obese in adult life, increasing their risks of a number of chronic diseases and premature death. Besides over-nutrition syndromes (i.e. overweight and obesity), under-nutrition (also called failure to thrive) is a problem in this age group, with 2–5% of Australian children and adolescents remaining underweight. This is often due to socioeconomic factors, but can also be caused by dietary restriction or unhealthy eating behaviours. Purposeful and severe dietary restriction with associated weight loss may be an indication of an eating disorder, which can occur among adolescents.

Young and middle-aged adults

Once growth is complete, adult energy and nutrient needs plateau. During this stage of life, nutrition is important for the maintenance and repair of body tissues and functions. Instances where nutrition needs are higher include increased physical activity, pregnancy, lactation, illness or injury.

The most common nutritional disorder among adults is overweight and obesity. Australian data showed that in 2007–08, 2% of adults were underweight; 37% were healthy weight; 37% were overweight; and 25% were obese (ABS 2009). Overweight and obesity are associated with increased risks of a number of chronic diseases such as type 2 diabetes, cardiovascular diseases, some cancers, respiratory and musculoskeletal conditions, reproductive and gastrointestinal disorders and mental illness, many of which are preventable and some of which are partially reversible with weight loss and healthy eating (NHMRC 2013). Adults should focus on achieving a nutritious diet and being physically active, in line with the *Australian Guide to Healthy Eating*.

Pregnancy

Nutrition during pregnancy is extremely important to ensure the adequate growth and normal development of the fetus. Poor nutrition can cause low birthweight and decreased chances of survival in infants. Generally, the fetus's needs are met at the expense of the mother; however, if nutrients are not available, both can be affected. Appropriate and steady maternal weight gain is important for the short- and long-term health of the mother and infant. For a healthy weight woman, recommended weight gain during pregnancy is between 11–16 kg. Underweight women need to gain more weight (12–18 kg) and overweight or obese women need to gain less weight (7–12 kg and 5–9 kg, respectively). Insufficient weight gain can increase the risk of low birthweight and too much weight gain can increase risks of gestational diabetes for the mother and obesity and metabolic syndrome for the infant later in life.

Requirements for energy and most nutrients and food groups are increased during pregnancy (see Tables 31-8 to 31-12). Energy/macronutrient requirements increase from the second trimester onwards, where there is a significant increase in bodyweight. During second and third trimesters, women need an additional 1400 kJ and 1900 kJ per day, respectively. Fluid needs are increased by around 300 mL per day, due to higher extracellular fluid space, amniotic fluid and fetal needs. Fat-soluble vitamin requirements are not increased, except vitamin A (minimally); but note that overconsumption of vitamin A during pregnancy can lead to birth defects. Most water-soluble vitamin requirements are increased during pregnancy based on maternal and fetal growth and increased energy use. Folate is a particularly important

nutrient before and during pregnancy as insufficiency during the first trimester can cause neural tube defects. As the neural tube is formed before most women are aware they are pregnant, ideally folate should be supplemented prior to conception and during the first trimester. Some mineral requirements are increased, such as iron for increased maternal and fetal blood volumes and to build iron stores for blood loss during delivery, iodine for thyroid activity, and zinc for increased tissue mass. While calcium is very important, especially during the third trimester when fetal bones are mineralised, calcium requirements are not increased as calcium absorption is increased during pregnancy.

Lactation

Similar to pregnancy, energy and nutrient requirements are higher during lactation. A breastfeeding mother needs an additional 2000–2100 kJ per day for milk production, provided by increased macronutrient intake (i.e. protein, carbohydrate and fat, all of which are also components of breast milk). Most vitamins and many minerals are needed in higher amounts (see Tables 31-9 to 31-11) due to their secretion in breast milk and many of the B vitamins are also needed for energy production during lactation. Fluid intake must be sufficient to replace fluid lost during breastfeeding (average water loss ~700 mL per day).

Older adults

Older adults face different nutritional challenges to other age groups. Generally, metabolic rate slows with age, so energy requirements are decreased from around 70 years. However, after this age, protein requirements are increased and vitamin and mineral requirements remain unchanged from adulthood. Older adults need more protein in order to maintain muscle mass and prevent *sarcopenia*, the gradual loss of skeletal muscle that occurs from around 50 years of age. Older adults are also at risk of protein energy malnutrition, due to a complex mix of personal, environmental and social factors (see *Working with diversity*). Prevention or correction of malnutrition in this age group is vital to optimise mobility and function and to avoid complications, such as skin breakdown, impaired immunity and poor healing and recovery from illness (see Chapter 18).

In the hospital setting, a person- and family-centred approach to nutrition care is important to ensure patients' nutritional goals, barriers or enablers to eating adequately, dietary needs or restrictions, and food preferences are considered in the patient's overall nutrition plan.

• CRITICAL REFLECTION POINT

Nurses play an important role in assisting older adults to maintain nutrition while in hospital. Lack of mobility, decreased vision, confusion and lack of dexterity can mean that some older adults may find it difficult to manage independently at mealtimes. Ensuring trays are within reach and packaging is opened assists patients to access and consume their meals. Adequate staffing during mealtimes can also help promote the intake of nutritionally at-risk patients, as some may need assistance to eat.

Alternative food patterns

Long before dietary guidelines were developed, people, groups and communities have followed special patterns of

WORKING WITH DIVERSITY

Focus on older adults

Factors affecting dietary intake	Underlying causes
Physical and physiological factors	
Poor appetite (anorexia)	Age, disease, drugs/treatments, stress, pain, physical inactivity
Loss of taste / taste changes	Age, disease, drugs/treatments
Chewing or swallowing problems	Dry mouth (xerostomia), oral conditions, poor dentition, respiratory problems, swallowing disorders
Depression or anxiety	Chronic illness, loss of a spouse, social isolation
Eating problems	Cognitive function, getting food to mouth, neurodegenerative disorders
Decreased nutrient absorption	Decreased function of gastrointestinal system
Social factors	
Poor food access	Decreased independence/function (i.e. affecting ability to cook and shop), inadequate income to purchase food, social isolation
Poor food choices	Inability to read/understand nutrition labels, lack of nutrition knowledge, institutionalisation

WORKING WITH DIVERSITY

Focus on cultural care

Religious dietary requirements

Christianity

Minimal or no alcohol

Holy day observances may restrict meat

Hinduism

No meats

Islam

No pork

No alcohol

No caffeine

Ramadan fasting sunrise to sunset for month

Ritualised methods of animal slaughter required for meat ingestion (halal)

Judaism

No pork

No predatory fowl

No shellfish (eat only fish with scales)

No rare meats

No blood (blood sausage, etc)

No mixing of milk or dairy products with meat dishes

Must adhere to kosher food preparation methods

24 hours of fasting on Yom Kippur, a day of atonement

No leavened bread eaten during Passover (8 days)

No cooking on the Sabbath (Saturday)

food intake based on religion, cultural background, ethics, health or environmental beliefs, or personal preference (see *Working with diversity*). Alternative diets are not necessarily more or less nutritious than diets based on standard nutritional guidelines as good nutrition depends on a balanced intake of all required nutrients. However, caution must be taken when following some alternative food patterns. In recent years many 'fad diets' have emerged, some of which may actually be detrimental to health, particularly among patients with underlying health conditions. Some common alternative food patterns are described below.

Vegetarianism is the consumption of a diet without meat (i.e. red meat, poultry, seafood and any other animal flesh). This food pattern may be chosen due to religious beliefs, concerns with animal rights or other personal reasons. There are a number of different types of vegetarianism, including ovolacto-vegetarian (eats eggs and dairy but avoids meat, fish and poultry), ovo-vegetarian (eats eggs but not dairy), lacto-vegetarian (eats dairy but not eggs) and vegan (excludes all animal products including eggs, dairy and honey). As long as adequate meat and dairy alternatives are consumed, vegetarian diets are usually adequate to meet most people's nutrient requirements. One exception is the vegan diet, which contains no vitamin B_{12} (as this is only available from animal sources), so this vitamin must be supplemented.

Complementary therapies are increasingly accepted as adjuncts to Western medicine, and many involve nutrition. There is limited research on the use of complementary therapies and while most seem relatively harmless, others may interact with medical treatments. For this reason, patients wishing to try complementary therapies are

WORKING WITH DIVERSITY

Focus on cultural care

Lactose intolerance

The incidence of lactose intolerance around the world occurs from highest to lowest in the following ethnic or racial groups: Asian-Pacific, African, Mexican, Middle Eastern, followed by white Caucasian. This condition affects nutrient absorption, and calcium deficiency results. Calcium is necessary for maintaining bone mass density. Alternative sources of calcium with low lactose are aged cheddar or Swiss cheese, green leafy vegetables, legumes, tofu, sardines, nuts and low-lactose milk products.

'Hot' and 'cold' foods

The theory of hot and cold foods predominates in many cultures. The origin appears to be from Hippocratic beliefs concerning health and the four humours. Arabs were keepers of this knowledge during the Dark Ages and later influenced the Spanish to adopt this belief system in the later Middle Ages. The foundation is keeping harmony with nature by balancing 'cold', 'hot', 'wet' and 'dry'. Some cultures may plan their meals based on these beliefs. Food classification as hot or cold varies slightly from one culture to another.

Classification has nothing to do with spiciness, but is a symbolic representation of temperature. Hot foods include rice, grain, cereals, alcohol, beef, lamb, chillies, chocolate, cheese, temperate-zone fruits, eggs, peas, goat's milk, oils, onions, pork and radishes. In contrast, cold foods encompass beans, citrus fruits, tropical fruits, dairy products, most vegetables, honey, raisins, chicken, fish and goat. Foods can be made hot or cold through methods of preparation. A blending of hot and cold balances food. Menstruation, cancer, pneumonia, earache, colds, paralysis, headache and rheumatism are cold illnesses requiring hot foods. Pregnancy, fever, infections, diarrhoea, rashes, ulcers, liver problems, constipation, kidney problems and sore throats are believed to be hot conditions; thus cold foods may be eaten during these times.

Reference

Modified from Giger J, Davidhizar R 2008 Transcultural nursing: assessment and intervention, 5th edn. Mosby, St Louis.

advised to discuss this with their healthcare professional or team. Oncology is an area where complementary therapies and diets are particularly prevalent; and their popularity is increasing due to media coverage of individuals who self-proclaim being 'cured' using such therapies. A major problem with some 'cancer' diets is that they suggest consumption of raw fruits and vegetables only, which can result in severe protein energy malnutrition due to poor energy and macronutrient intake. Caution must be taken when considering following a complementary diet to ensure that it is nutritionally adequate for the individual and especially for those experiencing major illness. More information on complementary therapies in cancer can be found in *Online resources*.

So-called 'fad' diets are becoming increasingly popular in today's society due to their promise of a 'quick fix' and endorsement by high-profile celebrities or other individuals who claim extreme health benefits. Fad diets are usually not based on evidence from scientific research and often contain nutrition misinformation. Any diet that makes dramatic health statements (i.e. claims to cure disease, improve bodily function or result in fast weight loss), recommends omission of whole food groups, or requires purchase of additional dietary supplements, should be considered with extreme caution.

Recently we have seen the emergence of numerous so-called 'nutrition experts' who write books, develop diets or make health claims, usually with little or no formal nutrition education or training. Dietary advice should always be sought from a nutrition expert such as an accredited practising dietitian or nutritionist, or other qualified health professionals.

Alcohol

Alcoholic beverages are consumed on a regular basis by 42% of adult men and 24% of adult women in Australia. Alcohol contributes approximately 5% of the energy intake of adult Australians. The consumption of alcohol declines with age, as does the safe limit of consumption. Ethyl alcohol is a nutrient, but is also a drug affecting the brain, and if consumed in amounts above the recommendations in the NHMRC's *Australian guidelines to reduce health risks from drinking alcohol*, becomes a toxin to many organs in the body. As well, alcohol can be morbidly or even mortally incompatible with many medications and over-the-counter drugs. The effects of alcohol on the brain combined with the toxic effects make it responsible for 1 death in every 34 in Australia (Lobo et al 2010). Alcohol may have health benefits if consumed in small amounts (1–2 standard drinks/day on most days), but the evidence remains contradictory.



CLINICAL REASONING PROCESS

Nurses are in an excellent position to recognise signs of poor nutrition, prevent hospital-acquired malnutrition and take steps to promote optimal nutrition intake. In collaboration with patients and their families, nurses are able to observe changes in physical status, food intake, weight changes and response to therapy. As malnutrition is a common problem in the hospital setting, affecting 20–50% of all patients and resulting in significant harm to patients and a burden to healthcare systems (Barkert et al 2011), its prevention and management is extremely important.

GATHERING RELEVANT INFORMATION AND DATA

There are a number of steps involved in nutrition care: identifying patients at risk of malnutrition, optimising nutrition therapy, and monitoring nutritional outcomes, all of which are supported by a team approach to nutrition care, good communication and documentation.

Nutrition risk screening in hospital and community settings is pivotal for the identification of at-risk patients and referral to appropriate health professionals for nutrition care, such as dietitians. Validated screening tools include the Malnutrition Screening Tool (MST), Malnutrition Universal Screening Tool (MUST) and Nutrition Risk Screening (NRS) (Guaitoli et al 2014). The MST (see Box 31-3) is commonly used in Australian hospitals, and contains two simple questions. A score of two or more warrants referral to a dietitian.

Evidence-based guidelines for the management of malnutrition recommend routine nutrition screening in the acute care setting to identify malnutrition risk and initiate nutrition care. Early recognition of malnourished or at-risk patients has a strong positive influence on both short- and long-term health

BOX 31-3 Malnutrition screening tool

1. Have you/the patient lost weight in the last 6 months without trying?	
No	0
Unsure	2
Yes, how much (kg)?	
1–5	1
6–10	2
11–15	3
> 15	4
Unsure	2
2. Have you/the patient been eating poorly because of a decreased appetite?	
No	0
Yes	1
Total score	

RESEARCH HIGHLIGHT

Research focus

Malnutrition is the most common nutrition-related problem in the hospital setting, affecting up to 50% of patients and resulting in severe consequences for patients and the healthcare system. One serious complication of malnutrition is the development of pressure ulcers. The link between malnutrition and pressure ulcer development has been well established and a number of studies have investigated nutritional intervention for pressure ulcer prevention. The aim of this study was to investigate the nutritional intakes of hospitalised patients deemed 'at risk' of developing a pressure ulcer, due to reduced mobility.

Research abstract

The oral intakes of 184 patients with reduced mobility were observed by researchers over a 24-hour period by assessing the amount of each meal component consumed at each meal occasion. Total energy and protein intakes were calculated for each patient and, on average, patients consumed around 5900 kJ and 54 g of protein over 24 hours. For 93 patients, disease-specific energy and protein requirements were calculated individually and compared with energy and protein intakes. Only 45% and 53% of patients ate enough to meet ≥ 75% of their energy and protein requirements, respectively. This is concerning, as intakes of < 75% of requirements has been shown to result in weight loss during hospitalisation, an indicator for malnutrition.

As malnutrition is a risk factor for pressure ulcers, these patients (who were already at risk of developing a pressure ulcer due to restricted mobility) were placed at further risk of pressure ulcer through poor nutritional status. Furthermore, poor nutritional status is linked with reduced mobility, highlighting the complex cycle of malnutrition and its complications. Patients who consumed any amount of nutrition support during the 24-hour study period were 5 and 15 times more likely to meet ≥ 75% of their energy and protein requirements, respectively. This suggests nutrition support may be an important strategy to enable patients with reduced mobility to meet their requirements.

Evidence-based practice

- Adequate nutritional intake is important amongst all patients, but particularly amongst those at risk of pressure ulcer (i.e. with reduced mobility).
- Around half of patients with reduced mobility fail to meet ≥ 75% of their energy and protein requirements.
- Oral nutrition support is a predictor of eating adequately in terms of energy and protein and may be utilised by nurses to increase nutritional intake amongst these patients.

Reference

Roberts S, Chaboyer W, Leveritt M et al 2014 Nutritional intakes of patients at risk of pressure ulcers in the clinical setting. Nutrition 30(7):8.

outcomes. Despite this, nutrition screening practices in the community and hospital are often suboptimal (Green & James 2013, Green et al 2014).

In addition to formal nutrition screening, it is also important for the nurse to recognise those patients who might be at risk of developing malnutrition during hospitalisation or while under the care of health professionals in other settings. Decreased nutritional intake related to the presenting illness may place the patient at increased risk of malnutrition. The most common nutrition-impacting symptom among hospitalised patients is poor appetite. This can occur for a number of reasons related to the patient (age, disease, treatments) or the hospital environment (unpleasant smells, aromas, dislike of the food etc). Other common nutrition-impacting symptoms include nausea, vomiting, diarrhoea, constipation, chewing or swallowing difficulties and taste or smell changes due to illness.

Increased nutritional requirements associated with illness severity also have the potential to contribute to the development of protein-calorie malnutrition. For example, nutrition requirements are elevated during infection and sepsis and can also remain increased following recovery from critical illness (Weimann 2013). The increased risk for development of iatrogenic malnutrition highlights the need to closely monitor nutrition intake of patients who are receiving care, particularly those who are acutely unwell and require hospitalisation.

Intake of less than 75% of protein-energy requirements is associated with poorer outcomes, increased length or stay and higher healthcare costs (Feldblum, German et al 2011, Starke, Schneider et al 2011). Nurses are an important part of the multidisciplinary healthcare team and are best positioned to monitor nutrition intake for hospitalised patients. Functional problems with reaching meal trays, opening food packages, using cutlery or getting food to the mouth are also common among hospitalised patients. In addition, behavioural or cognitive problems can affect patients' intakes. It is important to: 1) individually assess patients' nutrition-impacting symptoms and any other barriers to food intake; 2) ensure they are clearly documented in nursing notes; and 3) address these issues by involving appropriate healthcare professionals (i.e. speech pathologist for chewing/swallowing difficulties; occupational therapist for functional problems with eating; doctor or pharmacist for symptoms such as nausea, vomiting, constipation, diarrhoea; or dietitian for provision of extra nutrition) and/or providing feeding assistance and encouragement to patients who are eating poorly.

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

Nutrition assessment involves evaluating a patient's nutritional status and is usually performed by a dietitian. A formal assessment is extremely important for determining whether a patient is malnourished, and if so, the extent to which the patient is malnourished. There are a number of approaches to nutrition assessment including using tools such as the Subjective Global Assessment, which assesses nutritional status based on weight loss, dietary intake, gastrointestinal symptoms, functional capacity and physical assessment of muscle and fat stores.

Clinical observations can be among the most important aspects of a nutritional assessment. Clinical indicators of nutritional status provide guidelines for observations during physical assessment. An assessment of nutrition can also be made using **anthropometry**, which is the measurement of size, weight and body composition. Other anthropometric measurements that may be used in nutrition assessment include mid-upper-arm circumference, triceps skinfold and mid-upper-arm muscle circumference; however, significant variation is likely between examiners depending on their training and equipment.

Accurate measurement of height and weight is important and height should be measured with the patient standing if possible. Alternatively, the British Association of Parenteral and Enteral Nutrition (BAPEN) ulna measurement can be used (see *Online resources*). Weight should be measured on admission and weekly thereafter. More frequent weight measurement may be required to assess fluid status, such as in patients with cardiac or renal failure. Weight is most accurately measured in the morning, before breakfast and after urinating, in light clothes or hospital gown. Patients should be weighed at the same time each day, on the same scale, with similar clothing. Height and weight are used to calculate **body mass index (BMI)**, a measure of body composition describing our weight relative to height. BMI is used to classify individuals' weight ranges (see Table 31-14) and is calculated using the equation: BMI = weight (kg) ÷ height (m^2).

Common laboratory tests used to study nutritional status include measures of plasma proteins such as albumin, prealbumin, transferrin, total iron-binding capacity and haemoglobin. While this may assist with the clinical assessment of a patient, plasma protein measures are not specific to malnutrition as plasma protein levels can be influenced by fluid balance, liver function, kidney function and the presence of disease. After feeding, the response time for changes in these proteins ranges from hours to weeks. The metabolic half-life of albumin is 21 days, of transferrin 8 days and of prealbumin 2 days; so most serum proteins are not accurate short-term indicators of serum protein status. Furthermore, serum albumin level is affected by inflammation; hydration; haemorrhage; renal or hepatic disease; high-output drainage of wounds, burns or the gut; steroids; age; and trauma, stress or surgery. Therefore, serum plasma protein measurement is not considered an accurate marker of nutritional status.

TABLE 31-14 Classification of adults according to BMI

Classification	BMI	Risk of comorbidities
Underweight	< 18.50	Low (but risk of other clinical problems increased)
Normal range	18.50–24.99	Average
Overweight:	> 25.00	
Pre-obese	25.00–29.99	Increased
Obese class 1	30.00–34.99	Moderate
Obese class 2	35.00–39.99	Severe
Obese class 3	> 40.00	Very severe

Obesity: Preventing and Managing the Global Epidemic, 2000, WHO, Geneva.

CLINICAL EXAMPLE

Thomas, aged 69, has had an elective total hip replacement. Thomas undertook preoperative preparation (including fasting) three times, as his surgery was cancelled three times due to other emergency procedures causing last minute changes to the surgical list. His medical history includes unstable angina and asthma. Thomas's admission weight was 59 kg. Five days postoperatively he now weighs 52.0 kg. His height is 174 cm.

1. What is Thomas's body mass index?
2. What is his percentage weight loss?
3. What processes could have been put in place to prevent preoperative weight loss?

• CRITICAL REFLECTION POINT

If a patient has had negligible oral intake for 5 or more days they may be at risk of developing refeeding syndrome. Refeeding syndrome is a potentially life-threatening change in serum electrolytes, which can occur after rapid refeeding (particularly of carbohydrate) in patients who are malnourished or who have had negligible intakes for 5 or more days. On resumption of oral intake, significant drops in magnesium, phosphate and potassium can occur and may be life-threatening, so must be carefully monitored and supplemented as required. Refeeding syndrome is managed by slow introduction of feeding (starting at around 4000 kJ per day).

SETTING PRIORITIES AND ESTABLISHING GOALS

Nutrition therapy and interventions

Usually, a dietitian will assess the patient's nutritional status and determine the patient's priority problem(s). Priority nutrition problems should be clearly documented in the patient's medical record so the rest of the healthcare team are aware of the patient's nutritional status or condition. With the client and members of the healthcare team, the dietitian will then set priorities and establish goals for a plan or intervention to address the patient's specific nutritional needs and underlying disease (Table 31-15). Depending on the patient's condition, intake and requirements, this may include provision of

TABLE 31-15 Nutrition therapy for specific clinical presentations

Disease	Nutrition therapy
Inflammatory bowel disease	Elemental diets, which are where the nutrients are available in their simplest form, or PN may be used for patients experiencing diarrhoea and weight loss In the chronic stage of disease a regular highly nourishing diet is appropriate Low-fibre diet is recommended during acute exacerbation of inflammatory bowel disease to reduce irritation; high-fibre diet is recommended during the chronic phase to avoid constipation
Malabsorption syndrome	For coeliac disease a gluten-free diet is necessary Short bowel syndrome results in malabsorption which requires ongoing use of elemental formulas or PN
Diverticulitis	Use a moderate or low-residual diet until the infection subsides With chronic diverticulosis a high-fibre diet is recommended
Diabetes mellitus	Type 1 diabetes requires insulin and dietary restrictions Type 2 diabetes mellitus can be controlled through exercise and diet
Cardiovascular disease	Magnesium, folic acid and vitamin B_6 appear to be important for primary prevention of coronary heart disease. Increases in folic acid are associated with a decrease in homocysteine, which is associated with greater risk of coronary artery disease Weight loss may be important to decrease cardiovascular risk
Pulmonary disease	Patients with pulmonary disease may require a high energy high protein diet to meet increased requirements associated with respiratory disease or decreased intake associated with shortness of breath or reduced appetite
Renal disease	In acute renal failure fluid management is important and fluctuates depending on the stage of renal failure. Protein is restricted to 0.8 g–1.0 g/kg/day In chronic renal failure a diet that restricts protein, potassium, phosphate, sodium and fluid is usually required until commencement of dialysis when energy and protein requirements are increased
Cancer and cancer treatment	Cancer and cancer treatment is associated with a high rate of nutrition-impacting symptoms so nutrition management focuses on maximising intake of nutrients and fluids

nutritional therapy or dietary education or counselling. Nutrition therapy may be provided orally, with oral nutrition supplement or high energy high protein foods; or may be invasive, such as enteral or parenteral nutrition (PN). Whether specific nutrition therapy is required or not, it is important for the healthcare team to consider potential drug–nutrient interactions. For example, some medications such as phenytoin need to be given on an empty stomach so drug absorption is maximised. Table 31-16 provides an overview of potential drug–nutrient interactions.

Oral nutrition support

Oral nutrition support is a non-invasive method of providing additional nutrition to patients. In the hospital setting, oral nutrition support has been shown to be effective in improving nutritional intake and associated outcomes (such as reducing risk of mortality, infections, pressure ulcers and unintentional weight loss) among patients, and is associated with fewer complications compared to invasive methods of nutrition support (Stratton & Elia 2007). Oral nutrition support consists of commercially available supplement drinks such as Sustagen, Resource (Nestlé), Ensure (Abbott) and Fortisip (Nutricia). These oral supplements are specially formulated to contain all the essential nutrients required to support life, including macronutrients, micronutrients and fluid in the correct ratios to enable patients to meet their requirements even in the absence of any dietary intake. However, the term 'supplement' means that these drinks should be used to support food intake by making up for a lack of consumption of energy or other nutrients, which may occur due to illness or disease.

Besides standard nutrition support, specialised supplements for specific dietary conditions also exist, such as Resource Diabetic, Novasource Renal and clear fluid supplements for surgical preparation. Oral nutrition support is commonly used in the hospital setting and is usually prescribed by a dietitian. Individuals may also use oral nutrition support at home to supplement their oral intake if it is inadequate. Supplements can be purchased at most pharmacies or directly from companies (some even provide delivery services) and come in ready-to-drink tetra packs or as powders that require mixing with water or milk. While barriers to oral nutrition support include flavour fatigue or dislike, generally they are well tolerated and have been found not to suppress appetite or food intake in patients (Stratton & Elia 2007).

Enteral nutrition

If swallowing function is impaired or patients are unable to take nutrition orally, **enteral nutrition** is the preferred method of meeting long-term nutritional needs if the patient's GI tract is functioning. Enteral nutrition refers to nutrition provided to patients through a feeding device inserted into the GI tract. The enteral route is mostly used when patients are unable to chew or swallow, or when oral intake is inadequate to meet nutritional goals. Enteral nutrition can be delivered continuously, intermittently or by bolus. The benefits of enteral nutrition for

TABLE 31-16 Potential drug–nutrient interactions*

Drug class	Drug	Effect
Analgesic/narcotic	Aspirin	Absorbed directly through stomach; decreased drug absorption with food; decreased folic acid, vitamins C and K and iron absorption
	Opiates	Decreased peristalsis; constipation
	Paracetamol	Decreased drug absorption with food; overdose associated with liver failure
Antacid	Aluminium hydroxide	Decreased phosphate absorption
	Sodium bicarbonate	Decreased folic acid absorption
Antiarrhythmic	Amiodarone	Taste alteration
	Digoxin	Anorexia, decreased renal clearance in older persons
	Propranolol	Increased drug absorption with food
Antiarthritic	Methotrexate	Decreased drug absorption with food, decreased folic acid
	Penicillamine	Taste alteration
Antibiotic	Amoxicillin	Decreased drug absorption with food
	Ampicillin	Taste alteration, decreased drug absorption with food
	Cephalosporin	Decreased vitamin K
	Clarithromycin	Taste alteration
	Doxycycline	Decreased drug absorption with food
	Gentamicin	Anorexia, decreased renal excretion in older persons
	Metronidazole	Anorexia
	Neomycin	Decreased fat, nitrogen, vitamin B_{12}, lactose, sucrose, sodium, potassium, iron, calcium
	Nitrofurantoin	Increased drug absorption with food
	Penicillin	Decreased drug absorption with food
	Rifampicin	Decreased vitamin B_6, niacin, vitamin D
	Tetracycline	Decreased drug absorption with milk and antacids, decreased nutrient absorption of calcium, riboflavin, vitamin C due to binding
	Trimethoprim/sulfamethoxazole	Decreased folic acid
Anticoagulant	Warfarin	Acts as antagonist to vitamin K
Anticonvulsant	Carbamazepine	Increased drug absorption with food
	Phenobarbitone	Decreased drug absorption with food, decreased vitamin D
	Phenytoin	Decreased drug absorption with food so needs to be taken on an empty stomach – enteral feeds should be discontinued before administration; decreased calcium absorption; decreased vitamins D and K and folic acid; taste alteration
	Primidone	Decreased calcium absorption, increased metabolism of vitamins D and K
Antidepressant	Amitriptyline	Appetite stimulant
	Clomipramine	Taste alteration, appetite stimulant
	Fluoxetine (selective serotonin re-uptake inhibitors [SSRIs])	Taste alteration, anorexia
Antifungal	Amphotericin B	Anorexia
	Griseofulvin	Taste alteration, enhanced absorption with food

continued

TABLE 31-16 ***continued***

Drug class	Drug	Effect
Antigout	Allopurinol	Taste alteration
	Colchicine	Decreased vitamin B_{12}, vitamin A (carotene), lactose, sodium, potassium
Antihistamine	Astemizole	Increased appetite, decreased drug absorption with food
	Cyproheptadine	Increased appetite
Antihypertensive	Atenolol	Taste alteration (weight gain for all beta-blockers)
	Captopril	Taste alteration, anorexia
	Hydralazine	Enhanced drug absorption with food, decreased vitamin B_6
	Methyldopa	Decreased vitamin B_{12}, folic acid, iron
Anti-inflammatory	All steroids	Increased appetite and weight, increased folic acid, decreased calcium (osteoporosis with long-term use), promotes gluconeogenesis of protein
	Indomethacin	Decreased iron absorption
	Sulphasalazine	Decreased folic acid
Antimanic	Lithium carbonate	Anorexia, nausea, vomiting, diarrhoea, mucositis, decreased folic acid
Antiparkinson	Levodopa	Taste alteration, decreased vitamin B_6 and drug absorption with food
Antipsychotic	Chlorpromazine	Increased appetite
	Thiothixene	Decreased riboflavin, increased need
Antituberculosis	Isoniazid	Decreased calcium, niacin, vitamins B_6 and D
Bronchodilator	Albuterol sulfate	Appetite stimulant
	Theophylline	Anorexia
Cholesterol-lowering	Cholestyramine	Decreased fat-soluble vitamins (A, D, E, K), vitamin B_{12}, iron
Diuretic	Furosemide	Decreased drug absorption with food
	Spironolactone	Increased drug absorption with food
	Thiazides	Decreased magnesium, zinc and potassium
	Triamterene	Decreased folic acid
Oestrogen/ progestin	Oral contraceptive	Decreased vitamin B_6, B_{12}, folic acid, zinc; increased transferrin
	Hormone replacement therapy (HRT)	
Laxative	Mineral oil	Decreased absorption of fat-soluble vitamins (A, D, E, K), carotene
	Phenolphthalein	Decreased calcium, potassium, vitamin D
Muscle relaxant	Baclofen	Taste alteration
	Dantrolene	Taste alteration, anorexia
Platelet aggregate inhibitor	Dipyridamole	Decreased drug absorption with food
Potassium replacement	Potassium chloride	Decreased vitamin B_{12}
Stimulant	Dexamphetamine	Taste alteration, anorexia
	Methylphenidate	Anorexia, decreased weight, decreased growth
Tranquilliser	Benzodiazepines	Increased appetite

* Not intended to be an exhaustive or all-inclusive list. Always check pharmacology references before administering medications.

those patients who require nutrition therapy are considerable. Adequate nutrition through administration of enteral nutrition can improve wound healing (Cox & Rasmussen 2014), reduce the incidence of pressure injury (Stratton et al 2005), decrease infectious complications and shorten the length of stay among certain patient groups (Elke et al 2014).

While current evidence suggests that there are only a few contraindications to enteral nutrition, traditionally there have been a number of clinical presentations where enteral nutrition has been avoided. For example, patients with bowel obstruction, severe and protracted ileus, major upper gastrointestinal bleeding, intractable vomiting or diarrhoea, severe hemodynamic instability, gastrointestinal ischemia, and a high output fistula should have enteral nutrition withheld or commenced with caution. Patients with pancreatitis are able to be fed by the enteral route (McClave et al 2006). Similarly, patients in the immediate postoperative period can receive enteral nutrition if required (Osland et al 2011), and in some patients this approach may reduce postoperative ileus (Boelens et al 2014).

Effective management of enteral nutrition by nurses is important to ensure optimal nutrition outcomes. Protocols for the delivery of enteral nutrition have been shown to improve clinical outcomes (Friesecke et al 2014); however, many feeding protocols differ in their approach. Tube feedings are typically started at full strength, but the rate at which enteral feeds are commenced differs between and within institutions (Marshall & West 2006). In some institutions, enteral feeding is commenced at lower rates and then gradually increased, while in others, enteral nutrition is commenced at the goal rate. Individual patient assessment should guide which approach is most appropriate. If enteral nutrition is commenced at lower than the goal rate, then increases in the hourly rate should be made every 4 hours until the goal rate is achieved, or as tolerated by the patient.

CLINICAL EXAMPLE

Mrs Caine is 85 years old and has been hospitalised for a urinary tract infection that resulted in sepsis. She required treatment in ICU for six days and is now recovering on the ward.

What factors place Mrs Caine at increased risk of malnutrition? What strategies can be implemented to help promote optimal nutrition and functional recovery?

While the enteral delivery of nutrition has many positive benefits to patients it is not without risks. The potential for complications requires careful assessment and monitoring of the patient (Table 31-17). During enteral feeding, gastric emptying can be assessed by regularly aspirating the feeding tube. This is typically done in acute care settings where patients are more susceptible to reduced gastric emptying. Measuring gastric aspirates does not necessarily provide a clear picture of gastric emptying and is dependent on technique, tube type and the location of the tube within the stomach. Measurement of gastric residual volume is thought to provide an estimate of feeding tolerance and identify patients who might be at risk of aspiration, although there is no evidence to suggest that high gastric residual volumes predict aspiration (Reignier et al 2013). The amount of gastric residual volume that is considered 'high' also varies from 200–500 mL.

TABLE 31-17 Complications of enteral nutrition

Problem	Possible cause	Intervention
Abdominal cramping, nausea/vomiting	High osmolality of formula Rapid increase in rate/volume Delayed gastric emptying Lactose intolerance Intestinal obstruction High-fat formula used Cold formula used	Suggest use of lactose-free formula Lower rate of delivery to increase tolerance Stop feeding with GI obstruction Use greater proportion of carbohydrate Warm formula to room temperature
Delayed gastric emptying	Diabetic gastroparesis Prematurity Serious illnesses Inactivity	Consult with doctor regarding medication for increasing gastric motility (e.g. metoclopramide or erythromycin) Monitor gastric residual volume Minimise medications that may affect GI motility Consider small bowel feeding Assess for pathological conditions that may reduce GI motility
Pulmonary aspiration	Regurgitation of formula Feeding tube displaced Patient in supine position Deficient gag reflex Gastro-oesophageal reflux disease (GORD)	Check tube placement before feeding (every 4–8 hours during continuous feeding before feeds for intermittent or bolus feeding) Elevate head of bed 30–45 degrees during feedings and for 2 hours afterwards

continued

TABLE 31-17 ***continued***

Problem	Possible cause	Intervention
Diarrhoea	Hyperosmolar formula or medications	Antibiotics may destroy normal intestinal flora and can be a primary cause of diarrhoea
	Allergy to elixir ingredients (sorbitol)	Use closed enteral nutrition bags where possible. If open bags are used, follow manufacturer's recommendations for use
	Malnutrition	Avoid bolus feeding; deliver formula continuously
	Hypoalbuminaemia	Consult pharmacist to review medications and eliminate sorbitol containing medications, if possible
	Antibiotic therapy	Monitor albumin 25 g/L lessens oncotic pressure equilibrium
	Bacterial contamination	Check for pancreatic insufficiency, use low-fat, lactose-free formula and continuous feedings
	Malabsorption	
Constipation	Lack of fibre	Select a formula containing fibre
	Lack of free water	Add water as needed*
	Medications	Evaluate side effects; suggest stool softener or bulk-forming laxative
	Inactivity	Monitor patient's mobility; collaborate with doctor for activity order or physiotherapy
Serum electrolyte imbalance	Excess GI losses	Monitor serum electrolyte levels daily
	Dehydration	Know of links with specific pathological condition
	Cirrhosis	Monitor blood glucose level in diabetics or patients receiving insulin
	Renal insufficiency	
	Congestive heart failure, oedema	
	Diabetes mellitus	
Fluid overload	Refeeding syndrome in malnutrition	Restrict fluids if necessary and use either a specialised formula or a diluted enteral formula at first
	Excess free water or diluted (hypotonic) formula	Monitor levels of serum proteins and electrolytes
		Use a more concentrated formula with fluid volume excess without risk of refeeding syndrome
Hyperosmolar dehydration	Hypertonic formula with insufficient free water	Slow rate of delivery, dilute or change to isotonic formula
Tube occlusion	Pulverised medications given per tube	Irrigate with 20 mL water before and after each medication per tube*
	Insufficient tube irrigation	Dilute crushed medications if not liquid
	Sedimentation of formula	Avoid crushed medications, if liquid available
	Reaction of incompatible medications or formula	Shake cans well before administering (read label)
		Read pharmacological information on compatibility of drugs and formula
Tube displacement	Coughing, vomiting	Replace tube and confirm placement before restarting tube feeding
	Not taped securely	With placement verification, check that tape is secure (nasoenteric)

* Check first for fluid-restricted conditions that would affect volume of water given.

Provided there are no contraindications, patients receiving enteral feeding should be positioned with the head of the bed elevated 30–45° to minimise the risk of aspiration. If gastric emptying is reduced, then prokinetic agents, such as erythromycin and metoclopramide, can be administered. Regular assessment of the patient is imperative to monitor for signs of pulmonary aspiration; however, some traditional methods such as using blue dye and testing secretions for glucose are not recommended (Maloney et al 2002).

Diarrhoea may occur in enterally fed patients and is often the reason enteral nutrition is stopped or reduced. Enteral feeding should not necessarily be considered the primary cause of diarrhoea as the underlying illness or disease, use of antibiotics, hypoalbuminaemia, use of histamine-2 receptor antagonists and contamination of enteral feeding solutions can all contribute to the development of diarrhoea.

Enteral access tubes

Enteral tube feeding is indicated when a patient is unable to ingest food or maintain an adequate oral intake, but is still able to digest and absorb nutrients through the GI tract. Feeding tubes can be inserted through the *nose* (nasogastric

or nasojejunal), *surgically* (gastrostomy or jejunostomy) or *endoscopically* (percutaneous endoscopic gastrostomy (PEG) or *jejun-ostomy* (PEJ)).

If enteral therapy is for a period of less than 4 weeks in total, nasogastric or nasojejunal feeding tubes may be used (Figure 31-4). Small-bore nasogastic feeding tubes may be used after feeding is established and if prolonged feeding is anticipated, as this is more comfortable for the patient. Surgical or endoscopically placed tubes are preferred for long-term feeding (more than 4 weeks) to reduce the discomfort of a nasal tube and to provide a more secure, reliable access. Patients with gastroparesis (decreased or absent innervation to the stomach that results in delayed gastric emptying), or with oesophageal reflux, high risk of aspiration or a history of aspiration pneumonia, require placement of enteral feeding tubes beyond the stomach into the intestine.

Skills 31-1, 31-2 and 31-3 describe the procedures for inserting a small-bore nasoenteric tube and initiating enteral feedings.

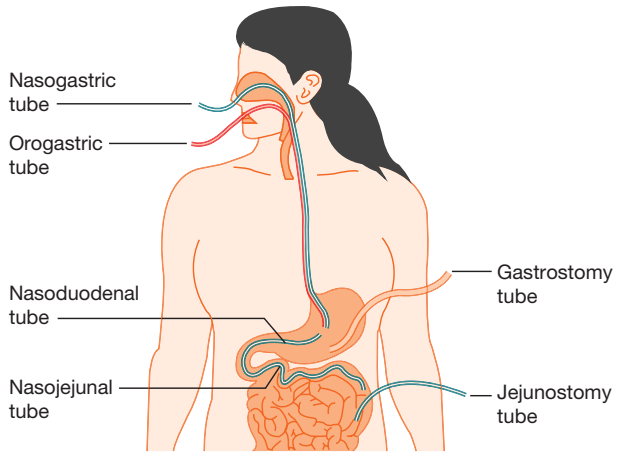


Figure 31-4 Routes of administration in enteral nutrition.

SKILL 31-1

Inserting a small-bore nasoenteric tube for enteral feedings

Delegation considerations

This task requires the problem-solving and knowledge-application skills of professional nurses. For this reason, delegation of this task to nurse assistants is inappropriate.

Equipment

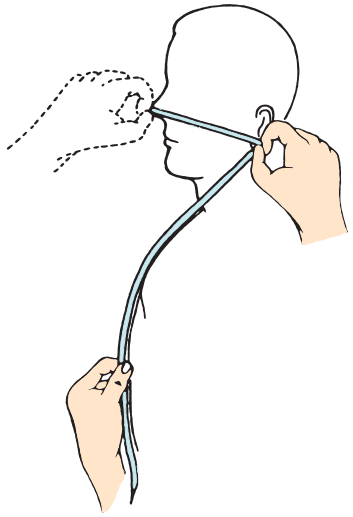
- Nasogastric or nasointestinal tube (8–12 Fr) with guide wire or stylet
- 60 mL or larger Luer-lock syringe
- Hypoallergenic tape and tincture of benzoin
- pH indicator strip
- Glass of water and straw
- Emesis basin
- Safety pin
- Rubber band
- Towel
- Facial tissues
- Clean gloves
- Suction equipment in case of aspiration
- Penlight to check placement in nasopharynx
- Tongue blade

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Assess patient for the need for enteral tube feeding: NBM or insufficient intake for more than 5 days, functional GI tract, unable to ingest sufficient nutrients.	Identifying patients who need tube feedings before they become nutritionally depleted may help to prevent complications related to malnutrition.
2. Assess patient for appropriate route of administration:	Evaluates nares for patency.

STEPS	RATIONALE
a. Close each nostril alternately, and ask patient to breathe.	Nares may be obstructed. Assessment determines which nostril to use.
b. Assess for gag reflex.	Identifies ability to swallow and risk of aspiration.
c. Inspect nares for any irritation or obstruction.	
d. Review patient's medical history for nasal problems and risk of aspiration.	Nurse may seek doctor's order to change route of nutritional support or to place tube past the stomach into the intestine if there is an increased risk of aspiration.
3. Review doctor's order for type of tube and enteral feeding schedule.	Procedure and tube feedings require a doctor's order.
4. Wash hands.	Reduces transfer of microorganisms.
5. Explain procedure to patient.	Reduces anxiety and helps patient to assist in insertion.
6. Stand on same side of bed as nostril for insertion, and help patient into high-Fowler's position unless contraindicated. Place pillow behind head and shoulders.	Allows easier manipulation of tube. Fowler's position reduces risk of aspiration and promotes effective swallowing.
7. Place bath towel over chest. Keep tissues within reach.	Prevents soiling of gown. Insertion of tube may produce tears.
8. Determine length of tube to be inserted and mark with tape: measure distance from tip of nose to earlobe to xiphoid process of sternum (see illustration).	Length approximates distance from nose to stomach in 98% of patients. For duodenal or jejunal placement, an additional 20–30 cm is required.



Step 8 Determining length of tube to be inserted.

9. Prepare nasogastric or nasointestinal tube for intubation:	
a. Plastic tubes should not be iced.	Tubes will become stiff and inflexible, causing trauma to mucous membranes.

STEPS	RATIONALE
b. Inject 10 mL of water from 30 mL or larger Luer-lock or catheter-tip syringe into the tube.	Aids in guide wire or stylet insertion.
c. Make certain that guide wire is securely positioned against weighted tip and that both Luer-lock connections are snugly fitted together.	Promotes smooth passage of tube into GI tract. Improperly positioned stylet can induce serious trauma.
10. Cut tape 10 cm long.	
11. Put on clean gloves.	Reduces transmission of microorganisms.
12. If the feeding tube is impregnated with surface lubricant, dip tube into glass of water. If there is no surface lubricant, ensure the tube is adequately lubricated before insertion.	Activates lubricant to facilitate passage of tube into nostril to GI tract.
13. Insert tube through nostril to back of throat (posterior nasopharynx). Aim back and down towards ear.	Natural contours facilitate passage of tube into GI tract; reduces gagging by patient.
14. Flex patient's head towards chest after tube has passed through nasopharynx.	Closes off glottis and reduces risk of tube entering trachea.
■ Critical decision point: Encourage patient to swallow by giving small sips of water or ice chips when possible. Advance tube as patient swallows. Rotate tube 180 degrees while inserting.	
15. Emphasise need to mouth-breathe and swallow during the procedure.	Helps facilitate passage of tube and alleviates patient's fears during the procedure.
16. Advance tube each time patient swallows until desired length has been passed. Do not force tube. If resistance is met or patient starts to cough, choke or become cyanotic, stop advancing the tube and pull tube back.	Reduces discomfort and trauma to patient.
17. Check for position of tube in back of throat with penlight and tongue blade.	Tube may be coiled, kinked or entering trachea.
18. Perform measures to verify placement of tube:	
a. Inject 30 mL of air into the tube, and aspirate GI contents with a syringe. b. Measure pH of aspirated GI contents (see illustration).	Gastric contents are usually cloudy and grassy green or tan to off-white; in contrast, intestinal fluid is usually deep golden yellow and is clearer than gastric fluid (see Figure 36-11). Fasting gastric pH is usually in a range of 1–4; gastric pH may be increased if the patient is receiving histamine-2 receptor antagonists or proton pump inhibitors. Intestinal sites usually have a pH of 7 or greater.
c. X-ray verification of placement may be necessary.	X-ray verification is considered gold standard and should be used to assess feeding tube placement except where radiography is unavailable.

STEPS	RATIONALE



Step 18b Comparing pH strip with colour chart.

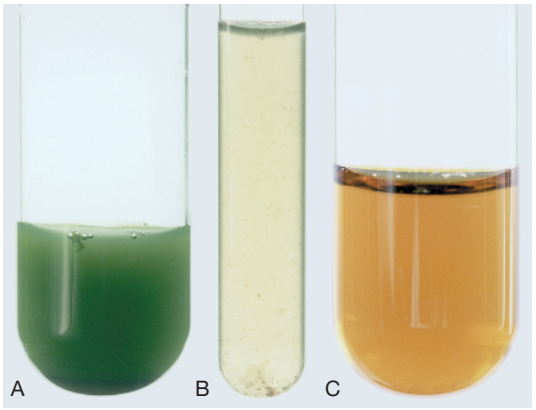


Figure 31-5 Gastric contents.
A, Stomach. B, Stomach. C, Intestinal.
Courtesy Dr Norma Metheny, St Louis University School of Nursing.

■ **Critical decision point: Auscultation is no longer considered a reliable method for verification of tube placement because a tube inadvertently placed in the lungs, pharynx or oesophagus can transmit a sound similar to that of air entering the stomach.**

19. Apply tincture of benzoin or other skin adhesive to tip of patient's nose and tube. Allow to dry.	Helps tape adhere better. Protects skin.
20. Remove gloves, and secure tube with tape, avoiding pressure on nostril.	A properly secured tube allows the patient more mobility and prevents trauma to nasal mucosa.
a. Split one end of tape lengthwise 5 cm. Place the intact end of tape over bridge of patient's nose. Wrap each of the 5 cm strips around tube as it exits nose (see illustration).	Securing tape to nares prevents tissue necrosis.
b. Fasten end of nasogastric tube to patient's gown by looping rubber band around tube in slip knot. Pin rubber band to gown (see illustration).	Reduces traction on the nostril if tube moves.



Step 20a Wrapping tape to anchor nasogastric tube.



Step 20b Pinning tube to gown.

STEPS	RATIONALE
21. For intestinal placement, position patient on right side when possible until radiological confirmation of correct placement has been verified. Otherwise, help patient into a comfortable position.	Promotes passage of the tube into the small intestine (duodenum or jejunum).

■ **Critical decision point: Leave guide wire or stylet in place until correct position is ensured by X-ray. Never attempt to reinsert partially or fully removed guide wire or stylet while feeding tube is in place.**

22. Obtain X-ray of abdomen.	Placement of tube is verified by X-ray examination.
23. Put on gloves, and administer oral hygiene. Clean tubing at nostril.	Promotes patient comfort and integrity of oral mucous membranes.
24. Remove gloves, dispose of equipment and wash hands.	Reduces transmission of microorganisms.
25. Inspect nostril and oropharynx for any irritation after insertion.	If insertion was difficult, irritation of nostril or oropharynx may have occurred.
26. Ask whether patient feels comfortable.	Evaluates patient's level of comfort.
27. Observe patient for any difficulty breathing or gagging.	Malposition of the tube may cause these symptoms.

RECORDING AND REPORTING

- Record and report type and size of tube placed, location of distal tip of tube, patient's tolerance of procedure, pH value and confirmation of tube position by X-ray.

HOME CARE CONSIDERATIONS

- Placement may be verified on the basis of pH recordings. A small amount of water may be instilled via the feeding tube while the patient is carefully observed for coughing or gagging.
- The patient and care provider should be instructed to report pH values that fall outside an established range and to report any difficulties that occur during the feeding.

SKILL 31-2

Administering enteral feeding via nasoenteric tube

Delegation considerations

This task requires the problem-solving and knowledge-application skills of professional nurses. For this reason, delegation of this task to nurse assistants is inappropriate.

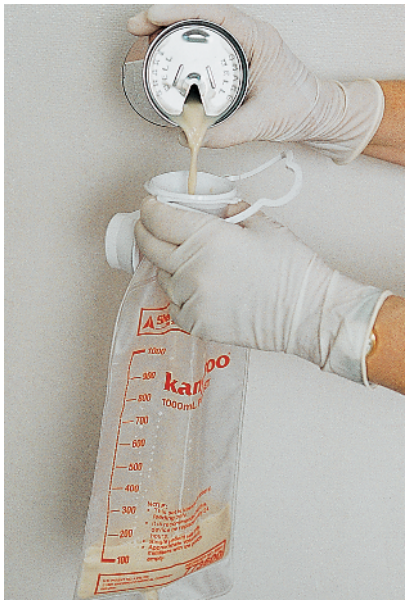
Equipment

- Disposable feeding bag and tubing or ready-to-hang system
- 30 mL or larger Luer-lock or catheter-tip syringe
- Stethoscope
- pH indicator strip
- Infusion pump (required for intestinal feedings): use pump designed for tube feedings
- Prescribed enteral feedings
- Gloves
- Equipment to obtain blood glucose by finger-stick

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

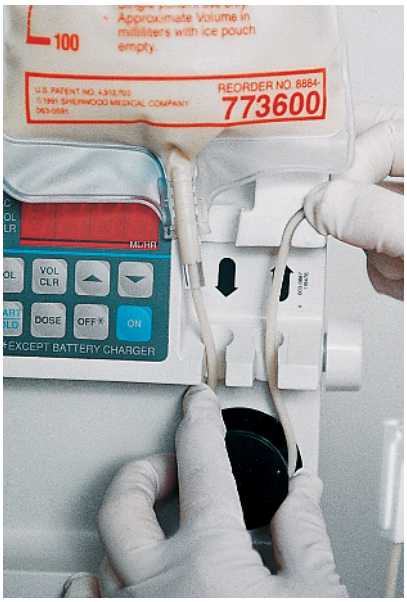
STEPS	RATIONALE
1. Assess patient's need for enteral tube feedings: impaired swallowing, decreased level of consciousness, head or neck surgery, facial trauma, surgeries of upper alimentary canal.	Identify patients who need tube feedings before they become nutritionally depleted.
2. Auscultate for bowel sounds before feeding.	Absent bowel sounds may indicate decreased ability of GI tract to digest or absorb nutrients but are not a contraindication to enteral feeding.
3. Obtain baseline weight and laboratory values. Assess patient for fluid volume excess or deficit, electrolyte abnormalities and metabolic abnormalities such as hyperglycaemia.	Enteral feedings are to restore or maintain a patient's nutritional status. Provides objective data to measure effectiveness of feedings.
4. Verify the order for formula, rate, route and frequency. Laboratory data and bedside assessments, such as finger-stick blood glucose measurement, may also be required.	Tube feedings can be prescribed by a dietitian or doctor. In some institutions feeding protocols provide guidance for nurses to commence enteral nutrition. Laboratory tests and bedside tests must be ordered by doctor.
5. Explain procedure to patient.	Well-informed patient is more cooperative and at ease.
6. Wash hands.	Reduces transmission of microorganisms.
7. Prepare feeding container to administer formula:	
a. Have tube feeding at room temperature.	Cold formula may cause gastric cramping and discomfort because the liquid is not warmed by mouth and oesophagus.
b. Connect tubing to container as needed or prepare ready-to-hang container.	Tubing must be free of contamination to prevent bacterial growth.
c. Shake formula container well, and fill container and tubing with formula (see illustration).	Filling the tubing with formula prevents excess air from entering GI tract.
8. Place patient in high-Fowler's position, or elevate head of bed 30 degrees.	Elevated head helps prevent aspiration.
9. Determine tube placement:	
a. Aspirate gastric contents to check for gastric residual (see illustration). Return aspirated contents to stomach unless the volume exceeds 250 mL.	Presence of gastric secretions indicates that the distal end of the tube is in the stomach. Residual volume indicates whether gastric emptying is delayed. Patients with delayed gastric emptying may have high gastric residual volumes (e.g. more than 400–500 mL).

STEPS	RATIONALE
 Step 7c Pouring formula into container.	 Step 9a Checking for gastric residual.
b. Measure pH of aspirated gastric contents.	Fasting gastric pH is usually equal to or less than 4. pH greater than 6 may occur if patients are receiving acid suppression or if there is undigested feed aspirated. In contrast, intestinal aspirates usually have a pH equal to or greater than 7.
c. Observe the aspirate's appearance.	Gastric fluid is usually cloudy and grassy green or tan to off-white in colour; in contrast, intestinal fluid is usually deep golden yellow and is clearer than gastric contents (see Figure 31-5).
d. Consider the results from pH testing, the aspirate's appearance and compare the insertion length of the feeding tube to what was originally verified on insertion.	An aspirate with a low pH and a typical gastric fluid colour indicates a high probability of gastric placement; in contrast, a golden-coloured aspirate with a high pH indicates a high probability of intestinal placement. Visualisation of gastric contents alone is not a reliable indicator of feeding tube position.

■ **Critical decision point: Auscultation is no longer considered a reliable method for verification of placement of tube because air in tube inadvertently placed in lungs, pharynx or oesophagus can transmit sound similar to that of air entering stomach.**

10. Initiate feeding:	
A. Bolus or intermittent feeding	
(1) Pinch proximal end of the feeding tube. (2) Remove plunger from syringe and attach barrel of syringe to end of tube.	Prevents air from entering patient's stomach.

STEPS	RATIONALE
(3) Fill syringe with measured amount of formula. Release tube and hold syringe high enough to allow it to empty gradually by gravity, refill; repeat until prescribed amount has been delivered to the patient. (4) If feeding bag is used, hang feeding bag on a pole. Fill bag with prescribed amount of formula, and allow bag to empty gradually over at least 30 minutes.	Gradual emptying of tube feeding by gravity from syringe or feeding bag reduces risk of abdominal discomfort, vomiting or diarrhoea induced by bolus or too-rapid infusion of tube feedings.
B. Continuous-drip method (1) Hang feeding bag and tubing on a pole. (2) Connect distal end of tubing to the proximal end of the feeding tube. (3) Connect tubing through infusion pump (see illustration) and set rate.	Continuous feeding method is designed to deliver prescribed hourly rate of feeding. This method reduces risk of abdominal discomfort. Patients who receive continuous drip feedings should have residuals checked every 4–6 hours and tube placement verified. When feeding is well established there is no need to monitor gastric residual volumes regularly.



Step 10B Connecting tubing through infusion pump.

11. Advance tube feeding as recommended by the dietitian or doctor.	Tube feedings can be started at goal rate for many patients. If a more conservative approach to reaching goal rate is required, discuss this with the dietitian or doctor to develop a tailored plan for the patient.
12. When feeding is complete, flush the tubing with 30 mL water. Chart the amount of water on the fluid balance chart.	Reduces the risk of sediment forming and blocking the tubing.
13. When tube feedings are not being administered, cap or clamp the proximal end of the feeding tube.	Prevents air from entering stomach between feedings.
14. Administer water via feeding tube as ordered with diluted formula.	Provides patient with source of water to help maintain fluid and electrolyte balance.

STEPS	RATIONALE
15. Rinse bag and tubing with warm water whenever feedings are interrupted for prolonged periods. Follow the manufacturer's recommendations as some feeding bags are recommended as single-use only.	Rinsing bag and tubing with warm water clears old tube feedings and reduces bacterial growth.
16. Measure amount of aspirate (residual) every 4–6 hours, if required.	Evaluates tolerance of tube feeding.
17. Monitor finger-stick blood glucose every 6 hours until maximum administration rate is reached and maintained for 24 hours. Monitor blood glucose level (BGL). Obtain medical direction for reportable BGL.	Alerts nurse to patient's tolerance of glucose.
18. Monitor intake and output every 24 hours.	Intake and output are indications of fluid balance or fluid volume excess or deficit.
19. Weigh patients weekly after admission unless otherwise indicated.	Weight gain is indicator of improved nutritional status; however, sudden gain of more than 900 g in 24 hours usually indicates fluid retention.

RECORDING AND REPORTING

- Record amount and type of feeding, patient's response to tube feeding, patency of tube and any side effects. Report patient's tolerance and adverse effects.

HOME CARE CONSIDERATIONS

- Ask patient or care provider about any symptoms or discomfort during enteral feedings. Reinforce instruction to contact nurse if symptoms or discomfort occur.

SKILL 31-3

Administering enteral feeding via gastrostomy or jejunostomy tube

Delegation considerations

This task requires the problem-solving and knowledge-application skills of professional nurses. For this reason, delegation to nurse assistants is inappropriate.

Equipment

- Disposable feeding container or ready-to-hang bag
- 30 mL or larger Luer-lock or catheter-tip syringe
- Formula
- Infusion pump: use pump designed for tube feedings
- pH indicator strips
- Stethoscope
- Gloves
- Equipment to obtain blood glucose by finger-stick

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Assess patient's need for enteral tube feedings (see Skill 31-2): impaired swallowing, decreased level of consciousness, surgeries of upper alimentary tract, need for long-term enteral nutrition.	Identifies patients who need tube feedings before they become nutritionally depleted. Enteral feeding preserves the function and mass of the gut, promotes wound healing, diminishes hypermetabolism in burn injuries and may decrease infection in critically ill patients.
2. Auscultate for bowel sounds for at least 60 seconds before feeding. Consult doctor if bowel sounds are absent.	Absence of bowel sounds may indicate decreased or absent peristalsis and increased risk of aspiration or abdominal distension. Absent or diminished bowel sounds are not absolute contraindications to enteral feeding.
3. Obtain baseline weight and laboratory values.	Enteral feedings are to restore or maintain nutritional status. Provides objective data to measure effectiveness of feedings.
4. Verify doctor or dietitian's order for formula, rate, route and frequency.	Tube feedings are ordered by doctors or dietitians and may be administered by nurses in accordance with local nutrition care protocols.
5. Explain procedure to patient.	Well-informed patient is more cooperative and feels more at ease.
6. Prepare feeding container to administer formula:	
a. Have tube feeding at room temperature.	Cold formula may cause gastric cramping and discomfort because the liquid is not warmed by mouth and oesophagus.
b. Connect tubing to container as needed, or prepare ready-to-hang bag.	Tubing must be free of contamination to prevent bacterial growth.
c. Fill container and tubing with formula.	Placement of formula through tubing prevents excess air from entering gastrointestinal tract.
7. Elevate head of bed 30–45 degrees.	Elevating patient's head helps prevent chance of aspiration.
8. Verify tube placement:	
A. Gastrostomy tube Aspirate gastric secretions; observe their appearance and check pH; return aspirated contents to stomach unless the volume exceeds 150 mL.	Gastric fluid is usually cloudy and grassy green or tan to off-white in colour; in contrast, intestinal fluid is usually deep golden yellow and more clear than gastric fluid (see Figure 31-5).
B. Jejunostomy tube Aspirate intestinal secretions, observe their appearance and check pH.	Presence of intestinal fluid indicates that the end of the tube is in the small intestine (i.e. duodenum or jejunum). Generally the intestinal residual is very small (10 mL or less). If fluid tests acidic on pH test, looks like gastric fluid or the residual volume is large (more than 10 mL), displacement of the tube into the stomach may have occurred.

STEPS	RATIONALE
9. Flush with 30 mL of water.	
10. Initiate feedings:	
A. Syringe feedings (1) Pinch proximal end of gastrostomy tube. (2) Remove plunger and attach barrel of syringe to end of tube, then fill syringe with formula. (3) Allow syringe to empty gradually. Refill until prescribed amount has been delivered to patient.	Usually gastrostomy and jejunostomy feedings are given continuously to ensure proper absorption. However, initial feedings may be given by bolus to assess patient's tolerance to formula. See Skill 31-2 for guidelines to advance enteral feedings.
B. Continuous drip method	
(1) Fill feeding container with enough formula for 4 hours of feeding. In summer, unless air-conditioning is available, this is reduced to 2-hourly to reduce the risk of contamination. (2) Hang container on a pole, and clear tubing of air. (3) Thread tubing on pump according to manufacturer's directions. (4) Connect tubing to end of feeding tube. (5) Begin infusion at prescribed rate.	
11. Following completion of feeding, flush the tube with 30 mL water. Chart additional water on fluid balance chart.	This reduces the risk of sediment forming and blocking the tube.
12. Assess skin around tube exit site. The skin around the tube should be cleaned daily with warm water and mild soap. Dressings around the exit site are not recommended.	Report any drainage, redness, swelling or displacement of the tube to the doctor.
13. Dispose of supplies, and wash hands.	Prevents transmission of microorganisms.
14. Measure the amount of aspirate (residual) every 4–6 hours, if required.	Evaluates tolerance of tube feeding.
15. Monitor finger-stick blood glucose every 6 hours until maximum administration rate is reached and maintained for 24 hours.	Alerts nurse to patient's tolerance of glucose.
16. Monitor intake and output every 24 hours.	Intake and output are indications of fluid balance or fluid volume excess.
17. Weigh patient weekly unless otherwise indicated.	Weight gain is indicator of improved nutritional status; however, a sudden gain of more than 900 g in 24 hours usually indicates fluid retention.
18. Inspect site for signs of pressure.	Enteral tubes can cause uncomfortable pressure areas on patient's nares.

RECORDING AND REPORTING

- Record amount and type of feeding and patient's response to tube feeding, patency of tube and any side effects.
- Report to oncoming nursing staff: type of feeding, status of feeding tube, patient's tolerance, adverse effects.

HOME CARE CONSIDERATIONS

- Ask patient or care provider about any symptoms or discomfort during enteral feeding. Reinforce instruction to contact nurse if symptoms or discomfort occur.
- Instruct patient or care provider in how to care for gastrostomy or jejunostomy tube site and symptoms to report.

CLINICAL EXAMPLE

Sandra White is a 36-year-old who sustained a closed head injury 3 days ago and remains unconscious. Sandra is to be started on enteral tube feeds. What are the potential complications of enteral tube feeding and the nursing interventions to minimise the occurrence of these? What strategies will need to be used to transition Sandra from enteral nutrition to oral intake?

On insertion, the placement of small-bore feeding tubes is ideally verified by X-ray examination. The tube should then be marked where it exits the nose and taped securely. Historically, feeding-tube placement was checked by injecting air through the tube while auscultating the stomach for a gurgling or bubbling sound, or asking the patient to speak (Tho et al 2011). These methods have a high degree of inaccuracy. While radiographic verification is the most reliable method for checking tube placement, this is cost-prohibitive for ongoing placement verification and is not possible in facilities without radiography, such as in nursing homes or remote locations. Where radiography is unavailable, the current most reliable and combined method of assessing tube placement (Metheny et al 2005) is measuring:

1. the length of the tubing extending from the insertion site
2. the volume of aspirate from the feeding tube
3. the appearance of the aspirate, and
4. the pH of the aspirate (acid or alkaline).

These methods must be used in combination as each has its own limitations. For example, assessing gastric aspirate pH can be misleading if the patient is simultaneously receiving acid-inhibitor medications which increase gastric pH.

Parenteral nutrition

Parenteral nutrition (PN) – also called *total parenteral nutrition* (TPN) if it is the sole source of nutrition – is a specialised method of nutrition support in which nutrients are provided directly into the bloodstream, intravenously. Because of the high osmolality of the PN solution, administration requires central access to the superior vena cava via a central venous catheter (CVC) or peripherally inserted central catheter (PICC) (Figure 31-6). Peripheral venous access may be used for limited time periods and lower osmolarity solutions (Pittiruti et al 2009); however,

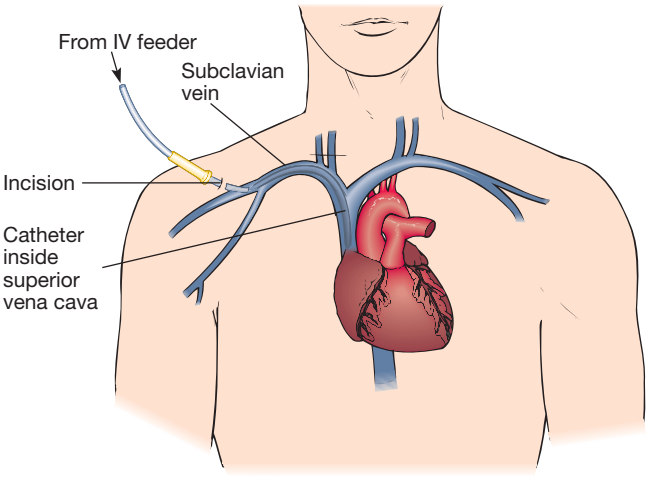


Figure 31-6 Central venous catheter insertion site.

Drawn by Rolin Graphics.

this route is not commonly used for PN in Australian hospitals (Dietitians Association of Australia 2011). PN is indicated in patients whose gut is either not functional or not accessible.

A multidisciplinary team approach is important for the initiation and management of PN. The dietitian is responsible for nutritional assessment and monitoring, calculating requirements and selecting appropriate PN solutions and infusion rates. The nurse oversees care of the vascular access site and PN equipment, prepares and administers the PN infusion and provides education and training for home use of PN to the patient if required. Doctors oversee the patient's medical management and pharmacists consult on the formulation, additives and interactions with other medications.

There are a number of commercially available PN formulas/solutions used in Australia. Standard formulas prepared in 'ready-to-hang' bags are normally used in the home and hospital setting, but specialised formulas may also be developed or compounded for patients with special needs. Standard formulas typically contain between 0.6–1.2 kcal/ mL, with 10–15% of energy provided by protein, 30–45% of energy from fat and 35–55% from carbohydrate (depending on whether the PN is a lower- or higher-carbohydrate solution). Macronutrients in PN are provided in their basic forms: proteins as free amino acids; carbohydrates as dextrose (D-glucose); and fats as water-soluble **lipid emulsions** which can be infused safely into the blood. The lipid emulsion consists of oil (soybean or mixture of olive,

soybean or fish oils) stabilised with egg yolk lecithin, and contains essential fatty acids. PN solutions generally contain electrolytes, but micronutrients such as vitamins and minerals need to be added to the solution. When prescribing an enteral nutrition formula, dietitians or doctors must ensure they have included an appropriate vitamin and mineral supplement to the prescription. Vitamin K cannot be added to the PN solution as it affects the stability of the lipid emulsion; therefore it must be given separately (i.e. IV). The dose and frequency of vitamin K will depend on the hospital's PN policy but is generally around 0.5–1 mg per day (American Society for Parenteral and Enteral Nutrition 2015).

Parenteral solutions

There are many different PN formulas available through different companies, although health services may select only one or two products for use. The most appropriate formula is selected by the dietitian or doctor following a comprehensive nutrition assessment. PN is usually available in a ready-to-hang bag, commonly provided as two-in-one or three-in-one solutions. Two-in-one solutions contain amino acids and dextrose in one bag. Lipids are given separately. Three-in-one solutions allow amino acids, dextrose and lipids to be given in one bag. The hang time for solutions differs, with lipid-only solutions recommended to hang for no more than 12 hours. The hang time for two-in-one and three-in-one solutions is 24 hours.

For some patients, individualised PN solutions are required and must be compounded in a hospital pharmacy or by the manufacturer. If micronutrients need to be added to the PN solution it is recommended that this is done under special sterile conditions by a pharmacy service using a laminar flow hood. This strategy minimises risk such as contamination, solution instability and compounding errors but may not be possible in facilities where such a service is unavailable (Dietitians Association of Australia 2011).

• CRITICAL REFLECTION POINT

TPN solutions have a high concentration of glucose and are an excellent medium for the growth of bacteria. Addition of medications to these solutions has the potential to introduce bacteria into the TPN solution, which is then administered directly into the patient's bloodstream and can cause life-threatening complications. Sterile conditions must be adhered to when adding medications to these solutions.

Beginning an infusion

Administering PN is similar to any other medication. Before beginning an infusion, the nurse must check the doctor's order with the solution prepared by the pharmacy. Checking the solution for particulate matter or a break in the lipid emulsion is also important.

Infusion flow rate

An infusion pump should always be used to administer PN. PN infusion rates vary from 40–150 mL/hour. Patients initially receive PN solutions at a moderate rate, such as 40–60 mL/h. The rate is gradually increased until the target energy needs are being supplied. Too-rapid administration of hypertonic dextrose can result in an osmotic diuresis and dehydration (see Chapter 34). Unlike enteral nutrition administration, if an infusion falls behind schedule, the nurse should not increase the rate in an attempt to catch up. Similarly, sudden discontinuation of the solution can cause hypoglycaemia. Usually, 5–10% dextrose is infused when PN solution is suddenly discontinued to prevent rebound hypoglycaemia.

In hospital, PN is delivered continuously over a 24-hour period. Patients who receive PN at home on a long-term basis are frequently acclimatised to a system of delivering 1–3 L of PN over 12 hours at night. The CVC is flushed and bunged (plugged with a sterile 'bung' or stopper) each morning for independent mobility during daytime hours. Nocturnal administration of PN is achieved by tapering the flow rate up at the beginning and down when ending. This individualised routine is tested during hospitalisation for tolerance and achievement of nutritional outcome.

Preventing complications

Complications most often arise because of the need for central venous access to deliver PN. Infection is the most common complication. To avoid infection, the infusion tubing should be changed every 24 hours for a lipid infusion. If lipids are not infused, CVC administration sets should be changed no more frequently than every 96 hours and should be changed at least every 7 days (O'Grady et al 2011). Clear CVC dressings should be changed every 7 days unless soiled, dampened or loosened. If gauze dressings are used, dressings should be changed every 2 days, unless required earlier.

During CVC insertion, pneumothorax may result from a puncture insult to the pulmonary system and culminates in accumulation of air in the pleural cavity. Pneumothorax is usually accompanied by symptoms of sudden sharp chest pain, dyspnoea and coughing. Other complications of CVC insertion are cardiac dysrhythmias and, infrequently, rupture of major vessels. Air embolus can also occur during insertion of the catheter or when changing the tubing or cap. Having the patient perform a Valsalva manoeuvre (holding one's breath and 'bearing down') while assuming a left lateral position can prevent air embolus. Metabolic complications can also occur as a result of PN administration and are described in Table 31-18.

Transitioning to oral intake

A goal of nutrition care is to move patients from parenteral to enteral and/or oral feeding. Once patients are meeting one-third to one-half their kilojoule needs per day enterally, TPN is usually decreased to half the original volume. Enteral feedings should then be increased to meet needs. When 75% of daily energy needs are consistently met with tube feeding, parenteral feeding may be discontinued.

Patients who make the transition from PN to oral feedings typically have early satiety and decreased appetite. PN should be gradually decreased in response to increased oral intake. If oral intake is inadequate, small, frequent meals may be better tolerated. Kilojoule/protein counts are recommended when patients begin taking soft foods. When 75% of needs are being met by reliable oral dietary intake, PN therapy may be discontinued.

Dietary education and counselling

Dietary education and counselling is a key aspect of nutrition care. This may involve providing general nutrition advice, such

TABLE 31-18 Short-term metabolic complications associated with total parenteral nutrition

Complication	Cause	Detection and treatment
Hyperosmolar coma	Occurs acutely if a rapid infusion of hypertonic fluid is administered. Infusion can cause severe osmotic diuresis, resulting in electrolyte abnormalities, dehydration and malfunction of the central nervous system	Daily blood samples, accurate measurements of fluid balance, routine blood samples. Reduce infusion rate, correct electrolyte imbalances
Electrolyte imbalance	Disturbances in serum electrolytes, particularly sodium potassium, urea and creatinine, may occur early in the treatment of TPN. Electrolyte imbalances can be caused by the patient's underlying medical condition; requirements vary with individual patients' needs. Can be caused by inadequate or excessive administration of intravenous fluids	Daily blood samples taken early in treatment to detect abnormalities. Replacement fluid as required, extra intravenous fluids may be required during the stabilisation period
Hyperglycaemia	Critically ill patients may be resistant to insulin because of the secretion of adrenocorticotropic hormone and adrenaline. This promotes the secretion of glycogen, which inhibits the insulin response to hyperglycaemia	Monitor the patient's blood sugar 4-hourly after commencement of treatment or as required. Monitor daily urinalysis for glucose and ketones. An insulin infusion may be required to keep blood sugar levels within prescribed limits
Rebound hypoglycaemia	May occur on discontinuation of TPN because hyperinsulinism may occur after prolonged intravenous nutrition. A rise in serum insulin occurs with infusion, and thus sudden cessation of infusion can result in hypoglycaemia	Glucose infusion rate should be gradually reduced over the final hour of infusion before discontinuing. Some patients may receive a 10% glucose solution after cessation of TPN
Hypophosphataemia	Glucose infusion results in the continuous release of insulin, stimulating anabolism and resulting in rapid influx of phosphorus into muscle cells. The greatest risk is to malnourished patients with overzealous administration of feeding. Patients who are hyperglycaemic, who require insulin therapy during TPN or who have a history of alcoholism or chronic weight loss may require extra phosphate in the early stages of treatment	Monitor phosphate levels daily. Hypophosphataemia will usually appear after 24–48 hours of feeding. Reduce the carbohydrate load and give phosphate supplementation
Lipid clearance	Lipids are broken down in the bloodstream with the aid of lipoprotein lipase found in the epithelium of capillaries in many tissues. A syndrome known as fat overload syndrome can occur when infusion of lipid is administered that is beyond the patient's clearing capacity, resulting in lipid deposits in the capillaries	Blood samples should be taken after the first infusion commences (within 6 hours) to observe for lipid in the blood
Side effects of lipid infusion	Some patients suffer symptoms either during or after an infusion of lipid mix parenteral nutrition. The exact cause is unknown. The patient may complain of headache, nausea or vomiting, and generally feels unwell	Treat mild symptoms. If tolerated, the TPN solution of non-protein calories can be given in the form of glucose. However, it is essential that the regimen includes some fat to prevent the development of fatty acid deficiency
Anaphylactic shock	This is a rare complication but may occur as a reaction to the administration of a lipid	It may be necessary to administer adrenaline and/or steroids, and to provide supportive therapy as required
Glucose intolerance	TPN using glucose as the main source of calories is associated with a rise in oxygen consumption and CO_2 production. The workload imposed by the high CO_2 production may precipitate respiratory distress in susceptible patients, particularly those requiring mechanical ventilation	Observe patients for signs of respiratory distress. Provide non-protein calories in the form of glucose lipid mix. Slow initial rate of infusion
Liver function	Abnormalities with liver function can be associated with TPN. May be attributable to hepatic stenosis with moderate hepatomegaly; patient may also develop jaundice. Liver function tests often return to normal after cessation of therapy; however, TPN can lead to severe hepatic dysfunction in neonates	Monitor liver function tests twice weekly. There are several factors that may contribute to development of abnormal liver function tests. These most often occur after a period of time and appear to be more of a problem when there is an excess calorie intake or in glucose-based regimens

Marshall AP, Williams T. 2015 Nutrition Assessment and Therapeutic Management. In Aitken L, Marshall A, Chaboyer W ACCCN's Critical Care Nursing, 3rd edn. Elsevier Australia, Sydney.

as that from the *Australian Guide to Healthy Eating*; or may be more specific disease-related dietary education (see Table 31-15 for common dietary modifications for certain disease states). Usually, dietitians will provide in-depth dietary education and counselling, but nurses are also in a good position to encourage healthy eating habits in patients and their families. It is important for nurses to understand key aspects of therapeutic diets in order to reinforce this information to patients or answer any patient queries. Assessing patients' health literacy and providing information appropriate to their level of understanding is a vital aspect of any dietary education and is in line with a person-centred approach to care.

PREPARING FOR AND TAKING ACTION

Person-centred and interdisciplinary nutrition care

The plan for nutritional care should involve the patient and/or their family and reflect achievable, patient-centred goals. Patient-centred care, patient engagement or patient participation in their care are terms that are often used interchangeably. However, all encompass aspects of a trusting relationship between the patient and nurse; surrendering of some power or control by the nurse; meaningful exchange of information and knowledge between patient and nurse; and active mutual agreement in intellectual and/or physical activities (Sahlsten et al 2008) to allow patients and clients to have input into decisions about their own health care.

Patient engagement

Patient engagement in care is one of Australia's National Safety and Quality Health Service Standards (ACSQHC 2011) and has been shown to improve patient outcomes such as reduce symptoms and improve function and patient satisfaction with health care (Arnetz et al 2010, Weingart et al 2011). Research has also shown that when hospitalised patients participate in their nutrition care, by self-monitoring their intake and setting nutritional goals, their energy and protein intakes are improved (Pedersen 2005, Roberts et al 2015). Ultimately, patients should have input into how they manage nutritional concerns. Depending on their level of engagement, some patients may lead their nutrition care and decision-making, while others may be more passive and require significant direction in regards to their nutritional plan. However, all patients should be given the opportunity to participate in their nutrition care.

Interdisciplinary approach

An interdisciplinary approach is essential to ensure high quality nutrition care (Holst et al 2015). Members of the interdisciplinary team will differ depending on the type of organisation or institution – but typically would include dietitians, nurses, speech therapists, occupational therapists, pharmacists and doctors. The dietitian monitors the patient's nutritional status and intake and makes recommendations for changes, based mainly on data documented in the patient's chart. Dietitians are expert in the choice of enteral formulas and dietary modifications required for specific disease states. Nurses monitor and assess patients 24 hours a day and are well positioned to note decreased nutrition intake. They are also responsible for delivering enteral and parenteral nutrition to ensure delivery most closely matches prescription. Speech therapists assist with swallowing assessment and ensuring patients at risk of dysphagia are able to safely consume oral foods and fluids. Occupational therapists work with patients and families to identify devices that help patients eat, or to rearrange food preparation areas in an effort to maximise the patient's functional capacity. The pharmacist is expert in drug–nutrient interactions and mixture of total parenteral nutrition. This team may be supported by nutrition assistants and food service staff who may have responsibility to assist patients with their nutrition care in the hospital setting.

Strong team communication with clear nutritional goals is necessary to ensure optimal nutrition care is delivered and risks of malnutrition are identified. Changes in nutritional status, whether they are improvements or deterioration, do not usually happen quickly. The insidious nature of changes to nutritional status highlights the need for patient and family involvement, as the healthcare team may change throughout a patient's admission and following discharge. During transitions in care, communicating the long-term nutritional goals for a patient is imperative so that nutritional gains are maintained. Involvement of the patient's family may be helpful, particularly if they are assisting with purchasing food and meal preparation after discharge. Family education is crucial to the success of implementing nutritional changes. In both the Aboriginal Australian and the New Zealand Māori populations, poor nutrition is recognised as a contributing factor for both communicable and non-communicable diseases.

EVALUATING IMPACTS AND OUTCOMES: ENSURING CONTINUITY OF CARE

Nutrition care should be consistent across the continuum of health care. This relies on appropriate documentation, monitoring and follow-up, as well as good communication between health professionals, the patient and their family. Documentation is important in all stages of nutrition care; it provides a means of communicating nutritional risk, comparing nutritional assessments over time, and monitoring the effectiveness of interventions. Accurate and complete documentation also enables nutritional care to continue when the patient is transferred between wards, facilities or discharged to the community.

Monitoring and follow-up should include timely re-screening of nutritional risk; regular assessment of nutritional parameters such as weight, dietary intake and nutrition-impacting symptoms; tailoring of nutritional interventions depending on the patient's medical and nutritional conditions; and monitoring of the tolerance of or adherence to nutritional interventions to achieve nutritional goals and priorities for the maintenance of health and wellbeing. All of these aspects of monitoring and follow-up should be clearly documented and communicated with appropriate members of the healthcare team and the patient (See *Sample student nursing care plan* for an example).

The nurse's role in nutrition care

Nutrition is vital for all aspects of life: health, growth, maintenance and repair. Requirements for specific nutrients differ across the life span, and are influenced

SAMPLE STUDENT NURSING CARE PLAN

Gathering relevant information and data*

Mrs Cooper's vital signs were all within normal limits. Three months had passed since Mrs Cooper had been started on sertraline for depression related to the loss of her husband 6 months ago. This was an initial episode of depression. Mrs Cooper had also been referred for counselling 3 months ago for help with grief and depression through a local senior service agency. After checking Mrs Cooper's weight and reviewing her chart, Marie realised her client was 20% **below her IBW** (ideal bodyweight) and had a **low BMI of 17**. This weight loss had occurred in **6 months, down 11 kg**. Mrs Cooper said, 'I'm **just not interested in food.** It has no taste.' Mrs Cooper also said she **gets full quickly**. Marie observed **dull, thinning hair, dry scaling skin, pale conjunctivae and mucous membranes** in addition to 12 **pitting oedema bilaterally in the ankles**. Mrs Cooper complained of chronic constipation and said she tires easily. Marie noted generalised poor muscle tone and a stooped posture. Laboratory data revealed a serum albumin 26 g/L; total lymphocyte count (TLC) 2×10^9/L. Laboratory values also suggested dehydration. Mrs Cooper said she drinks some juice in the morning and two or three cups of coffee. Mrs Cooper complained of loneliness, and said she does not get out much, although her psychologist recommended more socialising. She said she likes her counsellor and that she feels better but has not returned to her old self. Her friends at church call her to come back to meetings, but she is just not ready. When Marie inquired as to her financial situation, Mrs Cooper responded that it was tight living on the pension, but she was able to manage. She thanked Marie for finding a psychologist that she could afford.

**Important data to cluster in setting priorities in bold.*

Priority problem(s)

Altered nutrition: less than body requirements related to an inability to ingest food as a result of psychological depression.

Making appropriate judgements and decisions

Setting priorities and establishing goals	Expected outcomes
Mrs Cooper will progressively gain weight.	Mrs Cooper will gain 500 g to 1 kg a month until a goal of 60 kg is reached.
Mrs Cooper will learn key nutritional concepts.	Mrs Cooper will demonstrate an understanding of dietary guidelines.
Mrs Cooper will consume adequate nourishment each day.	Mrs Cooper will ingest 8000 kJ/day, including 50 g of protein per day.
Mrs Cooper will exhibit no signs of malnutrition.	Physical assessment and laboratory values will be within normal limits.
Preparing for and taking action†	**Rationale**
Nutritional counselling	
• Coordinate plan of care with doctor, psychologist, patient and dietitian.	Successful nutrition care planning is a multidisciplinary approach throughout the continuum of care.
• Individualise menu plans.	Individualised meal planning is more useful to the patient.
• Have frequent small meals.	Frequent small meals offset early satiety.
• Review healthy eating strategies.	NHMRC recommendations for optimal nutrition.
• Review dietary guidelines.	
Nutritional monitoring	
• Monitor patient monthly for weight gain.	Weight gain should be slow and progressive.
• Perform physical assessment of hair, eyes, mouth, skin and muscle tone.	

Preparing for and taking action†	Rationale
Nutritional management	
• Promote optimal oral hygiene before and after meals.	Consistent oral hygiene promotes taste sensation.
• Alternate rest with activity, resting before meals and after for 30 minutes.	Adequate rest allows for necessary energy for eating and digestion.
• Consider medication (sertraline)-induced anorexia and diminished taste.	SSRIs diminish taste and appetite.
• Encourage fluid intake.	Older adults need eight 250-mL servings per day of fluid. Concentrating intake in morning and early afternoon is acceptable to prevent nocturia.
• Encourage fibre intake.	Adequate fluid, fibre and exercise deter constipation.
• Consult with Mrs Cooper about referral for lunch at senior citizens centre 5 times per week.	Meal participation would encourage good nutrition and promote socialisation with peers.

† Intervention classification labels from Bulechek GM et al 2008 Nursing interventions classification (NIC), 5th edn. Mosby, St Louis.

Evaluating impacts and outcomes

- Ask Mrs Cooper to re-state number of servings from each group necessary for her optimal nutrition.
- Ask Mrs Cooper to state amount of kilojoules and protein she needs each day.
- Observe and monitor physical nutritional status (weight, biochemical indicators).
- Ask Mrs Cooper about appetite and taste status.

by disease states. Comprehensive nutrition assessment is required to determine an individual's nutrition needs and ensure adequate nutrition provision. As part of an interdisciplinary healthcare team, nurses have an important role in screening patients for nutrition risk and contributing to nutrition assessment.

Some patients may be at increased nutrition risk or influenced by pre-existing malnutrition associated with illness, disease or decreased nutrition intake. For hospitalised patients, nurses can ensure that nutrition intake is maintained or enhanced, and that nutrition-impacting symptoms are minimised so the full benefits of nutrition can be realised. Nurses can promote optimal nutrition intake by assisting patients with oral intake, and ensuring adherence to diet prescription and delivery of artificial nutrition such as enteral and parenteral nutrition. As nutrition requirements for individual patients vary, it is essential that a patient-centred approach is adopted and that patients and their families can contribute to strategies targeting adequate nutritional intake.

Key concepts

- There are many nutrients that are required by the body for normal health, growth and functioning, which are supplied by dietary intake.
- Through digestion, food is broken down into its simplest form for absorption. Digestion and absorption occur mainly in the small intestine.
- Australian dietary guidelines provide a range of values that cover the needs of groups (estimated average requirement) and individuals (adequate intakes, recommended dietary intakes and upper limit of intake).
- Guidelines for dietary change advocate reduced fat, saturated fat, sodium, refined sugar and cholesterol and increased intake of complex carbohydrates and fibre.
- Age affects the requirements for essential nutrients, e.g. periods of rapid growth increase the need for protein, vitamins and minerals.
- Because poor nutrition can affect all body systems, assessing patients' nutrition status is extremely important in the hospital setting.
- Multidisciplinary collaboration is essential to maintaining optimal nutrition in patients or clients.
- Nurses can improve food intake of patients by thoughtful attention to the preparation of the person and environment before meals are served.
- Nasogastric and enteral tube feeding can be used for patients who are unable to ingest food but are able to digest and absorb food.
- Total parenteral nutrition (TPN) supplies essential nutrients in appropriate amounts to support life through

the introduction of a concentrated nutrient solution into the superior vena cava near the right atrium of the heart.

- Medical nutrition therapy is a recognised treatment for both acute and chronic disease states.
- Special diets alter the composition, texture, digestibility and residue of foods to suit the patient's particular needs.
- Evaluation of the outcomes of nutrition support is essential to revise, update or continue nursing activities.
- Nutritional research is a dynamic process. Results of studies and new recommendations by expert sources need to be followed for future changes in practice standards.

Online resources

Australian Guide to Healthy Eating, link to a food selection guide that visually represents the proportion of the five food groups recommended for consumption each day. The site also contains nutrition calculators that can be used to calculate daily energy needs, https://www.eatforhealth.gov.au/guidelines/australian-guide-healthy-eating

Consumer references promoting breastfeeding:

Australian Breastfeeding Association, www.breastfeeding.asn.au

Cancer Council Australia, information about complementary therapies for patients with cancer, www.cancer.org.au/about-cancer/treatment/complementary-therapies-and-cancer.html

Diabetes-specific health promotion, including nutrition information for patients with diabetes and their families:

Diabetes Australia, www.diabetesaustralia.com.au

Diabetes New Zealand, www.diabetes.org.nz

Healthy eating information for patients with cardiovascular disease:

Heart Foundation Australia, www.heartfoundation.org.au/healthy-eating/Pages/default.aspx

Heart Foundation New Zealand, www.heartfoundation.org.nz/healthy-living/healthy-eating

Professional organisations specific to interdisciplinary nutrition care:

American Society for Parenteral and Enteral Nutrition, www.nutritioncare.org/

British Association of Parenteral and Enteral Nutrition, www.bapen.org.uk/pdfs/must/must_page6.pdf

Critical Care Nutrition, http://criticalcarenutrition.com

Dietitians Association of Australia, http://daa.asn.au/

European Society for Clinical Nutrition and Metabolism, www.espen.org

References

American Society for Parenteral and Enteral Nutrition 2015 Information to use in the event of an IV multivitamin shortage. Online. Available: www.nutritioncare.org/Guidelines_and_Clinical_Resources/Clinical_Practice_Library/Information_to_Use_in_the_Event_of_an_IV_Multivitamin_Shortage/; accessed July 2015.

Arnetz JE, Winblad U, Höglund AT et al 2010 Is patient involvement during hospitalization for acute myocardial infarction associated with post discharge treatment outcome? An exploratory study. Health Expectations 13(3):298–311.

Australian Bureau of Statistics (ABS) 2007 Australia's babies. Australian Social Trends 2007. ACT.

Australian Bureau of Statistics (ABS) 2009 National Health Survey: Summary of Results 2007–2008. Cat. no. 4364.0. Canberra.

Australian Commission on Safety and Quality in Health Care (ACSQHC) 2011 National safety and quality health service standards. ACSQHC, Sydney.

Australian Health Ministers' Conference 2009 Australian National Breastfeeding Strategy 2010–2015. Canberra, ACT.

Australian Institute of Health and Welfare (AIHW) 2011 2010 Australian national infant feeding survey: indicator results. Cat. no. PHe 156. Canberra.

Barker LA, Gout BS, Crowe TC 2011 Hospital malnutrition: prevalence, identification and impact on patients and the healthcare system. Int J Environ Res and Public Hlth (82):514–27.

Boelens PG, Heesakkers FF, Luyer MD et al 2014 Reduction of postoperative ileus by early enteral nutrition in patients undergoing major rectal surgery: prospective, randomized, controlled trial. Annals of Surgery 259(4):649–55.

Cox J, Rasmussen L 2014 Enteral nutrition in the prevention and treatment of pressure ulcers in adult critical care patients. Critical Care Nurse 34(6):15–27.

Dietitians Association of Australia 2011 Parenteral nutrition manual for adults in health care facilities. Online. Available: http://daa.asn.au/wp-content/uploads/2011/10/Parenteral-nutrition-manual-September-2011.pdf; accessed July 2015.

Elke G, Wang M, Weiler N et al 2014 Close to recommended caloric and protein intake by enteral nutrition is associated with better clinical outcome of critically ill septic patients: secondary analysis of a large international nutrition database. Crit Care 18(1):R29.

Feldblum I, German L, Castel H et al 2011 Individualized nutritional intervention during and after hospitalization: the nutrition intervention study clinical trial. Journal of the American Geriatrics Society 59(1):10–17.

Food Standards Australia New Zealand 2015 Food Labels. Online. Available: www.foodstandards.gov.au/consumer/labelling/Pages/default.aspx; accessed 30 July 2015.

Friesecke S, Schwabe A, Stecher SS, Abel P 2014 Improvement of enteral nutrition in intensive care unit patients by a nurse-driven feeding protocol. Nursing in Critical Care 19(4):204–10.

Green S, James E 2013 Barriers and facilitators to undertaking nutritional screening of patients: a systematic review. Journal of Human Nutrition and Dietetics 26(3):211–21.

Green S, James E, Latter S et al 2014 Barriers and facilitators to screening for malnutrition by community nurses: a qualitative study. Journal of Human Nutrition and Dietetics 27(1):88–95.

Gropper S, Smith J 2012 Advanced nutrition and human metabolism. Cengage Learning, Wadsworth USA.

Guaitoli PR, Jansma EP, de Vet HC 2014 Nutrition screening tools: does one size fit all? A systematic review of screening tools for the hospital setting. Clinical Nutrition 33(1):39–58.

Holst M, Beermann T, Mortensen MN et al 2015 Multi-modal intervention improved oral intake in hospitalized patients. A one year follow-up study. Clin Nutr (342):315–22.

Kee AL, Isenring E, Hickman I, Vivanti A 2012 Resting energy expenditure of morbidly obese patients using indirect calorimetry: a systematic review. Obes Rev 13(9):753–65.

Lobo E, Dufouil C, Marcos G et al 2010 Is there an association between low-to-moderate alcohol consumption and risk of cognitive decline? Am J Epidemiol 172(6):708–16.

Maloney JP, Ryan TA, Brasel KJ et al 2002 Food dye use in enteral feedings: a review and a call for a moratorium. Nutrition in Clinical Practice 17(3):169–81.

Marshall AP, West SH 2006 Enteral feeding in the critically ill: are nursing practices contributing to hypocaloric feeding? Intensive and Critical Care Nursing (222):95–105.

McClave SA, Chang W-K, Dhaliwal R, Heyland DK 2006 Nutrition support in acute pancreatitis: a systematic review of the literature. Journal of Parenteral and Enteral Nutrition (302):143–56.

Metheny NA, Schnelker R, McGinnis J et al 2005 Indicators of tubesite during feedings. Journal of Neuroscience Nursing 37(6):320–25.

Ministry of Health 2014 Annual update of key results 2013/14: New Zealand Health Survey. Ministry of Health, Wellington.

National Health and Medical Research Council (NHMRC) 2012 Infant feeding guidelines: information for health workers. Eat for Health. Canberra, ACT.

National Health and Medical Research Council (NHMRC) 2013 Australian Dietary Guidelines. Canberra.

National Health and Medical Research Council, Australian Government Department of Health and Ageing, New Zealand Ministry of Health 2006 Nutrient Reference Values for Australia and New Zealand. Canberra, ACT.

O'Grady NP, Alexander M, Burns LA et al 2011 Guidelines for the prevention of intravascular catheter-related infections. American Journal of Infection Control 39(4):S1–S34.

Osland E, Yunus RM, Khan S, Memon MA 2011 Early versus traditional postoperative feeding in patients undergoing resectional gastrointestinal surgery a meta-analysis. Journal of Parenteral and Enteral Nutrition 35(4):473–87.

Pedersen PU 2005 Nutritional care: the effectiveness of actively involving older patients. Journal of Clinical Nursing (142):247–55.

Pittiruti M, Hamilton H, Biffi R et al 2009 ESPEN Guidelines on Parenteral Nutrition: central venous catheters (access, care, diagnosis and therapy of complications). Clinical Nutrition 28(4):365–77.

Plunket 2015 Annual breastfeeding statistics. Online. Available: www.plunket.org.nz/news-and-research/research-from-plunket/plunket-breastfeeding-data-analysis/annual-breastfeeding-statistics/; accessed 24 Nov 2015.

Reignier J, Mercier E, Le Gouge A et al 2013 Effect of not monitoring residual gastric volume on risk of ventilator-associated pneumonia in adults receiving mechanical ventilation and early enteral feeding: a randomized controlled trial. JAMA 309(3):249–56.

Roberts S, Desbrow B, Chaboyer W 2015 Feasibility of a patient-centred nutrition intervention to improve oral intakes of patients at risk of pressure ulcer: a pilot randomised control trial. Scandinavian Journal of Caring Sciences.

Sahlsten MJ, Larsson IE, Sjöström B, Plos KA 2008 An analysis of the concept of patient participation. Nursing Forum, Wiley Online Library.

Samuel L, Basch C, Ethan D et al 2015 Using nutrition labels of pediatric multi-vitamin supplements to identify risk of over-exposure to fat-soluble vitamins. Journal of Nutrition Education and Behavior 47(4):S32.

Starke J, Schneider H, Alteheld B et al 2011 Short-term individual nutritional care as part of routine clinical setting improves outcome and quality of life in malnourished medical patients. Clinical Nutrition 30(2):194–201.

Stratton RJ, Ek AC, Engfer M et al 2005 Enteral nutritional support in prevention and treatment of pressure ulcers: a systematic review and meta-analysis. Ageing Research Reviews 4(3):422–50.

Stratton RJ, Elia M 2007 A review of reviews: a new look at the evidence for oral nutritional supplements in clinical practice. Clinical Nutrition Supplements 2(1):5–23.

Tho PC, Mordiffi S, Ang E, Chen H 2011 Implementation of the evidence review on best practice for confirming the correct placement of nasogastric tube in patients in an acute care hospital. International Journal of Evidence-Based Healthcare 9(1):51–60.

Weimann A 2013 The surgical/trauma patient. In Nutrition in intensive care medicine: beyond physiology. P Singer. Basel, Switzerland, Karger , vol. 105:106–15.

Weingart SN, Zhu J, Chiappetta L et al 2011 Hospitalized patients' participation and its impact on quality of care and patient safety. International Journal for Quality in Health Care 23(3):269–77.

World Health Organization 2011 Exclusive breastfeeding statement. Online. Available: www.who.int/mediacentre/news/statements/2011/breastfeeding_20110115/en/; accessed July 2015.

CHAPTER

32

Maintaining bowel elimination

Elizabeth Watt

Learning outcomes

Mastery of content will enable you to:

- discuss the role of gastrointestinal organs in digestion and elimination
- describe the functions of the large intestine
- explain the physiology of normal defecation
- discuss psychological and physiological factors that influence the elimination process
- describe common health issues related to elimination
- assess a person's elimination pattern
- list nursing diagnoses related to common health issues related to elimination
- describe nursing implications for common diagnostic examinations of the gastrointestinal tract
- describe nursing interventions that promote normal bowel function
- discuss the relationship between the structure and function of bowel diversions and the nursing assessment and care that is required
- use clinical reasoning and best practice evidence in the provision of care to patients with alterations in bowel elimination.

KEY TERMS

Biopsy, p. 1079
Bolus, p. 1065
Cathartics, p. 1071
Chyme, p. 1066
Colon, p. 1066
Colostomy, p. 1074
Constipation, p. 1067
Defecation, p. 1067
Diarrhoea, p. 1068
Endoscopy, p. 1079
Enema, p. 1086
Faeces, p. 1067
Fibre, p. 1068
Fibre-optic endoscope, p. 1079
Flatulence, p. 1073
Flatus, p. 1067
Gastrocolic reflex, p. 1085
Gastroscopy, p. 1079
Haemorrhoids, p. 1067
Haustral contractions, p. 1067
Ileostomy, p. 1074
Impaction, p. 1072
Incontinence, p. 1072
Lactose intolerance, p. 1068
Laxatives, p. 1071
Masticate, p. 1065
Paralytic ileus, p. 1070
Peristalsis, p. 1065
Polyps, p. 1079
Refluxing, p. 1065
Regurgitating, p. 1066
Stoma, p. 1074
Stomal therapy nurse, p. 1081
Valsalva manoeuvre, p. 1067

Regular elimination of bowel waste products is essential for normal body functioning. Alterations in elimination are often early signs or symptoms of problems within the gastrointestinal or other body systems. Because bowel function depends on the balance of several factors, elimination patterns and habits vary among individuals.

People who are hospitalised have additional risk factors for bowel problems, such as immobility, bed rest, altered diet, surgery and narcotic-type pain medications. To promote normal function and manage the person's elimination problems, an understanding of normal elimination and factors that promote or cause alterations in elimination is required.

The gastrointestinal (GI) tract is a series of hollow, mucous-membrane-lined muscular organs. The purposes of these organs are to absorb fluid and nutrients, prepare food for absorption and use by the body's cells, and provide for temporary storage of faeces (Figure 32-1). The volume of fluids absorbed by the GI tract is high, making fluid balance a key function of the GI system. In addition to ingested fluids and foods, the GI tract receives digestive secretions from organs such as the gallbladder and the pancreas. Any condition that seriously impairs normal absorption of GI fluids could cause fluid imbalance.

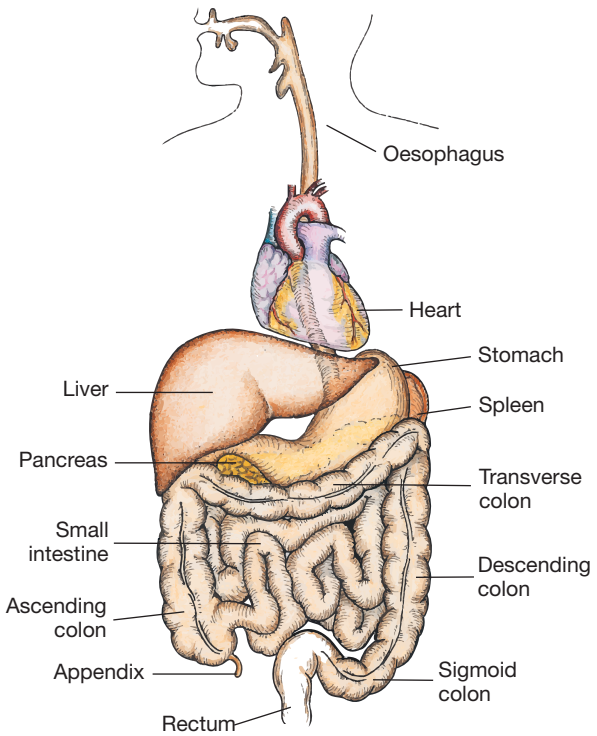


Figure 32-1 Organs of the gastrointestinal tract (with the heart as a reference point).

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Mouth

Digestion begins in the mouth, where mechanical and chemical breakdown of nutrients occurs. The teeth **masticate** (chew) food, breaking it down to a suitable size for swallowing. Saliva secreted from the salivary glands contains enzymes that initiate digestion of dietary starches and fats. Saliva also softens the **bolus** of food in the mouth for easier swallowing and keeps the mucous membranes of the mouth moist.

Oesophagus

As food enters the upper oesophagus, it passes through the *upper oesophageal sphincter*, which is a circular muscle that prevents air from entering the oesophagus and food from **refluxing** (moving backwards) into the throat. The bolus of food travels approximately 25 cm down the oesophagus. Food is pushed along by slow **peristalsis** produced by alternating involuntary contractions and relaxations of smooth muscle. As a portion of the oesophagus contracts above the food bolus, the circular muscle below (or in front) of the bolus relaxes. This alternate contraction–relaxation of smooth muscle propels food towards the next wave (Figure 32-2).

In 15 seconds the bolus of food moves down the oesophagus and reaches the *lower oesophageal sphincter*. The lower oesophageal (or cardiac) sphincter lies between the oesophagus and stomach and prevents backward movement of fluids from the stomach to the oesophagus. Factors influencing cardiac sphincter efficacy include antacids, which minimise reflux, and fatty foods and nicotine, which increase reflux.

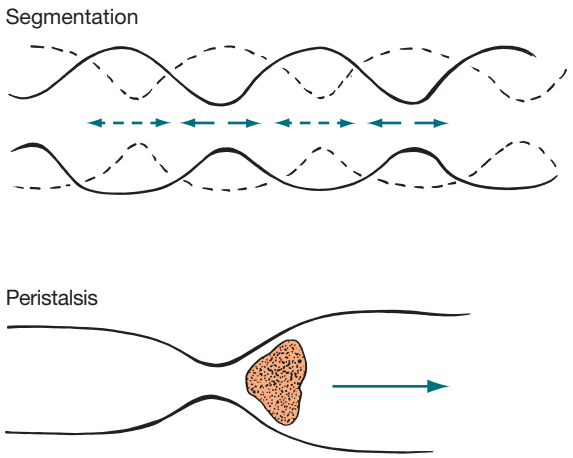


Figure 32-2 Segmented and peristaltic waves.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Stomach

In the stomach, food is temporarily stored and mechanically and chemically broken down for digestion and absorption (see Chapter 31). The stomach consists of four main regions: the cardia, the fundus, the body and the pylorus. When empty, the stomach has *rugaeor* folds which allow it to distend when food is ingested (Marieb & Hoehn 2014). The stomach secretes hydrochloric acid (HCl), mucous, the enzyme pepsin and intrinsic factor. The concentration of *hydrochloric acid* influences stomach acidity and the body's acid–base balance (see Chapter 34), and helps mix and break down food. Prostaglandins assist in the formation of *mucous*, which protects the stomach mucosa from acidity and enzyme activity. *Pepsin* digests proteins, although not much digestion occurs in the stomach. *Intrinsic factor* is the essential component needed for vitamin B_{12} absorption in the intestine and subsequent normal red blood cell formation. Lack of this intrinsic factor results in a condition called pernicious anaemia. Before food leaves the stomach, it is changed into a semifluid material called **chyme**. Chyme is more easily digested and absorbed than solid food.

Small intestine

During normal digestion, chyme leaves the stomach and enters the small intestine via the pyloric sphincter. The small intestine is a tube about 2.5 cm in diameter and 6 m long. It contains three divisions: *duodenum*, *jejunum* and *ileum*. Chyme mixes with digestive enzymes (e.g. bile and amylase) while travelling through the small intestine. Segmentation (alternating contraction and relaxation of smooth muscle) churns the chyme, further breaking down food for digestion (see Figure 32-2). These alternating contractions occur approximately 12 times a minute. As chyme mixes, forward peristaltic movement temporarily ceases, permitting absorption. Chyme travels slowly through the small intestine to allow absorption of nutrients and electrolytes.

Enzymes from the pancreas (e.g. amylase) and bile from the gallbladder are released into the duodenum. The enzymes in the small intestine break down fats, proteins and carbohydrates into basic elements (see Chapter 36). Nutrients are almost entirely absorbed by the duodenum and jejunum, although the ileum absorbs certain vitamins, iron and bile salts. If the function of the small intestine is impaired, the digestive process is greatly altered. For example, inflammation, surgical resection or obstruction can disrupt peristalsis, reduce the area of absorption or block the passage of chyme.

Large intestine

The lower GI tract is called the large intestine because it is larger in diameter than the small intestine. However, its length of 1.5–1.8 m is much shorter. The large intestine is divided into the *caecum*, *colon* and *rectum* (Figure 32-3). It is responsible for the absorption of water and is the primary organ of bowel elimination.

Caecum

Unabsorbed chyme enters the large intestine at the caecum through the *ileocaecal valve*. This valve is a circular muscle layer that prevents colon contents from **regurgitating** and returning to the small intestine. Located at the end of the caecum is the *vermiform appendix*. Inflammation of this area can result in blockage of the appendix, leading to appendicitis.

Colon

Although watery chyme enters the colon, the volume of water lessens as chyme moves along it. The **colon** is divided into the *ascending*, *transverse*, *descending* and

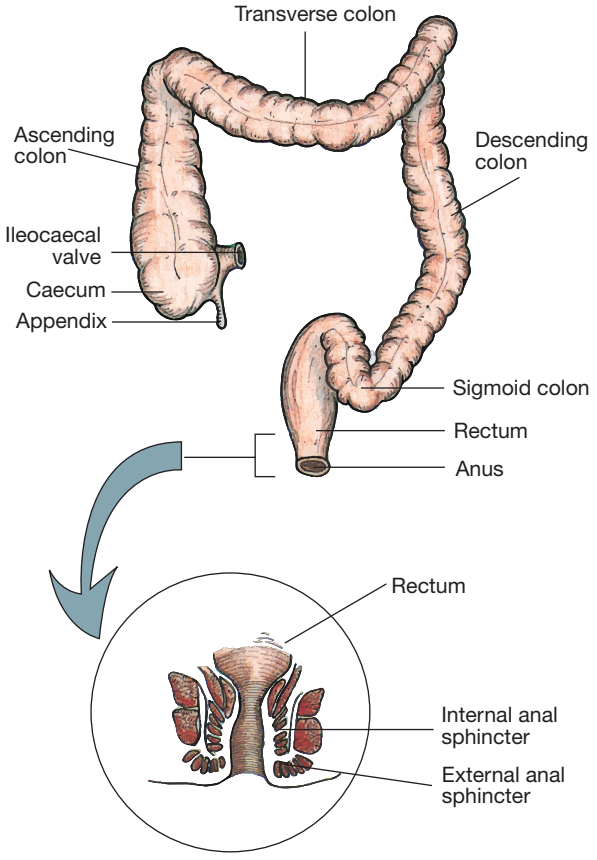


Figure 32-3 Divisions of the large intestine.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

sigmoid colon. The colon is made of muscular tissue, which allows it to accommodate and thus eliminate large quantities of waste.

The colon has four interrelated functions: absorption, protection, secretion and elimination. The colon absorbs a large volume of water and significant amounts of sodium and chloride daily. As food passes through the colon, **haustral contractions** occur. These are similar to segmental contractions of the small intestine but last longer, up to 5 minutes. The contractions produce large sacs in the colon's wall, providing a large surface area for absorption.

The colon can absorb as much as 2.5 L of water in 24 hours. On average, 55 mmol of sodium and 23 mmol of chloride are absorbed daily. The amount of water absorbed from chyme depends on the speed at which colonic contents move. Chyme is normally a soft, formed mass. If the speed of peristaltic contractions is abnormally fast, there is less time for water to be absorbed and the stool will be more liquid. If peristaltic contractions significantly slow down, water continues to be absorbed and a hard mass of stool forms, resulting in **constipation**.

The colon protects itself by secreting a supply of mucous. Mucous is normally clear to opaque, with a stringy consistency. Mucous lubricates the colon, preventing trauma to its inner walls. Lubrication is especially important near the distal end of the colon, where contents become drier and harder. The secretory function of the colon aids in electrolyte balance. Bicarbonate is secreted in exchange for chloride. About 4–9 mmol of potassium is released each day by the large intestine. Serious alterations in colon function, such as diarrhoea, can cause electrolyte imbalance due to loss of potassium and chloride.

Finally, the colon eliminates waste products (**faeces**) and gas (flatus). **Flatus** results from air swallowing, diffusion of gas from the bloodstream into the intestine, and bacterial action on non-absorbable carbohydrates. Fermentation of carbohydrates (such as in cabbage and onions) produces intestinal gas, which can stimulate peristalsis. An adult normally forms 400–700 mL of flatus daily.

Slow peristaltic contractions move contents through the colon. The intestinal content is the main stimulus for peristaltic contraction. Waste products and gas exert pressure against the walls of the colon. The muscle layer stretches, stimulating the reflex that initiates contraction. Mass peristaltic movements push the faecal bolus towards the rectum. These movements occur only three or four times daily, unlike the frequent peristaltic waves in the small intestine (usually heard during auscultation). When these mass peristaltic movements occur, large segments of the colon contract as a result of gastrocolic reflex and duodenocolic reflex responses. These occur when the stomach or duodenum is filled with food and fluid. Filling initiates nerve impulses that stimulate the colon's muscular walls. This reflex eristalsis is strongest during the hour after a meal.

Rectum

Waste products that reach the sigmoid portion of the colon are called faeces. The sigmoid stores faeces until just before defecation. The rectum is the final part of the GI tract. Its length varies according to age:

Infant	2.5–4 cm
Toddler	5 cm
Preschooler	7.5 cm
School-age child	10 cm
Adult	15–20 cm

Normally the rectum is empty of faeces until defecation. It contains vertical and transverse folds of tissue. Each vertical fold contains an artery and veins. If the veins become distended from pressure during excessive straining, **haemorrhoids** can form. Haemorrhoids can make defecation painful if they are swollen and inflamed.

When the faecal mass moves into the rectum and the rectal walls distend, **defecation** begins. The process involves involuntary and voluntary control. The *internal sphincter* is a smooth muscle innervated by the autonomic nervous system. As the rectum distends, sensory nerves are stimulated and carry impulses that cause the internal sphincter to relax, allowing more faeces to enter the rectum. At the same time, impulses travel to the brain to create conscious awareness of the need to defecate.

As the internal sphincter relaxes, so does the *external sphincter*. Adults and toilet-trained children can voluntarily control the external sphincter. If the time for defecation is not right, constriction of the levatorani muscles closes the anus and defecation is delayed. At the time of defecation, the external sphincter relaxes. Pressure can be exerted to expel faeces through an increase in intra-abdominal pressure, or a **Valsalva manoeuvre**. A Valsalva manoeuvre is voluntary contraction of abdominal muscles during forced expiration with a closed glottis (holding one's breath while straining).

Factors affecting bowel elimination

Many factors influence the process of bowel elimination. Knowledge of these factors enables identification of people at risk and the selection of appropriate intervention(s) to prevent or alleviate the symptoms of altered bowel elimination.

Age

Developmental changes that affect elimination occur throughout life. An infant has a small stomach capacity and less secretion of digestive enzymes. Some foods, such as complex starches, are tolerated poorly. Food passes quickly through an infant's intestinal tract because of rapid peristalsis. The infant is unable to control defecation because of a lack of neuromuscular development (see *Working with diversity*). This development usually does not take place until 2–3 years of age.

WORKING WITH DIVERSITY

Focus on infants and children

- Normally, a healthy newborn infant has a bowel motion within 24–36 hours of birth. This first stool is called meconium and is a thick greenish-black material.
- The frequency of bowel movements in babies can be affected by their feeding regimen. Breastfed babies tend to have more frequent bowel actions than those fed with formula. They may have an average of three bowel actions per day.
- The stools of infants are a yellow colour, gradually assuming more adult characteristics as solid food is introduced into the diet after 6 months of age. By the age of 3 years, a child will normally have one soft bowel movement each day.

Reference

Adapted from Hockenberry M, Wilson D 2015 Wong's nursing care of infants and children, 10th edn. Elsevier, Mosby.

During adolescence, there is rapid growth of the large intestine. The secretion of gastric acid increases, particularly in boys. Adolescents typically eat more.

Older adults experience normal changes to the GI tract that occur with ageing (see Table 32-1). While there is degeneration of the enteric nervous system with age, gut transit time and colonic motility tend to be consistent throughout life (Marieb & Hoehn 2014). Therefore, the majority of older adults maintain the same frequency of bowel movements that they had in their younger years. However, bowel function can be influenced by other factors, such as chronic disease, immobility and the various treatments for these health problems. Older adults, particularly women, may have decreased tone in the pelvic floor muscles and anal sphincter, increasing the risk of faecal incontinence.

Diet

The food that a person eats influences elimination. Regular daily food intake helps maintain a regular pattern of peristalsis in the colon. **Fibre**, the indigestible residue in the diet, provides the bulk in faecal material. Bulk-forming foods absorb fluids, thereby increasing stool mass. The bowel walls are stretched, creating peristalsis and initiating the defecation reflex. The following foods contain a high amount of fibre (see Chapter 31):

- raw fruits (apples, bananas, oranges)
- cooked fruits (prunes, apricots)
- greens (spinach, cabbage)
- raw vegetables (celery, green beans, zucchini)
- whole grains (cereal, bran flakes, breads) (National Health and Medical Research Council (NHMRC) 2013).

Ingestion of a high-fibre diet improves the likelihood of a normal elimination pattern if other factors are normal. Gas-producing foods such as onions, cauliflower and beans also stimulate peristalsis. The gas formed distends the intestinal walls, increasing colon motility. Some spicy foods can increase peristalsis but can also cause indigestion and watery stools.

Some foods, such as milk and milk products, are difficult or impossible for some people to digest. These people are known as lactose intolerant. Lactose-intolerant people are unable to digest lactose (milk sugar) due to an inadequate production of the enzyme lactase. Intolerance to lactose-containing foods results in **diarrhoea**, abdominal cramping and gaseous distension. Some people with **lactose intolerance** can tolerate small amounts of milk, cheese and yoghurt (NHMRC 2013).

Fluid intake

An inadequate intake of fluids affects the character of faeces. Fluid liquefies the intestinal contents, easing its passage through the colon. Inadequate fluid intake may slow passage of food through the intestine and can result in hardening of stool contents.

Physical activity

Physical activity promotes peristalsis. Therefore, it is important to encourage people to move around as quickly as possible following surgery or serious illness. Additionally, weakened abdominal and pelvic floor muscles impair the ability to increase intra-abdominal pressure and to control the external sphincter.

Personal habits

Personal elimination habits influence bowel function. Most people benefit from being able to use their own toilet facilities at a time that is most effective and convenient for them. A busy work schedule may prevent the individual from responding appropriately to the urge to defecate,

TABLE 32-1 Normal changes in the gastrointestinal tract from ageing

Portion of GI tract	Changes	Causes
Mouth	Decreased chewing due to reduction in facial muscle bulk and decreased salivation, including oral dryness	Degeneration of cells, use of some medications
	Changes to taste, including increased tolerance to saltiness and bitterness	
Oesophagus	Reduced peristalsis, especially in lower third in late older age (85+ years)	Degeneration of neural cells
Stomach	Decrease in acid secretions	Degeneration of gastric mucosa and increased risk of infection with *Helicobacter pylori* in older people
		Alkaline gastric medium contributes to malabsorption of iron. Although digestive enzymes are decreased, enough remain available for digestion
	Decrease in motor activity	Delayed gastric emptying and fewer hunger contractions
	Decrease in mucosal thickness	Loss of parietal cells also leads to loss of intrinsic factor, which is needed for vitamin B_{12} absorption
Small intestine	Fewer absorbing cells	Absorption of most nutrients and minerals not significantly affected
	Absorption of vitamin A, vitamin D, zinc and calcium declines with age	
Large intestine	Weakened musculature including in the anus and rectum	Increased collagen deposition, atrophy of the muscularispropria with increasing amount of fibrosis and elastin
	Duller nerve sensations	Increase in pouches on the weakened intestinal wall, called diverticulosis
		Decreased resting anal sphincter pressure, rectal wall elasticity
Liver	Size decreased and number of hepatocytes decreased	Reduced storage capacity and ability to synthesise protein and medications
	Reduced hepatic blood flow	
	Altered clearance of certain drugs	
	Reduced ability of the liver to regenerate after injury	

Feldstein RC, Tepper RE, Katz S 2010 Geriatric gastroenterology – an overview. In Fillit HM, Rockwood K, Woodhouse A (eds) Brocklehurst's textbook of geriatric medicine and gerontology, 7th edn. Saunders, Philadelphia, pp. 106–10; Welford, C 2014 Gerontological care. Taylor and Francis, Hoboken.

disrupting regular habits and causing possible alterations such as constipation.

Hospitalised patients can rarely maintain privacy during defecation. Bathroom facilities are often shared with another person whose hygiene habits might be quite different. The patient's illness often limits physical activity and requires the use of a bed pan or bedside commode. The sights, sounds and odours associated with sharing toilet facilities or using bed pans are often embarrassing. Embarrassment prompts patients to ignore the urge to defecate, which can begin a vicious circle of constipation and discomfort.

Position during defecation

Squatting is the normal position during defecation. Modern toilets are designed to facilitate this posture, allowing the person to lean forward, exert intra-abdominal pressure and contract the thigh muscles. For the patient immobilised in bed, defecation is often difficult. In a supine position it is impossible to contract the muscles used during defecation. If allowable within the patient's condition, raise the head of the bed; this helps the patient to a more normal sitting position on a bed pan, enhancing the ability to defecate. The hospitalised patient should be encouraged to get out of bed as soon as possible so they can use the toilet rather than a bed pan. If getting to the toilet is impossible, the person may be able to use a commode chair with a bed pan underneath to simulate as normal as possible position for defecation.

Psychological factors

The function of almost all body systems can be impaired by prolonged emotional stress (see Chapter 37). If an

individual becomes anxious, afraid or angry, the stress response is initiated, allowing the body to restore defences. The digestive process is accelerated, and peristalsis is increased to provide nutrients needed for defence. Side effects of increased peristalsis are diarrhoea and gaseous distension.

Pain

Normally the act of defecation is painless. However, a number of conditions, including haemorrhoids, rectal surgery, rectal fistulas and abdominal surgery, can result in discomfort. In these instances the patient often suppresses the urge to defecate to avoid pain. Constipation is a common consequence for people who experience pain during defecation.

Pregnancy

As pregnancy advances and the size of the fetus increases, pressure is exerted on the rectum. A temporary obstruction created by the fetus impairs the passage of faeces. Slowing of peristalsis during the third trimester often leads to constipation.

Surgery and anaesthesia

Some general anaesthetic agents used during surgery cause temporary cessation of peristalsis (see Chapter 39). The patient who receives local or regional anaesthesia is less at risk of elimination alterations because bowel activity is affected minimally or not at all.

Surgery that involves direct manipulation of the bowel can temporarily stop peristalsis. This condition, called **paralytic ileus**, usually lasts about 24–48 hours. If the patient remains inactive or is unable to eat after surgery, return of normal bowel function may be further delayed.

Infection

Many bacteria, parasites and viruses can cause GI infection, including *Escherichia coli*, *Giardia lamblia*, *norovirus* and *rotavirus*. *Helicobacter pylori* is a bacterial infection which contributes to the development of gastric ulcers and gastritis, and significantly increases the risk of gastric cancer (Plummer et al 2015). Chronic gastritis can result from *Helicobacter pylori* infection in childhood leading to degeneration of the stomach wall and altered digestion and elimination as well as failure to absorb essential vitamins and minerals (Sipponen & Maaroos 2015). *Clostridium difficile* is another bacteria that causes serious GI infection, particularly in hospitalised patients and frail older people. It is caused by a Gram-positive anerobic spore-producing bacteria and can result in life-threatening severe colitis and shock (Wilcox et al 2015). It is a common hospital-acquired infection transmitted by the faecal–oral route. The spores are not killed by hand hygiene solutions; therefore, handwashing and use of gloves is required when caring for a person suspected of having a *C. difficile* infection (Hand Hygiene Australia 2015).

Medications

Many common medications can affect bowel elimination (Table 32-2). These effects include slowing peristalsis,

TABLE 32-2 Medications and the gastrointestinal system

Medications	Action
Antibiotics	May produce diarrhoea by disrupting the normal bacterial flora in the GI tract, especially if administered orally. If the diarrhoea and associated abdominal cramping become severe, the patient might need to change medications
Anticholinergic drugs, such as atropine	Inhibit gastric acid secretion and depress GI motility (Bryant & Knights 2014). Although useful in treating hyperactive bowel disorders, anticholinergics can cause constipation
Anticholinergic/antispasmodic drugs, such as dicyclomineHCl (Merbentyl)	Suppresses peristalsis and can decrease gastric emptying
Aspirin	A prostaglandin inhibitor, it can interfere with the formation and production of protective mucous and can predispose patients to gastritis
Histamine-2 (H2) antagonists	Suppress the secretion of hydrochloric acid and may interfere with the digestion of some foods
Iron	Can cause discolouration of the stool (black) and lead to constipation
Narcotic analgesics	Slow peristalsis and segmental contractions, often resulting in constipation
Non-steroidal anti-inflammatory drugs	Promote gastrointestinal irritation that can range from dyspepsia to life-threatening haemorrhage (Bryant & Knights 2014)

Bryant B, Knights K 2014 Pharmacology for health professionals, 4th edn. Mosby, Sydney; Tiziani A 2010 Havard's nursing guide to drugs, 8th edn. Mosby, Sydney.

increasing peristalsis and changing the bowel flora. Laxatives, **cathartics** and stool softeners soften the stool and promote peristalsis. Although similar to cathartics, **laxatives** are milder in action. When used correctly, laxatives and cathartics safely promote and maintain normal elimination patterns. However, long-term use of cathartics can cause the large intestine to lose muscle tone and become less responsive to stimulation by laxatives. Laxative overuse can also cause serious diarrhoea which can lead to dehydration and electrolyte depletion.

Diagnostic tests

Diagnostic examinations that involve the viewing of GI structures often require portions of the bowel to be empty of contents. In the case of evaluation through the use of an enema or endoscopy, the person usually has a low-residue diet for 3 days and receives cathartics until the bowel contents that are expelled are clear. Such emptying of the bowel can interfere with elimination until normal eating is resumed. The person is not allowed to eat or drink after midnight of the day preceding examinations such as endoscopy of the lower GI tract (colonoscopy and sigmoidoscopy).

Common bowel elimination problems

Nurses commonly care for people who have, or are at risk of, elimination problems because of physiological changes in the GI tract, surgical alteration of intestinal structures, other prescribed therapy, or disorders impairing defecation.

Constipation

Constipation is characterised by a decrease in frequency of normal bowel movements, normally accompanied by straining and prolonged or difficult evacuation of faeces (Collins & O'Brien 2015). Constipation is a common health issue in the community-dwelling population. According to Schmidt and de Gouveia Santos (2014), the incidence of constipation in adults is between 2.6% and 26.9%. The incidence in hospitalised people is likely to be much higher. Constipation is more common in women and in low socioeconomic populations (Costilla & Foxx-Orenstein 2014).

Constipation is a symptom that should not be ignored, as it may indicate a serious underlying disease or motility disorder of the GI tract (Collins & O'Brien 2015). When intestinal motility slows, the faecal mass becomes exposed for an increased time to the intestinal walls and most of the faecal water content is absorbed. Little water is left to soften and lubricate stools. Passage of a dry, hard stool may cause pain on defecation. An important consideration when assessing a person's bowel elimination pattern is that defecation patterns vary between individuals. Not every adult has a daily bowel movement. A bowel movement only every 3 or more days may be considered normal if it is not associated with pain, passage of hard faeces or bloating.

The causes of constipation are multifactorial. Primary constipation can be classified as functional, outlet dysfunction and slow transit. Secondary constipation may be caused by diet, medications and underlying medical conditions (Costilla & Foxx-Orenstein 2014). Common medications that can cause constipation include antacids, iron supplements, anticholinergics, antidepressants, calcium channel blockers, beta-blockers, non-steroidal anti-inflammatory drugs (NSAIDs), diuretics and narcotic

BOX 32-1 Common causes of constipation

Lifestyle:
- Irregular bowel habits and ignoring the urge to defecate
- Low-fibre diet, high in processed foods
- Low fluid intake
- Lengthy bed rest or lack of regular exercise

Ageing:
- Slowed peristalsis, loss of abdominal muscle elasticity and reduced sense of rectal fullness
- Reduced physical or cognitive functioning (including dementia)

Neurological and neuromuscular disorders:
- Neurological conditions that block nerve impulses to the colon (e.g. spinal cord injury, multiple sclerosis, tumour)
- Stroke, Parkinson's disease

Psychiatric disorders:
- Depression, learning difficulties, anorexia/bulimia
- Pregnancy and puerperium

Colonic disorders:
- Irritable bowel syndrome, cancer, diverticular disease, idiopathic slow-transit constipation

Endocrine disorders:
- Organic illnesses such as hypothyroidism, diabetes mellitus, hypocalcaemia, hypokalaemia

Iatrogenic:
- Tranquillisers, opiates, anticholinergics, iron, diuretics, antacids with calcium or aluminium and antiparkinsonian drugs
- Amiodarone, calcium channel blockers, antacids, non-steroidal anti-inflammatory drugs

analgesics (Collins & O'Brien 2015) (see Table 32-2). Medical causes include anal and colonic disorders such as anal stricture and colon cancer; neurological disorders such as spinal cord injury or Parkinson's disease; metabolic disorders such as hypothyroidism and diabetes; as well as pelvic floor muscle weakness and rectocele. In addition, lifestyle factors, such as insufficient dietary fibre and low fluid intake, lack of exercise and voluntary suppression of defecation, commonly contribute to the development of constipation (Collins & O'Brien 2015). Prolonged constipation can have significant adverse health effects, including the development of haemorrhoids, faecal impaction, urinary incontinence (due to direct pressure of a faecal mass on the bladder), pelvic floor damage, urinary retention and urinary tract infection (due to incomplete bladder emptying) (Costilla & Foxx-Orenstein 2014).

Impaction

Faecal **impaction** results from unrelieved constipation. It is a collection of hardened faeces (with or without overflow faecal incontinence), obstructing the rectum, which cannot be expelled (Hussain et al 2014). In cases of severe impaction, the mass can extend up into the sigmoid colon. Frail older adults, who are debilitated or confused (e.g. people with dementia), or people who are unconscious or have an intellectual disability are most at risk for impaction.

An obvious sign of impaction is the inability to pass a stool for several days, despite a repeated urge to defecate. If a continuous oozing of diarrhoeal stool develops, impaction should be suspected. The liquid portion of faeces located higher in the colon seeps around the impacted mass. Loss of appetite (anorexia), abdominal distension and cramping, and rectal pain may accompany the condition.

WORKING WITH DIVERSITY

Focus on older adults

Constipation is a common health issue in the community. Older adults are prone to developing constipation because of the interaction of a number of factors:

- *Physiological* – lack of dietary fibre intake, poor fluid intake, inappropriate dietary habits, poor dentition
- *Functional* – decrease in mobility due to chronic joint disease, increase in sedentary lifestyle, ignoring the urge to defecate, poor lifelong bowel habits
- *Mechanical* – any condition that slows peristalsis or obstructs the colon and rectum; lack of sufficient abdominal muscle tone
- *Psychological* – depression, confusion, stress, avoidance of defecation (e.g. in a four-bed ward), recent environmental change
- *Systemic* – conditions that alter the physiology of the gastrointestinal tract
- *Pharmacological* – numerous medications that slow peristalsis, alter absorption or change the physiology of the gastrointestinal tract, e.g. antacids, opioid analgesics, antidepressants, sedatives, overuse of laxatives

Reference

Adapted from Ebersole, P Hess P 2012 Toward healthy aging, 8th edn. Mosby, St Louis.

Diarrhoea

Diarrhoea is an increase in the number of stools and the passage of liquid, unformed faeces. It is a symptom of disorders affecting digestion, absorption and secretion in the GI tract. Intestinal contents pass through the small and large intestines too quickly to allow the usual absorption of fluid and nutrients. Irritation within the colon can result in an increased mucous secretion. As a result, faeces become watery and the person may be unable to control the urge to defecate.

It is often difficult to assess diarrhoea in infants. An infant who is bottle-fed may have one firm stool every second day, whereas a breastfed baby may pass five to eight small soft stools daily. Any sudden increase in the number of stools, any reduction in faecal consistency with an increase in fluid content and a tendency for faeces to be greenish may indicate the need for further assessment.

Excess loss of colonic fluid can result in serious fluid and electrolyte or acid–base imbalances. Infants and older adults are particularly susceptible to associated complications (see Chapter 34). Because repeated passage of diarrhoeal stools also exposes the skin of the perineum and buttocks to irritating intestinal contents, meticulous skin care is needed to prevent skin breakdown (see Chapter 29), and containment of faecal drainage is needed.

Diarrhoea can be acute or chronic and can be caused by many conditions (Table 32-3). The aims of treatment are to remove precipitating conditions and to slow peristalsis. Box 32-2 lists nursing interventions that can be used in the treatment of acute diarrhoea in a hospitalised patient.

Incontinence

Faecal **incontinence** is defined as 'the inability to control passage of faecal material and/or flatus' (Abrams et al 2013:1897). It is a debilitating condition which is estimated to affect up to 10% of adults, with the incidence rising to 50% in the residential care population (Willson et al 2014). Physical conditions that impair anal sphincter function or control can cause incontinence; for example, damage to the anal sphincter during childbirth, pelvic

TABLE 32-3 Conditions and interventions that cause diarrhoea

Condition/Intervention	Physiological effects
Emotional stress (anxiety)	Increased intestinal motility
Colon disease (colitis, Crohn's disease)	Inflammation and ulceration of intestinal walls, reduced absorption of fluids, increased intestinal motility
Food allergies	Reduced digestion of food elements
Food intolerance (greasy foods, coffee, alcohol, spicy foods)	Increased intestinal motility, increased mucous secretion in colon
Intestinal infection (streptococcal or staphylococcal enteritis)	Inflammation of intestinal mucosa, increased mucous secretion in colon
Laxatives (short term)	Increased intestinal motility
Medications	
Iron	Irritation of intestinal mucosa
Antibiotics	Superinfection allowing overgrowth of normal flora, inflammation and irritation of mucosa
Surgical alterations	
Gastrectomy	Loss of reservoir function of stomach, improper absorption because food is moved into duodenum too quickly
Colon resection	Reduced size of colon, reduced amount of absorptive surface
Tube feedings	Hyperosmolarity of some enteral solutions results in diarrhoea, because hyperosmolar fluids draw fluids into the gastrointestinal tract

BOX 32-2 Summary of nursing interventions for the management of acute diarrhoea in a hospitalised patient

- *Reduce risk of spread of infective organism* – use standard and transmission-based infection control precautions.
- *Fluid replacement* – provide measures to maintain, or restore, fluid status and electrolyte balance.
- *Assessment* – observe vital signs for systemic manifestations such as fever, leucocytosis, fluid volume deficits, electrolyte imbalances.
- *Nutrition* – consult dietitians and encourage foods that are nourishing and tempting, little and often.
- *Skin care* – maintain perianal skin integrity by cleansing area and drying well.

Adapted from Australian Commission on Quality and Safety in Healthcare 2010 Australian guidelines for the prevention and control of infection in healthcare. Australian Government Canberra; Hall V 2010 Acute uncomplicated diarrhoea management. Pract Nurs 21(3):118–22.

floor dysfunction and neurological disorders such as multiple sclerosis, Parkinson's disease and spinal cord injury. In postpartum women the incidence of faecal incontinence is estimated to be 17% in the first 12 months (Brown et al 2015). Conditions that create frequent, loose, large-volume, watery stools also predispose a person to incontinence; for example, inflammatory bowel disease. In acute care settings, the incidence of faecal incontinence can be up to 33% (Willson et al 2014).

Flatulence

As gas accumulates in the lumen of the intestines, the bowel wall stretches and distends (**flatulence**). This is a common cause of abdominal fullness, pain and cramping. Normally, intestinal gas escapes through the mouth (burping) or the anus (passing of flatus). However, if there is a reduction in intestinal motility resulting from opiates, general anaesthetics, abdominal surgery or immobilisation, flatulence can become severe enough to cause abdominal distension and severe, sharp abdominal pain.

Haemorrhoids

Haemorrhoids are dilated engorged veins in the lining of the rectum. They are either external or internal. *External haemorrhoids* are clearly visible on the outside of the anus as protrusions of skin. If the underlying vein is hardened, there can be a purplish discolouration (thrombosis). This causes increased pain and the haemorrhoid may need to be surgically removed. *Internal haemorrhoids* have an outer mucous membrane. Increased venous pressure from chronic straining at defecation, pregnancy, obesity, heart failure and chronic liver disease can cause haemorrhoids.

Bowel diversions

Certain diseases, such as colorectal cancer and inflammatory bowel disease (ulcerative colitis and Crohn's disease), may result in the need for a temporary or permanent opening (stoma) in the abdominal wall. A **stoma** is a piece of bowel which is exteriorised and brought through the abdominal wall to re-route the passage of faeces or urine (Burch 2013). Temporary stomas are used to allow for healing at the site of surgery (the colon) or healing of a diseased part of the colon. Depending on the reason for the temporary stoma and the expected rate of healing, the person may have the stoma for only a few weeks or several months. The stoma reversal procedure involves the re-anastomosis of the ends of the colon or ileum, and then the muscle and skin of the abdominal wall are sutured closed. There are two main types of bowel stoma: colostomy and ileostomy (Figure 32-4).

The patient's specific health issue and general state of health determine the location of the colostomy stoma. Typically they are located in the ileum, ascending, transverse, descending or sigmoid colon. The location of the ostomy determines the consistency of stool. An **ileostomy** is formed in the ileum and bypasses the entire large intestine. As a result, the output of gas and stools is frequent, and stools have a thickened liquid consistency. The stoma is active throughout the day and the appliance will need to be emptied between four and six times per day (Burch 2015). A **colostomy** is formed from the large bowel or colon, and therefore the stool is a more solid and formed (depending on the location in the colon). A colostomy located in the sigmoid colon has a more predictable pattern of elimination of stool and gas, occurring from daily to three times per week (Burch 2015).

There are two main types of colostomy construction: *loop* colostomy (in the transverse colon), and the *end* colostomy.

A *loop colostomy* is usually performed when closure of the colostomy is anticipated. These are usually temporary large stomas constructed in the transverse colon (Figure 32-5). The surgeon pulls a loop of bowel onto the abdomen. An external supporting device such as a plastic rod, or bridge, is temporarily placed under the bowel loop to keep it from slipping back. The surgeon then opens the bowel and sutures it to the skin of the abdomen. A communicating wall remains between the proximal and distal bowel. The loop ostomy has two openings through the stoma. The proximal end drains stools, whereas the

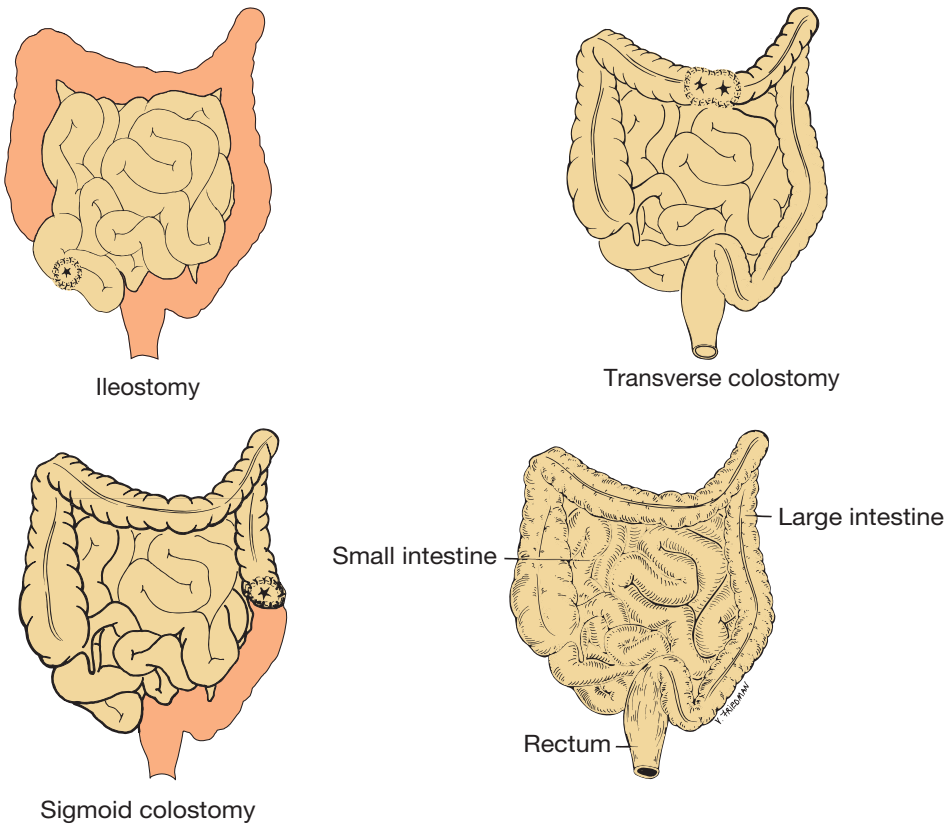


Figure 32-4 **Normal intestines (bottom right) and three types of ostomy. Shaded areas indicate excised tissue.**

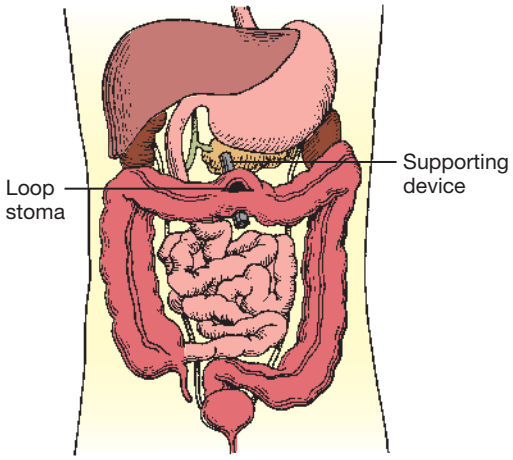


Figure 32-5 Loop colostomy. Loop of colon is exteriorised over plastic rod for temporary faecal diversion.

Modified from Phillips N 2007 Berry & Kohn's Operating room technique. Mosby, St Louis.

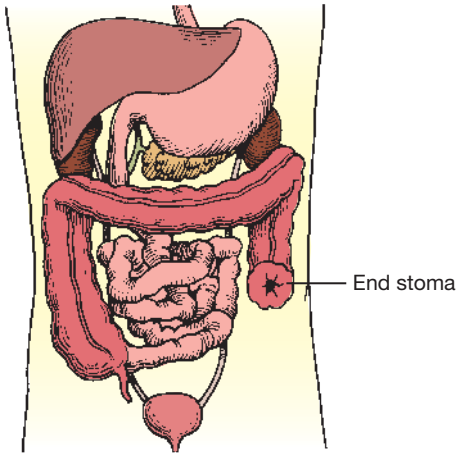


Figure 32-6 End colostomy (permanent). Terminal end of descending or sigmoid colon is brought out through peritoneum and muscle and sutured to skin.

Modified from Phillips N 2007 Berry & Kohn's Operating room technique. Mosby, St Louis.

distal portion drains mucous. Within 7–10 days the external supporting device is removed.

The *end colostomy* consists of one stoma formed from the proximal end of the bowel with the distal portion of the GI tract either removed or sewn closed (called a Hartmann's pouch) and left in the abdominal cavity. For many people, end colostomies are a result of surgical treatment of colorectal cancer. In such cases, the rectum might also be removed. Patients with diverticulitis who are treated surgically often have a temporary end colostomy with a Hartmann's pouch (Figure 32-6).

Psychosocial considerations

Consider for a moment how you would feel if you were not confident you could get to the toilet on time. Incontinence and faecal urgency significantly affect a person's quality of life and can lead to depression, anxiety and a decrease in general wellbeing (Meyer & Richter 2015, Wilson 2015). The embarrassment of soiling clothes can lead to social isolation.

Having a stoma significantly changes the way the body looks and functions and can cause significant psychological distress for the person and their family (Taylor 2015). Changes to the person's ability to complete daily tasks (including their usual work), diet, changes to sexuality and sexual function (including erectile dysfunction in men), social isolation, changes to general wellbeing and perception of quality of life are all possible consequences of living with a bowel stoma (Perez-Merino 2014). An important factor in the person's reaction to living with a stoma is the character of faecal secretions and the ability to control them. Foul odours, the fear of spillage or leakage of liquid stools and inability to regulate bowel movement can severely affect the person's quality of life.

CLINICAL REASONING PROCESS

Successful clinical decision-making requires a synthesis of knowledge, experience, information gathered from patients, critical thinking attitudes and intellectual and professional standards. Assessment of a person for risk factors or actual bowel elimination problems requires specific knowledge and sensitivity in approaching health issues that the person may find difficult to discuss (see Figure 32-7).

GATHERING RELEVANT INFORMATION AND DATA

To assess bowel elimination patterns and determine the aetiology of symptoms requires a focused nursing history, physical assessment, including abdominal examination, specimen inspection and skin assessment. As bowel function is closely linked with a person's nutrition, activity and exercise patterns, mobility and neurological function, you may need to assess these areas in conjunction with a focused bowel elimination assessment. All hospitalised people should be screened for risk factors for constipation, so that interventions can be implemented to promote normal bowel elimination.

Nursing history

The focused nursing history provides a review of the person's usual bowel pattern and habits. Identifying normal and abnormal patterns, habits and the person's perception of normal and abnormal bowel function enables identification of possible problems and gives direction to the physical examination. Much of the nursing history can be organised around the factors that affect elimination:

APPLYING CRITICAL THINKING

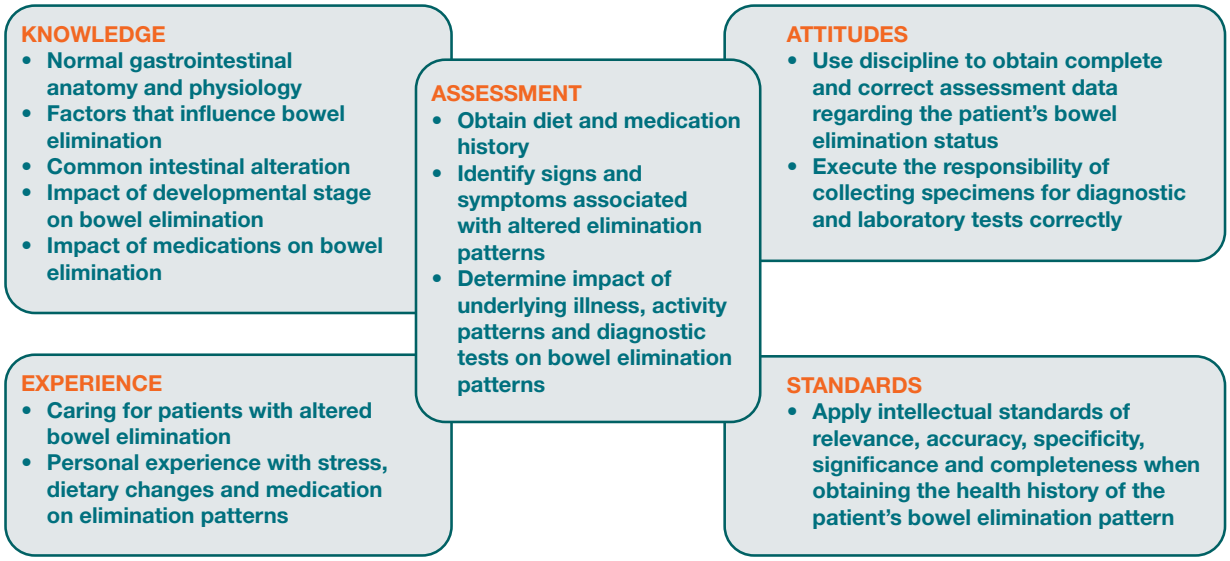


Figure 32-7 **Critical thinking associated with the assessment phase for bowel elimination.**

- *The person presenting's concern*. It is important to acknowledge the person's perception of their bowel elimination problem and how this affects their quality of life. Keep in mind that people who have faecal incontinence are likely to be reluctant to discuss their concerns (Olsson et al 2015). You need to approach this with empathy and tact.
- *Usual bowel elimination pattern*. Frequency and time of day are included. Having the person or caregiver complete a 'bowel diary' can enhance accurate assessment of the current bowel elimination pattern. To improve accuracy, the person completing the diary must understand what information must be recorded. Normally, a bowel diary would be kept for at least three 24-hour periods, preferably 7 days, so that the person's normal bowel elimination patterns can be determined. The information collected includes the date and time, and frequency and consistency of bowel movements, including incontinence episodes. The person is asked to describe their usual stool using the Bristol Stool Chart. This chart is a validated tool for describing stool appearance (Lewis & Heaton 1997). It has a 7-point scale (see Figure 32-8). Stool types 3 and 4 are considered to be the most usual or normal consistency.
- *Description of any recent change in elimination pattern*. This information is perhaps the most significant, because elimination patterns are variable and the person can best detect change. For example, a change in character or frequency of bowel elimination, history of recent overseas travel, eating take-away food, etc. Ask the person to describe any change in detail.
- *Bowel and anal symptoms*. Ask the person to describe any abnormal symptoms they are experiencing. For example, presence of blood or mucous in the stool, presence of pain before, during or after defecation, sense of incomplete emptying, or anal symptoms such as itchiness or pain.
- *Past health history*. Personal or family history of health issues affecting the GI tract; for example, abdominal surgery, neurological disease, family history of bowel

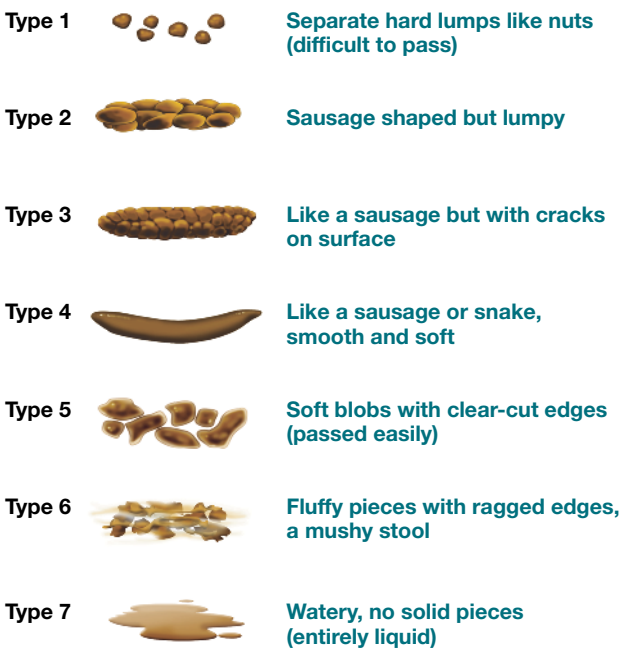


Figure 32-8 **Bristol Stool Chart, developed by KW Heaton and SJ Lewis at the University of Bristol, England.**

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cancer. If the patient has an ostomy, ask them about the frequency of faecal drainage, character of faeces, appearance and condition of the stoma (colour, swelling and irritation), type of appliance used and methods used to maintain the ostomy's function. For women – ask about obstetric history, number and type of births, weight of infants, and history of bowel problems after each birth.

- *Usual diet*. The most accurate way of collecting this information is for the person to complete a food diary. If this is not possible, ask the person to recall their food intake over the last 24-hour period. Take note of types of food consumed (fresh or processed), the amount of dietary fibre in the diet and the variety of foods eaten. The information may indicate the need for referral to a dietitian for specific dietary advice.
- *Description of daily fluid intake*. This includes the type and amount of fluid. The person might have to estimate the amount using common household measurements.
- *Medication history*. Ask the person about their usual medications (such as laxatives, antacids, iron supplements and analgesics) that might alter defecation or faecal characteristics.
- *Smoking* – ask about current and former cigarette smoking. Smoking can affect bowel function and is a risk factor for bowel cancer.
- *Activity and exercise*. Describe the type and amount of daily exercise, as lack of exercise is linked to constipation.
- *Mobility and dexterity* – ability to care for self. You need to make a judgement about the need for questioning in this area based on your observation of the person; for example, the person may need assistance to get to the toilet, undressing/redressing, hygiene, and use of toileting aids (commode chairs, raised toilet seats, etc). Where patients live may affect their toileting habits. If the patient is sharing living quarters, how many bathrooms are there? Do patients have their own bathroom, or do they need to share and thus adjust the time they use the bathroom to accommodate others?
- *Routines followed to promote normal elimination*. Examples are drinking hot liquids, using laxatives, eating specific foods or taking time to defecate during a certain part of the day.
- *Other self-care practices*. Health screening related to faecal occult blood testing (FOBT) in people over 50 years of age, rectal examination and colonoscopy (where there is a risk of bowel cancer). Use of continence aids and appliances if the person has a bowel control problem.

CRITICAL REFLECTION POINT

A 17-year-old male with a history of good health and regular exercise is seen by the school nurse. He complains of increasing diarrhoea and abdominal cramping. He states that on rare occasions he has noticed blood on the toilet paper he has used. What additional pieces of assessment data do you need?

Physical assessment

Focused physical examination (see Chapter 23) of body systems and functions related to elimination problems should be carried out. You will need to make a judgement about the specific areas to include in your examination, which may include assessment of the mouth, abdomen, perianal area and rectum.

Mouth

An assessment includes inspection of the patient's teeth, tongue and gums. Poor dentition or poorly fitting dentures influence the ability to chew (see Chapter 29), which is a major reason for older people consuming insufficient dietary fibre.

Abdomen

Inspect all four abdominal quadrants for contour, shape, symmetry and skin colour. Inspection also includes noting masses, scars, stomas and lesions. Abdominal distension appears as an overall outward protuberance of the abdomen. Intestinal gas, large tumours, or fluid in the peritoneal cavity may cause distension. The skin of a distended abdomen appears taut, as if stretched.

Auscultation of the abdomen with the stethoscope is performed to assess bowel sounds in each quadrant (see Chapter 23). Auscultation of the bowel sounds is not done in the usual order of physical assessment, but is done prior to palpation. Normal bowel sounds occur every 5–15 seconds and last from 1 second to several seconds. While auscultating, note the character and frequency of bowel sounds.

- An increase in pitch or a tinkling sound may be heard with abdominal distension.
- Absent or hypoactive sounds (< 5 sounds per minute) occur with paralytic ileus, such as after abdominal surgery.
- High-pitched and hyperactive bowel sounds (35 or more sounds per minute) occur with small-intestine obstruction and inflammatory disorders.

Palpation of the abdomen is performed to determine distension (a drum-like tightness), areas of tenderness or the presence of masses (see Chapter 23). It is important for the person to relax. Tensing abdominal muscles interferes with palpating underlying organs or masses. If the examination reveals significant tenderness in any area of the abdomen, note the location of the tenderness and do not progress with further palpation or percussion. Refer the person to a medical practitioner for further assessment, as the pain/tenderness may indicate serious underlying pathology such as acute appendicitis or inflammation of the bowel. A person with severe constipation or faecal impaction may have faecal matter in the sigmoid or descending colon which you may be able to palpate on the left lower abdominal region.

Percussion detects lesions, fluid or gas within the abdomen. Familiarity with the five percussion notes (see Chapter 23) also permits identification of underlying abdominal structures, for example, a distended bladder. Gas or flatulence creates a tympanic note. Masses, tumours and fluid are dull to percussion.

Perianal area

Inspect the area around the anus for faecal matter, lesions, discolouration, inflammation and haemorrhoids. Abnormalities should be carefully recorded (see Chapter 23).

RESEARCH HIGHLIGHT

Research focus

Faecal incontinence (FI) is a taboo subject, and people living with it can feel stigmatised. This article reports on a 10-year qualitative follow-up to an initial constructivist-grounded theory project, investigating living with FI. The article reviews the initial study and the 5-year follow-up study undertaken.

The research examines the challenges associated with living with FI and different ways of managing the condition, including the importance of social support.

Research abstract

This study builds upon two previous studies conducted over a 10-year period. Ethics approval was granted. The research design was qualitative using multivariational sampling to ensure a varied sample of participants. Nine participants (three men and six women) were included in the study. Data were collected using semi-structured, guided interviews. The majority of the interviews were audio-recorded with the participant's permission. The interviews were transcribed, coded and analysed for themes. Five themes emerged from the data that described the participant's experience of living with faecal incontinence over time. These themes were: impact of faecal incontinence on self (self-esteem, confidence, mood swings, feeling of control, social acceptability, attitudes to faecal incontinence), response to impact of faecal incontinence on lifestyle (the occurrence of faecal incontinence, 'ownership' of faecal incontinence, adaptions made and responsibility for progress in self-management), interaction (with significant others, the generalised 'other' (public) and others who have feacal incontinence – 'insiders'), direction in life (upwards – positive narrative, downwards – negative narrative, or level progress), and the quality of interaction with health professionals.

Wilson describes a process of a dynamic continuum related to these themes where participants move from being overwhelmed to mastery (adaption), moving from a negative narrative to a more positive narrative. At the 10-year follow-up none of the participants expected a cure and had accepted their faecal incontinence. Significant others, particularly partners and children, assisted with adaption. They continued through trial and error to develop and refine their lifestyle, dietary and medicinal strategies. Although incontinence in public was still avoided, most had incorporated the possibility into their lives, enabling more freedom to enjoy a range of foods and activities. The participants felt less inhibited to talk about their faecal incontinence publicly, although speaking about it was still considered to be a social taboo. Participants described a sense of 'teamwork' related to the support they received from their partners and health professionals. Interactions with other people with faecal incontinence facilitated shared experience, a finding that had not been found in these participants in the previous studies. Some participants had improved and others had learnt to cope with faecal incontinence. Ageing and comorbidity posed further challenges to adaption to faecal incontinence.

Evidence-based practice

Faecal incontinence has a serious impact on people's lives over a long period of time. People are likely to avoid discussing their condition, so it is important for health professionals to ask relevant questions during a health assessment and to create a climate in which the person feels able to disclose their faecal incontinence. Concealment of faecal incontinence may prevent people from gaining support from other people who also have faecal incontinence – 'insiders'. It is important to include partners in the care plan as they are likely to be the primary support.

Reference

Wilson M 2015 Living with faecal incontinence: a 10-year follow-up study. British Journal of Nursing 24(5):268–74.

Faecal characteristics

Inspection of faecal characteristics (see Table 32-4) can reveal information about the nature of elimination alterations. The stool should be inspected for colour, consistency, amount, odour and appearance. Several factors can influence each characteristic. Normally the colour of faeces is brown and the consistency is soft. Use the Bristol Stool Form Chart (see Figure 32-8) to determine consistency. Record your observations as descriptively and accurately as possible.

Laboratory tests

Laboratory and diagnostic examinations yield useful information concerning elimination problems. Laboratory analysis of faecal contents can detect pathological conditions such as tumours, GI haemorrhage, infection and parasites.

Faecal specimens

Ensure that specimens are accurately obtained, properly labelled in appropriate containers and transported to the laboratory on time. Institutions provide special containers for faecal specimens. Some tests require specimens to be placed in chemical preservatives.

Because about 25% of the solid portion of a stool is bacteria from the colon, you must wear disposable gloves when handling specimens. Hand hygiene is necessary for anyone who might come in contact with the specimen. Often the patient can obtain the specimen if properly instructed. Explain that faeces cannot be mixed with urine or water. For this reason the patient must defecate into a clean, dry bed pan or special container placed under the toilet seat.

TABLE 32-4 Faecal characteristics

Characteristic	Normal	Abnormal	Abnormal cause
Amount	150 g per day (adult)		
Colour	Infant: yellow; adult: brown	White or clay	Absence of bile
		Black or tarry	Iron ingestion or upper gastrointestinal (GI) tract bleeding
		Red	Lower GI tract bleeding, haemorrhoids
		Pale with fat (steatorrhoea)	Malabsorption of fat
Consistency	Soft, formed	Liquid	Diarrhoea, reduced absorption
		Hard	Constipation
Constituents	Undigested food, dead bacteria, fat, bile pigment, cells lining intestinal mucosa, water	Blood, pus, foreign bodies, mucous, worms	Internal bleeding, infection, swallowed objects, irritation, inflammation
Frequency	Varies:		Hypomotility or hypermotility
	Infant 4–6 times daily (breastfed) or 1–3 times daily (bottle-fed)	Infant more than 6 times daily or less than once every 1–2 days	
	Adult daily or 2–3 times a week	Adult more than 3 times a day or less than once a week	
Odour	Pungent; affected by food type	Noxious change	Blood or fat in faeces or infection
Shape	Resembles diameter of rectum	Narrow, pencil-shaped	Obstruction, rapid peristalsis

Tests performed by the laboratory for occult (microscopic) blood in the stool and stool cultures require only a small sample; collect about 2 cm of formed stool or 15–30 mL of liquid diarrhoeal stool. Tests for measuring the output of faecal fat require a 3- to 5-day collection of stool. All faecal material must be saved throughout the test period.

After obtaining a specimen, label and tightly seal the container and complete the laboratory requisition forms. Then record the specimen collection in the patient's medical record. It is important to avoid delays in sending specimens to the laboratory. Some tests, such as measurement for ova and parasites, require the stool to be warm; this is called a 'hot' specimen. When stool specimens are allowed to stand at room temperature, bacteriological changes that alter test results can occur.

Faecal occult blood test (FOBT)

The FOBT is a common laboratory test which measures microscopic amounts of blood in faeces. There are two main types of tests for FOB: guaiac and immunochemical. Immunochemical techniques (iFOBT) are considered to be more reliable, as their accuracy is not influenced by diet and the use of certain medications. The FOBT is useful as a diagnostic screening test for colon cancer. The Australian federal government funds a National Bowel Screening Program aimed at detecting bowel cancer early so that it can be effectively treated. The New Zealand Ministry of Health has a similar bowel screening program for New Zealanders. See Box 32-3.

Diagnostic examinations

Diagnostic tests related to genitourniary (GU) function can be performed in the outpatient or inpatient setting. Viewing of GI structures may be by endoscopic or radiological examination.

Endoscopic procedures

Instruments that are introduced through the mouth or the rectum enable inspection of the integrity of mucosa, blood vessels and organ parts. A colonoscopy uses a **fibre-optic endoscope** with a lens viewer, a long flexible tube and a light source at the end to view the colon and rectum. It allows viewing of structures at the tip of the tube and insertion of special instruments for biopsy. Proctoscopes and sigmoidoscopes are rigid, tube-shaped instruments with attached light sources; the proctoscope looks like a speculum with a light. These instruments are less flexible than fibre-optic scopes and more capable of causing discomfort.

Lower GI examinations require bowel preparation for several days prior to the procedure. The person has a restricted, low-fibre diet for several days and then clear fluids on the day prior to the procedure. They are also required to take a strong stimulant laxative (e.g. PicoPrep, ColonLYTELY) the day prior to the procedure. This is taken orally, usually 1 litre of fluid per hour for 2 hours. It has a strong osmotic effect in the bowel and may cause abdominal distension and cramping. The person should be advised to stay close to the toilet as it will result in high volumes of watery diarrhoea within 30 minutes to 3 hours following ingestion (Australian Medicines Handbook 2015).

Upper GI **endoscopy** or **gastroscopy** enables viewing of the oesophagus, stomach and duodenum for tumours, vascular changes, mucosal inflammation, ulcers, hernias and obstructions. A gastroscope enables the removal of tissue specimens (**biopsy**), abnormal tissue growth (e.g. **polyps**) and enables coagulation of sources of bleeding.

Conscious sedation is often used during these procedures. Midazolam, a sedative-antianxiety agent, may be used, possibly augmented with a narcotic analgesic for lower GI procedures.

BOX 32-3 Screening for colorectal cancer

Risk factors

- Age: over 50; risk increases with age – median diagnosis is 70 years
- Family history: colon polyps or colorectal cancer
- History of inflammatory bowel disease (ulcerative colitis, Crohn's disease)
- People who have had adenomas (polyps) previously
- Diet: high intake of fats, low fibre intake

Warning signs

- Recent and persistent change in bowel habits
- Rectal bleeding or any sign of blood after a bowel motion
- Unexplained tiredness (a symptom of anaemia)

Screening tests

- Faecal occult blood test (FOBT) – the Australian National Bowel Screening Program screens at ages 50, 55, 60, 65, 70 and 74 years. A free testing kit is sent in the mail. Research has shown screening for bowel cancer, using an FOBT, can reduce deaths from the disease by 15–25%. The New Zealand government is currently carrying out a pilot to test whether bowel screening should be introduced nationally.
- Colonoscopy is undertaken every 1–3 years for people at high risk or who have had a positive FOBT.

Cancer Council Australia 2008 – Clinical practice guidelines for the prevention, early detection and management of colorectal cancer. Cancer Council Australia, Sydney. Online. Available: www.cancer.org.au/File/HealthProfessionals/ClinicalpracticeguidelinesJuly2008.pdf

National Bowel Cancer Screening Program 2015 Department of Health and Ageing. Online. Available: www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/bowel-screening-1

In upper GI procedures, a local anaesthetic spray is used to help overcome gagging (Bryant & Knights 2014). It is essential to understand the safety precautions involved concerning the use of this form of anaesthesia. Most institutions require nurses to have specialised skills in anaesthetic care nursing to look after such patients. Resuscitation equipment must be present at the bedside, and the patient must be monitored continuously with pulse oximetry.

Nursing implications before diagnostic procedures concerning the GI system include the following:

Prior to the procedure:

- Record baseline observations including oxygen saturation (SpO_2).
- Check that the patient has signed an informed consent form after the steps of the procedure have been explained to them.
- Check that the patient has performed the necessary bowel preparation.
- Check that the patient has not had anything to eat or drink for the required period of time prior to the procedure (as instructed by the medical practitioner).
- If conscious sedation is used, explain to the patient that they will have an intravenous cannula inserted prior to the procedure. The sedation will make them very sleepy, but they may hear voices of the staff involved in the procedure. They will recover quickly following the procedure.

For procedures involving the upper GI tract:

- If conscious sedation is not used, explain that the patient may feel fullness in the throat and a sense of gagging during the test.
- Explain that the patient will be unable to speak as the endoscope enters the oesophagus.

For procedures involving the lower GI tract:

- During the test, air is used to distend the bowel for better viewing; explain that the patient may have 'wind pains' after the procedure.

Following the test:

- For upper GI procedures – instruct the patient to avoid eating or drinking until the gag reflex returns (2–4 hours). To check for the gag reflex, the nurse places a tongue blade at the back of the patient's tongue. Hoarseness and a sore throat are normal for several days; cool fluids and Normal saline gargling relieve soreness. The person should not drive a car or operate machinery for 12 hours after the procedure when conscious sedation is used.
- For lower GI procedures – the nurse observes for bleeding, fever, abdominal pain and blood in the stool. The person should not drive a car or operate machinery for 12 hours after the procedure when conscious sedation is used.

Radiological examination

The plain abdominal X-ray is the most common radiological investigation for gastrointestinal health problems. Other tests include: barium swallow, barium enema, CT and MRI scanning, cholangiography and nuclear imaging scans (especially for liver and hepatobilary function) and various procedures using ultrasound.

Patient expectations

People expect the nurse to be able to answer all their questions regarding diagnostic tests and the preparation for those tests. They will be concerned about discomfort and exposure of their body. For some, fear of loss of control over bowel elimination is distressing. They need information verbally and in writing and reassurance that their needs will be met and that the healthcare staff will be supportive.

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

A nursing assessment of the person's bowel function may reveal data that indicates an actual or potential elimination problem or a problem resulting from an elimination health problem (Box 32-4). Associated issues, such as body-image changes or skin breakdown, require intervention as part of the comprehensive care plan.

The ability to identify the correct nursing diagnosis/patient problem depends not only on the thoroughness of the assessment, but also on recognition of the defining characteristics and factors that can impair elimination (Box 32-5). It is important to identify any areas of potential

BOX 32-4 Examples of priority problems associated with people with alterations in bowel elimination

- Faecal incontinence
- Constipation
- Diarrhoea (acute or chronic)
- Skin integrity, impaired
- Abdominal pain

BOX 32-5 Sample priority problems

ACUTE DIARRHOEA

Possible nursing diagnosis	Diarrhoea related to infection, changes in diet or alteration in gastrointestinal functioning
Assessment activities	**Defining characteristics**
Have patients describe pain, cramping, or any associated factors.	Pain is colicky in nature and spasmodic.
Have patient describe onset of symptoms, relationship to diet, recent travel, etc.	Acute onset. May have recent history of ingestion of contaminated food, contact with another person with same symptoms or recent travel.
Auscultate bowel sounds.	Bowel sounds will be hyperactive and may be audible without a stethoscope.
Assess frequency of stools.	Frequency is an early indication of increased risk of fluid and electrolyte imbalance, which is further indicated by muscle cramps.
Assess hydration status.	Loss of skin turgor and dry mucous membranes indicate fluid deficit. Concentrated urine – high specific gravity.
Evaluate perianal area for redness and irritation.	Frequent stools lead to breakdown of perianal tissues.

risk for bowel elimination problems and plan interventions in conjunction with the person to promote normal bowel function.

Planning

Care planning requires the synthesis of information from multiple sources (Figure 32-9). Critical thinking ensures that the plan of care integrates knowledge about the patient and the clinical problem. The guidelines outlined for urinary incontinence (see Chapter 33) should be used in care planning to protect the patient's skin, promote continence and reduce the embarrassment associated with faecal incontinence. In addition, the use of current guidelines for the reduction of pressure injury should be used in the care of people with bowel incontinence (see Chapter 26). When the person requires surgical intervention, a care pathway may be used to coordinate the activities of the multidisciplinary healthcare team.

SETTING PRIORITIES AND ESTABLISHING GOALS

The care plan establishes goals and expected outcomes in collaboration with the person (and in some situations, the family) (see *Sample student nursing care plan*). Health education and the provision of good quality information is critical to a successful plan of care.

The goals of care for patients with elimination problems include:

- understanding normal elimination
- attaining/maintaining soft, formed, easy-to-eliminate stool
- understanding and maintaining healthy fluid and food intake
- achieving regular activity and exercise
- achieving comfort
- maintaining skin integrity
- maintaining self-concept
- improving health-related quality of life.

Outcomes for a goal of attaining/maintaining a soft, formed stool every 1–3 days, would include: identifying measures to prevent constipation, Bristol stool score 3–4 with minimal straining on defecation, increasing fibre in the diet and increasing fluid intake.

Setting priorities depends on the person's condition and perceived need. Some people perceive that they are constipated if they do not open their bowels every day; others do not worry until they become uncomfortable and have hard, dry stools.

Continuity of care

Patients who are discharged from hospital with unresolved bowel problems may require ongoing community care. Appropriate nursing services (e.g. Royal District Nursing Service) will be involved in teaching and monitoring the patient and meeting any ongoing needs. As well, the person with alterations in bowel function may require intervention from many members of the healthcare team – the general practitioner, **stomal therapy nurse**, pharmacist and physiotherapist can provide information, support, expertise and assistance. When the person has a disability or is debilitated by illness, it is necessary to include the family in the plan of care.

Certain tasks, such as assisting patients onto the bed pan or bedside commode, are appropriate to delegate to nursing assistants (e.g. a personal care worker or health assistant) after the nurse makes an assessment of the situation. It is, however, important to remind the assistant to report any abnormal findings or difficulties with elimination.

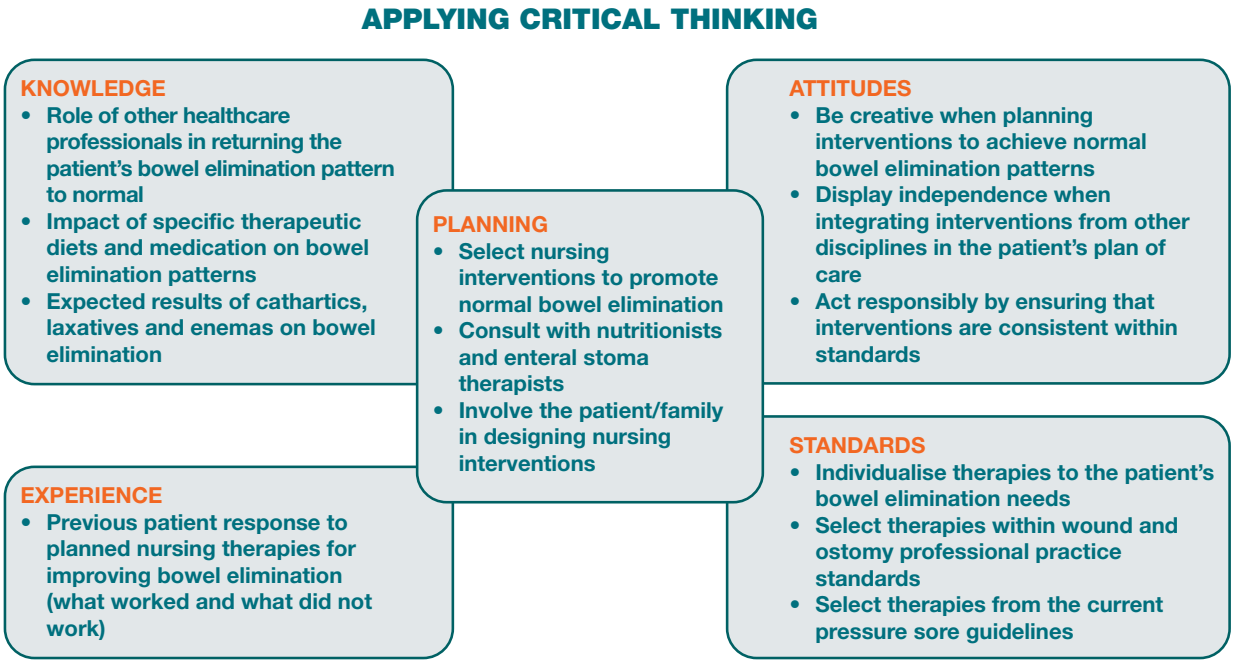


Figure 32-9 **Critical thinking associated with the planning phase for bowel elimination.**

PREPARING FOR AND TAKING ACTION

The success of nursing interventions depends on improving patients' and family members' understanding of bowel elimination.

Health promotion

One of the most important concepts a nurse can teach regarding bowel elimination is to take time for defecation. To establish regular bowel elimination patterns, a person must know when the urge to defecate normally occurs. Advise the person to begin establishing a routine during a time when defecation is most likely to occur, usually an hour after a meal. If the person is restricted to bed or requires assistance in moving, they should be offered a bed pan or assistance to reach the toilet.

Many people have established rituals for defecation. In a hospital or extended-care facilities, make certain that treatment routines do not interfere with these schedules. It is also important to provide privacy. When patients are forced to use a bed pan or share rooms with other people, pull the curtain around the area so that they can relax, knowing that interruptions will not occur. The call button should always be placed within a patient's reach. Bathroom doors should be closed, although you may need to stand close in case the patient needs assistance.

Promotion of normal defecation

To help patients evacuate bowel contents normally and without discomfort, a number of interventions can stimulate the defecation reflex, affect the character of faeces or increase peristalsis.

TOILETING POSITION You might need to give assistance to people who have difficulty getting onto a toilet because of muscular weakness and mobility problems. Regular toilets are often too low for people who are unable to lower themselves to a semi-squatting position because of pain, immobility or muscle weakness. Elevated toilet seats and grab rails can be purchased for use in the home, making sitting and standing easier and safer.

POSITIONING ON BED PAN Patients restricted to bed must use bed pans for defecation. Women use bed pans to pass both urine and faeces, whereas men use bed pans only for defecation. Sitting on a bed pan can be extremely uncomfortable. You may need to assist the person to get positioned comfortably. Two types of bed pans are available (Figure 32-10). The regular bed pan, made of metal or hard plastic, has a curved smooth upper end and a sharp-edged lower end and is about 5 cm deep. A slipper pan, designed for patients who have limited ability to move or who must lie flat, has a shallow upper end about 1.3 cm deep. The upper end of the pan fits under the buttocks towards the sacrum, with the lower end just under the upper thighs. The pan should be high enough so that faeces enter the pan.

When assisting the person onto the bed pan, the aim is to achieve as near-normal body position for toileting as possible. Figure 32-11 shows correct and incorrect positions on a bed pan. The best method is to be sure the patient is positioned high in bed. Raise the patient's head about 30 degrees, to prevent hyperextension of the back and to provide support to the upper torso, as the patient raises the hips by bending the knees and lifting the hips upwards. An overbed handrail to assist the patient to pull themselves off the mattress may also be used.

If the patient is immobile or it is unsafe to allow them to exert such effort, they can roll onto the bed pan by using the following steps:

1. Lower the head of the bed flat and help the patient roll onto one side, back towards you.
2. You may need to apply talcum powder lightly to the back and buttocks to prevent skin from sticking to the pan.

SAMPLE STUDENT NURSING CARE PLAN

Gathering relevant information and data*

Chris White (a registered nurse working in a rehabilitation centre) is assessing Mr John Moore on admission to the centre from an acute care hospital following a right total hip replacement **4 days ago**. Mr Moore is 75 years old and has a history of osteoarthritis for approximately 15 years. This has caused pain and reduced movement in both hips and knees. He had his left hip replaced 18 months ago. He has no other health problems and his only regular medication prior to surgery was 'Panadol osteo'. He was taking 2 tablets three times a day. He has progressed well following surgery and is keen to be involved in a rehabilitation program. The wound is healing well and has no signs of redness or swelling. Mr Moore is progressing well with increasing his mobility. His main health concern relates to bowel elimination. On this issue, the assessment revealed the following data:

- Normally has one soft bowel movement per day. Experienced constipation following previous hip replacement surgery.
- Has a poor appetite since the surgery, eating only small amounts. Drinking approximately 1500 mL of water and cups of tea per day.
- Feels bloated, feels like he needs to have his bowels opened but can't. Last bowel movement 4 days ago.
- Had patient-controlled analgesia of morphine for 24 hours postoperatively and then Oxynorm for pain.
- Abdominal examination: slightly convex shape to abdomen, **bowel sounds decreased in all four quadrants**. Tender on palpation, especially in left lower quadrant.
- Digital rectal examination not performed.

** Important data to cluster in setting priorities in bold.*

Priority problem

Constipation related to opiate-containing pain medication, change of diet and mobility.

Making appropriate judgements and decisions

Setting priorities and establishing goals	Expected outcomes
Mr Moore will pass a soft, formed stool within the next 24 hours. Mr Moore will voice relief from constipation. Mr Moore will identify measures that will prevent constipation.	Mr Moore will drink at least 1500 mL of fluid over the next 8 hours. Mr Moore will report passage of soft stool without straining. Mr Moore will increase the fibre content of his diet. Mr Moore discusses effect of exercise on elimination.
Preparing for and taking action	**Rationale**
Constipation management • Encourage fluid intake of appropriate fluids, fruit juice, water. • Encourage activity within the limits of patient's mobility regimen. • 2 tsp twice daily psyllium husk powder in 250 mL of water (e.g. Metamucil). • Provide privacy for toileting.	Adequate fluid intake is necessary to prevent hard, dry stool. Even minimal activity (such as leg lifts) increases peristalsis. Psyllium husk powder retains a large amount of fluid and increases the bulk of the stool, increasing intestinal motility. Patients should feel relaxed when moving bowels – this is often difficult in a hospital setting.

Evaluating impacts and outcomes

- Re-evaluate in 24 hours – may need stronger laxative.
- Observe Mr Moore's subsequent stool for characteristics such as consistency and colour (type 3–4 on Bristol Stool Scale).
- Ask Mr Moore to identify foods high in fibre.
- Observe Mr Moore's activity.
- Ask Mr Moore to plan menus to increase fibre.



Figure 32-10 Types of bed pans.

From left, regular bed pan and fracture or slipper pan.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

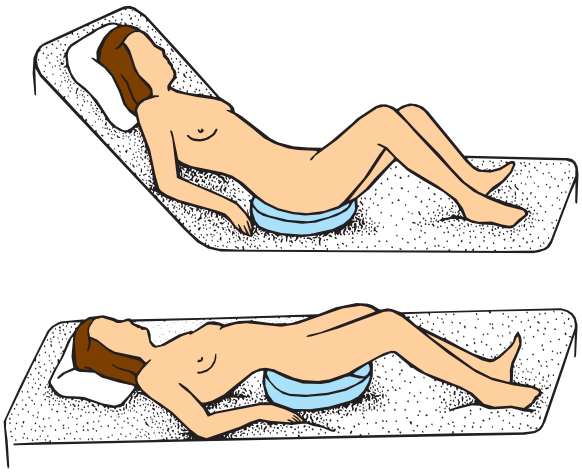


Figure 32-11 Positions on a bed pan.

Top: Proper position reduces patient's back strain. Bottom: Improper positioning of patient.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

3. Place the bed pan firmly against the buttocks, down into the mattress with the open rim towards the patient's feet (Figure 32-12).
4. Keeping one hand against the bed pan, place the other around the patient's upper hip. Ask the patient to roll back onto the pan, flat in bed. Do not push the pan under the patient.
5. With the patient positioned comfortably, raise the head of the bed 30 degrees.
6. Place a rolled towel or small pillow under the lumbar curve of the patient's back for added comfort.
7. Ask the patient to bend the knees to assume a semi-squatting position.

The privacy of a patient using a bed pan needs to be maintained. The call light and a supply of toilet paper should be within easy reach. Ensure the bed rails are raised to provide a secure environment for the patient. When the patient finishes, respond to the call signal immediately and remove the pan. When handling a bed pan, always wear gloves. To remove the pan, ask the patient to roll off to the side or raise the hips. The bed pan should be covered with a paper pan cover before taking it to the utility room to place in the pan flusher. Avoid pulling or shoving the pan from under the patient's hips because this can pull the patient's skin and cause tissue injury such as a pressure ulcer (see Chapter 26). After the pan is removed, assist the patient to clean the anal and perineal areas.

After assessing the stool, immediately empty the bed pan's contents into the pan flusher in the utility room. The bed pan is sterilised before being used by another person. After removing the gloves and performing hand hygiene, chart the characteristics of the faeces. After the patient has used a bed pan offer them a warm face washer or bowl of water and a towel so that they can wash their hands.

People who are unable to get to the toilet should be offered a bed pan or assistance to get to the toilet often. Patients may accidentally soil bedclothes if forced to wait and they may be reluctant to ask for assistance. Many patients try to avoid using a bed pan because it is embarrassing and uncomfortable. They may try to get to the toilet and risk increasing their pain or falling.

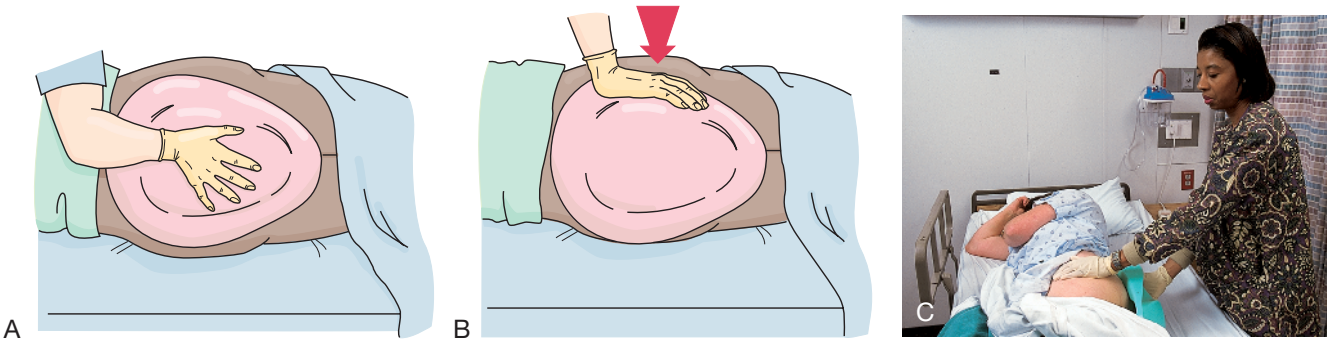


Figure 32-12 Positioning an immobilised patient on a bed pan.

A: Place bed pan firmly against buttocks. B: Push buttocks down into mattress with open rim towards feet. Once bed pan is in this position, place one hand against pan and the other on the patient's upper hip and ask the patient to roll onto the pan.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

FACILITATION OF THE GASTROCOLIC REFLEX As described previously, when food is chewed and swallowed, and moved into the stomach, a **gastrocolic reflex** is triggered causing an increase in peristalsis throughout the rest of the GI tract. The contents of the bowel are moved into the sigmoid colon and rectum, giving the person a sensation of wanting to defecate. The urge to defecate usually occurs approximately 30 minutes after eating, especially after a period of fasting, such as after breakfast. The aim is to harness this natural reflex to promote normal bowel function. It is a useful strategy, even for people who are confused and may not be able to communicate the need to defecate (such as a person with dementia) or who have impaired sensation such as paraplegia.

The reflex can be harnessed by establishing a routine time for breakfast (which is high in fibre and includes fluids), encouraging light exercise where possible and going to the toilet approximately 30 minutes after eating. Some people may need to wait for a while for the sensation to become evident. It is important to inform people not to ignore the urge to defecate, because once the urge is overridden it may not return for 24 hours.

ENCOURAGING FLUID AND FOOD INTAKE In choosing a diet for promoting normal elimination, consider the person's current frequency of defecation, the characteristics of faeces, and types of foods that promote normal bowel elimination. The person with constipation requires an increased intake of high-fibre foods and more fluids. When diet alone does not provide enough fibre, a fibre supplement such as psyllium husk powder can be added. Psyllium husk powder can be sprinkled on cereals or taken with a glass of water.

When acute diarrhoea is a problem, consider recommending foods with low fibre content and discouraging consumption of foods that typically cause gastric upset or abdominal cramping, for example, spicy foods. If the person cannot tolerate foods or liquids orally, intravenous therapy (with potassium supplements) is often necessary. They need to return to a normal diet slowly, often beginning with fluids. Excessively hot or cold fluids may stimulate peristalsis, causing abdominal cramps and further diarrhoea. As the tolerance to liquids improves, solid foods are introduced. For a person with chronic diarrhoea, diet is also important; however, determining the exact cause for the diarrhoea is necessary before dietary modifications are made. People with chronic diarrhoea are often referred to a continence nurse specialist and a dietitian for ongoing assessment and evaluation of their treatment plan.

During the first weeks after bowel surgery requiring formation of an ostomy, many surgeons recommend low-fibre diets, particularly for ileostomy patients, because the small bowel requires time to adapt to the diversion. Low-fibre foods include bread, noodles, rice, cream cheese, eggs (not fried), strained fruit juices, lean meats, fish and poultry. As the bowel and stoma heals and the person's condition improves, they can start to eat a variety of foods. High-fibre foods such as fresh fruits and vegetables help ensure a more solid stool, needed to achieve a more regular elimination pattern for the person with a sigmoid colostomy. People who have an ileostomy should be advised to eat slowly and chew food completely to reduce the risk of intestinal blockage caused by undigested foods. Drinking 10–12 glasses of water daily also prevents blockage. They may benefit from avoiding foods that cause gas and odour, for example, broccoli, cabbage, cauliflower, dried beans and Brussels sprouts. Individuals vary in their tolerance to certain foods, so for some they need to try foods and assess their effects.

Promotion of regular activity and exercise

Exercise and activity help to prevent constipation. For community-dwelling people, walking, running, riding a stationary bicycle or swimming stimulates peristalsis. People who are sedentary at work are most in need of regular exercise. Hospitalised patients who are temporarily immobilised should be encouraged to walk as soon as possible. If the condition permits, assist the postoperative patient to walk to a chair as soon as possible after surgery. The patient should be encouraged to walk further each day.

Promotion of comfort

Many people have discomfort from alterations in bowel function. Pain results when haemorrhoidal tissues are directly irritated. Flatus production can also create discomfort, particularly if distension develops.

The main goal for the person with haemorrhoids is to have soft-formed, painless stools. A high-fibre diet, fluids, and regular activity and exercise improve the likelihood of stools being soft. If the patient becomes constipated, passage of hard stools may cause bleeding and irritation. Local heat may provide temporary relief to swollen haemorrhoids. A sitz bath is the most effective means of heat application (see Chapter 26).

To relieve the discomfort of gaseous distension, use interventions that aim to reduce flatus or promote its escape. Swallowing of air increases flatus. The patient can reduce the amount of air swallowed by not drinking carbonated beverages, not using straws for drinking and not chewing gum or hard lollies. Some people find herbal teas, such as peppermint, help to reduce the discomfort of flatus. When trapped gas in the colon results in abdominal cramping, encourage the person to walk as this promotes passage of flatus. Having the person walk down the hall may be enough to stimulate peristalsis and relieve cramping.

Maintenance of skin integrity

The patient with diarrhoea or faecal incontinence is at risk of skin breakdown when faecal contents remain on the skin. The same problem exists for the patient with an ostomy that drains liquid stool. Liquid stool is usually acidic and contains digestive enzymes. Irritation from repeated wiping with toilet paper aggravates skin breakdown. Bathing the skin after soiling helps, but may result in more breakdown unless the skin is thoroughly dried.

When caring for a frail person who has faecal incontinence or urgency and is unable to ask for assistance, frequently assess for episodes of incontinence. The anal areas can be protected with a protective barrier cream (e.g. a zinc oxide and olive oil cream) that protects and holds moisture in the skin, preventing drying and cracking. Yeast infections (e.g. *Candida albicans* – 'thrush' infection) of the skin can develop easily. Several powdered antifungal agents are effective against this type of infection. Talcum powder should not be used, because it has no therapeutic properties and frequently cakes on the skin, making it difficult to remove.

Reducing the psychosocial impact of alterations in bowel elimination

As discussed previously, bowel elimination problems can have a significant psychological impact. Unpredictable elimination patterns, faecal incontinence, malodorous stools and the presence of a stoma and ostomy appliance are just a few factors that may cause psychosocial distress. For the person with a stoma, while in hospital they are focused on recovery and learning to manage the stoma and change the appliances. When they get home they often begin to question how they will cope, fear that the stoma appliance may leak or smell, and worry that their personal relationships will be affected and whether they can return to their normal activities (Burch 2013). The following interventions are aimed at minimising the psychosocial impact of bowel elimination problems:

- Give the patient an opportunity to discuss concerns or fears about elimination problems.
- Provide the patient and family with information to understand and manage the elimination problem.
- Provide opportunities to reinforce information and address misconceptions.
- Give positive feedback when the patient attempts self-care measures.
- Help the patient manage the condition and allow time for adjustment.
- Provide privacy during care.
- Show acceptance and understanding.
- Inform the person and the family about support networks, sources of good quality information and the roles of other health professionals in the multidisciplinary team.

CRITICAL REFLECTION POINT

The local retirement village has invited you to do a presentation to residents about bowel health and prevention of constipation. What points of information would you want to include in your presentation?

Cathartics and laxatives

If dietary and other interventions as described above have not resulted in a normal bowel action, further interventions may be required to alleviate constipation. Cathartics and laxatives have the short-term action of emptying the bowel. They are also used in bowel evacuation for patients undergoing GI tests and abdominal surgery. Although the terms 'cathartic' and 'laxative' are often used interchangeably, cathartics have a stronger effect on the intestines. Five types of laxatives and cathartics are available (Table 32-5). Cathartics and laxatives are available in oral tablet and suppository dosage forms (see Chapter 27). You should always aim to start with the milder type of laxative first. For example, start with a mild osmotic laxative such as lactulose syrup before moving on to a stronger laxative (e.g. Movicol or Coloxyl with senna). However, this will depend on your assessment of the patient. If the patient has significant symptoms or is taking narcotic analgesia, you may need to start with a stronger laxative and use a combination of laxatives. Dietary and other interventions should be continued.

Rectal suppositories and enemas

Suppositories and enemas are used when the patient has significant symptoms associated with their constipation to provide them with immediate relief. They work more quickly than oral preparations because of their local stimulant effect on the rectal mucosa.

RECTAL SUPPOSITORIES A suppository is a preparation that is solid until it is inserted into the rectum, where it melts and releases the active substance. The most commonly used preparation for the treatment of constipation is glycerine suppositories. They usually have an effect within 15 minutes to 1 hour. Stimulant suppositories such as bisacodyl (e.g. Durolax) can act within 30 minutes. Frail older adults often get a strong sudden urge to defecate with bisacodyl. Ensure the patient can reach the call bell, or has easy and quick access to the toilet area.

ENEMAS An **enema** is the instillation of a solution into the rectum and sigmoid colon. The main reason for an enema is to promote defecation by stimulating peristalsis and softening the faecal mass. The most common use for an enema is temporary relief of acute constipation. Other indications include removing impacted faeces and to empty the bowel before diagnostic tests or surgery.

The most commonly administered enemas are commercial preparations administered with a 5 mL plastic squeeze tube and a long insertion nozzle, for example, a Microlax microenema (see Table 32-5). Non-sterile gloves are worn to prevent the transmission of faecal microorganisms onto the hands. You should explain the procedure, including the position to assume, precautions to take to avoid discomfort, and the length of time necessary to retain the solution before defecation. If the patient is to receive the enema at home, explain the procedure to a family member or carer. Skill 32-1 outlines the steps for an enema administration.

Antidiarrhoeal agents

The most effective antidiarrhoeal agents are opiates such as codeine phosphate and diphenoxylate (e.g. Lomotil). Antidiarrhoeal opiate agents decrease intestinal muscle tone to slow the passage of faeces. Opiates inhibit peristaltic waves that move faeces forward, but they also increase segmental contractions that mix intestinal contents. As a result, the intestinal walls absorb more water. Opiate antidiarrhoeal agents should be used with caution because opiates are potentially habit-forming.

CRITICAL REFLECTION POINT

Mrs Maureen Green, a 72-year-old, has been transferred to the rehabilitation ward for intensive therapy following a right-sided haemorrhagic stroke. Outline the interventions you would plan to promote normal bowel function for this woman.

Care of a person with a bowel stoma

Patients who have temporary or permanent bowel diversions have unique health needs. A person with a stoma must wear pouches or appliances to collect the faecal matter and gas discharged from the stoma. Patients with ostomies must also follow good health practices, such as maintaining proper dietary habits and exercising regularly, to maintain normal elimination patterns. Patients with an ostomy have many education needs (Box 32-6).

TABLE 32-5 Common types of laxatives and cathartics used to prevent or treat constipation*

Agent/brand name	Action/onset of action	Indications	Precautions/side effects
Bulk-forming			
Psyllium (Metamucil)/ Ispaghula (Fybogel) Methylcellulose Sterculia (Normafibe) Bran	High-fibre content absorbs water and increases solid intestinal bulk Acts by stretching the intestinal wall to stimulate peristalsis Usually has an effect within 24 hours	Least irritating, most natural and safest cathartics Drugs of choice for mild or chronic constipation (e.g. pregnancy, low-residue diet) May also be used to relieve mild, watery diarrhoea	Should be administered with at least 250 mL of water or juice and swallowed quickly Caution is used with bulk-forming laxatives that also contain stimulants Not used in patients for whom large fluid intake is contraindicated (heart failure, renal failure)
Mild osmotic laxatives and stool softeners			
Lactulose (Actilax, Duphalac, Lac-Dol)	Reduce pH in the colon; broken down in the colon by bacteria to acetic and lactic acids. These acids stimulate peristalsis and exert a local osmotic effect in the colon A bulk-forming and irritant laxative Usually has an effect within 24 hours	Used in acute or chronic constipation	Slow in onset of action Unlike other osmotic laxatives, lactulose may be used long term Not used in patients with kidney dysfunction (toxic build-up of magnesium)
Docusate sodium (Coloxyl)	Stool softeners are detergents that lower surface tension of faeces, allowing water and fat to penetrate. They may increase secretion of water by the intestine Usually has an effect within 24–48 hours	Used for short-term therapy to relieve straining on defecation (e.g. haemorrhoids, perianal surgery, pregnancy, recovery from myocardial infarction)	Tolerance can develop with prolonged use Excessive use may cause hypomagnesaemia
Stronger osmotic laxatives			
Macrogol (Movicol sachets)	Acts by its osmotic effect in the gut which draws water into the colon and softens the stool Usually has an effect within 24–48 hours	Acute or chronic constipation	May cause severe cramping and abdominal distension Not for long-term use Prolonged use may result in electrolyte disturbance due to excessive loss of water
Stimulant laxatives			
Sennosides (Senakot)	Increase intestinal motility, water and electrolyte secretion Usually has an effect within 6–12 hours	Used in more severe, acute/short-term constipation	May cause cramping Not for long-term use Chronic use may cause fluid and electrolyte imbalances
Docusate sodium and sennosides (Coloxyl with Senna)	Docusate – stool softener Sennosides – increase intestinal motility, water and electrolyte secretion Usually has an effect within 6–12 hours	Used in more severe, acute/short-term constipation	May cause cramping Not for long-term use Chronic use may cause fluid and electrolyte imbalances
Suppositories and enemas			
Glycerine suppositories (adult and child forms)	Inserted high into the rectum against the rectal wall; have an osmotic laxative action Usually has an effect within 15 minutes to 1 hour	Used in more severe, acute/short-term constipation	Rarely – cramping pain, rectal discomfort

continued

TABLE 32-5 ***continued***

Agent/brand name	Action/onset of action	Indications	Precautions/side effects
Microlax/Enamax enema (5 mL)	Stool softener, distends the rectum and stimulates the defecatory reflex Usually has an effect within 15 minutes to 1 hour	Used in more severe, acute/short-term constipation	Rectal bleeding, burning or pain
Bisacodyl suppositories (Durolax)	Inserted high into the rectum against the rectal wall; a stimulant laxative Usually has an effect within 15 minutes to 1 hour	Used in more severe, acute/short-term constipation	Continued use may lead to inflammation of the anus Pain and rectal discomfort
Bisacodyl enema (Bisalax)	A stimulant laxative Usually has an effect within 15–30 minutes	Should only be used after other measures have failed	Continued use may lead to inflammation of the anus Pain and rectal discomfort
Phosphate enema (Fleet)	Distends the rectum and stimulates the defecatory reflex Usually has an effect within 5–10 minutes	Should only be used after other measures have failed	Rectal bleeding, burning or pain Caution in patients with heart or renal failure or frail older people May cause fluid and electrolyte shifts – especially sodium, potassium and phosphate

* Often a combination of products is used. Most are not nurse-initiated – they require a medical prescription.

Adapted from: Bryant B, Knights K 2014 Pharmacology for health professionals, 4th edn. Mosby, Sydney; Tiziani A 2010 Havard's nursing guide to drugs, 8th edn. Mosby, Sydney; and relevant proprietary information.

SKILL 32-1

Administering a prepared enema

Delegation and other considerations

This task requires the problem-solving and knowledge-application skills of registered nurses. For this reason, delegation of this task to nurse assistants or personal care workers is inappropriate.

- Position patient, being particularly aware of those who have mobility restrictions.
- Use non-sterile gloves to prevent the transmission of pathogens.

Equipment

- Non-sterile gloves
- Water-soluble lubricant
- Waterproof, absorbent pad to cover bed sheets
- Blanket or large towel to cover patient
- Toilet paper
- Bed pan, bedside commode or access to toilet
- Washbasin, washcloths, towel and soap (if person cannot get to the bathroom)
- Prepackaged enema
- Prepackaged enema container with rectal tip

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Assess health status of patient: last bowel movement – Bristol stool chart type, normal bowel patterns, presence of haemorrhoids, immobility, external anal sphincter control, abdominal pain. Auscultate abdomen for presence of bowel sounds.	Determines factors indicating need for enema and influencing the type of enema used. An enema should only be used when less-invasive methods have been used and have not resulted in relief of constipation.
2. Assess for presence of increased intracranial pressure, glaucoma or recent rectal or prostate surgery.	Conditions contraindicate use of enemas.
3. Determine patient's level of understanding of the need for an enema.	Allows nurse to plan for appropriate teaching measures.
4. Liaise with medical staff about need for an enema. Obtain written order.	Order by doctor is required. Determines number and type of enema to be given.
5. Collect appropriate equipment.	
6. Correctly identify patient and explain procedure.	Information promotes patient cooperation and reduces anxiety.
7. Provide privacy by closing curtains around bed or closing door.	Reduces embarrassment for patient.
8. Raise bed to appropriate working height for the nurse. Raise side rail on opposite side and assist patient into left side-lying (Sims') position with right knee flexed. Children may also be placed in dorsal recumbent position.	Promotes good body mechanics and patient safety. Allows enema solution to flow downwards by gravity along natural curve of sigmoid colon and rectum, thus improving retention of solution.
9. Perform hand hygiene. Put on non-sterile gloves.	Reduces transmission of microorganisms.
■ **Critical decision point: If patient is suspected of having poor sphincter control, position on bed pan. Patient will have difficulty retaining enema solution.**	
10. Place waterproof pad under hips and buttocks.	Used in case patient is unable to retain enema solution.
11. Cover patient with blanket/towel, exposing only rectal area, so anus is clearly visible.	
12. Place bed pan or commode in easily accessible position. If patient will be using the toilet, ensure that toilet is free. (If patient will be getting up to go to bathroom, place patient's slippers and dressing gown in easily accessible position.)	
13. Administer enema: (1) Remove plastic cap from rectal tip of prepackaged disposable – you may also need to remove a seal on the container. Tip is already lubricated, but more lubricant can be applied as needed.	Lubrication provides for smooth insertion of rectal tube without causing rectal irritation or trauma.

STEPS	RATIONALE
(2) Gently separate buttocks and locate rectum. Instruct patient to relax by breathing out slowly through mouth.	Breathing out promotes relaxation of external rectal sphincter.
(3) Insert tip of container gently into rectum, pointing tip in direction of patient's umbilicus. Length of insertion varies: Adult: 7–10 cm Child: 5–7 cm Infant: 2–4 cm	Gentle insertion prevents trauma to rectal mucosa. Insertion beyond proper limit can cause bowel perforation.
(4) Squeeze container until all of solution has entered rectum.	Only small volumes, to stimulate defecation.
14. Explain to patient that feeling the need to defecate is normal. Ask patient to retain solution as long as possible while lying quietly in bed (usually takes 15 minutes to 1 hour to take effect). (For infant or young child, gently hold buttocks together for a few minutes.)	Length of retention varies with type of enema and patient's ability to contract rectal sphincter. Longer retention promotes more effective stimulation of peristalsis and defecation.
15. Discard enema container and tubing in contaminated waste bin. Remove gloves and discard into waste bin.	Reduces transmission and growth of microorganisms.
16. Perform hand hygiene.	
17. Help patient to bathroom or help to position patient on bed pan. (Caution patient against flushing toilet before inspection.)	Normal squatting position promotes defecation.
18. Observe amount and character of faeces – amount, colour and type (use Bristol Stool Scale).	Note abnormalities such as presence of blood or mucous.
19. Help patient as needed to cleanse anal area (if nurse administers perineal care, use gloves). If patient cannot get to the bathroom, offer them a basin of warm water, soap and a towel to wash their hands.	Faecal contents can irritate skin. Hygiene promotes patient's comfort.
20. Assess condition of abdomen; cramping, rigidity or distension can indicate a serious problem.	Determines whether distension is relieved.

RECORDING AND REPORTING

- Record time and type of enema given and characteristics of results.
- Report failure of patient to defecate to medical practitioner.

HOME CARE CONSIDERATIONS

Instruct family about safe administration of enemas.

BOX 32-6 Health education for a person with a bowel stoma

Objective

- Patient will confidently, safely and effectively manage stoma care before discharge from hospital.

Teaching strategies

- Ascertain the person's current knowledge about stoma care and their readiness and ability to learn.
- Advise them to avoid using alcohol-based cleansing solutions around the stoma. Alcohol dilates capillaries and can cause bleeding of the stomal margin. Similarly, peroxide is an irritant and should not be used.
- Demonstrate how to wash around the stoma with water and a mild soap. Pat the skin dry, but do not rub.
- Advise them not to use skin creams on the skin surrounding the stoma because it prevents the pouch or skin barrier from adhering to the skin.
- Teach the person to assess the health of the stoma and surrounding skin daily:
  - observe a stoma that is moist, shiny and dark pink to red.
  - observe for and report excessive bleeding, oedema, or abnormal discharge or colour to a nurse or medical practitioner
  - assess when the stoma bag needs cleaning or replacement.
- Advise that if a yeast infection occurs, thoroughly clean the area, pat dry and apply an antifungal agent such as clotrimazole or nystatin.
- Teach the person how to:
  - select and apply correctly sized skin barrier
  - fit and apply the ostomy pouch
  - empty the pouch
  - employ techniques to reduce odour
  - troubleshoot when leakage occurs.
- Inform the person about where to get further ostomy supplies.

Evaluation

- The person will correctly perform ostomy skin care procedures and be able to assess the health of the stoma and periostomal skin.
- Patient will correctly assess the need for and replace the ostomy pouch.
- The person is able to identify sources for further ostomy supplies.

Pouching ostomies

An ostomy requires a pouch to collect faecal material. An effective pouching system protects the skin, contains faecal material, remains odour-free and is comfortable and inconspicuous. A person wearing a pouch should feel secure in participating in any activity.

Many pouching systems are available. To ensure that a pouch fits well and meets the person's needs, you need to consider the location of the ostomy, type and size of the stoma, type and amount of ostomy drainage, size and contour of the abdomen, condition of the skin around the stoma, physical activities of the patient, the patient's personal preference, age and dexterity, and cost of equipment. A stomal therapy nurse is a registered nurse who specialises in the care of patients with a faecal or urinary diversion. The person is usually referred to the stomal therapy nurse prior to surgery for preoperative counselling and siting of the position of the stoma. The stomal therapy nurse will work with the person to decide which pouching system is the most suitable.

A pouching system consists of a pouch and a skin barrier. Some pouching systems are attached to the person's skin along the product's adhesive surface, while other pouching systems are non-adhesive. Pouches come in one- and two-piece systems that are disposable or reusable. Some pouches have the opening pre-cut by the manufacturer; others require the stoma opening to be custom-cut to the patient's specific stoma size.

Skin barriers include wafers, pastes, powders and liquid film which are applied to the skin around the stoma. Some wafer skin barriers are permanently attached to the ostomy pouch. These are called one-piece pouch systems. In a two-piece system, the pouch can be detached from the skin barrier for emptying or changing. This allows the skin barrier to remain around the person's stoma for several days, thus minimising the chance of skin damage from too-frequent removal of the skin barrier from the peristomal skin. When using a two-piece pouching system, it is important to remember that the skin barrier and pouch must correspond in size and be from the same manufacturer. The pouch from one manufacturer will not fit correctly on the skin barrier from another manufacturer. Make sure to use an ostomy pouch made for collecting faecal matter (colostomy or ileostomy) and not one for collecting urine.

It is important to measure the stoma size carefully when selecting and cutting out the opening on the wafer skin barrier. A good skin barrier protects the skin, prevents irritation from repeated removal of the pouch and is comfortable for the patient to wear. Skill 32-2 describes general steps for applying one- and two-piece pouching systems.

• CRITICAL REFLECTION POINT

Ms Dianne Jones, a 52-year-old woman, is to undergo a bowel resection for bowel cancer. She will have a temporary ileostomy formed following the surgery. She and her partner need to be taught to learn what this means for her future elimination needs. What information would you include in an education session?

Inserting and maintaining a nasogastric tube

Decompression of the GI tract may be indicated following some types of abdominal surgery (see Chapter 39), trauma to the GI tract and for conditions in which peristalsis is absent (such as

SKILL 32-2

Pouching an ostomy

Delegation considerations

Pouching an ostomy, especially a newly established ostomy, requires the problem-solving and knowledge-application skills of a registered nurse (RN). Delegation of this skill as a whole is inappropriate. Pouching of an established ostomy can be delegated to enrolled nurses for the following aspects:

- Help caregiver and patient in selecting appropriate pouch and skin barrier.
- Educate caregiver and patient about the signs of stomal and peristomal skin changes that should be reported to an RN.
- Have caregiver or patient monitor and report characteristics and volume of ostomy output.

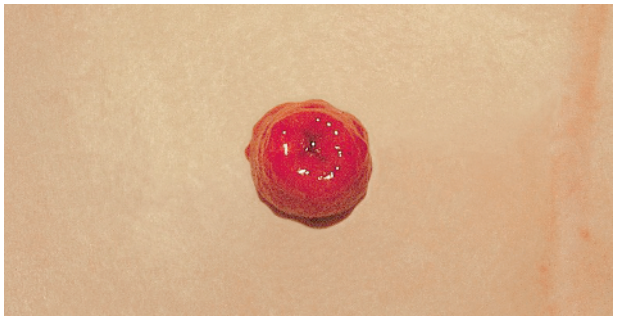
Equipment (see illustration)

- Pouch, clear drainable colostomy/ileostomy in correct size for two-piece system or custom cut-to-fit one-piece type with attached skin barrier
- Pouch closure device, such as clamp
- Adhesive remover (optional)
- Non-sterile disposable gloves
- Deodorant (if required)
- Gauze pads or washcloth
- Towel or disposable waterproof barrier
- Basin with warm tap water
- Scissors
- Skin barrier paste (pectin)
- Sealant wipes

Therapeutic relationship and patient considerations

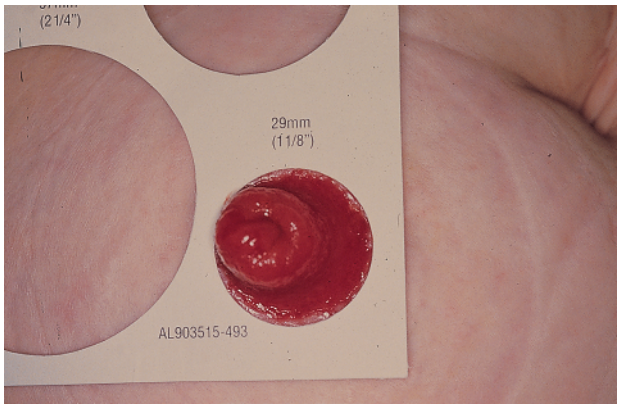
- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
Avoid unnecessary changing of the entire pouching system. A one-piece pouch with attached skin barriers or the skin barrier of a two-piece pouching system should be changed every 3–7 days, not daily.	Pouches should be emptied when one-third to half full, because the weight of contents may dislodge the skin seal, and ostomy drainage is irritating to the skin. Also, pouches collect flatus (gas), which needs to be expelled because it can disrupt the skin seal.
1. Assemble equipment and close room curtains or door.	Optimises use of time; conserves patient's and nurse's energy. Provides privacy.
2. Auscultate for bowel sounds.	Documents presence of peristalsis.
3. Observe skin barrier and pouch for leakage and length of time in place. Depending on type of pouching system used, the nurse may have to remove the pouch to fully observe the stoma (such as with an opaque pouch). Clear pouches permit the viewing of the stoma without their removal.	May indicate need for different type of pouch or sealant.
4. Observe stoma for colour, swelling, trauma, moisture and healing; stoma should be moist and reddish-pink. Assess type of stoma. Stomas can be flush with the skin or be a bud-like protrusion on the abdomen (see illustration for a normal bud stoma).	Stoma characteristics should be one of the factors to consider when selecting an appropriate pouching system.

STEPS	RATIONALE
 Equipment.	 Step 4 Bud stoma.
5. Measure the stoma with each pouching change. Follow pouch manufacturer's directions and measuring guide as to which pouch to use based on patient's stoma size.	Determines correct-size equipment, preventing trauma to stoma.
6. Observe abdominal incision (if present).	Relationship to stoma determines proper placement of pouch.
7. Observe effluent from stoma and keep a record of intake and output. Ask patient about skin tenderness.	
Critical decision point: Do not put holes in ostomy pouch for flatus to escape.	
8. Assess abdomen for best type of pouching system to use. Consider: a. Contour and peristomal plane b. Presence of scars, incisions c. Location and type of stoma	Determines pouching system selection and need for other equipment.
9. Assess the patient's self-care ability to determine the best type of pouching system to use.	Patients who have difficulty using their hands or who have limited vision may find a one-piece system or a pre-cut pouch and skin barrier more desirable to use; others prefer being able to keep the skin barrier in place for several days, changing just the pouch, and therefore prefer the two-piece system.

STEPS	RATIONALE
10. Determine the patient's emotional response and knowledge and understanding of an ostomy and its care.	Assists in determining extent to which patient is able to participate in care and need for teaching and information clarification.
11. Explain procedure to patient; encourage patient's interaction and questions.	Lessens anxiety and promotes patient's participation.
12. Position patient, either standing or supine, and drape. If seated, position either on or in front of the toilet.	When patient is supine, fewer wrinkles allow for ease of application of pouching system; maintains patient's dignity.
13. Perform hand hygiene and put on disposable gloves.	Reduces transmission of microorganisms.
14. Place towel or disposable waterproof barrier under the patient if supine.	Protects bedclothes.
15. Remove used pouch and skin barrier gently by pushing the skin away from the barrier. An adhesive remover may be used to facilitate removal of the skin barrier. After skin barrier and pouch removal, assess skin around stoma, noting scars, folds, skin breakdown and peristomal suture line, if present.	Reduces trauma; jerking irritates the skin and can cause tears, especially in older patients.
16. Clean peristomal skin gently with warm tap water using gauze pads or clean washcloth; do not scrub the skin; dry completely by patting the skin with gauze or towel.	Avoid use of soap because it leaves a residue on the skin that interferes with pouch adhesion to the skin. Skin must be dry; pouch does not adhere to wet skin. If blood appears on the gauze pad, do not be alarmed; the stoma, if rubbed, may ooze some blood from the cleaning process. Bleeding into the pouch is abnormal. The stoma's surface is a highly vascular mucous membrane.
17. Measure the stoma for correct size of pouching system needed, using the manufacturer's measuring guide (see illustration).	Ensures accuracy in determining correct pouch size needed. Stoma shrinks and does not reach final size for 6–8 weeks.
18. Select appropriate pouch for patient based on patient assessment. With a custom cut-to-fit pouch, use an ostomy guide to cut opening on the pouch 1.5–3 mm larger than stoma before removing backing. Prepare pouch by removing backing from barrier and adhesive (see illustration). With ileostomy, apply thin circle of barrier paste around opening in pouch; allow to dry.	The paste facilitates seal and protects skin. Correct size of pouch opening keeps drainage off skin and lessens risk of damage to stoma during peristalsis or activity. Pouch and skin barrier are changed whenever leaking. Can also be changed before or after tub bath or shower. Stool is alkaline and this irritates the skin; faecal bacteria can colonise on the skin and increase risk of infection. Change when patient is comfortable; before a meal is better, because this avoids increased peristalsis and chance of evacuation during the pouch change.
19. Apply the skin barrier and pouch (see steps below). If creases next to stoma occur, use barrier paste to fill in; allow to dry for 1–2 minutes.	

■ **Critical decision point: If patient has surgical incision near stoma, the skin barrier may have to be trimmed for fit.**

STEPS	RATIONALE
 Step 18 Measuring stoma.	 Step 19 Preparing suitable opening in pouch.
A. For one-piece pouching system	
(1) Use skin sealant wipes on skin directly under where adhesive skin barrier of pouch will be applied; allow to dry. (2) Hold pouch by skin barrier, centre over stoma, and press down gently on barrier; bottom of pouch should point towards patient's knees. Press the adhesive backing smoothly against the skin, starting from the bottom and working up and around the sides. (3) Maintain gentle finger pressure around the barrier for 1–2 minutes.	
B. For two-piece pouching system	
(1) Apply flange (barrier with adhesive) as in steps above for one-piece system. Then snap on pouch and maintain finger pressure.	Creates wrinkle-free, secure seal; decreases irritation from the adhesive on skin.
20. Apply non-allergic paper tape around the pectin barrier paste in a 'picture frame' method. Half the tape should be on the skin barrier and half on the patient's skin. Some patients may prefer a belt attached to the pouch for extra security rather than tape.	'Picture framing' the pectin skin barrier adds to the security of keeping the pouch system attached securely.

STEPS	RATIONALE
Critical decision point: Be sure belt is not too tight by placing two fingers between belt and skin.	
21. Although many ostomy pouches are odour proof, some nurses and patients like to put a small amount of ostomy deodorant into the pouch. Do not use 'home remedies', such as aspirin, to control ostomy odour – inform the person of this.	Aspirin or other substances can harm the stoma.
22. Fold bottom of drainable open-ended pouches up once and close using a closure device such as a clamp (or follow manufacturer's instructions for closure).	Maintains secure seal to prevent leaking.
23. Properly dispose of old pouch and soiled equipment. Consider spraying deodorant in room if needed.	Lessens odours in room.
24. Remove gloves and perform hand hygiene.	Reduces transmission of microorganisms.
25. Ask whether patient feels discomfort around stoma.	Determines presence of skin irritation.
26. Note appearance of skin around stoma and existing incision (if present) while pouch is removed and skin is cleaned. Inspect condition of skin barrier and adhesive.	Determines condition of tissues and progress of healing. Determines presence of leaks.
27. Auscultate bowel sounds and observe characteristics of stool.	Determines return of peristalsis and bowel elimination.
28. Observe patient's non-verbal behaviours as pouch is applied. Ask whether patient has any questions about pouching.	May indicate emotional response to stoma and readiness for teaching. Determines level of understanding of procedure.
29. Change pouch every 3–7 days unless leaking; pouch can remain in place for bath or shower; after bath, pat adhesive dry.	Avoids unnecessary trauma to skin from too-frequent changes. Drying ensures adhesion of pouch.

RECORDING AND REPORTING

- Chart type of pouch and skin barrier applied.
- Record amount and appearance of stool, texture, the condition of peristomal skin and sutures.
- Report any of the following to the nursing unit manager and/or doctor:
  - abnormal appearance of stoma, suture line, peristomal skin, character of output, absence of bowel sounds
  - no flatus in 24–36 hours and no stool by third day.
- Document abdominal distension and excessive tenderness, nature of bowel sounds.
- Record patient's level of participation and need for teaching.

HOME CARE CONSIDERATIONS

- Evaluate the patient's home toileting facilities. This includes presence of adequate toileting facilities, flushable toilet and number and location of toilets.
- Caution the patient that most ostomy pouches and barriers cannot be flushed down the toilet; they clog the system. Dispose of used ostomy pouch according to local sanitation regulations.
- Instruct patient to use a washcloth or any soft material to clean around stoma.

TABLE 32-6 Purposes of nasogastric intubation

Purposes	Description	Type of tube
Compression	Internal application of pressure by means of inflated balloon to prevent internal oesophageal or gastrointestinal (GI) haemorrhage	Sengstaken-Blakemore
Decompression	Removal of secretions and gaseous substances from GI tract; prevention or relief of abdominal distension	Large bore: Salem sump, Levin
Feeding (gavage) (see Chapter 36)	Instillation of liquid nutritional supplements or feedings into stomach for patients unable to swallow fluid	Fine bore: radio-opaque enteral feeding tube
Lavage	Irrigation of stomach in cases of active bleeding, poisoning or gastric dilation	Levin, Salem sump

bowel obstruction). When a nasogastric (NG) tube is used for decompression of the GI tract, the aim is to remove any gastric secretions (or food and fluids) from the stomach to prevent their build-up in the stomach and small intestine.

An NG tube is a pliable tube that is inserted through the person's nasopharynx into the stomach. The tube has a hollow lumen that allows removal of gastric secretions and introduction of solutions into the stomach. Nasogastric insertion has several purposes (Table 32-6); however, the following discussion only refers to use of an NG tube for decompression.

The Levin tube is most commonly used for stomach decompression. It is a single-lumen tube with holes near the tip. It may be connected to a drainage bag or to an intermittent suction device to drain stomach secretions.

Nasogastric tube insertion (Skill 32-3) does not require sterile technique. The person may experience a burning sensation as the tube passes through the sensitive nasal mucosa and when the tube reaches the back of the pharynx, they may begin to gag. You will need to encourage the person to relax to make tube insertion easier. Some institutions allow lignocaine jelly (e.g. topical Xylocaine) to be used when inserting the tube as it increases patient comfort during the procedure.

One of the greatest challenges in caring for a patient with an NG tube is maintaining comfort. The tube is a

SKILL 32-3

Inserting and maintaining a nasogastric tube (for decompression)

Delegation considerations

Inserting and maintaining a nasogastric (NG) tube requires the problem-solving and knowledge-application skills of registered nurses. Enrolled nurses may measure and record the drainage from the NG tube and provide oral and nasal hygiene and comfort measures.

Equipment

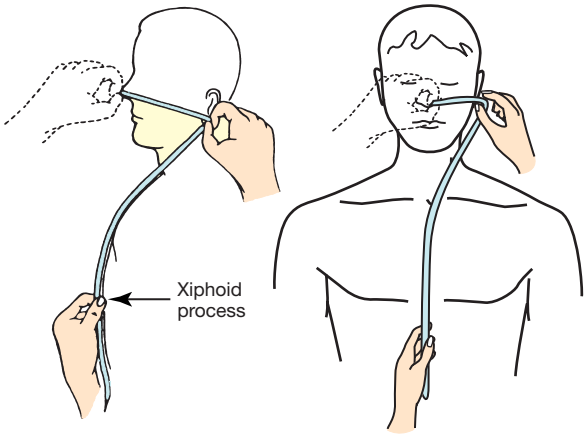
- No. 14 or no. 16 Fr NG tube (smaller lumen catheters are not used for decompression in adults because they must be able to remove thick secretions)
- Water-soluble lubricating jelly
- pH test strips (measure gastric aspirate acidity)
- Tongue blade
- Torch or lamp
- Catheter-tipped syringe
- 2.5 cm wide hypoallergenic tape
- Safety pin and rubber band/tape
- Clamp, drainage bag or suction machine or pressure gauge if wall suction is to be used
- Towel
- Glass of water with straw
- Facial tissues
- Emesis basin
- Non-sterile gloves/safety goggles

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
Inserting	
1. Pull curtain around the bed or close room door.	Provides privacy.
2. Inspect condition of patient's nasal and oral cavity.	Baseline condition of nasal and oral cavity determines need for special nursing measures for oral hygiene after tube placement.
3. Ask whether patient has had history of nasal surgery and note whether deviated nasal septum is present.	Nurse should insert tube into uninvolved nasal passage. Procedure may be contraindicated if surgery is recent.
4. Palpate patient's abdomen for distension, pain and rigidity. Auscultate for bowel sounds.	Baseline determination of level of abdominal distension later serves as comparison once tube is inserted.
5. Assess patient's level of consciousness and ability to follow instructions.	Determines patient's ability to assist in procedure.
■ **Critical decision point: If patient is confused, disoriented or unable to follow commands, get help from another staff member to insert the tube.**	
6. Check medical record for order, type of NG tube to be placed and whether tube is to be attached to suction or drainage bag.	Procedure requires a written medical order. Adequate decompression depends on NG suction.
7. Gather equipment at the bedside.	
8. Identify patient and explain procedure.	Identification prevents error of placing tube in wrong patient. Explanation gains patient's cooperation and lessens possibility that patient will remove tube.
9. Perform hand hygiene and apply disposable gloves and PPE – safety goggles.	Reduces transmission of microorganisms.
10. Position patient in high-Fowler's position (if not contraindicated, e.g. patient with a spinal injury) with pillows behind head and shoulders. Raise bed to a horizontal level comfortable for the nurse.	Promotes patient's ability to swallow during procedure. Good body mechanics prevent injury to nurse or patient.
11. Stand on patient's right side if right-handed, left side if left-handed.	Allows easiest manipulation of tubing.
12. Place towel over patient's chest; give facial tissues to patient. Have emesis basin nearby or place on the patient's lap.	Prevents soiling of patient's gown. Tube insertion through nasal passages may cause eye-watering and coughing with increased salivation.
13. Instruct patient to relax and breathe normally while occluding one nostril. Then repeat this action for the other nostril. Select nostril with greater air flow.	Tube passes more easily through the nostril that is more patent.
14. Using the NG tube, measure distance to insert tube: measure distance from tip of nose to earlobe to xiphoid process (see illustration).	Tube should extend from nares to stomach; distance varies with each patient.

STEPS	RATIONALE



Step 14 Measuring distance to insert tube.

15. Mark length of tube to be inserted with small piece of tape placed so it can be easily removed.	Marks amount of tube to be inserted from nares to stomach.
16. Cut a 10 cm piece of tape. Split one end down the middle lengthwise 5 cm. Place on bed rail or bedside table.	Tape will be used after tube insertion to anchor the tube securely.
17. Curve 10–15 cm of end of tube tightly around index finger, then release.	Curving tube tip aids insertion and decreases stiffness of tube.
18. Lubricate 7–10 cm of end of tube with water-soluble lubricating jelly.	Minimises friction against nasal mucosa and aids insertion of tube.
19. Alert patient that procedure is to begin.	Decreases patient anxiety and increases patient cooperation.
20. Initially instruct patient to extend neck back against pillow; insert tube slowly through the nostril with curved end pointing downwards (see illustration).	Facilitates initial passage of tube through the nostril and maintains clear airway for open nostril.



Step 20 Inserting tube.

STEPS	RATIONALE
21. Continue to pass tube along floor of nasal passage, aiming down towards ear. When resistance is felt, apply gentle downward pressure to advance tube (do not force past resistance).	Minimises discomfort of tube rubbing against upper nasal turbinates. Resistance is caused by posterior nasopharynx. Downward pressure helps tube curl around corner of nasopharynx.
22. If resistance is met, try to rotate the tube and see if it advances. If still resistant, withdraw tube, allow patient to rest, re-lubricate tube and insert into the other nostril.	Forcing against resistance can cause trauma to mucosa. Resting helps relieve patient's anxiety.
Critical decision point: If unable to insert tube in either nostril, stop procedure and notify medical practitioner.	
23. Continue insertion of tube until just past the nasopharynx by gently rotating tube towards opposite nostril.	
a. Stop tube advancement, allow patient to relax and provide tissues.	Relieves patient's anxiety; eye-watering is natural response to mucosal irritation, and excessive salivation may occur because of oral stimulation.
b. Explain to patient that next step requires the patient to swallow. Give patient glass of water unless contraindicated.	Sipping of water aids passage of NG tube into oesophagus.
24. With tube just above oropharynx, instruct patient to flex head forwards, take a small sip of water and swallow. Advance tube 2–5 cm with each swallow of water. If patient is not allowed fluids, instruct to dry-swallow or suck air through straw. Advance tube with each swallow.	Flexed position closes off upper airway to trachea and opens oesophagus. Swallowing closes epiglottis over trachea and helps move the tube into the oesophagus. Swallowing water reduces gagging or choking. Water can be removed later from stomach by suction.
25. If patient begins to cough, gag or choke, withdraw slightly and stop tube advancement. Instruct patient to breathe easily and take sips of water.	Tubing may accidentally enter larynx and initiate cough reflex. Gagging is eased by swallowing water. Risk of aspiration increases if vomiting occurs.
Critical decision point: If vomiting occurs, help patient clear airway; oral suctioning may be needed. Do not proceed until airway is cleared.	
26. If patient continues to cough during insertion, pull tube back slightly.	Tube may enter larynx and obstruct airway.
27. If patient continues to gag, check back of pharynx using torch and tongue blade.	Tube may coil around itself in back of throat and stimulate gag reflex.
28. After patient relaxes, continue to advance tube to the desired distance.	Tip of tube should be within stomach to decompress properly.
29. Once tube is correctly advanced, remove tape used to mark length of tube and place the prepared split tape with non-split side on nose. Anchor with one of split ends while checking tube placement.	Tube should be partially anchored before placement is checked.

STEPS	RATIONALE
30. Checking tube placement: check institutional policy for preferred methods for checking tube placement (for decompression).	
a. Ask patient to talk.	Patient is unable to talk if NG tube has passed through vocal cords.
b. Inspect posterior pharynx for presence of coiled tube.	Tube is pliable and can coil up in back of pharynx instead of advancing into oesophagus.
c. Aspirate gently back on syringe to obtain gastric contents, observing colour (see illustration).	Gastric contents are usually cloudy and green, but may be off white, tan, bloody or brown. Aspiration of contents provides means to measure fluid pH and thus determine tube tip placement in gastrointestinal tract.
d. Measure pH of aspirate with colour-coded pH paper with range of whole numbers 1–11 (see illustration).	Other common aspirate colours include the following: duodenal placement (yellow or bile-stained), oesophagus (may or may not have saliva-appearing aspirate). Gastric aspirates have highly acidic pH values, preferably 4 or less in adults and 5 or less in children, compared with intestinal aspirates, which are usually greater than 4, or respiratory secretions, which are usually greater than 5.5 (Gilbertson et al 2011, Phang et al 2004).
e. If tube is not in stomach, advance another 2–5 cm and repeat Steps 30c and d to check tube position.	Tube must be in stomach to provide decompression.



Step 30c Aspirating back to obtain gastric contents.



Step 30d Measuring pH of aspirate.

STEPS	RATIONALE
31. Anchoring tube:	
a. After tube is properly inserted and positioned, either clamp end or connect it to drainage bag.	Drainage bag is used for gravity drainage. Intermittent suction is most effective for decompression. Patient going to the operating room often has tube clamped.
b. Tape tube to nose; avoid putting pressure on nares.	Prevents tissue necrosis. Tape anchors tube securely.
(1) Before taping tube to nose, apply small amount of tincture of benzoin to lower end of nose and allow to dry (optional). Be sure top end of tape over nose is secure.	Benzoin prevents loosening of tape if patient perspires.
(2) Carefully wrap two split ends of tape around tube (see illustration).	
(3) Alternative: Apply tube fixation device using shaped adhesive patch (see illustration).	



Step 31b(2) Wrapping tape ends around tube, to secure.



Step 31b(3) Patient with tube fixation device.

c. Once tube is taped to nose, the tube can be wound behind patient's ear and taped into position for patient comfort. Fasten end of NG tube to patient's gown by looping rubber band around tube in slip knot. Pin rubber band to gown (provides slack for movement).	Reduces pressure on the nares if tube moves.
d. Unless doctor orders otherwise, head of bed should be elevated 30 degrees.	Helps prevent oesophageal reflux and minimises irritation of tube against posterior pharynx.
e. Explain to patient that sensation of tube should decrease somewhat with time.	Adaptation to continued sensory stimulus.
f. Remove gloves and apply alcoholic hand wash.	Reduces transmission of microorganisms.

STEPS	RATIONALE
32. Safety:	
a. Once placement is confirmed, place a mark, either a red mark or tape, on the tube to indicate where the tube exists in the nose.	The mark or tube length is to be used as a guide to indicate whether displacement may have occurred.
b. Measurement of the tube length from nares to connector is an alternative method.	
c. If tube length is the method used, document the tube length in the patient record.	
33. Don non-sterile gloves and clean equipment and return to proper place. Place soiled linen in utility room or proper receptacle.	Reduces transmission of microorganisms.
34. Remove gloves and perform hand hygiene.	Reduces transmission of microorganisms.
Maintaining:	
35. Observe amount and character of contents draining from NG tube. Ask whether patient feels nauseated.	Determines whether tube is decompressing stomach of contents.
36. Inspect and palpate the patient's abdomen periodically, noting any distension, pain and rigidity, and auscultate for the presence of bowel sounds.	Determines success of abdominal decompression and the return of peristalsis.
37. Inspect condition of nares and nose.	Evaluates onset of skin and tissue irritation.
38. Observe position of tubing.	Determines whether tension is being applied to nasal structures.
39. Ask whether patient feels sore throat or irritation in pharynx.	Evaluates level of patient's discomfort.
Removing	
40. Discontinuation of NG tube:	
a. Verify order to discontinue NG tube.	Written medical order required for procedure.
b. Explain procedure to patient and reassure that removal is less distressing than insertion.	Minimises anxiety and increases cooperation. Tube passes out smoothly.
c. Perform hand hygiene and put on non-sterile gloves. Put on PPE – safety goggles.	Reduces transmission of microorganisms.
d. Disconnect NG tube from drainage bag. Remove tape from bridge of nose and unpin tube from gown.	Have tube free of connections before removal.
e. Stand on patient's right side if right-handed, left side if left-handed.	Allows easiest manipulation of tube.

STEPS	RATIONALE
f. Hand the patient facial tissue; place clean towel across chest. Instruct patient to take and hold a deep breath.	Patient may wish to blow nose after tube is removed. Towel may keep gown from getting soiled. Airway will be temporarily obstructed during tube removal.
g. Clamp or kink tubing securely and then pull tube out steadily and smoothly into towel held in other hand while patient holds breath.	Clamping prevents tube contents from draining into oropharynx. Reduces trauma to mucosa and minimises patient's discomfort. Towel covers tube, which can be an unpleasant sight. Holding breath helps to prevent aspiration.
h. Measure amount of drainage in the bag and note character of content. Dispose of tube and drainage equipment in contaminated waste bin. Remove gloves.	Provides accurate measure of fluid output. Proper disposal of equipment and soiled gloves prevents spread of microorganisms and ensures proper exchange procedures.
i. Apply clean gloves. Clean nares and provide mouth care.	Promotes comfort.
j. Position patient comfortably and explain procedure for drinking fluids, if not contraindicated.	Depends on medical order. Sometimes patients are allowed nothing by mouth (NBM) for up to 24 hours. When fluids are allowed, the order usually begins with a small amount of ice chips each hour and increases as patient is able to tolerate more.

RECORDING AND REPORTING

- Record in patient progress notes time and type of NG tube inserted, patient's tolerance of procedure, confirmation of placement, character of gastric contents, pH value and whether tube is clamped or connected to drainage device.
- Record in patient progress notes and/or flow sheet amount and character of contents draining from NG tube every shift, unless ordered more frequently by medical practitioner.

constant irritation to nasal mucosa. Frequent assessment of the condition of the nares and mucosa with regard to inflammation and excoriation should be undertaken. The tape used to anchor the tube often becomes soiled, and should be changed every day to lessen irritation. Frequent lubrication of the nares also minimises excoriation. With one nostril occluded, the patient may breathe through the mouth. Frequent mouth care (at least every 2 hours) helps minimise drying of oral mucosa. A glass of cool water for rinsing is useful, but the patient who is allowed nothing by mouth (NBM) should not swallow the water. The person may complain of a sore throat. An ice bag applied externally to the throat sometimes helps. Gargling with topical lignocaine jelly and/or lozenges may be used if ordered by the medical practitioner.

After the tube is inserted, its patency must be maintained. If the tip of the tubing rests against the stomach wall or if the tube becomes blocked with thick secretions, irrigation may be necessary. Flushing the tube with water by way of an irrigation syringe clears blockage within the tube (see Skill 32-3). If an NG tube continues to poorly drain after irrigation, advancing or withdrawing the tube slightly may reposition it. Any change in tube position requires reassessment of the placement of the tube in the patient's GI tract. Repositioning the person regularly helps to promote emptying of stomach contents.

EVALUATING IMPACTS AND OUTCOMES

Patient care

The effectiveness of care depends on success in meeting the goals and expected outcomes of care. At best, the patient will be able to defecate regularly, producing soft-formed, painless stools. The patient is the only one who is able to determine whether the bowel elimination problems have been relieved and which therapies were the most effective (Figure 32-13). The person will also be able to demonstrate information gained regarding establishment of a normal elimination pattern. The patient will be able to demonstrate any skills learnt, such as ostomy protocols and skin protection. The patient will be able to accomplish normal defecation by adjusting their diet, fluid intake and exercise. The patient will have minimal reliance on artificial means of defecation such as enemas and laxative use.

APPLYING CRITICAL THINKING

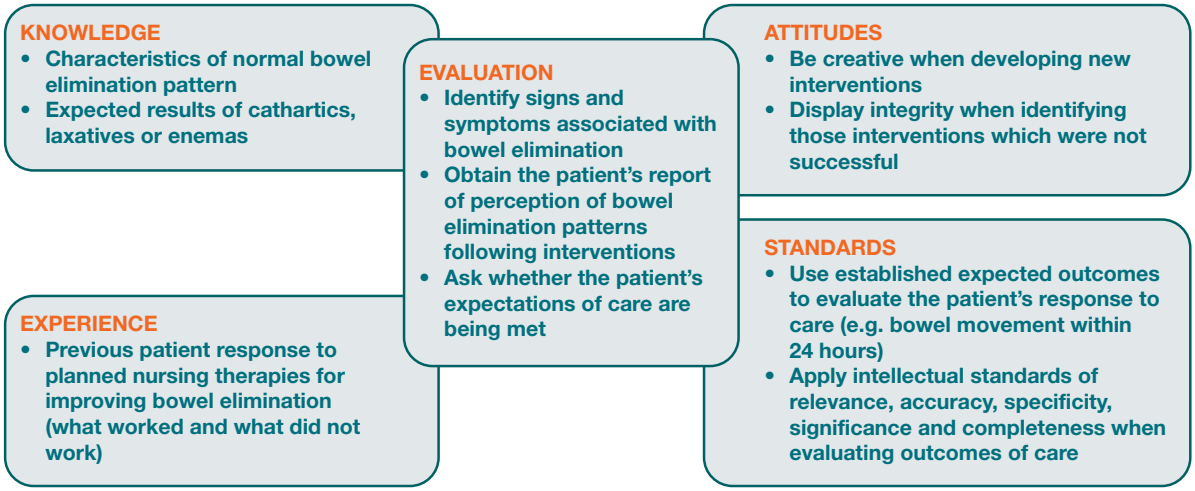


Figure 32-13 **Critical thinking associated with the evaluation phase for bowel elimination.**

Patient expectations

If you have been successful in establishing a therapeutic relationship with the person, they will feel comfortable in discussing the intimate details often associated with bowel elimination. They will not be embarrassed and will have a feeling of comfort and freedom from pain as elimination needs are met within the limits of their health condition and treatment.

Key concepts

- Mechanical breakdown of food elements, gastrointestinal (GI) motility and selective absorption and secretion of substances by the large intestine influence the character of faeces.
- Food high in fibre content and an increased fluid intake keep faeces soft.
- The greatest danger from acute diarrhoea is development of fluid and electrolyte imbalance.
- The location of an ostomy influences consistency of stools.
- Assessment of elimination patterns should focus on bowel habits, factors that normally influence defecation, recent changes in elimination, past history, lifestyle and physical examination.
- Diagnostic procedures related to the lower GI tract usually require cleansing the bowel before the procedure.
- The nurse should consider frequency of defecation, faecal characteristics and effect of foods on GI function when advising on a diet promoting normal elimination.
- Proper positioning on a bed pan enables the patient to assume a position similar to that on a toilet without experiencing muscle strain or discomfort.
- Normal bowel elimination patterns can be promoted by attention to toileting posture, facilitating the gastrocolic reflex, appropriate diet and fluid intake and an increase in activity and exercise.
- Proper selection and use of an ostomy pouching system is necessary to prevent damage to the skin around the stoma.
- Skin breakdown can occur after repeated exposure to liquid stools.
- Changes to bowel elimination can have significant psychosocial impacts on the person and their family.

Online resources

Australian guidelines for the prevention and control of infection in healthcare (2010), www.nhmrc.gov.au/guidelines/publications/cd33

Cancer in Australia: an overview 2014; presents comprehensive national data on cancer incidence and mortality in Australia, http://www.aihw.gov.au/publication-detail/?id=60129550047

Continence Foundation of Australia; the national peak body in Australia promoting bladder and bowel health, http://www.continence.org.au

Eat for health: Australian dietary guidelines, http://www.eatforhealth.gov.au/

National Bowel Cancer Screening Program; most recent information on bowel cancer and additional resources, http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/bowel-campaign-home

New Zealand Continence Association; provides a service to people with continence problems, caregivers, health professionals and the general public, http://www.continence.nz/pages/Incontinence-Everyones-Problem/57/

References

Abrams P, Andersson KE, Artibani W et al 2103 Recommendations of the International Scientific Committee: evaluation and treatment of urinary incontinence, pelvic organ prolapse and faecal incontinence. In Abrams P, Cardozo P, Khoury S et al

(eds) 2013 Incontinence. 5th International Consultation on Incontinence, 5th edn. ICUD-EAU, Paris.

Australian Medicines Handbook 2015 Adelaide, SA. Online. Available: https://amhonline.amh.net.au/; accessed 13 Jan 2016.

Brown S, Gartland D, Perlen S et al 2015 Consultation about urinary and faecal incontinence in the year after childbirth: a cohort study. BJOG 122(7):954–62.

Bryant B, Knights K 2014 Pharmacology for health professionals, 4th edn. Mosby, Sydney.

Burch J 2013 Care of patients with a stoma. Nursing Standard 27(32):49–56.

Burch J 2015 Stoma appliances and accessories: getting it right for the patient. Gastrointestinal Nursing 13(3):25–32.

Collins BR, O'Brien L 2015 Prevention and management of constipation in adults. Nursing Standard 29(32):49–58.

Costilla VC, Foxx-Orenstein AE 2014 Constipation: understanding mechanisms and management. Clinics in Geriatric Medicine 30(1):107–15.

Gilbertson HR, Rogers EJ, Ukoumme OC 2011 Determination of a practical pH cutoff level for reliable confirmation of nasogastric tube placement. J Parenter Enteral Nutr 34:540–4.

Hand Hygiene Australia 2015 ABHR is the hand hygiene product of choice. Online. Available: www.hha.org.au/About/ABHRS.aspx; accessed 8 Jan 2016.

Hussain ZH, Whitehead DA, Lacy BE 2014 Fecal impaction. Current gastroenterology reports 16(9):1–7.

Lewis SJ, Heaton KW 1997 Stool form scale as a useful guide to intestinal transit time. Scand J Gastroenterol 32(9):920–4.

Marieb EM, Hoehn K 2014 Human anatomy and physiology, 9th edn. Pearson, San Francisco.

Meyer I, Richter HE 2015 Impact of fecal incontinence and its treatment on quality of life in women. Women's Health 11(2):225–38.

National Health and Medical Research Council (NHMRC) 2013 Eat for health: Australian dietary guidelines. NHMRC, Canberra. Online. Available: www.nhmrc.gov.au/_files_nhmrc/publications/attachments/n55_australian_dietary_guidelines_130530.pdf; accessed 8 Jan 2016.

Olsson F, Berterö C 2015 Living with faecal incontinence: trying to control the daily life that is out of control. Journal of Clinical Nursing 24(1/2):141–50.

Perez-Merino R 2014 Improving colorectal cancer patients' quality of life after stoma formation. Gastrointestinal Nursing 12(9):41–7.

Phang JS, Marsh WA, Barlows TG et al 2004 Determining feeding tube location by gastric and intestinal pH values. Nutr Clin Pract 19:640–4.

Plummer M, Franceschi S, Vignat J et al 2015 Global burden of gastric cancer attributable to Helicobacter pylori. International Journal of Cancer 136(2):487–90.

Schmidt FMQ, de Gouveia Santos VLC 2014 Prevalence of constipation in the general adult population: an integrative review. Journal of Wound Ostomy and Continence Nursing 41(1):70–6.

Sipponen P, Maaroos HI 2015 Chronic gastritis. Scandinavian Journal of Gastroenterology 50(6):657–67.

Taylor C 2015 Body image concerns after colorectal cancer surgery. British Journal of Nursing 24S8–S14.

Tiziani A 2010 Havard's nursing guide to drugs, 8th edn. Mosby, Sydney.

Wilcox MH, Vehreschild MJGT, Nord CE 2015 Clostridium difficile infection. In Annual Update in Intensive Care and Emergency Medicine. Springer International Publishing.

Willson MM, Angyus M, Beals D et al 2014 Executive Summary: A Quick Reference Guide for Managing Fecal Incontinence (FI). Journal of Wound Ostomy and Continence Nursing 41(1)61–9.

Wilson M 2015 Living with faecal incontinence: a 10-year follow-up study. British Journal of Nursing 24(5):268–74.

CHAPTER

33

Maintaining urinary elimination

Elizabeth Watt

KEY TERMS

Anuria, p. 1112
Bacteriuria, p. 1114
Catheterisation, p. 1131
Diuresis, p. 1112
Dysuria, p. 1114
Erythropoietin, p. 1109
Haematuria, p. 1114
Meatus, p. 1110
Micturition, p. 1110
Nephron, p. 1108
Nocturia, p. 1112
Oliguria, p. 1112
Pelvic floor exercises (PFEs), p. 1143
Polyuria, p. 1112
Proteinuria, p. 1108
Pyelonephritis, p. 1114
Renal calculus, p. 1109
Renal replacement therapies, p. 1117
Renin, p. 1109
Residual urine, p. 1112
Uraemic syndrome, p. 1117
Urinalysis, p. 1125
Urinary frequency, p. 1112
Urinary incontinence, p. 1114
Urinary retention, p. 1116

Learning outcomes

Mastery of content will enable you to:

- describe the physiological process of micturition
- identify factors that commonly influence urinary elimination
- compare and contrast common alterations in urinary elimination
- obtain a nursing history and perform a physical examination for a patient with urinary elimination problems
- describe characteristics of normal and abnormal urine
- describe the nursing implications of common diagnostic tests of the urinary system
- identify nursing diagnoses appropriate for patients with alterations in urinary elimination
- discuss nursing interventions to promote normal voiding
- discuss nursing interventions to promote continence
- discuss nursing interventions to reduce urinary tract infection
- insert a urinary catheter
- apply a urinary sheath/condom drainage device
- use clinical reasoning and best practice evidence in the provision of care to people who have an indwelling urinary catheter
- use clinical reasoning and best practice evidence in the provision of care to people who have urinary elimination problems.

Normal elimination of waste products via the urine is a basic function most people take for granted. When the upper urinary tract fails to function properly, virtually all organ systems can potentially be affected. Similarly, a change in function of the lower urinary tract can significantly affect upper urinary tract function, and a person's health and quality of life.

Urinary system

Urinary elimination depends on the function of the kidneys, ureters, bladder and urethra. Kidneys remove wastes from the blood to form urine. Ureters transport urine from the kidneys to the bladder. The bladder holds urine until the urge to urinate develops. Urine leaves the body through the urethra. The kidneys and ureters form the *upper urinary tract*; the bladder and urethra form the *lower urinary tract*. All organs of the urinary system must be intact and functional for successful removal of urinary wastes (Figure 33-1).

Kidneys

The *kidneys* are reddish-brown, bean-shaped organs, one on either side of the vertebral column, posterior to the peritoneum and lying against the deep muscles of the back. The kidneys extend to the twelfth thoracic and third lumbar vertebrae. Normally, the left kidney is 1.5–2 cm higher than the right because of the anatomical position of the liver on the right side of the abdomen. Each kidney typically measures approximately 12 × 7 cm and weighs 120–150 g. Each kidney is covered by a tough capsule and surrounded by a cushion of fat.

The kidneys filter the waste products of metabolism that collect in the blood. Blood reaches each kidney by a *renal artery* which branches from the abdominal aorta. The renal artery enters the kidney at the hilum. Approximately 20–25% of the cardiac output circulates each minute through the kidneys. The **nephron**, the functional unit of the kidney, forms the urine. The nephron is composed of the glomerulus, Bowman's capsule, proximal convoluted tubule, loop of Henle, distal tubule and collecting duct (Figure 33-2).

Blood reaches nephrons through the *afferent arterioles*. A cluster of these blood vessels forms the capillary network of the glomerulus, which is the initial site of filtration of the blood and the beginning of urine formation. The glomerular capillaries are porous and permit filtration of water and substances such as glucose, amino acids, urea, creatinine and major electrolytes into the *Bowman's capsule*. Large proteins and blood cells do not normally filter through the glomerulus. The presence of large proteins in the urine (**proteinuria**) is one sign of glomerular injury. The glomerulus filters approximately 125 mL of filtrate per minute. The amount of filtrate formed in the renal corpuscle (a Bowman's capsule and a glomerulus) of both kidneys each minute is known as the glomerular filtration rate (GFR). Initially the filtrate closely approximates the composition of blood plasma minus the large proteins. Only a small amount of the glomerular filtrate is excreted as urine. About 99% of the filtrate is reabsorbed into the plasma, with the remaining 1% excreted as urine. Thus the kidneys play a key role in fluid and electrolyte balance

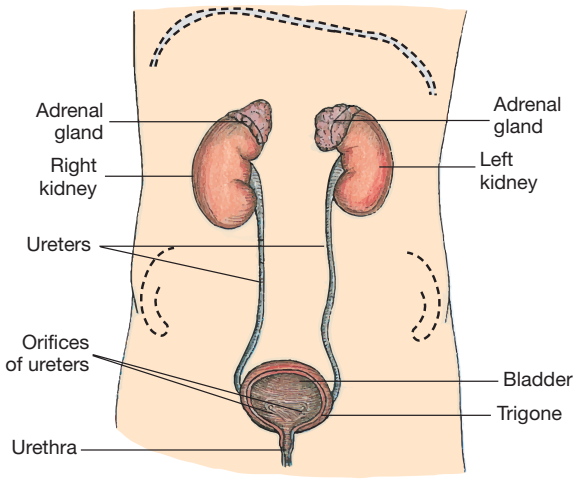


Figure 33-1 Organs of the urinary system.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

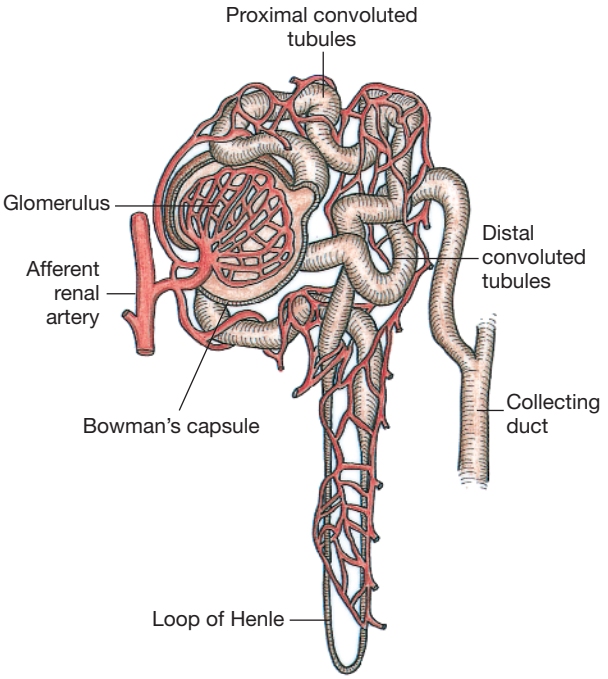


Figure 33-2 Renal nephron.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

(see Chapter 34). Although urine output does depend on intake, the normal adult 24-hour output of urine is about 1500–1600 mL. An output of less than 0.5 mL/kg per hour may indicate alterations in renal function.

The kidneys also produce several *hormones* vital to the production of red blood cells (RBCs), blood pressure regulation and bone mineralisation. The kidneys are responsible for maintaining a normal RBC volume by producing erythropoietin. As a hormone, **erythropoietin** functions within the bone marrow to stimulate RBC production and maturation (McCance & Huether 2013). Erythropoietin also prolongs the life of mature RBCs. People with chronic alterations in kidney function cannot produce sufficient quantities of this hormone and are, therefore, prone to anaemia.

Renin is another hormone produced by the kidneys. Its major role is the regulation of the systemic circulation in times of renal ischaemia (decreased blood supply to the kidneys). Renin is released from juxtaglomerular cells (Figure 33-3).

Renin functions as an enzyme to convert angiotensinogen (a plasma substance synthesised by the liver) into angiotensin I. As angiotensin I circulates through the lungs, it is converted to angiotensin II and angiotensin III. Angiotensin II exerts its effect on vascular smooth muscle to cause vasoconstriction and stimulates aldosterone release from the adrenal cortex. Aldosterone causes retention of water, which increases blood volume. Angiotensin III exerts similar effects, but to a lesser degree. The net effect of both these mechanisms is an increase in arterial blood pressure and renal blood flow (McCance & Huether 2013).

The kidneys also play a role in *calcium and phosphate regulation*. They are responsible for producing a substance which converts vitamin D into its active form. People with chronic alterations in kidney function do not make sufficient amounts of the active vitamin D metabolite. They are therefore prone to developing renal bone disease resulting from the demineralisation of bone secondary to impaired intestinal calcium absorption unless the active form of vitamin D is supplied.

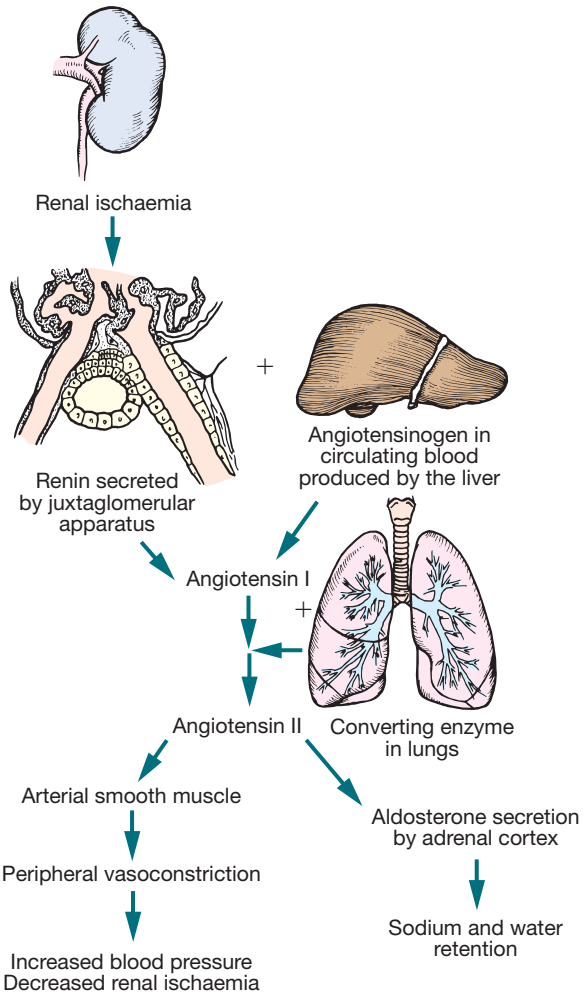


Figure 33-3 Physiological effects of the renin–angiotensin mechanism.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Ureters

Urine enters the renal pelvis from the collecting ducts. A *ureter* joins each renal pelvis to the urinary bladder. Ureters are tubular structures measuring 25–30 cm in length and approximately 3–4 mm in diameter in the adult (Marieb & Hoehn 2014). They extend retroperitoneally to enter the urinary bladder in the pelvic cavity at the ureterovesical junction. Urine draining from the ureters to the bladder is usually sterile.

Three layers of tissue form the wall of the ureter. The inner layer is a mucous membrane continuous with the lining of the renal pelvis and urinary bladder. The middle layer consists of smooth muscle fibres that transport urine through the ureters by peristaltic waves stimulated by distension with urine. An outer layer of fibrous connective tissue supports the ureters.

Peristaltic waves cause the urine to enter the bladder in spurts, rather than steadily. The ureters enter obliquely through the posterior bladder wall. This arrangement normally prevents the reflux of urine from the bladder into the ureters during the act of micturition by the compression of the ureter at the ureterovesical junction (the juncture of the ureters with the bladder). An obstruction within a ureter, such as a kidney stone (**renal calculus**), results in strong peristaltic waves that attempt to move the obstruction into the bladder. These strong peristaltic waves result in pain, often referred to as renal colic.

Bladder

The urinary *bladder* is a hollow, distensible, muscular organ which is both a reservoir for urine and the organ of excretion. The size and shape of the bladder will vary depending on its state of fullness. When empty, the bladder lies in the pelvic cavity behind the symphysis pubis. In men the bladder lies against the anterior wall of the rectum and in women it rests against the anterior wall of the uterus and vagina.

The bladder expands as it becomes filled with urine. Pressure within the bladder is usually low, even when partly full, a factor which protects against reflux of urine back up the ureters into the kidneys. In a healthy adult, bladder capacity is approximately 500 mL and when the bladder is emptied there is no residual urine volume. Both men and women will void at 3- to 5-hour intervals during the day and usually do not need to void at night. Keep in mind, however, that the habits of individuals will vary. When the bladder is full, it expands and extends above the symphysis pubis. A greatly distended bladder may reach the umbilicus. In a pregnant woman the developing fetus pushes against the bladder, causing a feeling of fullness and reducing the bladder's capacity. This effect is more likely to occur in the first and third trimesters.

The *trigone* (a smooth, triangular area on the inner surface of the bladder) is at the base of the bladder. An opening exists at each of the trigone's three angles. Two are for the ureters, and one is for the urethra. This area does not change shape very much during bladder filling and is very sensitive to stretch due to the large number of sensory nerve endings it contains (Marieb & Hohen 2014).

The *wall* of the bladder has four layers: an inner mucous coat, a submucous layer of connective tissue, a muscular layer and an outer serous coat. The muscular layer has bundles of muscle fibres that form the detrusor muscle. Parasympathetic nerve fibres stimulate the *detrusor muscle* during urination. In the male, the bladder neck provides a powerful sphincter mechanism. It also prevents retrograde ejaculation into the bladder during orgasm. The male internal urethral sphincter is made of a ring-like band of muscle which has a rich nerve supply. In the female, the bladder neck is a far weaker structure than in the male (Marieb & Hohen 2014): the smooth muscle fibres extend longitudinally along the urethra; there are no circular muscles.

Urethra

Urine travels from the bladder through the *urethra* and passes outside the body through the *urethral meatus*. Normally, the turbulent flow of urine through the urethra washes it free of bacteria. Mucous membrane lines the urethra, and urethral glands secrete mucous into the urethral canal. The mucous is believed to be bacteriostatic and forms a mucous plug to prevent entrance of bacteria. Thick layers of smooth muscle surround the urethra. In addition, the urethra descends through a layer of skeletal muscle called the *pelvic floor muscles*. When these muscles are contracted, it is possible to prevent urine flow through the urethra (McCance & Huether 2013).

In women, the urethra is approximately 3.5–5.5 cm long. The external urethral sphincter, located about halfway down the urethra, permits voluntary flow of urine. The short length of the urethra predisposes women to ascending infection. Bacteria can easily enter the urethra from the perineal area. In men, the urethra, which is both a urinary canal and a passageway for semen, is 18–23 cm long. The male urethra has three sections: the prostatic urethra, the membranous urethra and the cavernous or penile urethra. The prostate gland encircles the male urethra at the base of the bladder. In a female, the urinary **meatus** (opening) is located between the labia minora, above the vagina and below the clitoris. In a male, the meatus is located at the distal end of the penis.

Pelvic floor muscles

The bony pelvis forms the solid structure for the muscles and ligaments of the anterior, posterior and lateral pelvic walls and pelvic floor, which play an important role in supporting the position of the pelvic organs. The pelvic floor muscles include the coccygeus muscle and the levatorani and are referred to as the *pelvic diaphragm*. The anal canal, urethra and vagina pass through the pelvic diaphragm. The levatorani muscles support the pelvic organs and function as a sphincter for the anal canal and urethra (Jenkins & Tortora 2013).

The *perineum* is located inferior to the pelvic diaphragm. The perineum extends from the symphysis pubis anteriorly to the coccyx posteriorly and the ischial tuberosities laterally. The muscles of the perineum are in two layers: superficial and deep. The deep muscle layer of the perineum includes the external urethral sphincter and external anal sphincter, which assist in maintaining urinary and faecal continence (Jenkins & Tortora 2013).

Micturition

Several brain structures influence bladder function, including the cerebral cortex, thalamus, hypothalamus and brainstem. Together they suppress contraction of the bladder's detrusor muscle until a person decides to urinate (void). Once voiding (**micturition**) occurs, the response is

a contraction of the bladder and coordinated relaxation of the pelvic floor muscles.

The desire to urinate can be sensed when the bladder contains approximately 150–200 mL of urine in an adult and 50–200 mL of urine in a child. As the volume increases, the bladder walls stretch, sending sensory impulses to the *micturition centre* in the sacral spinal cord. Parasympathetic impulses from the micturition centre stimulate the detrusor muscle to contract rhythmically. The internal urethral sphincter also relaxes so that urine may enter the urethra, although voiding does not yet occur. As the bladder contracts, nerve impulses travel up the spinal cord to the pons and cerebral cortex. A person is thus conscious of the need to urinate. Older children and adults can respond to or ignore this urge, thus making urination under voluntary control. If the person chooses not to void, the external urinary sphincter remains contracted, and the micturition reflex is inhibited. When a person is ready to void, the external sphincter relaxes, the micturition reflex stimulates the detrusor muscle to contract, and efficient emptying of the bladder occurs.

Factors affecting urinary elimination

Many factors influence the volume of urine and a person's ability to urinate. Some pathophysiological conditions may be acute and reversible (e.g. acute urinary tract infection), while others may be chronic and irreversible (e.g. slow, progressive development of renal impairment). There are changes that occur to the urinary system from normal growth and development, for example, development of continence in a child. There are also a number of changes that occur with normal ageing that predispose older people to problems related to their kidneys and bladder.

Growth and development

Infants and young children cannot effectively concentrate urine. In relation to their small body size, infants and children excrete large volumes of urine. For example, a 6-month-old infant who weighs 6–8 kg excretes 400–500 mL of urine daily.

A child cannot control micturition voluntarily until 18–24 months old. A child must be able to recognise the feeling of bladder fullness, to hold urine for 1–2 hours and to communicate the sense of needing to void to an adult. The young child needs parents' understanding, patience and consistency. A child may not gain full control of micturition until age 4 or 5 years. Daytime control of micturition is easier to accomplish than night-time control and occurs earlier in the child's development, usually by 2–3 years of age (see *Working with diversity*).

The adult normally voids 1500–1600 mL of urine daily, although this is dependent on the amount of fluid ingested and the amount of insensible loss through, for example, sweating or breathing. The kidney concentrates urine, normally producing light-yellow-coloured urine. A person does not normally wake to void during sleep because of reduction of renal blood flow during rest and the kidneys' ability to concentrate urine.

Changes in kidney and bladder function also occur with ageing. The glomerular filtration rate declines, but the kidneys' ability to concentrate urine also declines.

WORKING WITH DIVERSITY

Focus on children

Bedwetting (nocturnal enuresis) is common in children and can occur until the teen years. According to the Continence Foundation of Australia, 1 in 5 Australian children wet their bed. There are three main causes of bedwetting:

- the inability to waken to the sensation of a full bladder at night
- over-activity of the bladder at night, causing loss of urine
- an abnormal amount of urine production occurring at night (nocturnal polyuria) when the child is asleep and unable to sense the fullness of the bladder.

Most children will gain night-time continence with time. The Continence Foundation of Australia suggests parents should seek assistance from a healthcare professional if a child who has been dry at night suddenly starts wetting at night; the episodes are frequent after 5 years of age; the wetting bothers the child or makes them angry or frustrated; the child is socially affected; or if the child states they want to become dry.

There are several approaches – bladder-training programs to increase the child's functional bladder capacity; night alarms that wake the child when there is leakage, so they learn to wake when their bladder is full; and the use of some medications.

At home, parents can praise success and ignore failure; encourage the child to drink plenty of water; encourage the child to take responsibility for the problem (assist when changing sheets, etc); provide a high-fibre diet, as constipation can aggravate the problem; and avoid 'toileting' the child during the night – this does not improve bladder control.

Parents can be advised to seek help from:

- Continence Foundation of Australia, www.continence.org.au/ or helpline 1800 33 00 66
- Continence New Zealand, www.continence.nz/ or helpline 0800 650 659.

Thus the older adult often experiences **nocturia** (urination at night). The bladder loses its muscle tone and capacity to hold urine, resulting in increased **urinary frequency**. Because the bladder cannot contract as effectively, an older person often retains urine in the bladder after voiding (**residual urine**). Older men may also suffer from *benign prostatic hypertrophy*, which makes them prone to urinary retention and incontinence. These changes increase the risk for bacterial growth and development of urinary tract infections (UTIs). Another factor related to urinary elimination difficulties is constipation. Constipation and resulting bowel fullness may put external pressure on the bladder, reducing the effective capacity and causing frequency or even incontinence (see Chapter 32).

In the female, childbearing and/or the hormonal changes of menopause may cause changes that lead to urinary difficulties. During a pregnancy, urinary frequency is common and susceptibility to UTIs is increased. Temporary or permanent changes that result from repeated vaginal deliveries or hormonal changes may result in decreased pelvic floor muscle tone, leading to urgency and stress incontinence (see Chapter 18). The changes in the urethral mucosa associated with loss of oestrogen during and after menopause also contribute to increased susceptibility to infection (McCance & Huether 2013).

Fluid balance

The kidneys maintain a sensitive balance between retention and excretion of fluids (see Chapter 34). If fluids and the concentration of electrolytes and solutes are in equilibrium, an increase in fluid intake causes an increase in urine production. Ingested fluids increase the body's circulating plasma and thus increase the volume of glomerular filtrate and urine excreted.

This amount varies with food and fluid intake. The volume of urine formed at night is about half that formed during the day, because both intake and metabolism decline. This results in a reduction in the volume of renal blood flow. In a healthy person, the intake of water in food and fluids balances the output of water in urine, faeces and insensible losses in perspiration and respiration. An excessive output of urine is known as **polyuria**.

Ingestion of certain fluids directly affects urine production and excretion. Coffee, tea, cocoa and cola drinks that contain caffeine promote increased urine formation (**diuresis**). Alcohol inhibits the release of antidiuretic hormone (ADH), resulting in increased water loss in urine. Foods that contain a high fluid content, such as fruits and vegetables, may also increase urine production.

Febrile conditions affect urine production. The patient who becomes diaphoretic loses a large amount of fluids through insensible water loss, which decreases urine production. However, the increased body metabolism associated with fever increases accumulation of body wastes. Although urine volume may be reduced, it is highly concentrated.

Changes to renal function

Disease processes that primarily affect renal function (changes in urine volume or quality) are generally categorised as prerenal, renal or postrenal in origin (Box 33-1). Prerenal alterations in urinary elimination decrease circulating blood flow to and through the kidneys, with subsequent decreased perfusion to renal tissue. In other words, the alterations are outside the urinary system. The decrease in renal perfusion leads to **oliguria** (diminished capacity to form urine) or, less commonly, **anuria** (inability to produce urine). *Renal alterations* result from factors that cause injury directly to the glomerulus or renal tubule, interfering with their normal filtering, reabsorptive and secretory functions. *Postrenal alterations* result from obstruction to the urinary collecting system anywhere from the calyces (drainage structures within the kidney) to the urethral meatus (i.e. outside the kidney but within the urinary

BOX 33-1 Conditions causing alterations in renal function

Prerenal conditions

- Decreased intravascular volume: dehydration, haemorrhage, significant burns, shock
- Altered peripheral vascular resistance: sepsis, anaphylactic (allergic) reactions
- Cardiac pump failure: heart failure, myocardial infarction, hypertension, valvular disease, pericardial tamponade

Renal conditions

- Systemic diseases (e.g. diabetes mellitus)
- Hereditary diseases (e.g. polycystic kidney disease)
- Nephrotoxic agents (e.g. gentamycin)
- Diseases of the glomeruli (e.g. glomerulonephritis)
- Renal neoplasms
- Infections
- Transfusion reactions

Postrenal conditions

- Ureteral, bladder or urethral obstruction: calculi, blood clots, tumours, stricture
- Prostatic hypertrophy or tumour
- Neurogenic bladder
- Pelvic tumours

system). Urine is formed by the urinary system but cannot be eliminated by normal means.

Changes to bladder function

Several diseases can affect the ability to void normally. Any lesion of peripheral nerves leading to the bladder causes loss of bladder tone, reduced sensation of bladder fullness and difficulty in controlling urination. For example, diabetes mellitus and multiple sclerosis cause neuropathic conditions that alter bladder function.

Illness and frailty

Reduced mobility or disability sometimes makes it difficult for a person to reach a toilet in time or to manage clothing or hygiene requirements. Rheumatoid arthritis, degenerative joint disease and Parkinson's disease are examples of conditions that make it difficult to reach and use toilet facilities. A person with rheumatoid arthritis often cannot sit on or rise from a toilet without an elevated seat or handrails.

Any alteration in cognitive function can impair a person's perception of the need to void or impair their ability to get themselves to the toilet and complete toileting activities. This is particularly relevant when a person who has dementia is admitted to an acute care hospital or moves from home to residential care. The change in environment can increase the person's confusion and make episodes of urinary incontinence more likely. A major goal when caring for a person in this situation is to reduce the impact of the change in environment by close observation of the person's responses, so that the nurse can anticipate the cues that the person needs to go to the toilet, reinforce the location of the toilet and provide frequent reassurance.

Psychological and environmental factors

Anxiety and emotional stress may cause a sense of urgency and increased frequency of urination. An anxious person may have the urge to void even after voiding only a few minutes earlier. Anxiety may also prevent a person from being able to urinate completely. Emotional tension makes it difficult to relax abdominal and pelvic floor muscles. If the external urethral sphincter is not completely relaxed, voiding may be incomplete and urine is retained in the bladder.

When people are hospitalised they are often reluctant to void in a shared ward environment or to use a bed pan or urinal. Where possible, the person should be assisted to the toilet to void. Men may need assistance to stand to void. Staying close by and leaving the person with a call bell may encourage a more normal environment in which they feel comfortable for voiding to occur.

Surgical procedures

The stress of surgery initially triggers the general adaptation syndrome (see Chapter 37). The posterior pituitary gland releases an increased amount of ADH, which increases water reabsorption and reduces urine output. The surgical patient is often in an altered state of fluid balance before surgery due to the disease process or preoperative fasting, which aggravates the reduction in urine output. The stress response also elevates the level of aldosterone, resulting in reduction of urine output in an effort to maintain circulatory fluid volume.

Anaesthetic and narcotic analgesics may slow the glomerular filtration rate, reducing urine output. These pharmacological agents also impair sensory and motor impulses between the bladder, spinal cord and brain. Patients recovering from anaesthesia and deep analgesia are often unable to sense bladder fullness and are unable to initiate or inhibit micturition. Spinal anaesthetics, in particular, create the risk of urinary retention because of an inability to sense the need to void and a possible inability of the bladder muscles and sphincters to respond.

Surgery of lower abdominal and pelvic structures can impair voiding because of local trauma to surrounding tissues. Pain can interfere with relaxation of pelvic floor and sphincter muscles and make voiding difficult or painful. After returning from surgery involving the ureters, bladder and urethra, patients routinely have an indwelling urinary catheter.

Medications

Diuretics prevent reabsorption of water and certain electrolytes to increase urine output. Urinary retention may be caused by use of some anticholinergic, antihistamine, antihypertensive or beta-adrenergic blocker medications. Some medications change the colour of urine; for example, amitriptyline causes a green or blue discolouration, while levodopa may discolour the urine to brown or black (Bryant & Knights 2015). People who have impairment in kidney function require dosage adjustments of medications excreted by the kidneys.

Common urinary elimination problems

People with urinary problems most commonly have disturbances in voiding that involve a failure to store

urine or a failure to empty urine. These disturbances result from impaired bladder function, obstruction to urine outflow or inability to voluntarily control micturition. Chronic kidney disease is a significant health problem in the Australian and New Zealand community, causing a serious and ongoing health burden on the person, their family and the healthcare system.

Lower urinary tract infections

Urinary tract infections are very common throughout the life span but are more prevalent in older people. It is estimated that the overall incidence rate is 18 per 1000 people per year (Puca 2014). When the infection is confined to the bladder and urethra it is termed a lower urinary tract infection. Bacteria in the urine (**bacteriuria**) may lead to the spread of organisms into the kidneys (upper urinary tract infection).

The most common organism that causes UTIs in otherwise healthy people is *Escherichia coli* (Puca 2014). Microorganisms most commonly enter the urinary tract through the urethral route. Bacteria inhabit the distal urethra, external genitalia and vagina in women. Organisms enter the urethral meatus easily and travel up the inner mucosal lining to the bladder. Risk factors for developing a UTI include being a postmenopausal woman, sexual activity in women, pregnancy, and underlying anatomical abnormality (vesico-ureteric reflux, history of recurrent UTI, urinary obstruction, presence of renal calculi). Older adults and people with progressive underlying disease or decreased immunity are also at increased risk.

Most children and adults with lower UTIs have pain or burning during urination (**dysuria**) as urine flows past inflamed tissues. An irritated bladder causes a frequent and urgent sensation of the need to void. Irritation to bladder and urethral mucosa can result in blood-tinged urine (**haematuria**). The urine can appear concentrated and cloudy because of the presence of white blood cells (WBCs) or bacteria. The signs and symptoms of UTI in older adults can be less obvious. Often the first symptoms may be confusion and dehydration. An infection in the upper urinary tract (kidneys – **pyelonephritis**) can cause more-severe symptoms such as (commonly) flank pain, tenderness, nausea, vomiting, fever and chills.

Urinary incontinence

Urinary incontinence is defined as the complaint of any involuntary loss of urine (Abrams et al 2013). It may be transient or ongoing. Urinary incontinence can be further defined according to the person's symptoms: stress incontinence, urge incontinence, mixed incontinence (a mix of stress and urge symptoms), nocturnal enuresis, post-micturition dribble, overactive bladder and functional incontinence (Abrams et al 2013) (see Table 33-1 for definitions, risk factors and defining characteristics).

Urinary incontinence affects up to 37% of Australian women and 13% of Australian men (Australian Institute of Health and Welfare (AIHW) 2013b). Severe urinary incontinence (UI) affects up to 1.5% of Australian men and women. It is more common in females, and people over 65 years of age are 12 times more likely to experience severe UI than those under 65 years (AIHW 2014a). In New Zealand, 25–34% of adult women and 5–22% of adult men have experienced urinary incontinence (Continence New Zealand 2015).

Urinary incontinence significantly affects a person's quality of life, including the person's daily activities, sexuality, body image and self-esteem (Abrams et al 2015). Efforts to cope with the problem may lead to the person reducing their fluid intake, increasing the frequency of voiding and avoiding social contact (Gordon & Drake 2014, Yip et al 2013). There is also evidence in the literature that continence problems have significant impact on family caregivers, including depression (Lobchuk & Rosenberg 2014).

Prostatic hypertrophy and prostate cancer

Benign enlargement of the prostate gland that occurs with ageing can obstruct the urethra and make voiding difficult. *Benign prostatic hypertrophy* (BPH) is a common condition affecting more than 50% of men by 60 years of age (Bechis et al 2014). The typical symptoms are decreased urinary stream, hesitancy, intermittent stream, nocturia, frequency and urgency (see Table 33-2 for a description of common types of lower urinary symptoms). Some men may develop acute or chronic urinary retention (see below). Treatment for men who have symptomatic BPH include medications which aim to relax the smooth muscles at the bladder neck (alpha-blockers) or to reduce the size of the prostate gland (5-alpha-reductase inhibitors), or surgery – for example, trans-urethral resection of the prostate (Eifler 2014).

Prostate cancer is the most common cancer that occurs in men. The risk of developing prostate cancer to age 75 years is 1 in 7 for Australian men (AIHW 2014b). In New Zealand males, the incidence of prostate cancer is estimated to be 1 in 13 to age 75 (Prostate Cancer Foundation of New Zealand 2015). Prostate cancer is essentially a disease of older men, with 85% diagnosed after 65 years of age (Cancer Council Australia 2015). Prostate cancer is rare before the age of 40 years and its incidence rises rapidly after age 60 years.

TABLE 33-1 Types of urinary incontinence

Description	Risk factors	Symptoms
Urgency urinary incontinence		
Involuntary leakage of urine after a strong sense of urgency to void	Decreased bladder capacity; irritation of bladder wall; alcohol or caffeine ingestion; increased fluid intake; infection	Significant urinary urgency – inability to defer voiding once the urge has occurred, often with frequency (more often than every 2 hours)
Stress urinary incontinence		
Involuntary leakage of urine on effort or exertion or on sneezing or coughing	Coughing, laughing, sneezing or lifting with a full bladder; obesity; full uterus in third trimester; incompetent bladder outlet; vaginal or uterine prolapse; weak pelvic floor muscles	Loss of urine with increased intra-abdominal pressure. Usually small amounts of urine lost
Mixed urinary incontinence		
Involuntary leakage of urine associated with urgency and also with effort or exertion or on sneezing or coughing	Coughing, laughing, sneezing or lifting with a full bladder; obesity; full uterus in third trimester; incompetent bladder outlet; vaginal or uterine prolapse; weak pelvic floor muscles	Loss of urine with increased intra-abdominal pressure, urinary urgency and frequency. Can be a small or large amount of urine lost
Functional urinary incontinence		
Involuntary urine loss that occurs because of impaired functional status – impaired cognitive status, impaired mobility and dexterity and/or environmental barriers that block toilet access	Change in environment: sensory, cognitive or mobility deficits	Urge to void that causes loss of urine before reaching appropriate receptacle. The patient with cognitive changes may have forgotten what to do or not recognise the place to void
Nocturnal enuresis		
Involuntary loss of urine occurring during sleep	Abnormal night-time secretion of antidiuretic hormone, developmental delay in development of control of the micturition reflex, family history of enuresis. Exacerbated by urinary tract infection	Urinary loss while asleep
Overactive bladder		
Symptoms of urgency with or without urge incontinence, usually with frequency and nocturia	Neurological disorders such as stroke, dementia, Parkinson's disease; stress urinary incontinence, inflammation, idiopathic	Diagnosed with urodynamic testing. Bothersome urgency usually associated with frequency and nocturia
Post-micturition dribble		
Feeling of involuntary urine loss immediately after finishing voiding	Urinary retention, urethral abnormalities such as a diverticulum in women and post prostatectomy in men	Men will complain of urine loss immediately after voiding; women will complain of urine loss on rising from the toilet
Neurogenic detrusor overactivity		
Urinary incontinence, urinary retention. Urine leakage occurs without warning	Disruption of the central nervous system regulation of the micturition reflex as seen in neurological disorders such as spinal cord injury, multiple sclerosis, etc	Urine leakage occurs without warning

Adapted from: Abrams P, Cardozo P, Khoury S, Wein A (eds), Incontinence – 5th international consultation on incontinence – Paris, 5th edn, ICUD-EAU.

The cause of prostate cancer is unknown. Apart from advancing age and being male, the strongest established risk factor is a family history of the disease (Zhu et al 2012). Part of the concern for men and for healthcare workers is the non-specific nature of the typical presenting signs and symptoms associated with prostate cancer. In the early stages they are likely to be asymptomatic. Differential diagnosis involves a health assessment and will include a prostatic-specific antigen (PSA) test, digital rectal examination (DRE) and biopsy. Treatment options for prostate cancer include surgery (radical prostatectomy), androgen deprivation therapy and radiation therapy.

TABLE 33-2 Common lower urinary tract symptoms

Symptoms	Description	Causes or associated factors
Storage/filling symptoms		
Frequency	Voiding more frequently than normal during the day – usually more than 8 times per day (but this varies)	Increased fluid intake, bladder inflammation (usually from infection), increased pressure on bladder (pregnancy, psychological stress), overactive bladder
Nocturia	Waking from sleep to void more than once per night	Excessive fluid intake before bed (especially coffee or alcohol), renal disease, ageing process, prostate enlargement, heart failure, incomplete bladder emptying, use of sedatives and hypnotics
Urgency	Strong and immediate need to void immediately that is not easily deferred	Bladder irritation or inflammation from infection, incompetent urethral sphincter, psychological stress
Emptying/voiding symptoms		
Dysuria	Painful or difficult urination – often described as a 'burning' sensation	Bladder inflammation (usually from infection), trauma or inflammation of the urethra (urethritis)
Hesitancy	Difficulty initiating urination and delay in onset of voiding	Prostate enlargement, anxiety, urethral oedema
Incomplete bladder emptying	The sensation that urine remains in the bladder after micturition	Abnormal bladder sensations, bladder outlet obstruction, neurological diseases, pelvic organ prolapse

Adapted from Staskin D, Kelleher C, Bosch R et al 2013 Initial assessment of urinary incontinence in adult male and female patients. In P Abrams, P Cardozo, S Khoury, A Wein (eds), Incontinence – 5th international consultation on incontinence – Paris, 5th edn, ICUD-EAU.

Urinary retention

Urinary retention is the inability to fully empty the bladder after voiding or a complete inability to urinate despite effort (Staskin et al 2013). Urinary retention can be acute or chronic. In *acute retention*, key signs are bladder distension and absence of urine output over several hours. The bladder may hold as much as 2000–3000 mL of urine. The person may experience significant discomfort, tenderness over the symphysis pubis, restlessness and diaphoresis (sweating). Acute retention is most common in men due to obstruction of the urethra as a result of benign enlargement of the prostate gland. It can also occur in people in the postoperative period, particularly following a lengthy surgical procedure, in people who have had an epidural anaesthetic or infusion, following removal of an indwelling catheter, in people who have poorly controlled pain and after vaginal birth (Johansson et al 2013). It is a medical emergency that requires immediate intervention.

Chronic retention results from incomplete bladder emptying over a period of time. It results from either a partial obstruction of the urethra (e.g. urethral stricture, enlarged prostate, chronic constipation) and/or from reduced ability of the detrusor (bladder) muscle to contract during voiding (e.g. spinal cord injury, nerve damage from diabetes mellitus). As retention progresses, retention with overflow may develop. Pressure in the bladder builds to a point where the external urethral sphincter is unable to hold back urine. The person may have an urge to void but is only able to void small amounts. Some people may experience intermittent episodes of incontinence, while others experience constant dribbling of urine. Depending on the cause of the chronic retention, the person may or may not be aware of the incomplete bladder emptying. Chronic retention caused by partial obstruction can result in increased pressures within the urinary tract causing damage to the kidneys (postrenal obstruction). Incomplete bladder emptying can predispose the person to UTIs.

Chronic kidney disease

Diseases that cause irreversible damage to the glomerulus or tubules result in permanent alterations in renal function. Chronic kidney disease (CKD) or end-stage kidney disease (ESKD) are the terms used to describe the resulting decline in kidney function from these processes. CKD is damage to the kidneys or reduced renal function lasting more than 3 months (AIHW 2015). It is estimated that 13% of Australians are living with CKD (AIHW 2015). Aboriginal and Torres Strait Islander people, especially those living in remote communities, are at high risk of developing CKD and the incidence is increasing (AIHW 2013a). There is a similar incidence of CKD in New Zealand, with 16% of New Zealanders having some form of kidney damage, and a higher incidence in Māori and Pacific Islanders (Joshy et al 2010). A major risk factor for developing CKD is diabetes. Other risk factors include

hypertension, cigarette smoking, obesity, family history of CKD and being over 50 years of age (Kidney Health Australia 2015).

The person with ESKD manifests numerous metabolic disturbances that require treatment for survival. The associated symptoms experienced by the patient occur as a result of the **uraemic syndrome**. This syndrome is characterised by an increase in nitrogenous wastes in the blood, altered regulatory functions (causing marked fluid and electrolyte abnormalities), nausea, vomiting, headache, coma and convulsions. The problem may be managed conservatively with medications and a regimen of dietary and fluid restrictions. However, as worsening of the uraemic symptoms becomes evident, more-aggressive treatment is required. These treatments are known as **renal replacement therapies**. Dialysis and organ transplant are the two methods of renal replacement; the two methods of dialysis are haemodialysis and peritoneal dialysis. Both dialysis methods can be applied for a short or a long time, and they require specialised equipment and nurses who are renal clinical specialists.

Haemodialysis involves using a machine equipped with a semipermeable filtering membrane (artificial kidney) that removes accumulated waste products from the blood. In the dialysis machine, dialysate fluid is pumped through one side of the filter membrane (artificial kidney) while the patient's blood passes through the other side. The processes of diffusion, osmosis and ultrafiltration clean the patient's blood, and it is returned through a specially placed vascular access device (Dring & Hipkiss 2015).

Peritoneal dialysis uses the peritoneal membrane in the abdomen and its blood supply for diffusion and osmosis of waste products and excess fluid volume. Dialysis fluid is infused into the abdomen via a catheter into the peritoneum. The dialysis fluid is left in the abdomen for a period of time and then drained (Dring & Hipkiss 2015).

Transplantation is the surgical replacement of the person's diseased kidney with a healthy one from a living or cadaveric donor of compatible blood and tissue type. Immunosuppressive medications are administered for life to prevent the body rejecting the transplanted organ. Unlike the other treatments, a successful organ transplant offers the patient the potential for restoration of normal kidney function for varying periods of time.

Renal calculi (nephrolithiasis)

Urinary calculi are stones that occur in the urinary tract including the kidney, ureters, bladder and urethra, and can be classified according to their point of origin, location and composition. The calculi can vary in size from microscopic to several centimetres in diameter. They can cause significant morbidity for people who develop them. Urinary calculi are common worldwide affecting 10% of the population with an increasing prevalence (Turner & Semins 2014). The lifetime risk of developing kidney stones is 1 in 10 for Australian men and 1 in 35 for Australian women (Renal Resource Centre 2015). Stones form by a process of crystallisation where growth occurs around a central nucleus. Classification of urinary stones is commonly based on their composition and one or more substances may form them. The most common urinary stones (80%) are composed of calcium; 5–10% are uric acid, 10–15% are struvite and may form a stag horn calculus in the renal pelvis, and 1% are composed of cystine (Khan 2012). The most common presentation with urinary calculi is severe pain, usually of sudden onset and the person may have microscopic or macroscopic haematuria (Khan 2013). The person may find it difficult to void because of pain or obstruction. Treatment options for urinary calculi can be classified as either non-invasive (watchful waiting) or invasive (actual removal of the stone/s). Initial management for an acute presentation includes intravenous fluids, treatment of nausea and vomiting and pain relief. However, in many cases the person requires hospital admission and urgent intervention, for example, if there is evidence of infection, a reduction in renal function on the affected side, uncontrolled pain, solitary kidney or bilateral renal obstruction (Gayed & Semins 2014).

• CRITICAL REFLECTION POINT

Successful clinical reasoning requires a synthesis of knowledge, experience, information gathered from patients, critical-thinking attitudes, and intellectual and professional standards. Assessment of a person for risk factors or actual urinary elimination problems requires specific knowledge and sensitivity in approaching health issues which the person may find difficult to discuss (see Figure 33-4).

CLINICAL REASONING PROCESS



GATHERING RELEVANT INFORMATION AND DATA

Assessing urinary elimination patterns and determining the aetiology of symptoms requires a focused nursing history, physical assessment, including abdominal examination, and specimen testing, assessment of skin, mobility and, where necessary, cognition. In most cases, you would also need to assess bowel function (see Chapter 32).

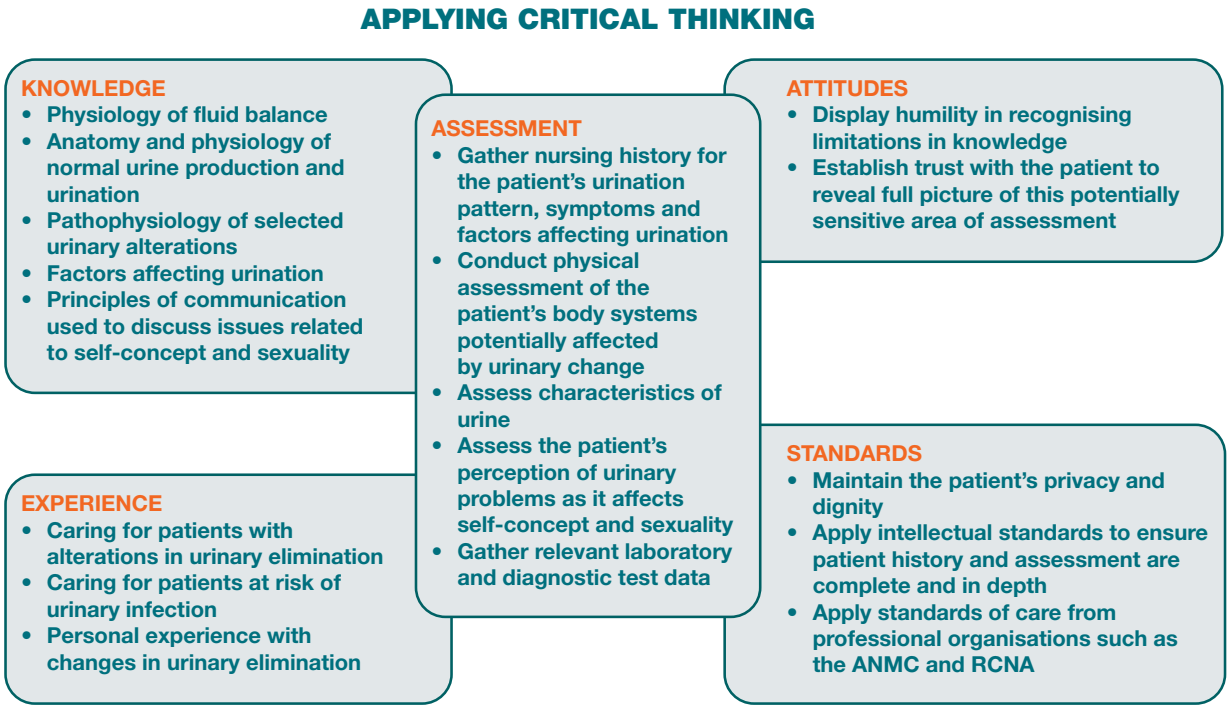


Figure 33-4 **Critical thinking associated with the assessment phase for urinary elimination.**

Nursing history

The focused nursing history provides a review of the person's usual urinary elimination pattern and toileting habits. This information enables identification of possible health problems and gives direction to the physical examination. The nursing history includes a review of the patient's elimination pattern, LUTS and an assessment of other factors that may be affecting the ability to urinate normally.

- *Determine the concern being presented by the person.* It is important to acknowledge the person's perception of their urinary elimination problem and how this affects their quality of life. How does this problem affect their work, school, activities, relationships, and so on?
- *Determine the usual voiding pattern.* Ask the person about the frequency and pattern of urination, including frequency and times of day, normal volume at each voiding and any recent changes. Frequency varies among individuals and with intake and other types of fluid losses. The common times for urination are on waking, after meals and before bedtime. Most people void an average of five or more times a day and no more than once overnight. Information about the pattern of urination establishes a baseline for comparison. Having the person or caregiver complete a 'voiding or bladder diary' can enhance accurate assessment of the person's urinary pattern. The information collected in a typical voiding diary includes: time of voiding and the measured amount voided, fluid intake and type, presence of symptoms (e.g. urge, incontinence). To improve accuracy, the person completing the diary must understand what information must be recorded. Normally a voiding diary would be kept for three 24-hour periods so that the person's normal urinary elimination patterns can be determined. Keep in mind that normal changes with ageing predispose older adults to certain elimination problems (see *Research highlight*).
- *Characteristics of the urine.* Ask the person about the colour, odour, clarity, etc of their urine.
- *Fluid intake/fluid balance.* In a hospitalised patient, assessment of fluid balance is often undertaken. The data is recorded on a fluid balance chart, and intake and output are compared over a 24-hour period (see below). The information in the voiding diary will help you determine the amount and types of fluid that the person usually consumes. If the person has not completed a voiding diary, ask them about their usual fluid intake (type and amount) and pattern of intake.
- *History of change or disturbance in urinary function.* Detail any changes in function that the person has noticed and for how long this has been a problem, what has the person done about it.
- *Pain.* There are several sites for pain associated with urinary tract dysfunction. These include flank pain (costovertebral angle), usually unilateral, which is associated with a problem in the kidney or renal pelvis; and suprapubic pain which is associated with UTI. Ask about the frequency and character of the pain. Is the pain associated with voiding? How long has the pain been present? How does the pain rate from 1 to 10? What has the person done to relieve the pain? Are there any associated symptoms (e.g. nausea, frequent urination, fatigue)?
- *Lower urinary tract symptoms.* LUTS may occur in more than one type of disorder. During assessment ask the patient about the LUTS listed in Table 33-2. Also investigate the factors that precipitate or aggravate symptoms.

RESEARCH HIGHLIGHT

Research focus

There are risks associated with the use of indwelling urinary catheters; in particular, they are the cause of approximately 80% of urinary tract infections in acute care. The majority of research aimed at minimising IUC use has focused on limiting the duration of catheterisation and there is evidence that interventions in this area can achieve positive outcomes. Interventions to reduce the duration of use of indwelling urethral catheters (e.g. reminder systems) have been found to be effective. This paper evaluates attempts to minimise the initial placement of IUCs.

Research abstract

This research aimed to systematically evaluate the evidence of the effectiveness of interventions to minimise the initial placement of indwelling urinary catheters in adults in acute care environments. A systematic review of the published literature was undertaken in order to accurately identify, evaluate and summarise the findings of all relevant studies. Studies incorporating an intervention to reduce the initial placement of indwelling urinary catheters in an acute care environment in patients aged 18 and over that reported on the incidence of indwelling urethral catheter placement were included in the review. The MEDLINE, CINAHL, EMBASE, National Health Service Centre for Review and Dissemination and Cochrane Library databases were used to identify relevant publications. Results of the search identified 2689 studies which were scanned for eligibility. Only eight studies were found that reported any change (increase or decrease) in the level of initial placement of indwelling catheter as a result of an intervention in acute care. Of the eight, six had an uncontrolled before–after design. Seven demonstrated a reduction in the initial use of indwelling catheter post-intervention. There was insufficient evidence to support or rule out the effectiveness of interventions due to the small number of studies, limitations in study design and variation in clinical environments.

The authors outlined several key observations from the study. Clinical education was the most common intervention component, although they found that multiple interventions are likely to be required to implement a change in clinical practice. These could include education sessions, introduction of checklists which clinicians could use to confirm the need for catheterisation, improved access to bladder scanners, improved collaboration and communication between medical and nursing colleagues, the need for healthcare organisations to address ritualised practice and improved reporting of indwelling catheter use. The authors also noted the wide variation in the content and reported acceptability of the 'indications for catheter placement' reported in the reviewed studies. The authors concluded that more work is needed to establish when the initial placement of an indwelling catheter is appropriate in order to better understand when indwelling catheters are overused and inform the development of methodologically robust research on the potential of interventions to minimise the initial placement of indwelling urinary catheters.

Evidence-based practice

Urinary catheterisation is a significant cause of morbidity in hospitalised patients. The financial burden to the healthcare system of catheter use is high. There is a need for greater understanding of when the placement of a urinary catheter is necessary, what constitutes urinary catheter overuse and the eventual development of a set of consistent, evidence-based, setting-appropriate, clinician-friendly indicators for the initial placement of a urinary catheter. Clinicians need to carefully examine the indications for catheter use and every effort should be made to reduce the incidence of urinary catheterisation in acute care patients.

Reference

Murphy C, Fader M, Prieto J 2014 Interventions to minimise the initial use of indwelling urinary catheters in acute care: a systematic review. International Journal of Nursing Studies 51(1):4–13.doi:10.1016/j.ijnurstu.2012.12.007.

It is important to specifically ask people about the presence of urinary incontinence. People are embarrassed about this problem and are often reluctant to talk about it (Strickland 2014).

- *Other symptoms.* Generalised symptoms can also result from urinary elimination problems, especially CKD and upper UTI. Ask the person about the presence of fever, nausea and vomiting, weight gain or loss, peripheral oedema, fatigue and lethargy, headache, itching skin, etc.
- *Past health history.* Personal or family history of health issues affecting the urinary tract; for example, infection; urinary calculi; family history of renal or bladder cancer; neurological disorders; surgery, including gynaecological, spinal or bowel surgery; diabetes, urinary catheterisation or any issues with constipation. For men, ask about history of prostate cancer. For women, ask about obstetric history (e.g. number of births, birthweights, type of birth) and, if relevant, menopausal symptoms.
- *History of smoking.* Smoking is a known risk factor for bladder and renal cancer and can contribute to voiding problems.
- *Self-care practices.* Ask about activity and exercise patterns, toileting and hygiene, use of continence aids and appliances. The patient's mobility and dexterity

need to be evaluated to determine whether the patient needs assistive devices or personnel. You need to make a judgement about the need for questioning in this area based on your observation of the person. For example, questions regarding assistance needed to get to the toilet, undressing/redressing, hygiene, and use of toileting aids (commode chairs, raised toilet seats, etc). Where patients live may affect their toileting habits. If the patient is sharing living quarters, how many bathrooms are there? Do they have their own bathroom, or do they need to share and thus adjust the time they use the bathroom to accommodate others? Work environment – location and access to toilets. For men over 50 years – ask about prostate checks.

- *Medications (prescribed and over-the-counter) currently being used.* Many medications can affect bladder function.

CRITICAL REFLECTION POINT

Ms Sally O'Connor is an 18-year-old student who is attending the university health clinic for the first time. She is complaining of urgency and frequency on voiding. Outline areas for further subjective data collection that you would ask Ms O'Connor.

Physical examination

The physical examination is focused on body systems and functions related to urinary elimination problems (see Chapter 23). You will need to make a judgement about the specific areas to include in your examination, which may include assessment of fluid balance (including skin and mucous membranes), abdomen and perineal area/skin. You will also need to complete a urinalysis and may be involved in specimen collection for microscopic examination and microbiological and biochemical analysis. Start with vital signs (see Chapter 24).

Skin and mucous membranes

Problems with urinary elimination are often associated with fluid and electrolyte disturbances. By assessing skin turgor and the oral mucosa, you are assessing the person's hydration status. A more general skin assessment may be required if the person has urinary incontinence. Specifically assess the health of skin on the upper thighs, groin and perineal area.

Abdominal assessment

As mentioned previously, often an assessment of urinary elimination is done at the same time as an assessment of bowel elimination. Specific aspects of an abdominal assessment relevant to urinary elimination involve inspection, palpation and percussion.

Inspect all four abdominal quadrants for contour, shape, symmetry and skin colour. Inspection also includes noting masses, scars, stomas and lesions. In adults the bladder rests below the symphysis pubis and cannot be examined abdominally. When distended, the bladder rises above the symphysis pubis at the midline of the abdomen and may extend to just below the umbilicus. A significantly distended bladder may appear as a protuberance on the central lower abdomen.

Palpation of the abdomen is performed to determine distension (a drum-like tightness), areas of tenderness or the presence of masses (see Chapter 23). It is important for the person to relax. Tensing abdominal muscles interferes with palpating underlying organs or masses. If the examination reveals significant tenderness in any area of the abdomen, note the location of the tenderness and do not progress with further palpation or percussion. Refer the person to a medical practitioner for further assessment, as the pain/tenderness may indicate serious underlying pathology such as acute appendicitis or inflammation of the bowel.

The partially filled bladder normally feels smooth and rounded. As you apply light pressure to the bladder, the patient may feel tenderness or even pain. Even when the bladder is not visible, palpation may cause the urge to urinate. A person with urinary retention may have a significantly distended bladder which you may be able to palpate centrally on the lower abdomen. The suprapubic area may also be tender if the person has a UTI.

Percussion detects lesions, fluid or gas within the abdomen. On percussion, a distended bladder will elicit a dull percussion tone. If the kidneys become infected or inflamed, flank pain typically develops. If you find that the person has kidney pain, they should be referred to a medical practitioner for further assessment.

In most acute care hospitals you will have access to a bladder scanner. This is an ultrasound device which detects and measures the volume of urine in the bladder. It is commonly used to determine the volume (if any) of residual urine left in the bladder after voiding. A conductive gel is applied to the lower abdomen and the transducer is placed on the skin and moved about until a reading is obtained. Once the bladder volume is determined, the person is asked to void normally. The scan is repeated to determine the presence of a residual urine volume. The accuracy of the scan is determined by correct use of the equipment and patient selection. You will need to follow the manufacturer's instructions on correct use of the bladder scanner.

Urethral meatus

Assess the urinary meatus to note the presence of discharge, inflammation and lesions. This assessment screens for infections and other abnormalities. To examine the female, a dorsal recumbent position provides full exposure of the genitalia. While wearing gloves, retract the labial folds to see the urethral meatus. Normally the meatus is pink and appears as a small slit-like opening below the clitoris and above the vaginal orifice. There is normally no discharge from the meatus. If present, specimens of urethral discharge should be obtained before the patient voids.

The male urethral meatus is normally a small opening at the tip of the penis. Inspect the meatus for discharge, inflammation and lesions. It may be necessary to retract the foreskin in uncircumcised men to see the meatus.

Assessment of fluid intake and output

As mentioned previously, assessment of fluid balance is often undertaken for a hospitalised patient. The data are recorded on a fluid balance chart, and intake and output are compared over a 24-hour period. All sources are included, including oral intake, intravenous fluid infusions, tube feedings and fluid instilled into nasogastric or gastric tubes.

The volume of urinary output is measured with each voiding using a bed pan or urinal and measuring jug. If the person has a urinary catheter, precise measurement of the volume of urine

is done by using a measuring device which is part of the urinary drainage bag. The urine drains passively into the urimeter, which holds 100–200 mL of urine. After measuring the urine in the urimeter, typically at hourly or 2-hourly intervals, the urine can be drained directly into the large drainage bag without opening the closed drainage system. If there is no need to measure hourly or 2-hourly urine output, urine volume can be measured by draining the urine from the drainage bag into a plastic graduated measuring receptacle (Figure 33-5). Standard infection control precaution measures should be used when measuring urine.

Record and report any extreme increase or decrease in urine volume. An hourly output of less than 0.5 mL/kg for more than 2 hours is abnormal and should be reported to a medical practitioner. Similarly, consistently high volumes of urine (polyuria), more than 2000–2500 mL daily, should be reported.

Assessment of urine

The characteristics of the urine should also be recorded. Inspect the urine for colour, clarity and odour. Normal urine ranges from a pale straw colour to amber, depending on its concentration. Urine is usually more concentrated in the morning or with a fluid volume deficit. As the person drinks more fluids, urine becomes less concentrated. Bleeding from the kidneys or ureters causes urine to become dark red or tea-coloured; bleeding from the bladder or urethra causes bright-red urine. Various medications also change urine colour. Eating beetroot, rhubarb or blackberries may cause red urine. Special dyes used in intravenous diagnostic studies eventually discolour urine. Dark-amber urine may be the result of high concentrations of bilirubin caused by liver dysfunction. Document and report any abnormal colour or sediment, especially if the cause is unknown.



Figure 33-5 Urine drainage bag.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

Normal urine is transparent at voiding; urine that stands several minutes in a container can become slightly cloudy. Freshly voided urine in patients with renal disease may be cloudy or foamy because of high protein concentrations. Urine can be thick and cloudy as a result of bacteria.

Urine has a characteristic odour. The more concentrated the urine, the stronger the odour. Stagnant urine has an ammonia odour. A sweet or fruity odour occurs from acetone or acetoacetic acid (by-products of incomplete fat metabolism) seen with diabetes or starvation. Keep in mind that some foods, for example asparagus, can change the odour of urine. If you detect an unusual odour, especially when there are no other abnormalities in the urine, ask the person what they have been eating in the last 12–24 hours.

Urine testing

Urine specimens are often collected for laboratory testing. The type of test determines the method of collection. Specimens that need to be sent to the laboratory for analysis should be labelled with the person's name and date and time of collection. They should be transported to the laboratory in a timely fashion to ensure accuracy of test results. Standard infection control precaution measures should be used when collecting urine specimens (see Chapter 25). In all cases you need a fresh urine sample.

Collecting a clean voided urine specimen

A clean, freshly voided specimen is collected so that urinalysis and inspection of the urine can be performed. The person is asked to void into a clean urine cup, urinal or bed pan. Most people are able to do this independently; however, if the person has poor mobility or cognitive impairment they may require assistance. The person should void before defecating so that faeces does not contaminate the specimen. Female patients are also instructed not to place toilet tissue in the bed pan. Only 50–100 mL of urine is needed for accurate testing. After the specimen is collected, the urine is inspected and then tested using the appropriate testing strips (dipsticks).

Collecting a midstream urine specimen

To obtain a specimen relatively free of the microorganisms growing in the lower urethra, the patient will need to be instructed about the method for obtaining a midstream urine specimen (Skill 33-1). This type of specimen is needed to culture urine to determine the presence of bacteriuria and to check for antibiotic sensitivity (micro-culture and sensitivity or MC&S test). After appropriate cleaning (using warm water and a mild soap) of the external genitalia, the person begins voiding, allowing a small amount of urine to escape; then during the middle portion of voiding, the person collects the specimen in a sterile container. The initial stream of urine cleans or flushes the urethral orifice and meatus of resident bacteria. It is easiest for a patient to obtain midstream urine specimens while using toilet facilities. If possible collect the first voided specimen of the day as it is likely to contain higher levels of bacteria and other constituents.

Collecting a urine specimen from a patient with an indwelling urinary catheter

You may need to perform a urinalysis using dipsticks or collect a specimen for laboratory analysis from a person who has an indwelling urinary catheter. A urine specimen is not collected

SKILL 33-1

Collecting a midstream (clean-voided) urine specimen

Delegation considerations

If appropriate, an alert patient who is physically able may be instructed to collect the specimen.

Equipment

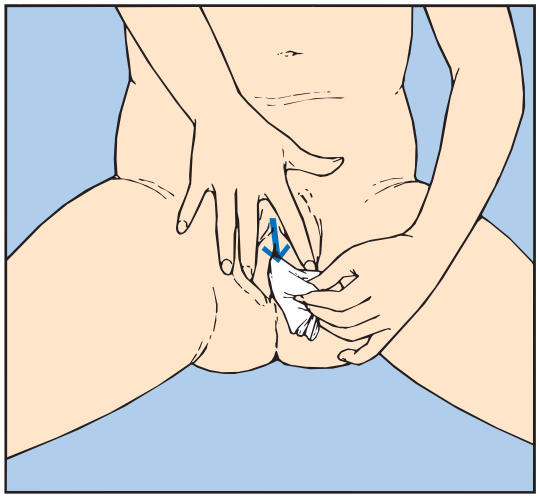
- A mild soap or cleaning solution, washcloth and towel or disposable cleansing towel
- Sterile specimen collection jar with lid
- Non-sterile gloves
- If the person cannot collect the specimen themselves, they can be assisted while seated on a bed pan in bed or using a bedside commode
- Completed pathology requisition for the procedure (signed by a medical practitioner or nurse practitioner – may be an electronic document)

Therapeutic relationship and patient considerations

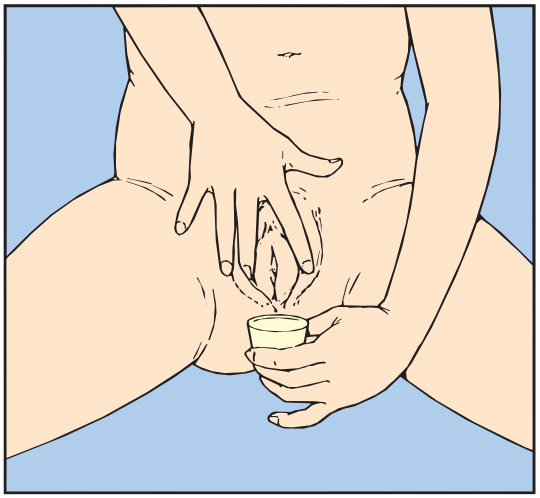
- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Assess the general health status of patient:	
a. When patient last voided	May indicate bladder fullness.
b. Level of education, health literacy and developmental stage	Reveals patient's ability to cooperate during procedure.
c. Mobility, balance and physical limitations	Determines level of assistance.
2. Assess patient's understanding of purpose of test and method of collection.	Information allows you to clarify misunderstandings and promotes patient cooperation.
3. Explain procedure to patient:	Helps patient understand the procedure.
a. Reason midstream specimen is needed	
b. Ways patient and family can assist	
c. Ways to obtain specimen free of faeces	Faeces change characteristics of urine and may cause abnormal values.
4. Provide fluids to drink 30 minutes before collection unless contraindicated (i.e. fluid restriction) if patient does not feel urge to void.	Improves likelihood of patient being able to void.
5. Ask the person to go to the toilet/bathroom or provide privacy for patient by closing door or bed curtain.	Privacy allows patient to relax and produce specimen more quickly.

STEPS	RATIONALE
6. Perform hand hygiene and put on non-sterile gloves. Assist non-ambulatory patients with perineal care. Help female patient onto bed pan. Remove gloves and perform hand hygiene.	Prevents transmission of microorganisms to nurse; provides easy access to perineal area to collect specimen.
7. Open the sterile specimen container, placing cap with sterile inside surface up; do not touch inside of container or cap (see Chapter 25).	Aseptic technique is essential to maintain sterility of equipment and specimen. Contaminated specimen is most frequent reason for inaccurate reporting of urine cultures and sensitivities.
8. Assist (wearing non-sterile gloves) or ask the patient to independently clean perineum and collect specimen:	
A. Female	
(1) Spread labia with thumb and forefinger of non-dominant hand.	Provides access to urethral meatus.
(2) Clean area with soap and water or moistened disposable towel moving from front (above urethral orifice) to back (towards anus) (see illustration).	Clean from area of least contamination to area of greatest contamination (near anus), to reduce chance of bacterial contamination with faecal bacteria.
(3) While continuing to hold labia apart, patient should initiate stream and after stream is achieved, pass container into stream and collect 30–60 mL (see illustration).	Initial stream flushes out microorganisms that accumulate at urethral meatus and prevents transfer into specimen.



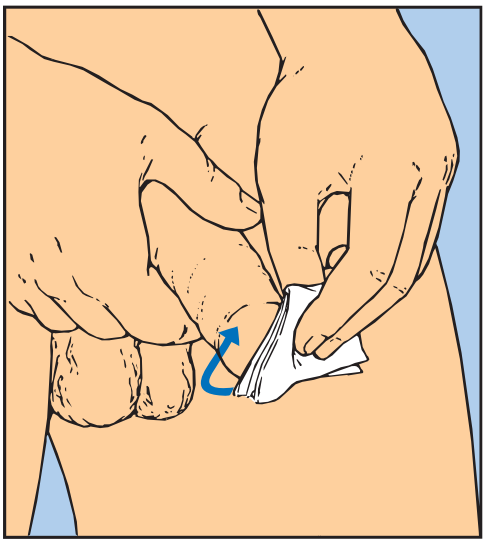
Step 8A(2) Cleaning technique (female).



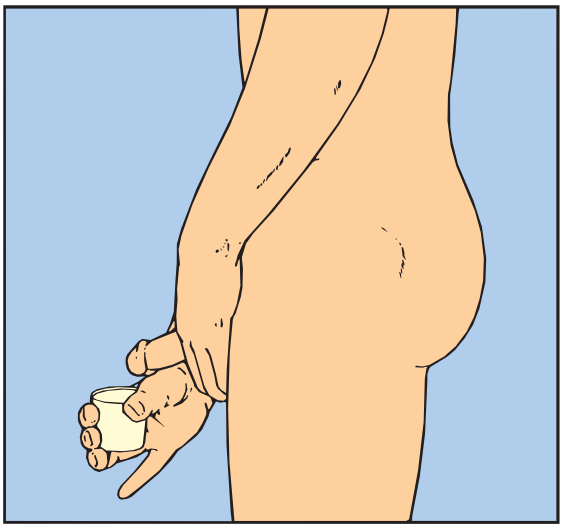
Step 8A(3) Specimen collection (female).

B. Male	
(1) Hold penis with one hand and, using circular motion, clean end of penis, moving from centre to outside (see illustration). In uncircumcised men, the foreskin should be retracted prior to cleaning.	Clean from area of least contamination to area of greatest contamination, to decrease bacterial levels.

STEPS	RATIONALE
(2) After patient has initiated urine stream, pass specimen collection container into stream, and collect 30–60 mL (see illustration).	Initial stream flushes out microorganisms that accumulate at urethral meatus and prevents transfer into specimen.



Step 8B(1) Cleaning technique (male).



Step 8B(2) Specimen collection (male).

9. Remove specimen container before flow of urine stops and before releasing labia or penis. Patient finishes voiding in bed pan or toilet. If foreskin was retracted for specimen collection, it must be replaced over the glans.	Prevents contamination of specimen with skin flora. If foreskin not replaced, swelling and constriction may occur, causing pain and possible obstruction to urine flow.
10. Replace cap securely on specimen container (touch outside only).	Retains sterility of inside of container and prevents spillage of urine.
11. Clean any urine from exterior surface of container, and place in a plastic specimen bag.	Prevents transfer of microorganisms to others.
12. Remove bed pan (if applicable), and make sure that the patient is clean and comfortable.	Promotes relaxing environment.
13. Remove gloves, dispose of in waste bin and perform hand hygiene.	Reduces transmission of infection.

■ **Critical decision point: If patient is menstruating, indicate information on laboratory requisition.**

14. Label specimen, including the date and time of collection, place in plastic biohazard transport self-seal bag and attach pathology requisition (if required by the laboratory).	Prevents inaccurate identification that could lead to errors in diagnosis or treatment.
15. Arrange for transport of the specimen to laboratory within 15 minutes or refrigerate immediately.	Bacteria grow quickly in urine, and specimen should be analysed immediately to obtain correct results.

RECORDING AND REPORTING

- Record date and time urine specimen was obtained, and place information in clinical progress notes.

HOME CARE CONSIDERATIONS

- If patient is to collect specimen as outpatient, proper instruction for collection needs to be given.
- Appropriate equipment will need to be given to patient and family.
- Information on storing specimen until time for delivery to local pathology service or hospital laboratory needs to be given.

for culture from a urine drainage bag. Bacteria grow rapidly in the drainage bags and could cause an inaccurate result. The aim is to obtain a fresh urine sample while maintaining the closed system between the catheter and the urine drainage bag. The sample needs to be drawn from the needleless sampling port in the drainage bag tubing. You should not disconnect the catheter from the drainage bag tubing, nor insert a needle into the catheter or the drainage bag tubing. The following steps should be undertaken:

- Inform the patient of the purpose of collecting the urine.
- Place the urine drainage bag tubing so that a loop near the drainage port is lying flat on the patient's bed or chair (so that urine will collect in the tubing). In some cases you may need to clamp off the tubing; however, make sure that you return to take the sample within 15 minutes so that urine does not build up in the bladder.
- After performing hand hygiene, put on non-sterile gloves.
- Assemble a sterile 10 mL syringe.
- If the specimen is for laboratory analysis, have a sterile pathology specimen container close by – do not touch the inside of the container or the lid. Make sure that the container is labelled with the patient's details and date and time of the specimen collection. Also make a note on the label that the urine was obtained from a patient with an indwelling catheter.
- Wipe the needleless port with an antimicrobial swab. When this has dried, carefully insert the hub of the syringe through the needleless port into the catheter lumen. Aspirate 5–10 mL of urine and remove the syringe from the sampling port. Transfer the urine into the sterile container using an aseptic technique (see Chapter 25).
- Return the drainage bag tubing to the usual position so that urine will flow freely into the drainage bag.
- Remove the gloves and properly dispose of equipment. Perform hand hygiene.

The specimen is transferred to the laboratory in a sealed plastic bag with the request slip for testing. It generally takes 24 hours to culture the bacteria and 48 hours to identify sensitivity to antimicrobial agents.

Collecting urine over a specific time period

Some tests of renal function and urine composition, such as measuring levels of adrenocortical steroids or hormones, creatinine clearance or protein quantitation tests, require collection of urine over 2-, 12- or 24-hour intervals. The urine is collected each time the person voids and placed in a specially labelled container over the prescribed period of time. The timed collection period begins after the person urinates. This sample is discarded and the collection begins at this time. You will need to inform the patient that all urine must now be collected, and note the starting time on the collection container and on the laboratory requisition. The person then collects all urine voided in the timed period. Each voiding is collected in a clean container and immediately emptied into the larger container. Any missed specimens will make test results inaccurate. The person should be reminded to void before defecating so that faeces or toilet paper do not contaminate urine. The person should void the last specimen at the end of the timed period. For example, for a 24-hour collection the person first voids at 0800. This sample is discarded and the 24-hour time period begins. All urine from this time onwards is saved until 0800 the next day. The person voids as close to 0800 as possible. This urine is added to the collection container and the time period is completed.

Collecting urine from children

Specimen collection from infants and children is often difficult. Adolescents and school-age children are usually able to cooperate, although they may be embarrassed. Preschool children and toddlers have difficulty voiding on request. Offering a young child fluid 30 minutes before requesting a specimen may help. Gain cooperation from the parents in obtaining the specimen.

A young child may be reluctant to void in unfamiliar receptacles. A potty-chair or large specimen container placed under the toilet seat is usually effective. For infants or toddlers who are not toilet-trained, clear plastic, single-use bags with self-adhering material (paediatric urine collector) can be attached over the child's urethral meatus. Specimens should not be obtained by squeezing urine from the nappy material. When the specimen is obtained, it is placed in a sterile container and labelled with the child's details and date and time of the specimen collection. Also, make a note on the label that the urine was obtained using a paediatric urine-collecting device.

Common urine tests

Urine tests include urinalysis, specific gravity and urine culture.

Urinalysis is a test commonly performed by nurses in all healthcare settings. The urine specimen should be fresh. The purpose of the urinalysis is to determine the constituents of the urine and determine the presence of abnormalities. Using standard infection control guidelines, dip the reagent strips



Figure 33-6 Checking urine test results of a chemical reagent strip (dipstick).

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(often called dipsticks) into the urine, making sure that all of the reagent pads are submerged in the urine. Taking care to drain the urine off the dipstick, observe for a colour change in the time interval designated on the packaging (Figure 33-6). Various brands of urine dipsticks test for varying abnormalities. Typically the strips test for glucose, bilirubin, ketones, specific gravity, microscopic blood, pH, protein, urobilinogen, nitrites and leucocytes. The exact detail of the results of the urinalysis is recorded in the patient's clinical progress notes. Urine may also be sent to the laboratory where urinalysis is performed using specialised equipment. Table 33-3 lists normal values for a urinalysis.

Diagnostic examinations

There are many imaging and other diagnostic studies used to examine urinary tract structures.

Imaging procedures

ABDOMINAL X-RAY Also referred to as plain abdominal film or KUB (kidney, ureter, bladder), X-ray of the abdomen is commonly used to assess the gross structures of the urinary tract for abnormalities. It can determine size, symmetry, shape and location of the kidneys, ureters and bladder structures. It is also useful in showing calculi (if calcified) or tumours in these organs. In addition, the ribs or other surrounding support structures can be assessed for fractures or abnormalities. Lack of positive findings on the X-ray does not rule out the possibility of abnormalities in the urinary tract; additional diagnostic studies may be needed. No special preparation is needed prior to this procedure.

INTRAVENOUS UROGRAM (IVu) This technique enables visualisation of the collecting ducts and renal pelvis and outlines the ureters, bladder and urethra. Although this procedure is non-invasive, it requires the patient to receive an intravenous injection of a radio-opaque dye. Because the kidneys and ureters lie behind the intestines, it is necessary that the patient has bowel preparation to empty the intestines before the procedure. In many hospitals, non-contrast CT (see below) has replaced the IVU, especially for emergency evaluation of acute abdominal and flank pain.

RADIONUCLIDE TESTS Radionuclide tests such as renal scans allow indirect viewing of urinary tract structures after an intravenous injection of radioactive isotopes. The emissions from the radionuclides can be photographed by special cameras. The isotope can be detected without the need for bowel preparation. A very low dose of radioisotope is used. No precautions against radioactive exposure are needed except for the use of disposable gloves if the patient uses a bed pan or urinal to void. Rinse the bed pan or urinal and double-flush urine down the toilet to dilute any possible remaining radiation hazard.

After a radionuclide is injected, it circulates through the kidneys and is excreted. The renal scan measures radioactive concentrations. Except for the venepuncture, it is painless. The scanning procedure is completed in about 1 hour. Information pertaining to renal blood flow, anatomical structures and their excretory function can be obtained from this procedure.

COMPUTED TOMOGRAPHY (CT) AND MAGNETIC RESONANCE IMAGING (MRI) A CT is a computerised X-ray procedure used to obtain detailed images of structures within a selected plane of the body. The tomographic scanner is a large machine that contains specialised computers and X-ray detector systems that function simultaneously to photograph internal structures in thin, transverse cross-sections (Figure 33-7). The computer, through a series of complex manipulations, is able to 'reconstruct' the cross-sectional image as a recognisable photograph on the television monitor. With this procedure it is possible to see abnormal pathological conditions such as tumours, obstructions, retroperitoneal masses and lymph node enlargement. Although this procedure is non-invasive, in some examinations oral or intravenous contrast material is used to enhance the areas under study. If intravenous contrast is used, it may be necessary to administer a bowel-cleaning solution orally, especially if additional organs in the abdominal cavity will be examined.

MRI uses radio waves to alter magnetic fields produced by the body. So while it is an imaging procedure, it does not use radiation like the other procedures that have been discussed. It can produce images from any perspective and can generate dynamic images. The detail of the MRI scan can be enhanced with the use of an intravenous injection of a contrast media (Skennerton 2012).

ULTRASONOGRAPHY A valuable non-invasive diagnostic tool in the assessment of urinary disorders, ultrasonography or ultrasound makes use of high-frequency inaudible sound waves that reflect off tissue structures. Some of the sound waves are reflected back to the transducer as echoes; the velocity of the sound waves varies with tissue density. The patient is usually prone during the procedure, but can be positioned in a sitting position. Ultrasound is often used to identify gross renal structures and structural abnormalities of the kidneys or lower urinary tract, and to assist with percutaneous biopsy. Abnormalities such as tumours or cysts in the kidney are easily identified. If a Doppler is used with the transducer, examination of blood flow through the kidney can also be performed. This procedure is painless.

Endoscopic procedures

Endoscopy is the visual inspection of a hollow body organ with the aid of a fibre-optic instrument. A cystoscopy enables visualisation of the interior of the bladder and urethra. The

TABLE 33-3 Routine urinalysis – adults

Measurement and normal value	Interpretation
Dipstick examination	
Bilirubin (trace)	Positive in obstructive jaundice and hepatitis.
Blood (none)	Damage to glomeruli or tubules may allow red blood cells (RBCs) to enter the urine. Trauma, disease or surgery of the lower urinary tract also may cause blood to be present. In women, blood in a routine urine specimen may be contaminated with menstrual fluid
Glucose (none)	Diabetic patients have glucose in urine as a result of inability of tubules to reabsorb high glucose concentrations. Ingestion of high concentrations of glucose may cause some glucose to appear in urine of healthy people
Ketones (none)	Patients whose diabetes mellitus is poorly controlled experience breakdown of fatty acids. End-products of fat metabolism are ketones. Patients with dehydration, starvation or excessive aspirin usage also may have ketonuria
Leucocyte esterase (none)	Detects significant numbers of white blood cells (WBCs) which are suggestive of urinary tract infection (UTI). When combined with the nitrite test, it has a predictive value of 74% if both tests are positive
Nitrite (none)	Nitrites are produced by bacteria. It will be positive in UTI; however, a negative test does not rule out infection because some organisms do not produce nitrites (e.g. *Streptococcus faecalis*). Urine must be retained in the bladder for several hours for the reaction to take place
pH (4.5–8.0; average 5.0–6.0)	pH helps indicate acid–base balance. Urine that stands for several hours becomes alkaline. An acid pH helps protect against bacterial growth
Protein (none)	Normally protein is not present in urine. It is seen in renal disease because damage to glomeruli or tubules allows protein to enter urine
Specific gravity (1.016–1.022)	Specific gravity measures concentration of particles in urine. High specific gravity reflects concentrated urine, and low specific gravity reflects diluted urine Dehydration, reduced renal blood flow and increased antidiuretic hormone (ADH) secretion elevate specific gravity Overhydration, early renal disease and inadequate ADH secretion reduce specific gravity Dipstick evaluations may be falsely high when the urine pH is < 6 and falsely low when the pH is > 7
Urobilinogen (trace)	Positive in cirrhosis, chronic hepatic failure, hepatitis, hyperthyroidism
Microscopic examination	
Bacteria (normally none)	In symptomatic patients > 10^6/L colony count of bacteria indicates urinary tract infection
Casts (none)	Casts are cylindrical bodies whose shapes take on likeness of objects within the renal tubule. Types include hyaline, WBCs, RBCs, granular cells and epithelial cells. Their presence is always an abnormal finding and indicates renal alterations
WBCs	> 10 × 10^6 white blood cells is suggestive of UTI

Adapted from: Royal Society of Pathologists of Australia Manual 2015. Online. Available: www.rcpa.edu.au/Library/Practising-Pathology/RCPA-Manual/Home; Gormella LG (ed), 2014 The 5-minute urology consult, 3rd edn. Wolters Kluwer/Lippincott Williams & Wilkins, Philadelphia.



Figure 33-7 CT equipment.

Shutterstock.

cystoscope is inserted through the patient's urethra into the bladder. The instrument has an outer plastic or rubber sheath, an obturator that keeps the scope rigid during insertion, a telescope for viewing the bladder and urethra, and a channel for inserting catheters or special surgical instruments.

A flexible cystoscopy is performed using local anaesthesia (xylocaine gel) which is inserted into the urethra prior to inserting the endoscope. During the test, urine and tissue specimens may be collected. This procedure can be performed in an operating room or in a procedure room in a clinic. In some hospitals, registered nurses who have undertaken specific education perform this procedure, especially in situations where patients are having frequent procedures to monitor bladder tumours. This test is commonly performed as an outpatient.

The person may eat and drink as normal prior to the test and will be able to leave the hospital shortly after the procedure. They should be encouraged to observe their urine for signs of bleeding or infection and be advised to increase fluid intake.

Urodynamic testing

Urodynamics is the general name given to a series of diagnostic tests that measure lower urinary tract pressure, flow and electrical response (McCooty & Latthe 2013). A cystometrogram (CMG) is one such test that determines the level of function of the detrusor muscle. This test is used to determine the type and degree of urinary incontinence. A catheter is inserted, residual volume is measured and discarded and the bladder is filled with sterile saline in predetermined increments. Pressure readings are taken at those increments. During the filling time, the patient's perceptions related to bladder fullness, urge to void and the ability to inhibit voiding are documented.

Patient expectations

People depend on their caregivers to recognise and meet their needs. The person with needs related to urinary function expects that the nurse will be respectful of privacy needs and sensitive to the impact of urinary impairments on their quality of life and self-concept. The person should be included in the plan of care and in the development of goals that are mutually acceptable. Cultural practices and personal preferences should also be considered.

• CRITICAL REFLECTION POINT

Mrs Baker is a 37-year-old woman who has been admitted to the day surgery centre for a cystoscopy. She has noticed blood in her urine for several weeks.

1. **What is the purpose of the cystoscopy?**
2. **What advice would you give her following the procedure?**

BOX 33-2 Examples of priority problems associated with urinary elimination

- Incontinence (specify type)
- Pain
- Self-care deficit, toileting
- Skin integrity, impaired or risk for impairment of skin integrity
- Risk for urinary tract infection
- Urinary retention (acute or chronic)

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

A thorough assessment of the patient's urinary elimination function reveals patterns of data that allow the nurse to make relevant and accurate nursing diagnoses. The diagnosis may be an actual problem or a problem that the patient is at risk of developing (Box 33-2).

The diagnosis may focus on a specific urinary elimination alteration or on associated problems such as impaired skin integrity related to urinary incontinence. Identification of defining characteristics leads the nurse to select an appropriate diagnosis (Box 33-2). Specifying related factors for each diagnosis allows selection of individualised nursing interventions.

Planning

Critical thinking ensures that the patient's plan of care integrates knowledge about the individual as well as key critical thinking elements (Figure 33-8). Professional standards are especially important to consider when developing a plan of care. These standards often establish scientifically proven guidelines for selecting effective nursing interventions.

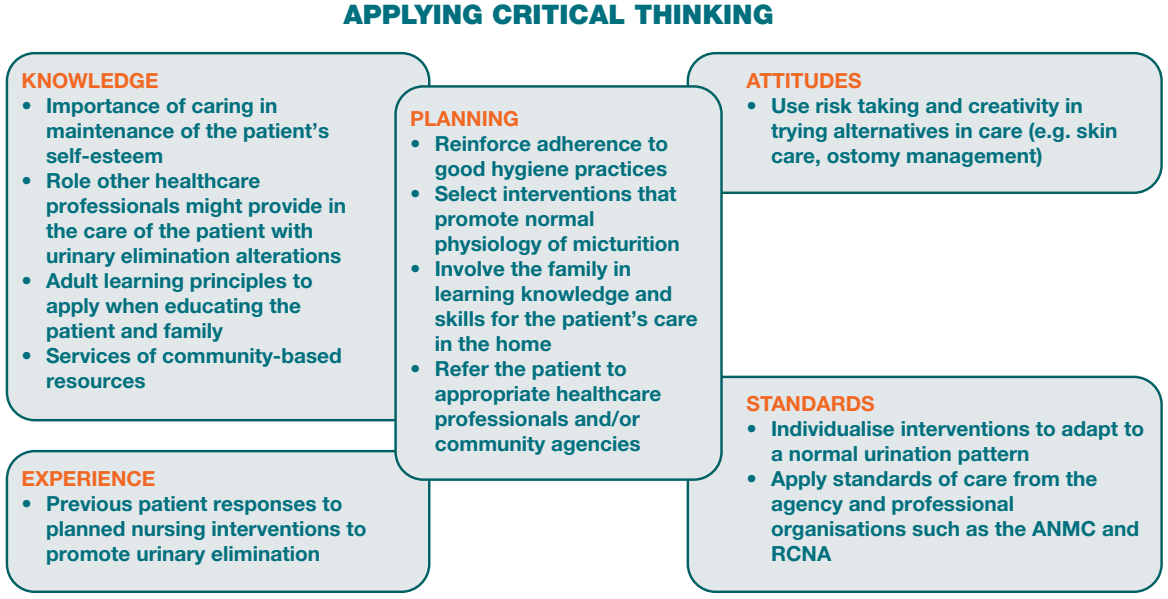


Figure 33-8 Critical thinking associated with the planning phase for urinary elimination.

The plan incorporates health promotion activities and therapeutic interventions for people with urinary elimination problems. Preventive interventions may be required for patients at risk of urinary problems. It is important in the nursing process to consider the patient's home environment and normal elimination routines when planning therapies. In planning care for some patients, consultation with other healthcare professionals may be needed. For example, the physiotherapist can design an exercise plan to increase strength and endurance so the patient will be able to walk to the bathroom.

SETTING PRIORITIES AND ESTABLISHING GOALS

Planning care also involves an understanding of the person's need to control body function. Alterations in urinary elimination can be embarrassing, uncomfortable and often frustrating. General goals for the person may include:

- understanding normal urinary elimination
- promoting normal voiding
- achieving complete bladder emptying
- preventing infection
- maintaining skin integrity
- gaining a sense of comfort.

Setting priorities

Problems involved with alterations in urinary elimination are often interrelated and complex. You also need to anticipate problems that may develop as a result of therapy. For example, the diagnosis of risk of infection is appropriate when a patient has an indwelling catheter. Determining the most imperative diagnosis will depend on each individual patient's condition.

Continuity of care

For hospitalised people, planning should include preparations for discharge; for example, assessment of the need for any aids that will be required and the person and their family educational needs. Health education is important in enabling people to care for themselves. For example, a patient being discharged with an indwelling catheter will need to perform catheter care, understand ways to empty the drainage bag safely, measure urine accurately and know signs and symptoms

SAMPLE STUDENT NURSING CARE PLAN

Gathering relevant information and data*

Jenny Smith (a registered nurse) is assisting Mrs Christine Bryant to have a shower. Mrs Bryant, 81 years of age, was admitted to the orthopaedic ward 5 days previously via the emergency department after sustaining a fractured pubic ramus from a fall in the backyard of her house. She has a medical history of osteoporosis and has been taking weekly strontium (Protos) for the past 2 years. She is otherwise well and does not take any regular medication. She is active in the local bowls club and is involved in local community groups. She lives with her husband (84 years old), who has chronic obstructive pulmonary disease and macular degeneration, which limits his activities to staying around the house. Since admission she has been on bed rest and has been getting up to go to the toilet and shower with assistance and a gutter frame walker. She is taking oxycodone (OxyNorm) for pain which has good effect when she is resting; however, she finds walking very painful. While in the shower she tells Jenny that she has been **losing urine on the way to the toilet**, especially if there is a delay in the nurse coming to assist her after she rings the call bell. Jenny tells her she will assist her to get dried and dressed and they can talk about this further.

The assessment reveals the following data:

- **Normally has no urinary incontinence**, never needs to use a pad.
- **No other LUTS – no frequency, urgency or dysuria**. She **feels she can hold on a long time but because she needs assistance** it sometimes takes a long time for a nurse to give her assistance to get to the toilet. She says that she is reluctant to call for help because 'the nurses are so busy'.
- **Only small amounts of urine lost – only on walking to the toilet when she has a very full bladder.** Gets up once at night to go to the toilet.
- **Normally no loss of urine on sneezing or coughing except when she has a very full bladder.**
- History of **three vaginal births** (all over 3.5 kg birthweight); 1st delivery with forceps.
- No history of constipation. Bowels open yesterday – Bristol type 3.
- **Eating and drinking normally** – drinking 5 cups of tea per day and water (approx. 1L).
- Beginning to mobilise well with assistance. Likelihood of a two-week hospital stay.
- Abdominal examination – soft abdomen, bowel sounds in all four quadrants.
- Skin on upper thighs and perineum intact and healthy.
- Urine analysis – urine clear, pH 6.5, no abnormalities detected.

** Important data to cluster in setting priorities in bold.*

Priority problems

Functional incontinence. Mild stress incontinence (when bladder very full) related to weakened pelvic floor muscles (age and childbirth).

Making appropriate judgements and decisions

Setting priorities and establishing goals	Expected outcomes
Mrs Bryant will have reduced episodes of incontinence within 2 days.	Mrs Bryant will report less-frequent episodes of incontinence.
Preparing for and taking action	**Rationale**
• Ensure that the call bell is readily available at all times. Alert all nursing staff at handover of the need to attend to Mrs Bryant's call bell promptly.	Reduces the likelihood that she will have a very full bladder. Gives her more time to get to the toilet within current mobility constraints.
• Health education regarding: – the need to call for assistance when she first feels the need to void – that she is not causing a problem for the nursing staff – the importance of strong pelvic floor muscles – the importance of not becoming constipated. – the need to keep drinking fluids, especially water.	Encourages Mrs Bryant to feel empowered to take control and not feel a burden on nursing staff Motivates her to participate in PFM training. Makes it easy for her to be independent without risk of falling. Pelvic floor exercises strengthen the muscles that control continence; 4–6 weeks of exercises will result in decreased leakage.
• Trial of having a commode chair beside her bed at night. Instruct Mrs Bryant on safely standing out of bed and transferring to the commode chair. Have her demonstrate this.	
• Instruct Mrs Bryant in how to do pelvic floor exercises.	

Evaluating impacts and outcomes

- Evaluate the change in frequency of incontinence episodes (use voiding diary).
- Ask Mrs Bryant about satisfaction with bladder control.

of urinary infection. The need for home health services should be explored, and appropriate referrals should be made. Good discharge planning will result in the person's smooth transition from healthcare agency to home.

PREPARING FOR AND TAKING ACTION

Promotion of normal voiding patterns

There are many nursing interventions to promote normal voiding in people at risk of urinary elimination difficulties and in people with established urinary elimination health problems. The nurse can initiate many of these interventions independently.

Provide privacy and time to void

Encourage people not to rush voiding so that their bladder empties fully. Privacy is essential. If they cannot reach the bathroom, make sure that a curtain encloses the bedside area. In the home, the debilitated person may prefer using a bedside commode enclosed behind a partition or room divider. Some patients are embarrassed by the sound of voiding. Running water or flushing the toilet masks the sound. Young children are often unable to void in the presence of persons other than their parents.

It is very important to respond to patients' need to urinate in a timely manner. Delay in helping patients to the bathroom may interfere with normal voiding and contribute to incontinence. Attempts by frail older people or those with a disability or a mobility problem to get to the toilet alone can contribute to falls (Gosch et al 2014).

Stimulating micturition reflex

It is often difficult for hospitalised patients to void due to the effects of surgery, an anaesthetic, pain or medications. The patient's ability to void depends on feeling the urge to urinate, being able to control the urethral sphincter and being able to relax during voiding. You can help a patient learn to relax and stimulate the reflex to void by assuming the normal position for voiding. A woman is better able to void in a sitting position, leaning forward with feet flat on the floor. This position promotes contraction of the pelvic and intra-abdominal muscles which assist in sphincter control and bladder contraction. If the patient is unable to use toilet facilities, assist the person to position themselves in a semi-squatting position on a bed pan or bedside commode. A man voids more easily in the standing position. If the man cannot reach the toilet, he may stand at the bedside and void into a urinal (a metal or plastic receptacle for urine) (Figure 33-9). At times it may be necessary for one or more nurses to assist a man to stand.

Other measures that promote relaxation and the ability to void include sensory stimuli. The sound of running water may help the patient void through the power of suggestion. If the patient

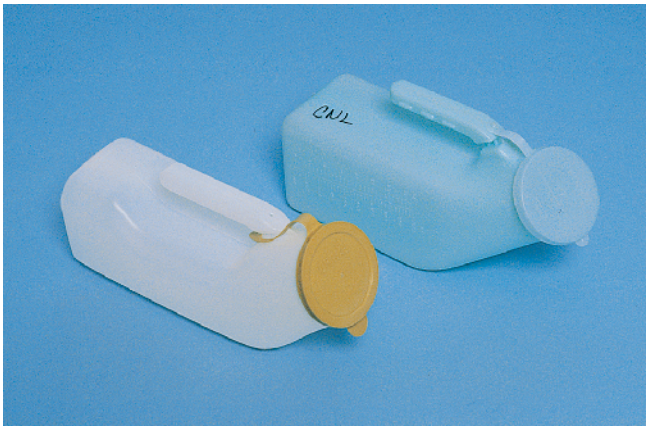


Figure 33-9 Types of male urinals.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

is confined to bed the nurse can also pour warm water over their perineum and create the sensation to urinate. If urine output is to be measured, the nurse must first measure the volume of water to be poured over the perineal area. Offering fluids the patient will drink may also promote voiding.

Maintaining adequate fluid intake

A simple method of promoting normal micturition is by maintaining good fluid intake. A person with normal renal function who is not on fluid restriction should drink 1500–2000 mL of fluid daily. However, an average daily intake of 1200–1500 mL of fluids is usually adequate (in hot weather, increase fluid intake to compensate for increased loss through perspiration).

When fluid intake is increased, the excreted urine flushes out solutes or particles that may collect in the urinary system. Because a person may be unwilling to drink 2000 mL of water daily, encourage fluids that the patient prefers. Many vegetables and fruits also have a high fluid content. At home it may help to set a schedule for drinking fluids (e.g. with meals or medications).

Maintaining normal bowel function

Constipation can cause obstruction of the urethra and contribute to a sense of urinary urgency. Promotion of normal bowel function needs to be part of the care plan for any patient who has a urinary elimination problem. See Chapter 32 for details on promoting normal bowel function.

Patient education

The success of therapies aimed at eliminating or minimising urinary elimination problems depends in part on the person understanding their urinary elimination problem. For example, people who experience recurrent UTIs may benefit from learning about normal sterility of the urinary tract and ways to prevent infection. Health teaching can be incorporated when giving nursing care, for example, discussing the benefits of increasing fluid intake while giving fluids with medications or meals.

Catheterisation

Catheterisation of the bladder involves introducing a tube, usually made of silicone- or hydrogel-coated latex, through the urethra and into the bladder. The catheter provides a continuous flow of urine in people unable to control voiding or those with a urethral obstruction. It also provides a means of assessing hourly urine output in haemodynamically unstable patients. Because bladder catheterisation carries the risk of UTI and trauma to the urethra, it is preferable to rely on other measures for either specimen collection or management of incontinence.

WORKING WITH DIVERSITY

Focus on cultural care

The Victorian Continence Resource Centre conducted a project titled 'Awareness of incontinence in ethnic communities'. The aim of the project was to explore the awareness of people from different ethnic communities in relation to the prevention, treatment and management of incontinence.

Twenty focus groups were undertaken in selected ethnic communities in Victoria. Participants (n = 218) included older men and women, and middle-aged women (167 female and 52 male). The communities represented included Arabic-speaking, Chinese, Greek, Italian, Polish, Vietnamese, Macedonian, Russian, Spanish-speaking and Turkish. Interpreters were used when needed.

Key findings included:

- Knowledge of incontinence was low across all ethnic groups.
- Not all languages have a term to describe 'incontinence', or the translated term often has a negative or detrimental meaning.
- Limitation to social participation was a common impact of incontinence.
- Incontinence could lead to religious restriction for Muslim men and women.
- Cultural and religious influences were expressed in relation to preferences for information in a specific language and for healthcare professionals who spoke their language or were a specific gender.
- Communication and language barriers were perceived to limit access to information and support services.

Reference

Continence Foundation Australia (Victoria Branch) 2011 http://www.continencevictoria.org.au/awareness-of-incontinence-in-ethnic-communities-report/ Kew: CFA (Vic Branch). Online. Available: www.continencevictoria.org.au/node/138; accessed 19 Feb 2016.

Resources for working with culturally diverse people

Incontinence information for supporting culturally diverse people is available at: www.continence.org.au/pages/professionals.html

Video and written information on continence issues in a variety of languages is available from: www.continence.org.au/other-languages.php

Methods of achieving drainage of the urinary tract

There are several methods for achieving drainage of the urinary tract:

- *Indwelling urethral catheterisation* A self-retaining indwelling urethral catheter (Foley catheter) has a small inflatable balloon that encircles the catheter just below the tip. When inflated, the balloon rests against the bladder outlet to anchor the catheter in place. The indwelling retention catheter also has two or three lumens within the body of the catheter (Figure 33-10B). One lumen drains urine through the catheter to a collecting tube. A second lumen carries sterile water to and from the balloon when it is inflated or deflated. A third (optional) lumen may be used to instil fluids or medications into the bladder. It is easy to determine the number of lumens by the number of drainage and injection ports at the catheter's end. An indwelling catheter is used when constant drainage is required, for example, when there has been surgery to the abdomen or pelvic area, or when accurate measurement of urine is required. Indwelling catheters can be left in for long periods of time. It is necessary to change indwelling catheters periodically – usually every 6–8 weeks, depending on the individual's requirements.
- *Intermittent catheterisation*. With the intermittent technique, a straight single-use catheter (Figure 33-10A) is introduced long enough to drain the bladder (5–10 minutes). When the bladder is empty, the catheter is withdrawn. The straight single-use catheter has a single lumen with a small opening about 1.3 cm from the tip. Urine drains from the tip, through the lumen, to a receptacle. Intermittent catheterisation can be repeated as necessary, usually several times per day. Some people require intermittent catheterisation for many months or years and are taught to catheterise themselves; this is termed intermittent self-catheterisation (ISC).
- *Suprapubic catheterisation*. A suprapubic catheter is surgically inserted into the bladder via a puncture wound on the lower abdomen. These are used in patients who have chronic retention of urine, neurological disease (such as spinal cord injury or multiple sclerosis), prior pelvic or gynaecological surgery, urethral trauma or those who require long-term drainage of urine (Tompkins et al 2014). They can be more comfortable for people who require long-term urinary drainage. Suprapubic catheters are self-retaining – they have a balloon at the catheter tip. Suprapubic catheters need to be changed the same way that indwelling urethral catheters are changed. Registered nurses who have had appropriate training are able to change these catheters.
- *Other methods* to achieve drainage from the urinary tract. There are several other devices that can be used to drain urine from the upper urinary tract. Nephrostomy tubes are surgically inserted in the flank region straight into the pelvis of the kidney. These are used when there is obstruction in the upper ureter from urinary calculi or tumours or resulting from oedema when there has been surgery to the upper tract. A sterile drainage bag is applied to the person's skin and urine can drain freely. Stents can also be endoscopically inserted into the ureter so that drainage is maintained.

Catheters come in many diameters to fit the size of a patient's urethra. Suggestions on catheter selection are provided in Box 33-3.

INDICATIONS FOR CATHETERISATION Catheterisation may be indicated for many reasons. When catheterisation time will be short and minimising infection is a priority, the intermittent method is best. Intermittent catheterisation is also preferred for people who have chronic retention of urine (without urethral obstruction), such as a person with diabetes who has developed an atonic bladder. By intermittently draining the bladder on a routine basis, these patients have fewer infections (Bermingham et al 2013). Indwelling catheterisation is used when long-term bladder emptying is necessary. Box 33-4 outlines specific indications for catheterisation.

CATHETER INSERTION Urethral catheterisation may require a medical prescription. Aseptic technique is used to minimise the risk of introducing microorganisms into the bladder (see

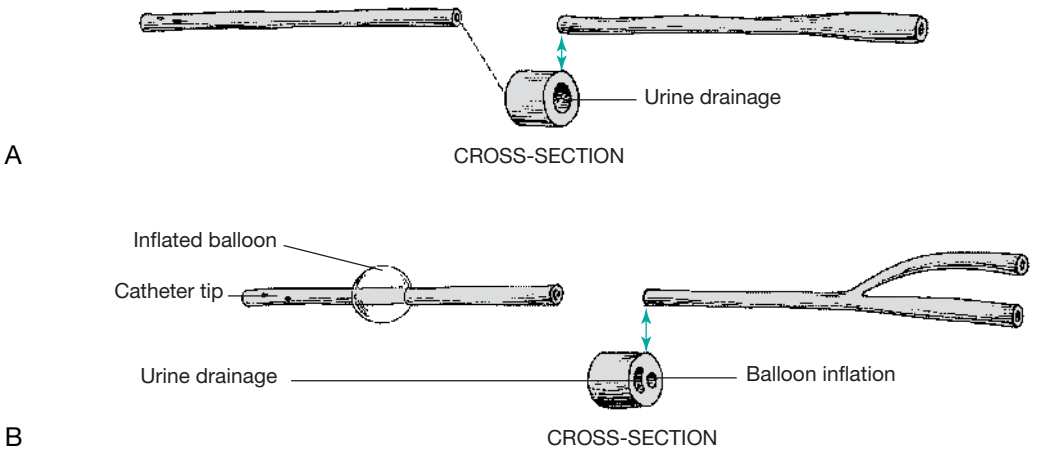


Figure 33-10 Types of urinary catheters.

A, Non-retaining or straight catheter. B, Self-retaining indwelling (Foley) catheter.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

BOX 33-3 Guidelines for appropriate catheter selection

- The catheter size should be determined by the size of the person's urethral canal. When the French system (Charrière or French Gauge) is used, the larger the gauge number, the larger the catheter size. One Charrière is ⅓ of a millimetre. Generally, children require an 8–10 FG, women require a 12–14 FG and men require a 16–18 FG. To prevent trauma, the smallest effective catheter size is preferred
- The expected time required for the catheterisation will determine the catheter material selection
  - PVC catheters are suitable only for intermittent use due to their inflexibility
  - Silicone-coated latex catheters are recommended for use up to 1 month – although these are usually only used for short periods (1 week)
  - Hydrogel-coated catheters are recommended for use up to 3 months; these are comfortable for the person as they cause little friction in the urethra
  - Pure silicon catheters are best suited for long-term use (2–3 months), as they cause less encrustation at the urethral meatus. They have a large lumen as they are not coated
- Balloon size is also important in selecting an indwelling catheter. Use the smallest balloon size possible, as a large balloon can cause irritation at the bladder neck
  - Balloon sizes range from 3 mL for babies and children to 5–30 mL for adults. In adults, the 10 mL is the most common. A 30 mL size is used after prostate surgery to provide haemostasis of the prostatic bed
- Only sterile water should be used to inflate the balloon as saline may crystallise, resulting in incomplete deflation of the balloon at the time of removal

Adapted from Australian and New Zealand Urological Nurses Society 2013 Catheterisation clinical guidelines. Online. Available: www.anzuns.org/wp-content/uploads/2011/12/ANZUNS-Catheterisation-final-Document-October-20131.pdf; accessed 19 Feb 2016.

BOX 33-4 Indications for catheterisation

- Relief of acute or chronic urinary retention
- Measurement of urinary output in acutely ill patients:
  - to bypass an obstruction (e.g. enlarged prostate, tumour or clot)
  - to assist with drainage of urine in patients with neurogenic bladder dysfunction who cannot manage intermittent self-catheterisation
  - to empty the bladder prior to procedures or surgery
- Following surgery on the bladder, urethra and surrounding structures:
  - to permit continuous or intermittent bladder irrigation or instil medication
  - to protect skin from urine (e.g. serious decubitus ulcers of the buttocks, burns to thighs)
  - to alleviate discomfort in terminally ill patients
  - to determine residual urine volume in the absence of ultrasound equipment (bladder scanner)
  - to manage intractable incontinence (only a last resort).

Adapted from Australian and New Zealand Urological Nurses Society 2013 Catheterisation clinical guidelines. Online. Available: www.anzuns.org/wp-content/uploads/2011/12/ANZUNS-Catheterisation-final-Document-October-20131.pdf; accessed Feb 2016.

Chapter 25). The steps for inserting indwelling and single-use straight catheters are basically the same. The difference lies in the procedure taken to inflate the indwelling catheter balloon and secure the catheter. Skill 33-2 lists steps for performing female and male urethral catheterisation.

CLOSED DRAINAGE SYSTEMS After inserting an indwelling catheter, a closed urinary drainage system is maintained to minimise the risk of infection. Urinary drainage bags are plastic and can hold about 1000–1500 mL of urine. The bag should hang on the bed frame or wheelchair without touching the floor. When the patient moves about, the nurse or patient carries the bag below the patient's waist. The drainage bag should never be raised above the level of the patient's bladder, so that urine does not flow back from the tubing into the bladder.

Most drainage bags contain an anti-reflux valve to prevent urine in the bag from re-entering the drainage tubing and contaminating the patient's bladder. A valve at the base of the bag provides a means for emptying the bag. The valve should always be closed, except during emptying, and tucked into the protective pouch on the side of the bag. To keep the drainage system patent, frequently check for kinks or bends in the tubing, avoid positioning the patient on the drainage tubing and observe for clots or sediment that may occlude the collecting tubing.

For the person who will go home from hospital with an indwelling urinary catheter, a smaller leg bag is connected to the catheter. Leg bags are designed to be strapped to the person's leg so that they can carry on their usual daily activities without having to carry a large urine bag. Because the leg bag only holds approximately 500 mL of urine, it will need to be emptied frequently throughout the day. This can easily be done into a toilet or plastic jug. A larger overnight bag is connected (at the base of the leg bag) before the person goes to sleep so that their sleep is not interrupted by the need to empty the smaller leg bag.

ROUTINE CATHETER CARE Patients with indwelling catheters have a number of special care needs. Nursing interventions are directed at preventing infection and maintaining an unobstructed flow of urine through the catheter drainage system.

Perineal hygiene Build-up of secretions or encrustation at the catheter insertion site is a source of irritation and potential infection. The person can shower normally with a catheter, and they should be encouraged to use mild soap and water to wash their genital area at least daily. If the person is unable to shower on their own they will need assistance with their personal hygiene either in the shower or during a bed bath.

Fluid intake All patients with catheters should be encouraged to have a daily intake of 2000–2500 mL of fluid if not contraindicated. This can be achieved through oral intake or intravenous infusion. A high fluid intake produces a large volume of urine that flushes the bladder and keeps the catheter tubing free of sediment.

Bowel care As mentioned previously, constipation can affect urinary elimination. Promotion of normal bowel elimination is also important in catheterised patients. Assessment of bowel function should be conducted daily.

Ongoing assessment A patient who has a urinary catheter needs focused assessment at least three times per day (once per shift). The assessment should include:

- daily inspection of the urethral meatus for signs of inflammation and leakage of urine
- checking of the closed drainage system for patency
- inspection of the urine for colour and clarity
- abdominal palpation for bladder distension
- checking that the catheter is secured to the upper thigh or lower abdomen with an appropriate device such as a catheter strap.

PREVENTING INFECTION The most common cause of infection in hospitalised patients is the introduction of instruments into the urinary tract. For example, the introduction of a catheter through the urethra provides a direct route for microorganisms. Catheter associated urinary tract infection (CAUTI) is said to be one of the most common healthcare-associated infections worldwide (Krein & Saint 2014). A CAUTI is a symptomatic UTI in a person with a urinary catheter. According to Lo et al (2014), the risk of bacteriuria varies from 3% to 7% per day when an indwelling urethral catheter remains in situ. Hence, a goal of care is to remove the urinary catheter as soon as possible.

Bacteria ascend along the outside of the catheter on the urethral wall or travel up the catheter's lumen. The catheter interferes with the normal voiding mechanism that acts as a defence against organisms entering the urethra. Local irritation to the urethra or bladder further predisposes tissues to bacterial invasion.

Pooling of urine in the drainage bag tubing should also be avoided. Urine in the drainage bag is an excellent medium for microorganism growth. Bacteria can travel up drainage tubing to grow in pools of urine in the tubing. If this urine flows back into the patient's bladder an infection is likely to develop. Bacteria can also enter the bladder at the connection between the catheter and the drainage bag. Maintaining a closed urinary drainage system is important in infection control, as a break in the system can lead to introduction of microorganisms. Suggestions for ways to prevent infections in catheterised patients are provided in Box 33-5.

REMOVAL OF INDWELLING URETHRAL CATHETER The aim when removing an indwelling catheter is to prevent trauma to the urethra.

The equipment required to remove a catheter is a disposable towel or plastic bed protection pad; a rubbish receptacle; and a sterile syringe the same size as the volume of the catheter balloon. The distal end of each catheter contains a label that denotes the volume of solution (5–30 mL) within the balloon. Standard infection control precautions are also required (hand hygiene and non-sterile gloves).

- Explain the procedure to the person. The removal of the catheter is likely to cause minor discomfort but is unlikely to be painful.
- Position the person comfortably lying down with legs slightly apart.

BOX 33-5 Tips for preventing infection in catheterised patients

- Follow hand hygiene guidelines (see Chapter 29)
- Maintain a closed system – catheter, drainage tubing and drainage bag
- Do not open the drainage system at connecting points to collect specimens
- If the drainage tube becomes disconnected, do not touch the ends of the catheter or tubing. Wipe the end of the tubing and catheter with an antimicrobial solution before reconnecting
- Prevent pooling of urine in the tubing and reflux of urine into the bladder:
  - avoid raising the drainage bag above the level of the bladder
  - avoid allowing large loops of tubing to lie on the bed
  - provide for drainage of urine from the tubing to the bag by positioning the tubing
  - before exercise or walking, drain urine from the tubing into the drainage bag
- Do not allow the drainage port on the drainage bag to touch the floor
- Empty the drainage bag at least every 8 hours. If large outputs are noted, empty more frequently
- Remove the catheter as soon as clinically warranted
- Secure the catheter appropriately for the patient (see Skill 33-2)

- After removing catheter-securing devices such as a catheter strap, place the towel/bed protection pad between a female patient's thighs or over a male patient's thighs.
- Insert the syringe into the balloon port. Slowly withdraw all of the solution to totally deflate the balloon. If a portion of the solution remains, the partially inflated balloon will traumatise the urethra and cause pain as the catheter is removed.
- When all of the solution from the balloon has been aspirated, pull the catheter out smoothly and slowly. If the balloon does not deflate or you have trouble removing the catheter, do not cut the tubing. Refer the problem to a specialist clinical nurse (e.g. a urology or continence nurse) or a medical practitioner.

It is normal for the patient to experience some dysuria post catheter removal, especially if the catheter has been in place for several days or weeks. The catheter causes inflammation of the urethra. Until the bladder regains full tone and capacity, the person may also experience frequency of urination or urinary retention.

Assess the person's urinary function by noting the time of first voiding after catheter removal, and document the time and amount of voiding for the next 24 hours. Encourage the person to drink plenty of water. If the voided amounts are small (less than 100 mL), frequent assessment for retention of urine is

SKILL 33-2

Inserting a straight or indwelling catheter

Delegation considerations

Catheterisation requires the problem-solving and knowledge-application skills of registered nurses; therefore, delegation of this task to nurse assistants or personal care workers is inappropriate.

Insertion of a urinary catheter normally requires a medical request.

Equipment

- Catheterisation kit containing the following sterile items:
  - Gloves (extra pair optional)
  - Drapes, one fenestrated
  - Lubricant (usually water-based for women and xylocaine gel (2%) in a pre-filled syringe for men/or women)
  - Antiseptic cleaning solution (aqueous chlorhexidine), Normal saline or sterile water
  - Gauze swabs
  - Forceps
  - Syringe with sterile water to inflate the balloon of indwelling catheter
  - Receptacle or basin (usually bottom of disposable catheterisation tray)
- Blanket/large towel to cover patient
- Catheter of correct size and type for procedure (i.e. intermittent or indwelling)
- Sterile urine drainage bag
- Catheter strap or other catheter-securing device
- PPE – safety goggles
- Lamp/torch

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

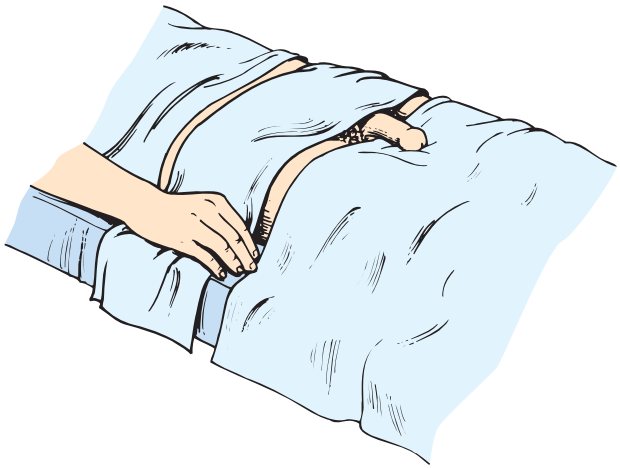
STEPS	RATIONALE
1. Assess the general health status of patient:	
a. Time of last urination; ask patient, check fluid balance chart	
b. Level of education, health literacy and developmental stage	Reveals the patient's ability to cooperate and level of explanation needed.
c. Mobility and physical limitations of patient	Affects way the nurse positions patient.
d. Patient's gender and age	Determines catheter size: see Box 38-4.
e. Distended bladder – use a portable ultrasound bladder scanner or palpate bladder	Causes pain. Can indicate need to insert catheter if patient is unable to void independently. Bladder fullness may be detected with deep palpation above the symphysis pubis or with a portable ultrasound bladder scanner.
f. Perineum erythema, drainage and odour	Determines condition of the perineum.

STEPS	RATIONALE
g. Any pathological condition that may impair passage of catheter (e.g. enlarged prostate in men)	Obstruction prevents passage of catheter through urethra into the bladder.
h. Allergies	Determines allergy to antiseptic (if aqueous chlorhexadine is used), tape, latex and lubricant (xylocaine gel).
2. Review patient's medical record, including medical request and nurses' clinical progress notes.	Determines purpose of inserting catheter. Assess for previous catheterisation, including catheter size, response of patient and time of last catheterisation; history of previous difficult catheterisation procedure.
3. Assess patient's knowledge of the purpose of catheterisation.	Reveals need for patient instruction.
4. Explain procedure to patient and gain the patient's consent for the procedure.	Promotes cooperation.
5. Arrange for extra nursing personnel to help as necessary.	Patient may be unable to assume positioning for procedure.
6. Perform hand hygiene.	Reduces transmission of microorganisms.
7. Close curtain or door.	Offers privacy, reduces embarrassment and aids in relaxation during procedure.
8. Raise bed to appropriate working height.	Promotes use of proper body mechanics.
9. Facing patient, stand on left side of bed if right-handed (on right side of bed if left-handed). Clear the bedside table and arrange equipment.	Successful catheter insertion requires nurse to assume comfortable position with all equipment easily accessible. The materials in the kit are arranged in sequence of use.
10. Raise side rail on opposite side of bed, and put side rail down on working side.	Promotes patient safety.
11. Place waterproof pad under patient.	Prevents soiling of bedclothes.
12. **Position patient.**	Provides good view of perineal structures.
A. Female patient	
(1) Help into dorsal recumbent position (supine with knees flexed). Ask patient to relax thighs so the hips can be externally rotated.	Legs may be supported with pillows to reduce muscle tension and promote comfort.
(2) Position female patient in side-lying (Sims') position with upper leg flexed at hip if unable to be supine. Support patient with pillows if necessary to maintain position.	This position is used if patient cannot abduct leg at hip joint (e.g. if patient has arthritic joints). Also, this position may be more comfortable for patient.

STEPS	RATIONALE
B. Male patient	
(1) Help into supine position with thighs slightly abducted.	Comfortable position for patient that gives good view.
13. **Drape patient:** **A. Female patient** (see illustration) Drape with blanket/towel. Place blanket diamond-fashion over patient, with one corner at patient's neck, side corners over each arm and side, and last corner over perineum. **B. Male patient** (see illustration) Drape upper trunk with blanket/towel, and cover lower extremities with bed sheets, exposing only genitalia.	Avoids unnecessary exposure of body parts and maintains patient's comfort.



Step 13A Draping technique (female).



Step 13B Draping technique (male).

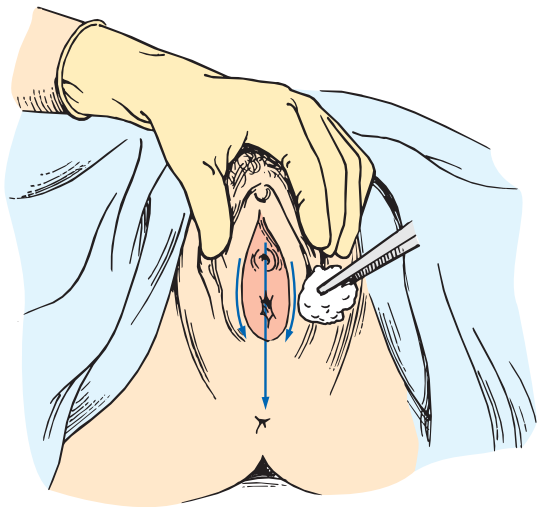
14. Position lamp (if necessary) to illuminate perineal area. (When using torch, have an assistant hold it.)	Permits accurate identification and good view of urethral meatus.
15. Wearing non-sterile gloves, wash perineal area with mild soap and water as needed; dry.	Reduces microorganisms near urethral meatus and allows further opportunity to see perineum and landmarks.
16. For men: take pre-filled syringe of xylocaine gel (2%). Insert tip of syringe into the urethral meatus, holding the penis firmly and straight. Gently instil the gel into the urethra. Ask the man to hold the end of his penis to stop the gel coming out.	Wait several minutes before inserting the catheter so that the anaesthetic agent has time to take effect.

STEPS	RATIONALE
17. Remove and discard gloves; perform hand hygiene.	Prevents transmission of microorganisms from table or work area to sterile supplies.
18. Open package containing drainage system; place drainage bag over edge of bottom bed frame, and bring drainage tube up between side rails and mattress (indwelling catheter only).	
19. Perform hand hygiene. Open catheterisation kit according to directions, keeping bottom of container sterile. Don PPE – safety goggles.	
20. Put on sterile gloves (see Chapter 29).	Allows nurse to handle sterile supplies without contamination.
21. Organise supplies on sterile field. Open inner sterile package containing catheter. Pour sterile cleansing solution into correct compartment containing sterile gauze squares. Open sterile packet containing lubricant. Open catheter onto sterile field.	Maintains principles of surgical asepsis and organises work area.
22. Lubricate 2–5 cm of catheter for women and 12–18 cm for men.	
23. **Apply sterile drape:**	
A. Female patient	
(1) Allow top edge of drape to form a cuff over both hands. Place drape down on bed between patient's thighs. Slip cuffed edge just under buttocks, taking care not to touch contaminated surface with gloves.	Outer surface of drape covering hands remains sterile. Sterile drape against sterile gloves is sterile.
(2) Pick up fenestrated sterile drape, and allow it to unfold without touching an unsterile object. Apply drape over perineum, exposing labia, and being sure not to touch contaminated surface.	Maintains sterility of work surface.
B. Male patient	
(1) Two methods are used for draping depending on preference. First method: apply drape over thighs and under penis without completely opening fenestrated drape. Second method: apply drape over thighs just below penis. Pick up fenestrated sterile drape, allow it to unfold and drape it over penis with fenestrated slit resting over penis.	Maintains sterility of work surface.
24. Place sterile tray and contents on sterile drape.	Provides easy access to supplies during catheter insertion. Maintains aseptic technique during procedure.

STEPS	RATIONALE
25. Clean urethral meatus:	
A. Female patient	
(1) With non-dominant hand, carefully retract labia to fully expose urethral meatus. Maintain position of non-dominant hand throughout procedure.	Full view of urethral meatus is provided. Full retraction prevents contamination of urethral meatus during cleaning.
(2) Using forceps in sterile dominant hand, pick up gauze square saturated with cleansing solution/sterile water and clean perineal area, wiping from front to back from clitoris towards anus. Using a new gauze square for each area, wipe along the far labial fold, near labial fold and directly over centre of urethral meatus (see illustration).	Cleaning reduces number of microorganisms at urethral meatus. Use of a single gauze square for each wipe prevents transfer of microorganisms. Cleaning proceeds from area of least contamination to that of most contamination. Dominant hand remains sterile.

■ **Critical decision point: Closure of labia during cleaning requires that the cleaning procedure be repeated because the area has become contaminated.**

B. Male patient	
(1) If patient is not circumcised, retract foreskin with non-dominant hand. Grasp penis at shaft just below glans. Retract urethral meatus between thumb and forefinger. Maintain non-dominant hand in this position throughout procedure.	Accidental release of foreskin or dropping of penis during cleaning requires process to be repeated because area has become contaminated.
(2) With dominant hand, pick up gauze square with forceps and clean penis. Move in a circular motion from urethral meatus down to base of glans. Repeat cleaning three more times, using a clean gauze square each time (see illustration).	Reduces number of microorganisms at urethral meatus and moves from area of least to most contamination. Dominant hand remains sterile.

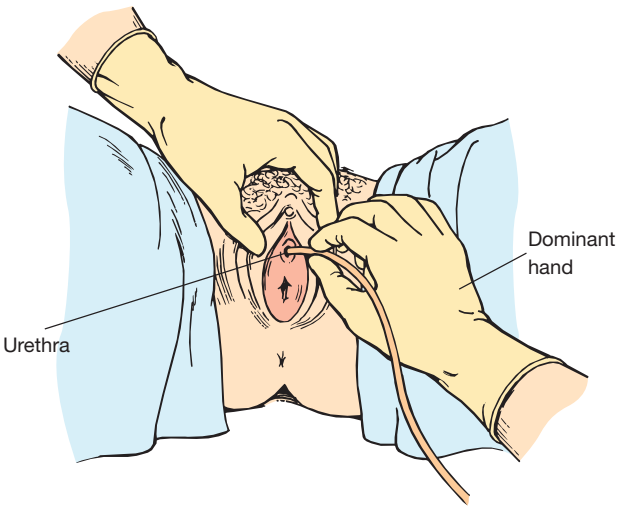


Step 25A(2) Cleaning female perineum.

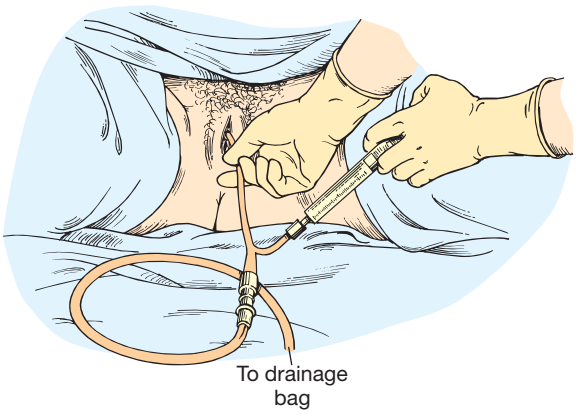


Step 25B(2) Cleaning male urinary meatus.

STEPS	RATIONALE
26. Pick up catheter with gloved dominant hand 8–10 cm from catheter tip. Hold end of catheter loosely coiled in palm of dominant hand (optional: may grasp catheter with forceps).	
27. **Insert catheter:**	
A. Female patient	
(1) Slowly insert catheter through urethral meatus (see illustration).	
(2) Advance catheter a total of 5–8 cm in adult or until urine flows out of catheter's end. When urine appears, advance catheter another 2–5 cm. Do not force against resistance.	Female urethra is short. Appearance of urine indicates that catheter tip is in bladder or lower urethra. Advancement of catheter ensures bladder placement.
■ **Critical decision point: If no urine appears, check that catheter has not been inserted in the vagina instead of the urethra. If misplaced, leave catheter in vagina as landmark indicating where not to insert, and insert another (you will need to start the procedure again unless you have another nurse attending who can open another sterile catheter onto the sterile field).**	
(3) Release labia, and hold catheter securely with non-dominant hand. Inflate balloon if retention catheter is used (see illustration). Only put in the amount of sterile water that is indicated on the catheter.	Bladder or sphincter contraction may cause accidental expulsion of catheter. Over-inflation of the balloon may cause it to burst or block off the drainage holes of the catheter. Under-inflation can result in the catheter falling out.



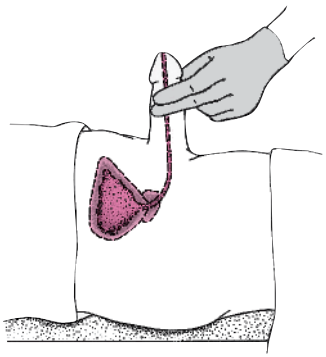
Step 27A(1) Inserting catheter.



Step 27A(3) Inflating balloon of retention catheter.

B. Male patient	
(1) Lift penis to position perpendicular to patient's body and apply light traction (see illustration).	Straightens urethral canal to ease catheter insertion.
(2) Slowly insert catheter through urethral meatus.	

STEPS	RATIONALE
(3) Advance catheter 18–23 cm in adult or until urine flows out catheter's end. If resistance is felt, withdraw catheter; do not force it through urethra. When urine appears, advance catheter another 2–5 cm.	The adult male urethra is long. It is normal to meet resistance at the prostatic sphincter. When resistance is met, nurse should hold catheter firmly against sphincter without forcing catheter. After a few seconds, the sphincter relaxes, and the catheter is advanced. Appearance of urine indicates catheter tip is in bladder or urethra. Further advancement of catheter ensures proper placement.
(4) Lower penis and hold catheter securely in non-dominant hand. Place end of catheter in urine tray. Inflate balloon if retention catheter is used. Only put in the amount of sterile water that is indicated on the catheter.	Catheter may be accidentally expelled by bladder or urethral contraction. Collection of urine prevents soiling and provides output measurement. Over-inflation of the balloon may cause it to burst or block off the drainage holes of the catheter. Under-inflation can result in the catheter falling out.
(5) Reduce (or reposition) the foreskin.	Paraphimosis (retraction and constriction of the foreskin behind the glans penis) secondary to catheterisation may occur if foreskin is not reduced.
28. Remove straight, single-use catheters when drainage ceases. Withdraw catheter slowly but smoothly until removed.	



Step 27B(1) Positioning penis prior to catheter insertion.



Step 28 Drainage bag attached to lower bed frame.

For indwelling catheterisation – attach end of catheter to tube of drainage bag system (see illustration). Make sure drainage port at the base of the drainage bag is closed. Drainage bag must be below level of bladder; attach bag to bed frame, do not place bag on side rails of bed. Ensure patient is informed of correct position for drainage bag.	Establishes a closed system for urine drainage.
29. Pack up equipment and leave it on the trolley so that it can be easily disposed of shortly.	

STEPS	RATIONALE
30. Remove gloves and perform hand hygiene.	Reduces transmission of microorganisms.
31. **Anchor catheter:**	
A. Female patient	
(1) Secure catheter tubing to inner thigh with a catheter strap or other catheter-securing device. Allow for slack so movement of thigh does not create tension on catheter.	Anchoring catheter to inner thigh reduces pressure on urethra, thus reducing possibility of tissue injury and reduces risk of urinary tract infection.
B. Male patient	
(1) Secure catheter tubing to top of thigh or lower abdomen (with penis directed towards chest). Allow slack in catheter so movement does not create tension on catheter.	Anchoring catheter to lower abdomen reduces pressure on urethra at junction of penis and scrotum, thus reducing possibility of tissue injury.
32. Ensure that the patient is clean and comfortable.	Maintains comfort and security.
33. Dispose of equipment, drapes and urine in proper receptacles. Perform hand hygiene.	Reduces transmission of microorganisms.
34. Palpate bladder.	Determines whether distension is relieved.
35. Ask about patient's comfort.	Determines whether patient's sensation of discomfort or fullness has been relieved.
36. Observe character and amount of urine in drainage system.	Determines whether urine is flowing adequately.
37. Determine that there is no urine leaking from catheter or tubing connections.	Prevents injury to patient's skin.
38. Perform hand hygiene when leaving the patient's bed area.	

RECORDING AND REPORTING

- Report and record type and size of catheter inserted, amount of water used to inflate the balloon, characteristics of urine, amount of urine, reasons for catheterisation, specimen collection if appropriate and patient's response to procedure and teaching concepts.
- Initiate fluid balance chart.
- If catheter is definitely in bladder and no urine is produced within an hour, absence of urine should be immediately reported to a medical practitioner.

HOME CARE CONSIDERATIONS

- Patients who are at home may use a leg bag during the day and attach a large-volume bag at night so sleep can be uninterrupted.
- Patients may catheterise themselves at home using a clean technique.

necessary. Most hospitals use ultrasonic bladder scanners to assess post-void residual urine volumes. Guidelines vary on the amount of residual urine that is considered acceptable. The post-void residual volume is compared with the actual amount voided. If over 8 hours elapse without voiding in a patient who is drinking good amounts, it may become necessary to reinsert a catheter.

Interventions to promote continence

All of the interventions mentioned previously that promote normal voiding patterns are also used to promote continence. There are a number of interventions that are used to treat urinary incontinence. The treatment plan can only be developed after careful assessment of the problem. Implementing toileting programs without a detailed assessment and identification of the specific continence issue is not likely to result in an improvement in the person's continence.

Strengthening pelvic floor muscles

Continence, especially in women, relies on strong pelvic floor muscles. **Pelvic floor exercises** (PFEs), also known as Kegel exercises, are designed to improve the strength of pelvic floor muscles. They consist of repetitive contractions of specific muscle groups. PFEs can be used to promote continence as well as for rehabilitation when a continence problem exists. As PFEs involve the identification and conscious recruitment of the pelvic floor muscles, the person must be able to follow instructions and repeat a series of exercises without supervision over a long period of time. Therefore, people who have short-term memory problems, inattention or impaired conscious state may not be suitable candidates for a PFE program. The elements of a PFE program are described in Box 33-6. Both the Continence Foundation of Australia and the New Zealand Continence Association have excellent brochures, posters and teaching materials related to PFEs.

WORKING WITH DIVERSITY

Focus on older adults

- When frail older adults can no longer maintain their independence in personal care, nurses must assume responsibility for their urinary care.
- Dilute urine discourages bacterial growth, so older adults should be encouraged to drink at least 6–8 glasses of fluids a day, unless medically contraindicated.
- Since acidic urine prevents or inhibits bacterial growth in urine, fluids that acidify the urine (e.g. cranberry juice) should be offered daily.
- Urinary catheterisation increases the incidence of nosocomial infection. Indwelling catheters should not be used in a routine manner.
- Incontinence is not a normal part of ageing, and efforts should be made to assess incontinence and provide interventions to promote return to continence.
- Hospitalised older adults who have no pre-existing urinary incontinence should not be given continence pads 'just in case' they are incontinent or instead of being assisted to go to the toilet.

BOX 33-6 Health education: pelvic floor muscle exercises

Objective

Prevent incontinence through increased pelvic floor muscle tone.

Important points

Explanation about:

- anatomy and function of pelvic floor muscles (PFMs)
- causes of weakness in PFMs.

Recognition of PFMs

- Have the person attempt to tighten PFMs during voiding by attempting to stop the flow of urine or get them to visualise squeezing the muscles between vagina and anus (or scrotum and anus in men). Pull muscles up into the body. Get the sense of the squeezing and lifting sensation. (Don't tighten the buttocks, abdominal muscles or thighs.)

PFM training

- Have the person squeeze and lift these muscles and hold for 5–10 seconds (the best they can do) before relaxing. Breathe in and out during the contraction. Repeat the squeeze and lift 8–12 times.
- When they have perfected the technique, advise them to repeat these exercises three times a day (8–12 squeeze-and-lifts with a rest in between) each day while lying down, sitting or standing. It may take months for the person to work up to a 10-second squeeze repeated 8–12 times. Reassure them that it will improve with time.

Other points

- Provide written instructions with diagrams of anatomy (you can get brochures from the Continence Foundation of Australia or the New Zealand Continence Association).
- Talk with the person about good bladder and bowel habits (drink well, eat a healthy diet, healthy weight, stop smoking, good toilet habits, avoiding constipation).
- If the person has difficulty in identifying their PFMs refer to a continence nurse or continence physiotherapist.
- Refer to a continence nurse or the person's general practitioner if they have any other lower urinary tract symptoms.

Evaluation

- Patient reports ease of completing the exercises.
- Reduced episodes of urinary incontinence on coughing, sneezing, etc.

Resources

- Brochures and teaching materials available from the Continence Foundation of Australia (http://www.continence.org.au and http://www.continence.org.au/resources.php) or Continence New Zealand (www.continence.org.nz).
- For further assistance to locate a continence nurse or continence physiotherapist or for advice call the relevant continence helpline: Australia – 1800 33 00 66, New Zealand – 0800 650 659.

Continence aids and appliances

Aids and appliances form the key to achieving social continence. Social continence refers to the use of continence aids and appliances to keep urinary leakage and odour contained, enabling the person to engage in normal daily activities. Continence aids and appliances are an important part of active treatment plans for many people because they give the person the confidence they need to engage in normal daily activities and social interactions. For some people, social continence may be the goal of treatment. There are various continence aids and appliances available. These include continence pads and pants, absorbent bed sheets and chair covers, and other products that assist with voiding, such as bed pans, urinals, commode chairs, raised toilet seats and chairs; most hospitals and healthcare agencies will have a selection in stock. Some of these products can be misused. A study by Zisberg (2011) found that continent adult women, especially those with impaired mobility, were being given continence pads in the acute care setting. Zisberg makes the point that using continence pads for these people is likely to result in reduced self-esteem and quality of life, increased risk of skin problems and urinary tract infections and may increase the risk of urinary incontinence in frail older people. It is not acceptable practice to give a person a continence pad when they do not have any urinary incontinence.

A person with an ongoing continence problem should be referred to a continence nurse specialist for assessment and management of their continence problem. Continence nurse specialists are registered nurses with postgraduate qualifications and experience in promoting continence and managing incontinence. A continence nurse specialist can provide expert advice on appropriate continence aids and appliances and can assist the person to access government funding schemes. Individual needs must be taken into account when selecting continence products. These include the amount of urine that the pad needs to contain, rate of loss of urine, gender, size of the person, cognitive function, manual dexterity and strength, the person's lifestyle, access to laundry and/or disposal facilities, and the personal preference of the person (Cottenden et al 2013).

URINARY SHEATH The urinary sheath (or the 'condom' in condom drainage) is a non-invasive soft, pliable, silicone or latex sheath that slips over the penis (Skill 33-3). It is suitable for men who have urinary incontinence but still have complete and spontaneous bladder emptying. It may be worn continuously or at night only, depending on the person's needs. The success of the urinary sheath relies on correct choice of size of the device

SKILL 33-3

Applying a sheath/condom drainage device

Delegation considerations

Applying a sheath/condom can be delegated to enrolled nurses, the person if he is able, or a family carer in the home context.

- Ensure that person/caregiver knows standard precautions guidelines relating to body fluids.
- Clarify that skin of penile shaft is intact and free of swelling, redness or open lesions before sheath/condom drainage device is applied.
- Clarify the person's/caregiver's understanding of how to apply the adhesive strip that secures the sheath/condom drainage device.
- Clarify the person's understanding of signs of infection, skin breakdown or poor circulation in penis and knowledge of where and when to seek assistance from a health professional.

Equipment

- Sheath/condom drainage device kit
  - Latex/silicone condom sheath (proper size) (check for possible rubber or latex allergy)
  - Skin preparation solution or swab (may be required)
- Urinary collection bag with tubing or leg bag with straps
- Basin with warm water and mild soap
- Towels and washcloths
- Non-sterile disposable gloves
- Blanket/towel
- Scissors and/or personal trimmer (patient's own)

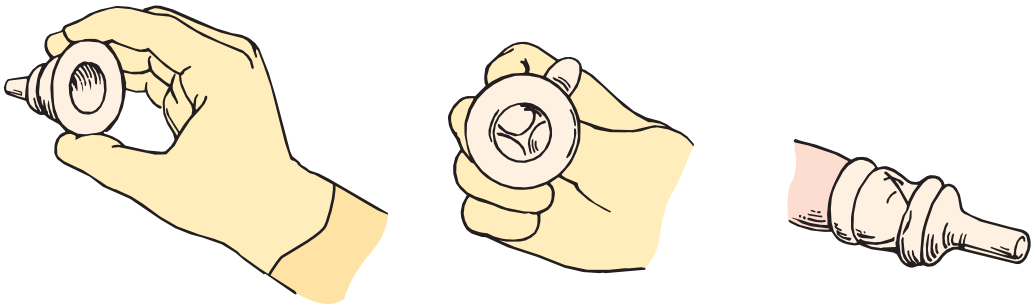
Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Assess urinary elimination patterns, patient's ability to voluntarily urinate and continence.	Patients who are incontinent are at high risk of skin breakdown.
2. Provide privacy by closing door or bed curtains.	Maintains patient's self-esteem.
3. Assess the person's level of education and health literacy so appropriate teaching related to sheath device can be implemented.	Some male patients may be incontinent only at night. Teaching can be implemented to instruct patient on self-application.
4. Assess condition of penis and assess for appropriate sheath size using a sizing chart.	Provides a baseline to compare changes in condition of skin after condom application.
5. Assess patient's knowledge of the purpose of a sheath device.	Reveals need for patient instruction.
6. Explain procedure to patient.	Reduces anxiety and promotes cooperation.
7. Perform hand hygiene.	Reduces transmission of microorganisms.
8. Raise bed to appropriate working height for the nurse. Raise side rail on opposite side of bed, and lower rail on working side.	Promotes patient safety and proper use of body mechanics by nurse.
9. Help patient into semi-Fowler's position. Place blanket/towel over upper torso. Fold bed sheets so that lower extremities are covered; only genitalia should be exposed.	Promotes patient comfort and prevents unnecessary exposure of body parts.
10. Prepare urinary drainage collection for connection to sheath/condom. Clamp off all drainage exit ports. Secure collection bag to bed frame; bring drainage tubing up through side rails onto bed. Prepare leg bag for connection to sheath/condom if necessary.	Provides easy access to drainage equipment after sheath/condom is applied.
11. Put on non-sterile gloves. Assess the required size of the sheath/condom using the manufacturer's guide.	Sheath/condoms come in a variety of sizes (circumference and length). It is very important to use the correct size for comfort and so that the sheath/condom remains in place for the required period of time.
12. Wash area with mild soap and water or ask the patient to do this for himself if he is able (see Skill 38-2), and dry thoroughly.	Removes irritating secretions. Rubber/latex sheath rolls onto dry skin more easily. The adhesive will adhere to dry skin. Be aware of possible latex allergy.
13. Clip hair at base of penis. In some cases, shaving the hair at the base of the penis may be necessary.	Hair adheres to sheath/condom and is pulled during sheath/condom removal or may get caught as sheath/condom is applied.
14. Roll sheath/condom onto penis – try to keep the glans centrally within the sheath. You may need to put gentle tension on the penis to keep it straight within the sheath. As the adhesive is on the inside of the sheath/condom, you need to gently press the sheath onto the shaft of the penis as you unroll it (see illustrations).	Make sure that the foreskin remains over the glans to protect the glans from the adhesive on the inside of the sheath/condom. Gentle pressure and the heat from your hand will help make sure that the adhesive is well applied to the penile shaft.

STEPS	RATIONALE

■ **Critical decision point: Allow 2–5 cm of space between tip of glans penis and end of sheath/condom (see illustration, Step 14).**



Step 14 Technique for rolling sheath/condom onto penis.

15. Connect drainage tubing to end of sheath/condom. Be sure sheath/condom is not twisted. The sheath/condom can be attached to large-volume bag or leg bag (see illustrations).	Allows urine to be collected and measured. Keeps patient dry. Twisted sheath/condom obstructs urine flow.



Step 15 Attaching sheath/condom to large-volume or leg bag.

16. If using a large-volume urine bag, secure tubing to the top of the patient's thigh, allowing some slack so as to not create tension and risk dislodging condom/sheath. Place excess coiling of tubing on bed, and secure to bottom sheet.	Promotes free drainage of urine.
17. Place patient in a safe, comfortable position. Lower bed, and place side rails accordingly.	Promotes safety and comfort.
18. Dispose of contaminated supplies. Remove gloves, and wash hands.	Reduces spread of microorganisms.
19. Observe urinary drainage.	Determines whether normal voiding is occurring.

STEPS	RATIONALE
20. Inspect penis with sheath/condom in place within 30 minutes after application. Look for swelling and discolouration, and ask patient if there is any discomfort. Ensure there is no leakage of urine from the device.	Determines whether sheath/condom has been applied correctly.
21. Remove and change sheath/condom and inspect skin on penile shaft for signs of breakdown or irritation at least daily when hygiene is performed and when the sheath/condom is reapplied.	Indicates whether sheath/condom or urine is causing irritation. Frequent assessment of good blood circulation to glans penis is important to determine whether sheath/condom has been applied too tightly.

RECORDING AND REPORTING

- Record and report pertinent information: sheath/condom application, condition of skin, voiding pattern.
- Monitor fluid balance chart as indicated.

HOME CARE CONSIDERATIONS

- If leg bag is used, assess leg for circulatory impairment. Switch to a large-volume drainage bag at night.
- Teach patient that a collection bag that fills completely may put unnecessary tension on the catheter and contribute to problems keeping the sheath/condom intact.
- Some men have difficulty in getting the adhesive to stick to their skin. These men may benefit from the use of skin preparation wipes to the shaft of penis (these can be purchased from the sheath/condom manufacturer). These remove skin oils and adhesive from previous applications and may assist the adhesion of the sheath.

and its correct application to the penis. Urinary sheaths come in varying lengths and diameters. Each brand of sheath will come with a sizing guide; care must be taken to ensure that whatever type or size is used, blood supply to the penis is not impaired. Each sheath has adhesive on the inside so that it is comfortably fitted and stays in place without leaking. The penis needs to be clean and dry for the adhesive to stick properly. Some men may need to reduce the amount of pubic hair (using a personal trimmer) so the adhesive sticks properly.

The distal end of the sheath fits into plastic drainage tubing. A drainage bag can be attached to the side of the bed, or a leg bag can be strapped to the patient's leg. The sheath itself poses little risk of infection. Infections with urinary sheaths usually result from a build-up of secretions around the urethra, trauma to the urethral meatus or a build-up of pressure in the outflow tubing.

The man (or their carer) should be advised to gently remove and discard the sheath daily. This provides a good opportunity to check the skin of the penis for irritation and inflammation. Normal personal hygiene can be attended to, such as showering, and a new sheath fitted.

For a man with a retracted penis, maintaining a conventional urinary sheath may prove difficult. Special devices are available to help alleviate this problem (Figure 33-11). Manufacturers' guidelines for product application should be consulted.



Figure 33-11 Retracted penis pouch external urinary device.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

• CRITICAL REFLECTION POINT

Mr Miller is a 75-year-old widower who has had prostate surgery for benign prostatic hypertrophy. He thought his problems would be over, but now he is experiencing continual dribbling of urine. He has been trying to deal with the problem by using an absorbent pad in his underwear, but he feels as though everyone is aware of it. The embarrassment of having an odour often keeps him at home. He has given up going to the golf club which he usually attends three times per week.

1. **Outline the areas for further assessment of his problem.**
2. **Describe a plan of care for Mr Miller.**

Maintenance of skin integrity

The normal acidity of urine is irritating to skin. Urine allowed to be in contact with the skin becomes alkaline, causing encrustations or precipitates to collect on the skin, fostering breakdown. Continuous exposure of the perineal area leads to gradual maceration and excoriation (see Chapter 26). Washing with mild soap and warm water is the best way to remove urine from skin. A non-perfumed body lotion keeps skin moisturised, and skin barriers (e.g. zinc and castor oil cream) provide a barrier to the urine.

If the skin becomes inflamed, a medical practitioner may prescribe a cream containing a corticosteroid such as hydrocortisone. If a fungal infection develops, a topical antifungal containing an agent such as nystatin or clotrimazole is effective.

Voiding programs

Voiding programs should not be commenced until a detailed assessment has been undertaken and the specific continence problem(s) identified. Bladder training programs aim to increase bladder capacity by gradually increasing the interval between voids, for example, in a person with urge incontinence who may be voiding frequently. These programs consist of an educational program about how the bladder works and how continence is maintained; a voiding program based on the person's current voiding pattern (determined by a voiding diary); and an ongoing support program as it is likely to take several months to achieve the desired increase in voiding frequency (Moore et al 2013).

Habit training, timed voiding and prompted voiding are methods of bladder re-education aimed at re-establishing a normal voiding pattern. These programs are used for people with stress, urge and mixed incontinence and are often used with frail or cognitively impaired people to reduce incontinence episodes (Moore et al 2013). Habit training involves identification of the person's usual voiding pattern and pre-empting incontinence episodes by decreasing voiding intervals, while keeping these intervals as long as possible. Timed voiding is a program of voiding according to a schedule which is determined from a voiding diary (Ostaszkiewicz et al 2013). *Prompted voiding* is a program in which the nurse (or carer) checks the person at regular intervals to see if they are wet or dry, provides feedback to the person about their own perception of being wet or dry and offers assistance with toileting. Positive responses are praised and incontinent episodes are managed without comment. This type of voiding program is most suited to people with mild to moderate cognitive impairment or with functional incontinence due to immobility. While these programs are extensively used in practice, there is very little published evidence on their efficacy and patient outcomes (Ostaszkiewicz et al 2013).

EVALUATING IMPACTS AND OUTCOMES

The patient is the best source of evaluation of outcomes and responses to nursing care (see Figure 33-12). Although most people will be able to assess for themselves whether their goals have been met, the nurse will also evaluate the effectiveness of

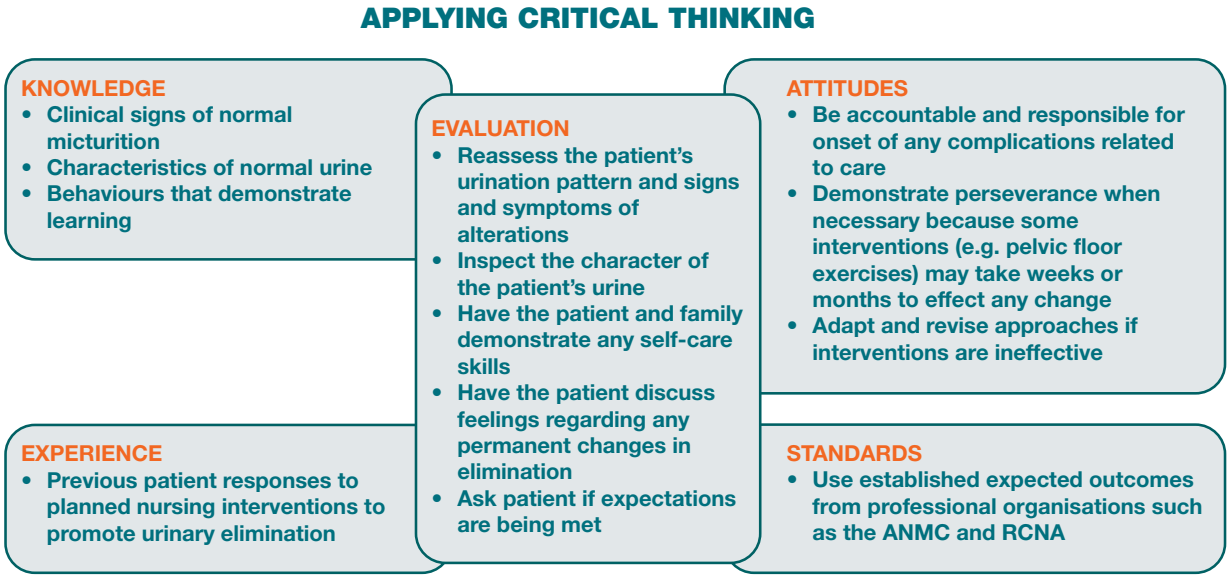


Figure 33-12 **Critical thinking associated with the evaluation phase for urinary elimination.**

nursing interventions through comparisons with baseline data. The nurse evaluates for change in the patient's voiding pattern, presence of urinary tract alteration, and physical condition. Outcomes are compared with expectations to determine the person's health status. Continuous evaluation allows the nurse to determine whether new or revised therapies are required or if any new nursing diagnoses have developed.

Patient expectations

If the nurse has developed a relationship of trust with the person, indications of the person's degree of satisfaction with the care will be evident. Keep in mind that it may take several months before any measurable improvement in urinary incontinence can be determined. These people need ongoing support so that their treatment goals can be realised. The nurse can also assist the person in redefining unrealistic goals when impairment in function is not likely to be altered as completely as the person might like.

CRITICAL REFLECTION POINT

Mrs Joseph is an 82-year-old woman with mild cognitive changes associated with Alzheimer's disease. Her daughter, with whom she lives, has brought her to the general practitioner's clinic for assessment and advice. You are the practice nurse in the clinic. As you assess Mrs Joseph, you ask her daughter how she is coping with caring for her mother. The daughter replies that her mother does not seem to remember how to go to the toilet. Mrs Joseph will go into the bathroom but forget to pull down her underwear before going to the toilet. After such an incident she becomes upset and blames her daughter for her wetness. The daughter asks you for suggestions on how to manage, as she has noticed that her mother's perineal skin is reddened and sore.

What assessments would you need to complete before planning interventions for Mrs Joseph's care?

Key concepts

- The act of micturition or voiding is influenced by voluntary control from higher brain centres and involuntary control from the spinal cord.
- Symptoms common to urinary disturbances include urgency, frequency, dysuria, incontinence, nocturia, polyuria, oliguria and difficulty in starting the urinary stream.
- Methods of promoting the micturition reflex help patients sense the urge to urinate and control urethral sphincter relaxation.
- An increased fluid intake results in increased urine formation that flushes particles and solutes from the urinary system.
- An indwelling urinary catheter remains in the bladder for an extended period, making the risk of infection greater than with intermittent catheterisation.
- One of the main functions of the elimination process is fluid and electrolyte balance.
- A catheter drainage system should remain a closed system and the drainage bag should be positioned to allow free drainage of urine by gravity.
- Incontinence is a significant health issue. An accurate assessment must be undertaken to determine the type of continence problem before a treatment program can be developed.
- Alterations in the urinary system can cause alterations in other organ systems.

Online resources

Cancer in Australia: an overview 2014; presents comprehensive national data on cancer incidence and mortality in Australia, www.aihw.gov.au/publication-detail/?id=60129550047

Continence Foundation of Australia; the national peak body in Australia promoting bladder and bowel health, www.continence.org.au

Kidney Health Australia; promotes kidney health and research and provides resources for the general public and health professionals, www.kidney.org.au

Kidney Health New Zealand; promotes kidney health and research and provides resources for the general public and health professionals, www.kidneys.co.nz

New Zealand Continence Association; provides a service to people with continence problems, caregivers, health professionals and the general public, www.continence.nz/pages/Incontinence-Everyones-Problem/57/

References

Abrams P, Cardozo P, Khoury S, Wein A (eds) 2013 Incontinence – 5th international consultation on incontinence – Paris (5th edn): ICUD-EAU.

Abrams P, Smith AP, Cotterill N 2015 The impact of urinary incontinence on health-related quality of life (HRQoL) in a real-world population of women aged 45–60 years: results from a survey in France, Germany, the UK and the USA. BJU International 115(1):143–52.

Australian Institute of Health & Welfare (AIHW) 2015 Cardiovascular disease, diabetes and chronic kidney disease – Australian facts: risk factors. Cardiovascular, diabetes and chronic kidney disease series no. 4. Cat. no. CDK 004. AIHW, Canberra.

Australian Institute of Health and Welfare 2014a Australia's health 2014. Online. Available: www.aihw.gov.au/publication-detail/?id=60129547205; accessed 19 Feb 2016.

Australian Institute of Health and Welfare (AIHW) 2014b Cancer in Australia: an overview 2014. Online. Available: www.aihw.gov.au/publication-detail/?id=60129550047; accessed 19 Feb 2016.

Australian Institute of Health and Welfare (AIHW) 2013a Chronic kidney disease: regional variation in Australia. Cat. no. PHE 172. AIHW, Canberra. Online. Available: www.aihw.gov.au/publication-detail/?id=60129544873; accessed 19 Feb 2016.

Australian Institute of Health & Welfare (AIHW) 2013b Incontinence in Australia. Cat. no. DIS 61. AIHW, Canberra. Online. Available: www.aihw.gov.au/publication-detail/?id=60129543605; accessed 19 Feb 2016.

Bechis SK, Otsetov AG, Ge R, Olumi AF 2014 Personalized medicine for the management of benign prostatic hyperplasia. The Journal of Urology 192(1):16–23.

Bermingham SL, Hodgkinson S, Wright S et al 2013 Intermittent self catheterisation with hydrophilic, gel reservoir, and non-coated catheters: a systematic review and cost effectiveness analysis. BMJ: British Medical Journal 346. doi: http://0-dx.doi.org.alpha2.latrobe.edu.au/10.1136/bmj.e8639.

Bryant B, Knights K 2015 Pharmacology for health professionals, 4th edn. Mosby, Sydney.

Cancer Council of Australia 2015 Cancer types: prostate cancer. Online. Available: www.cancer.org.au/about-cancer/types-of-cancer/prostate-cancer.html; accessed 19 Feb 2016.

Continence New Zealand 2015 Epidemiology. Online. Available: www.continence.nz/pages/Epidemiology-Statistics/102/; accessed 19 Feb 2016.

Cottenden A, Bliss D, Buckley B et al 2013 Management using continence products. In Abrams P, Cardozo P, Khoury S, Wein A (eds), Incontinence – 5th international consultation on incontinence. ICUD-EAU, Paris.

Dring B, Hipkiss V 2015 Managing and treating chronic kidney disease. Nursing Times 111(7):16–19.

Eifler JB 2014 Benign prostatic hypertrophy. In Kellogg Parsons J, Eifler JB, Han M (eds), Handbook of Urology. Wiley, Oxford.

Gayed BA, Semins MJ 2014 Nephrolithiasis: evaluation and surgical management. In Kellogg Parsons J, Eifler JB, Han M (eds), Handbook of Urology. Wiley, Oxford.

Gordon J, Drake MJ 2014 The psychological impact of lower urinary dysfunction. In Wein AJ, Andersson K-E, Drake MJ, Dmochowski RR (eds) Bladder dysfunction in the adult. New York, Springer.

Gosch M, Talasz H, Nicholas JA et al 2015 Urinary incontinence and poor functional status in fragility fracture patients: an underrecognized and underappreciated association. Archives of Orthopaedic and Trauma Surgery 135(1):59–67.

Jenkins G, Tortora GJ 2012 Anatomy and physiology: from science to life, 3rd edn. John Wiley & Sons, Hoboken NJ.

Johansson, R-M, Malmvall, B-E, Andersson-Gäre, B et al 2013 Guidelines for preventing urinary retention and bladder damage during hospital care. Journal of Clinical Nursing 22:347–55. doi:10.1111/j.1365-2702.2012.04229.x

Joshy G, Porter T, Le Lievre C et al 2010 Implications of using estimated glomerular filtration rate (GFR) in a multi ethnic population of diabetes patients in general practice. N Z Med J 123(1310):9–18.

Khan FA 2012 Urinary tract stone disease. In Dawson C, Nethercliffe JM (eds), ABC of urology, 3rd edn. BMJ Books/Blackwell Publishing, Chichester.

Kidney Health Australia 2015 Fast facts on CKD in Australia. Kidney Health Australia, Melbourne. Online. Available: www.kidney.org.au/KidneyDisease/FastFactsonCKD/tabid/589/Default.aspx; accessed 19 Feb 2016.

Krein SL, Saint S 2014 Preventing catheter-associated urinary tract infection: a happy marriage between implementation and healthier patients. Healthcare Infection 19:1–3. doi.org/10.1071/HI13047.

Lo E, Nicolle LE, Coffin SE et al 2014 Strategies to prevent catheter-associated urinary tract infections in acute care hospitals: 2014 Update. Infection Control and Hospital Epidemiology 35(5):464–79.

Lobchuk MM, Rosenberg F 2014 A qualitative analysis of individual and family caregiver responses to the impact of urinary incontinence on quality of life. Journal of Wound Ostomy & Continence Nursing 41(6):589–96.

Marieb EN, Hoehn K 2014 Human anatomy & physiology, 9th edn. Pearson, Harlow.

McCance H, Huether S 2013 Pathophysiology: the biological basis for disease in adults and children, 7th edn. Mosby, St Louis.

McCooty S, Latthe P 2013 Quality control in urodynamics. Nursing Standard 27(43):35–8.

Moore K, Dumoulin C, Bradley C et al 2013 Adult conservative management. In Abrams P, Cardozo P, Khoury S, Wein A (eds), Incontinence – 5th international consultation on incontinence – Paris, 5th edn, ICUD-EAU.

Ostaszkiewicz J, Eustice S, Roe B et al 2013 Toileting assistance programmes for the management of urinary incontinence in adults (Protocol). Cochrane Database of Systematic Reviews 6:CD010589. DOI: 10.1002/14651858.CD010589.

Prostate Cancer Foundation of New Zealand 2015 Prostate cancer. Online. Available: http://prostate.org.nz/prostate-cancer/; accessed 19 Feb 2016.

Puca E 2014 Urinary tract infection in adults. ClinMicrobiol 3:e120.

Renal Resource Centre 2015 Fact sheet – Kidney stones. Royal North Shore Community Health Centre, Sydney. Online. Available: www.renalresource.com/factsheets/kidneystones.php; accessed 19 Feb 2016.

Skennerton D 2012 Assessment of the urological patient. In Dawson C, Nethercliffe J (eds), ABC Urology, pp. 1-4. John Wiley & Sons, Chichester, UK.

Stapleton AE 2014 Urinary tract infection pathogenesis: host factors. Infectious Disease Clinics of North America 28(1):149–59.

Staskin D, Kelleher C, Bosch R et al 2013 Initial assessment of urinary incontinence in adult male and female patients. In Abrams P, Cardozo P, Khoury S, Wein A (eds), Incontinence – 5th international consultation on incontinence – Paris, 5th edn, ICUD-EAU.

Strickland R 2014 Reasons for not seeking care for urinary incontinence in older community-dwelling women: a contemporary review. Urologic Nursing 34(2):63.

Tompkins AJ, Travis M, Watne RE et al 2014 Decreasing suprapubic tube-related injuries: results of case series and comprehensive literature review. Urologic Nursing 34(1): 9–17.

Turner RM, Semins MJ 2014 Nephrolithiasis: etiology, stone composition, medical management, and prevention. In Kellogg Parsons J, Eifler JB, Han M (eds), Handbook of Urology. Wiley, Oxford.

Yip S, Dick M, McPencow A et al 2013 The association between urinary and fecal incontinence and social isolation in older women. American Journal of Obstetrics & Gynecology 208(2):146.e1–7.doi:10.1016/j.ajog.2012.11.010.

Zhu X, Albertsen PC, Andriole GL et al 2012 Risk-based prostate cancer screening. European Urology 61(4):652–661.doi: http://dx.doi.org/10.1016/j.eururo.2011.11.029.

Zisberg A 2011 Incontinence brief use in acute hospitalized patients with no prior incontinence. J Wound Ostomy Continence Nurs 38(5):559–64.

CHAPTER

34

Balancing fluid, electrolyte and acid–base status

Karen Wotton

Learning outcomes

Mastery of content will enable you to:

- use knowledge of the distribution, composition, movement and regulation of body fluids and electrolytes to discuss physiological mechanisms that maintain fluid balance in all body compartments
- develop a beginning understanding of the meaning of changes in laboratory results associated with common fluid, electrolyte and acid–base imbalances
- demonstrate an ability to apply theoretical concepts to clinical practice in the determination of appropriate screening, prescription and monitoring of intravenous (IV) fluids and electrolyte administration in patients in ambulatory and acute care settings
- discuss reasons for nursing interventions for patients with fluid, electrolyte and acid–base imbalances
- construct a plan of care (assessment, plan, implementation and evaluation) for maintaining fluid, electrolyte and acid–base balance:
  - for a patient ordered oral fluids and diet
  - for a patient ordered nasogastric (enteral) replacement
  - for a patient ordered nil by mouth and either or both IV crystalloids or colloids
  - for a patient requiring a blood transfusion.

KEY TERMS

Active transport, p. 1161
Aldosterone, p. 1163
Anion gap, p. 1173
Anions, p. 1155
Antidiuretic hormone (ADH), p. 1163
Arterial blood gas (ABG,) p. 1170
Autologous transfusion, p. 1227
Buffers, p. 1167
Cations, p. 1155
Colloid osmotic pressure, p. 1159
Colloids, p. 1159
Concentration gradient, p. 1160
Crystalloids, p. 1159
Dehydration, p. 1178
Diffusion, p. 1159
Electrolyte, p. 1168
Extracellular fluid (ECF), p. 1153
Filtration, p. 1161
Fluid volume deficits (FVD), p. 1177
Fluid volume excess (FVE), p. 1197
Haemolysis, p. 1234
Homeostasis, p. 1161
Hydrostatic pressure, p. 1161
Hypertonic, p. 1158
Hypotonic, p. 1158
Hypovolaemia, p. 1163
Infiltration, p. 1213
Infusion pump, p. 1213
Insensible water loss, p. 1163
Interstitial fluid, p. 1154
Intracellular fluid (ICF), p. 1153
Intravascular fluid, p. 1154
Ion, p. 1154
Isotonic, p. 1158
Metabolic acidosis, p. 1173
Metabolic alkalosis, p. 1174
Oedema, p. 1161
Oncotic pressure, p. 1159
Osmolality, p. 1158
Osmolarity, p. 1158
Osmols, p. 1158
Osmoreceptors, p. 1162
Osmosis, p. 1158
Osmotic pressure, p. 1158
Phlebitis, p. 1204
Renin, p. 1163
Respiratory acidosis, p. 1172
Respiratory alkalosis, p. 1172
Sensible water loss, p. 1163
Total parenteral nutrition (TPN), p. 1203
Vascular access devices, p. 1202
Venepuncture, p. 1204

Fluid and electrolyte balance is where *all* compartments of the body contain the appropriate water volume and concentration of electrolytes. Nurses must assume that all patients have a fluid and electrolyte imbalance. Nurses must therefore comprehensively assess fluid and electrolyte status and be able to articulate, at any time throughout the shift, the clinical indicators which prove the patient's degree of fluid and electrolyte balance or imbalance. An understanding of the distribution of body fluids, constituents of body fluids and processes used by the body to maintain fluid and electrolyte balance (Figure 34-1) will assist in early identification and management of factors that contribute to fluid and electrolyte imbalances and monitoring the effectiveness of interventions.

Water is the largest single component of the body and adaptive physiological mechanisms ensure that healthy, mobile, well-oriented adults maintain normal fluid, electrolyte and acid–base balance.

Students should aim to develop the ability to use concepts covered in this chapter in developing knowledge of what is normal, identification of risk factors for fluid, electrolyte and acid–base imbalances, skills in comprehensive assessment, and knowledge of appropriate fluid and electrolyte replacement therapy for different imbalances.

Distribution of body fluids

Total body water (TBW) is generally about 60% of body weight, with the following variations: 80% in newborns; 60% in adult males; 50% in adult females; around 50% in obese people and 70% in lean people. The lower percentage of TBW in females and obese individuals is due to higher body fat content. Nurses need to understand differences in usual TBW based on age, usual weight and gender, to understand the significance of a fluid loss or gain based on calculated TBW. TBW calculations for an adult male are 0.6 × usual bodyweight = TBW (litres) and for an adult female 0.55 × usual bodyweight = TBW (litres) (Table 34-1).

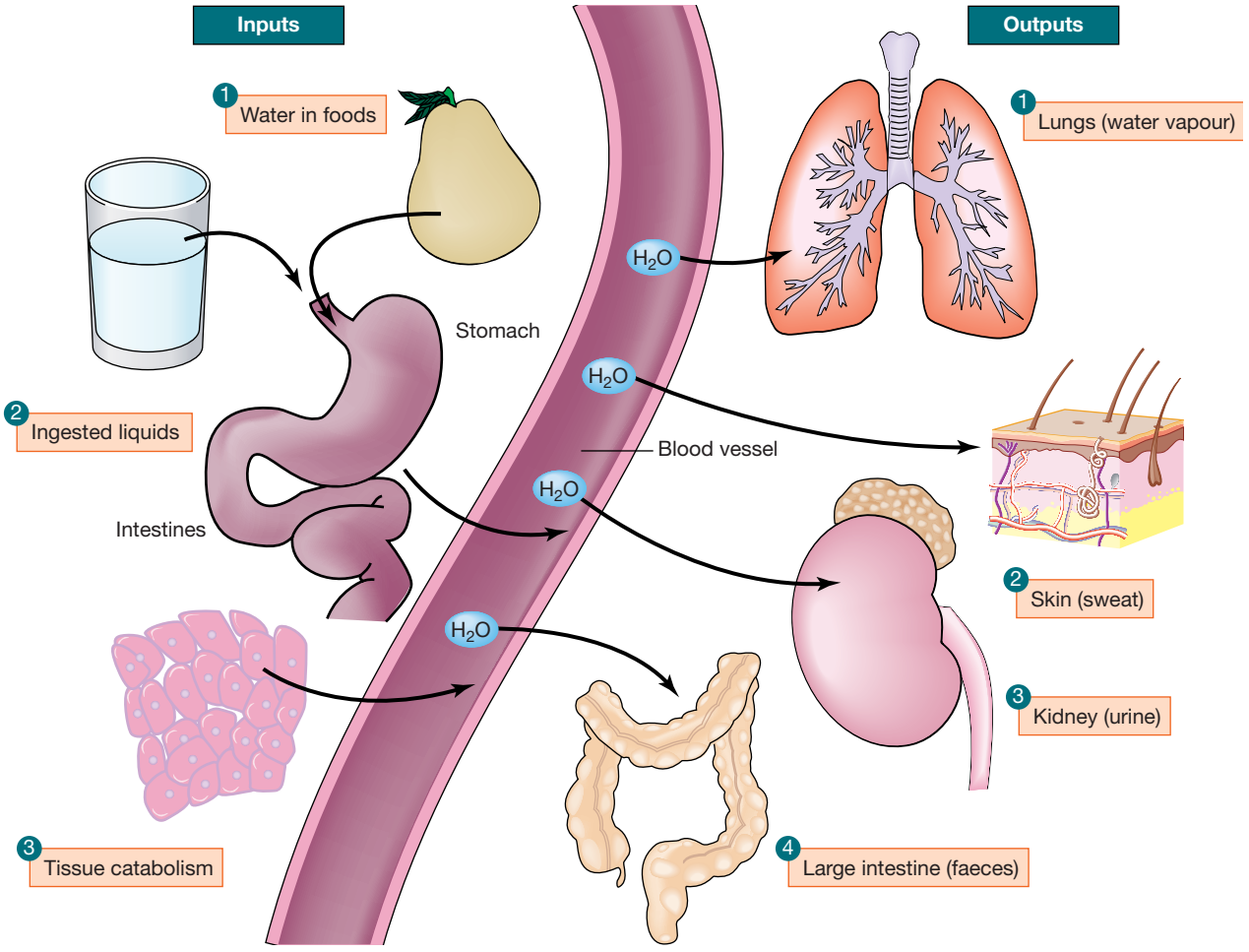


Figure 34-1 **Sources of fluid input and output.**

TABLE 34-1 Expected TBW based on gender and weight

Usual weight (kg)	Gender	Total body water (L)
50	Male	30
	Female	27.5
60	Male	36
	Female	33
70	Male	42
	Female	38.5
80	Male	48
	Female	44

Adapted from Wotton K, Crannitch K, Munt R 2008 Prevalence, risk factors and strategies to prevent dehydration in older adults. Contemp Nurse 31(1):44–56.

• CRITICAL REFLECTION POINT

This critical thinking exercise is designed to increase understanding of the importance of usual weight in interpreting the significance of possible alterations in TBW.

Activity

Using TBW data in Table 34-1, identify which of the following patients has the greatest health risk from a fluid loss of 1000 mL.

Patients: Mrs Gardener weight 50 kg, Mr Hermes weight 60 kg, Mrs McMaster weight 70 kg, Mr Kenyard weight 80 kg.

Process	Example: Ms Hunter weighs 60 kg and vomited 500 mL. What percentage of TBW is this loss?
Calculate the TBW for each patient by referring to information in Table 34-1	TBW 33 L
Change L into mL by x 1000 = mL	mL = 33 x 1000 = 33,000 mL
Calculate the percentage TBW lost for each patient	% TBW loss
Volume lost x 100	500 x 100
TBW (mL)	33,000 = 1.5%

Body fluids are distributed in two distinct compartments, one containing intracellular fluids and the other, extracellular fluids (Figure 34-2). Almost two-thirds of TBW is in the intracellular compartment (*intracellular fluid*); the other third is extracellular (*extracellular fluid*). Various semipermeable cell membranes separate TBW into these and further compartments, allowing compartments to function relatively independently (Patton & Thibodeau 2016). The microspores in the capillary membrane facilitate the exchange of fluids between compartments.

Intracellular fluid (ICF) comprises all fluid within body cells constituting approximately 40% of bodyweight in adult males and 35% in females (Patton & Thibodeau 2016). The ICF compartment is a 'virtual compartment' consisting of an extremely large number of small collections of fluids high in potassium and low in sodium and chloride ions.

Extracellular fluid (ECF) is all fluid outside the cells, divided into two main smaller compartments containing

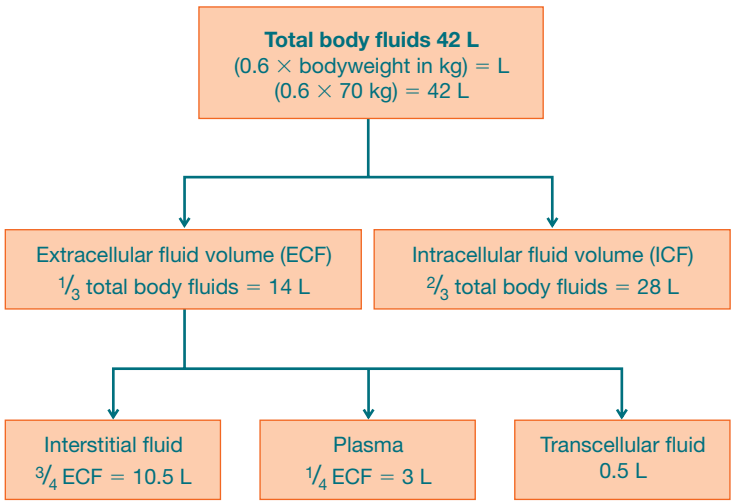


Figure 34-2 Volumes of fluid compartments for a male weighing 70 kg.

interstitial fluid and intravascular fluid. **Interstitial fluid** (ISF) exists between the cells and outside the blood vessels. ISF bathes all body cells and carries oxygen, nutrients, wastes and chemical messengers. **Intravascular fluid** consists of blood plasma and lymph. Plasma exists as a real fluid collection in one location. It differs from ISF in higher protein content and contains suspended red and white cells (Hall 2015). The lymphatic system returns protein and excess ISF to the circulation. About 25% of the ECF is in the intravascular compartment and 75% is interstitial fluid. Other ECFs are *transcellular fluid*, *cerebrospinal fluid* (found in the ventricles of brain and surrounding the brain and spinal cord); *synovial fluid* (found inside synovial joint capsules); *gastrointestinal tract fluids* (saliva and gastric, pancreatic and intestinal juices); *eye and ear fluids* (vitreous and aqueous humour); *pleural*, *pericardial* and *peritoneal fluids* and *glomerular filtrate* (Patton & Thibodeau 2016). ECF ion concentration is opposite to ICF being low in potassium and high in sodium and chloride ions (Patton & Thibodeau 2016).

Table 34-2 shows the difference in expected fluid volumes in the various fluid compartments based on gender and weight.

• CRITICAL REFLECTION POINT

Daily weight informs health professionals about a patient's fluid balance. This critical thinking exercise is designed to further consolidate an understanding of the importance of knowing an individual's usual weight and expected volumes in different body compartments. This knowledge is essential in interpreting the significance of possible alterations in fluid balance.

Activity

Refer to plasma volume data in Table 34-2 to identify which of the following patients has the greatest health risk from a blood loss of 1000 mL. Patients: Mrs Gardener weight 50 kg, Mr Hermes weight 60 kg, Mrs McMaster weight 70 kg, Mr Kenyard weight 80 kg.

Process	Example: Ms Hunter weighs 60 kg and vomited 500 mL. What percentage of plasma volume is lost?
1. Calculate the plasma volume for each patient by referring to information In Table 34-2	1. Plasma volume 2.75 L
2. Change L into mL by x 1000	2. mL = 2.75 x 1000 = 2750 mL
3. Calculate the percentage plasma volume loss for each patient Volume lost x 100 Plasma volume (mL)	3. 500 x 100 2750 = 18.2% plasma volume loss

Composition of body fluids

Body fluids contain dissolved solutes essential to fluid and electrolyte balance and metabolism – technically known as electrolytes. An electrolyte is an element or compound which, when dissolved in water, separates into ions and is able to carry an electrical current. An **ion** is an

TABLE 34-2 Expected body fluid volumes (L) based on gender and weight

Usual weight (kg)	Gender	Total body water (L)	ICF (= ⅔ TBW) (L)	ECF (= ⅓ TBW) (L)	ECF	
					Interstitial (= 75% ECF) (L)	Plasma (= 25% ECF) (L)
50	Male	30	20	10	7.5	2.5
	Female	27.5	18.33	9.17	6.89	2.28
60	Male	36	24	12	9	3
	Female	33	22	11	8.25	2.75
70	Male	42	28	14	10.5	3.5
	Female	38.5	25.66	12.83	9.63	3.2
80	Male	48	32	16	12	4
	Female	44	29.3	14.66	10.96	3.67

ECF = extracellular fluid; ICF = intracellular fluid; TBW = total body water.

Calculation of TBW:
Male 0.6 × usual bodyweight = x litres
Female 0.55 × usual bodyweight = x litres

Adapted from Wotton K, Crannitch K, Munt R 2008 Prevalence, risk factors and strategies to prevent dehydration in older adults. Contemp Nurse 31(1):44–56.

atom or molecule that possesses a positive or a negative charge. Positively charged ions are **cations** (sodium Na^+, potassium K^+, calcium Ca^{2+}, magnesium Mg^{2+}, iron Fe^{2+} and hydrogen H^+). Negatively charged electrolytes are **anions** (chloride Cl^-, bicarbonate HCO_3^-, sulfate SO_4^{2-}, phosphate HPO_4^{3-} and protein anions) (Table 34-3).

Electrolytes are measured in millimoles per litre (mmol/L). A mole is a particle standard (6.02×10^{23} atoms). One mole (mol) is defined as the molecular (or atomic) weight of a substance, in grams. One millimole (mmol) is thus equal to one-thousandth of a mole, in milligrams. In clinical practice, measurement of an amount of a substance is reported as the concentration of that substance in a particular volume; thus mass per unit of volume (Hall 2015). The unit of measurement frequently used in the clinical setting is millimoles per litre (mmol/L). Millimoles per litre are a measure of the weight of a particular ion (the solute) dissolved in 1 L of a liquid (the solvent). The liquid formed by dissolving the solute in the solvent is called a solution.

Knowledge of the function of electrolyte anions and cations and their role in maintaining electrolyte balance in the human body will assist in understanding the patient's maintenance and restorative dietary and fluid needs. Electrolyte concentrations differ between ICF and ECF (Table 34-3). The body fluids and electrolytes in the ICF and ECF compartments are also in a constant state of mobility where electrolyte distribution is a primary determinant of water concentration in a particular compartment. Knowledge of the electrolytes in different body fluids (Table 34-4) can assist nurses in identifying potential fluid and electrolyte imbalances when fluids are lost from particular sources, and therefore in understanding the appropriateness of replacement fluids and other interventions.

TABLE 34-3 Electrolyte levels in intracellular and extracellular fluids

	Extracellular fluid (mmol/L)		
Electrolyte	Plasma	Interstitial	Intracellular fluid (mmol/L)
Cations			
Calcium, Ca^{2+}	2.2–2.6	2.2–2.6	0.5–1
Magnesium, Mg^{2+}	0.7–0.95	1	14–15
Potassium, K^+	3.1–4.2	4.1	150–155
Sodium, Na^+	137–145	145	15–20
Anions			
Bicarbonate, HCO_3^-	22–32	27	10–12
Chloride, Cl^-	98–106	114	1–4
Phosphate, HPO_4^{3-}	0.7–1.25	0.7–1.25	33–35

CRITICAL REFLECTION POINT

Nurses are involved in the assessment and the thoughtful and knowledgeable implementation of the orders of medical staff and evaluation of the effectiveness of therapies to manage fluid and electrolyte imbalances. The following activity is designed to assist students in developing an understanding of the cause of an imbalance and rationale for prescribed fluids and electrolytes.

Activity

Refer to data in Table 34-4 in calculating which electrolyte/s would be required in replacement diet and fluids for each of the following patients:

1. **Mr Luke, 34 years, who has a temperature of 39.6°C and is diaphoretic.**
2. **Mrs Tesler, 69 years, who has been vomiting for 24 hours.**

TABLE 34-4 Electrolyte levels in common body fluids

	Na^+ (mmol/L)	K^+ (mmol/L)	Cl^- (mmol/L)	HCO_3^- (mmol/L)
Bile	150	5–10	40–80	20–40
Cerebrospinal fluid	147	3	113	25
Colonic fluid	140	5	85	60
Gastric juice	20–100	5–10	120–160	0
Ileal fluid	140	5	105	40
Pancreatic juice	120	5–10	10–60	80–120
Perspiration	65	8	39	16
Saliva	20–80	10–20	20–40	20–60

3. **Mr Smyth, 66 years, who is fifth-day post ileostomy with ileostomy bag needing to be changed seven times over the last shift.**
4. **Amy, a 4-year-old child, who has had acute diarrhoea with some vomiting for the past 24 hours. Use your knowledge of electrolytes contained in diarrhoea and vomitus and mechanisms for diarrhoea to explore whether Amy should be given any of the lemonade (flat), Gatorade or Gastrolyte her mother has purchased.**

Minerals (e.g. iron, zinc and magnesium; see Table 34-5) are constituents of all body tissues and fluids and are important in maintaining physiological processes. Minerals serve as co-factors in the thousands of enzyme-controlled body reactions; they act as catalysts in nerve response, muscle contraction and metabolism of nutrients in foods; regulate electrolyte balance and hormone production; and strengthen skeletal structures (Patton & Thibodeau 2016). It is essential for nurses to be aware that all trace minerals can be toxic in moderate to high doses.

Minerals do not work alone, but in balance with one another and with the metabolism of proteins, carbohydrates, fats and vitamins. An imbalance in one mineral can cause a chain reaction of deficiencies.

• CRITICAL REFLECTION POINT

Nurses are responsible for completing and documenting patient history within 24 hours of admission. This history should include information concerning the patient's usual diet and over-the-counter medications. The risk for mineral consumption above daily requirement is increased because of the availability of over-the-counter mineral supplements (tablets, capsules, powders) and the addition of trace elements to: dietary supplements, cold preparations, nasal preparations and hygiene products.

Mrs Henshaw has a history of chronic renal injury and admitted with fatigue, hypotension, bruising and bleeding gums. She has been self-medicating with Milk of Magnesia for constipation, Mylanta for indigestion and, because of her ill-fitting dentures, is using additional denture adhesive. She loves pineapple, raspberries and strawberries.

Activity

Refer to Tables 34-5 and 34-6 in deciding what, if any, trace element could be partly responsible for Mrs Henshaw's admission signs and symptoms.

TABLE 34-5 Major minerals and their function

Mineral	Daily INTAKE	Function	Source
Iron	8 mg/day (male) 18 mg/day (female)	Haemoglobin formation, electron transport, oxygen transport, enzyme activator	There are two types of iron in food: 1. *haem iron* found in meat and offal (lean red meat, poultry or game, liver, kidney) 2. *non-haem iron* derived from some vegetables, fruit, fish, grains and nuts – apricots, blackcurrants, figs, prunes, beans, lentils, broccoli, peas, cabbage, spinach, eggs, liquorice, mackerel, oysters, sardines, tuna, wholegrain cereals and breads
Zinc	4–14 mg	Antioxidant; maintenance of immune system, protein synthesis, carbon dioxide transport, sexual function, insulin storage, carbohydrate metabolism, wound healing	Water, meat and cereal products – brown rice, wholegrain breads, cheese, crab, lobster, mussels, oysters, sardines, duck, kidney, red meat, turkey, venison. Homeopathic medications, cold lozenges, nasal gels/sprays and denture adhesive cream
Magnesium	300–400 mg	Assists in absorption and breakdown of vitamins and minerals, e.g. calcium and vitamin C; present in bones, liver, muscles, transfer of intercellular water, alkaline balance, neuromuscular activity	Apricots, bananas, figs, prunes, raisins, brown rice, granary bread, wholemeal bread and pasta, nuts, pulses, courgettes/zucchini, green leafy vegetables, okra, parsnips, peas, sweetcorn, lean meat, milk, yoghurt. Laxative Milk of Magnesia (Bailey et al 2011) and included in Mylanta (Zajac et al 2013)
Copper	2–5 mg	Synthesis and function of proteins, enzymes, connective tissues (collagen and elastin), myelin and other phospholipids; tyrosinasein melanin synthesis (pigmentation of skin); thermal regulation, glucose metabolism, blood clotting	Mushrooms, spinach, greens, seeds, raw cashews, raw walnuts, tempeh, barley
Manganese	3–4 mg	Formation of connective tissue, bones, blood clotting factors and sex hormones; fat and carbohydrate metabolism, calcium absorption, regulation blood glucose; necessary for brain and nerve function	Spelt grain, brown rice, beans, spinach, pineapple, tempeh, rye, soybeans, thyme, raspberries, strawberries, garlic, squash, eggplant, cloves, cinnamon, turmeric

TABLE 34-6 Example of causes and signs and symptoms of mineral deficits

	Causes	Signs and symptoms
Hypomagnesemia > 0.75 mmol/L	Renal wasting, chronic alcohol use, diabetes mellitus, malnutrition, refeeding syndrome, parathyroidectomy, diarrhoea, hyperthyroidism, primary aldosteronism, pancreatitis	Weakness, muscle fasciculation, tremors, tetany, increased reflexes; personality changes, disorientation; convulsions, psychosis, stupor, coma; arrhythmias, ECG abnormalities
Hypermagnesemia > 1.3 mmol/L	Over-replacement of magnesium, antacid/ laxative overuse, renal dysfunction; rapid IV infusions of magnesium	< 5 mEq/L: serious symptoms rare; bradycardia, flushing, sweating, sensation of warmth, nausea, vomiting > 5 mEq/L: lethargy, mental confusion, hypotension; decreased clotting mechanisms > 7.5 mEq/L: coma, paralysis, decreased clotting, respiratory distress, cardiac arrest
Hypocupremia	Chronic diarrhoea, malabsorption syndrome, long-term parenteral nutrition; enteropathies, bowel resection, vegetarian diet	Abnormal glucose tolerance, arrhythmias, hypercholesterolemia, atherosclerosis, depressed immune function, demineralisation of bones, pathological fractures
Hypercupremia	Ingestion > 15 mg of elemental copper, long-term parenteral nutrition	Nausea, vomiting, intestinal cramps, diarrhoea, shock, hepatic necrosis, haemolysis, renal impairment, coma and death
Hypozincemia	Decrease intake, malabsorption, increased loss, rapidly growing adolescents; menstruating, lactating, or pregnant women; low meat intake; institutionalised chronically ill residents, chronic diarrhoea, zinc-deficient parenteral nutrition solutions, diabetes mellitus, and diuretic therapy	Dysgeusia (decreased taste), hyposmia (diminished smell), Pica, growth retardation, anaemia, hepatosplenomegaly, impaired wound healing, diarrhoea, vomiting, alopecia and oral, anal or genital skin lesions
Hyperzincemia	People rarely consume too much dietary zinc. Zinc toxicity may be associated with: consuming foods/ beverages packaged in a zinc-coated (galvanised) container, zinc supplements, zinc oxide fumes (welding, dyes, galvanising, electroplating), zinc in cough lozenges, zinc in false teeth adhesives (Maret & Sandstead 2006)	Zinc poisoning is a potentially life-threatening emergency. Symptoms include: convulsions, seizures, fever, non-specific aches and pains, shock, metallic taste, difficulty with micturition, rash, hypotension and vomiting.

RESEARCH HIGHLIGHT

Research focus

To explore mortality and frequency of arrhythmias in patients admitted with acute myocardial infarction (AMI) treated with IV magnesium therapy.

Research abstract

This prospective randomised controlled trial randomly divided patients admitted with AMI (n = 100) into two groups of 50 patients each. Group one administered IV magnesium (age 59.52 years ± 15.03), Group 2 a placebo (age 59.14 years ± 13.41) and a control group of 20 healthy volunteers. Patients with AMI were admitted to hospital within 12 hours of the onset of chest pain; serum magnesium was measured on admission, days 2 and day 5.

Research findings

Incidence of cardiac arrhythmias, heart failure and hospital mortality were significantly lower in the magnesium-treated group. Mortality as well as morbidity was very less in the magnesium-treated group of patients compared to the placebo-treated patients.

Conclusion

Intravenous magnesium is a safe and effective method of reducing the frequency of arrhythmias and mortality following the acute myocardial infarction. Magnesium therapy reduces the incidence of arrhythmias and mortality, even in the absence of demonstrable magnesium deficiency.

Reference

Mhaskar DM, Mahajan SK, Pawar KC 2013 Significance of serum magnesium levels in reference to acute myocardial infarction and role of intravenous magnesium therapy in prevention of cardiac arrhythmias following myocardial infarction. Int J Med Public Health 3:187–91.

Movement of body fluids

Fluids and electrolytes constantly shift from compartment to compartment to facilitate body processes such as tissue oxygenation, acid–base balance and urine formation. Cell membranes separating the body fluid compartments are selectively permeable, allowing water to pass through them easily. Most ions and molecules pass through them more slowly. Fluids and solutes move across these membranes by four processes: osmosis, diffusion, filtration and active transport.

Osmosis

Osmosis is the net movement of water molecules through a selectively permeable membrane down a water potential gradient; the water molecules move from an area of high water potential (low solute concentration, called **hypotonic**) to an area of low water potential (high solute concentration, called **hypertonic**) (Figure 34-3) (Haynie 2008). The membrane is permeable to the solvent (water), but is impermeable to the solute. The rate of osmosis depends on the concentration of the solutes in the solution, the temperature of the solution, the electrical charges of the solutes and the differences between the *osmotic pressures* exerted by the solutions. The concentration of a solution is measured in **osmols**, which reflect the amount of a substance in solution in the form of molecules, ions or both.

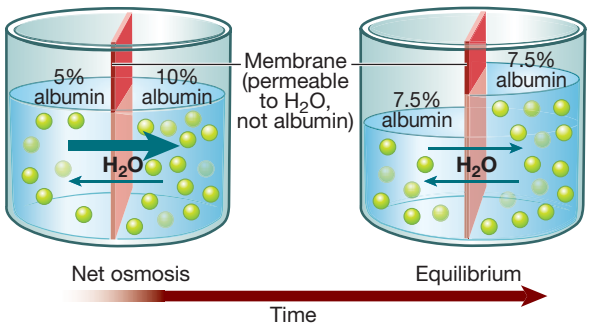


Figure 34-3 Osmosis through a semipermeable membrane.

Patton KT, Thibodeau GA 2010 Anatomy and physiology, 7th edn. Mosby, St Louis.

Osmotic pressure is the drawing power for water in osmosis, and depends on the number of molecules in solution. Osmotic pressure is the minimum hydrostatic pressure applied to a solution to oppose the movement of water across a semipermeable membrane in response to differing solute concentration between the two sides of the semipermeable membrane (Hall 2015). If the concentration of the solute is greater on one side of the selectively permeable membrane, the rate of osmosis is quicker, with a more rapid transfer of solvent across the membrane. This continues until equilibrium is reached. The osmotic pressure of a solution is called its **osmolality**, which is expressed in osmols per kilogram (Osm/kg) or milliosmols per kilogram (mOsm/kg) of the solution. The normal serum osmolality is 280–295 mOsm/kg.

Osmolarity is the number of osmoles of solute in a litre of solution (Osm/L). Although the terms *osmolality* and *osmolarity* are often used interchangeably, the osmolality of a substance in serum is about 6% higher than its osmolarity because of proteins and lipids present in plasma. Osmolarity is the measure used to evaluate serum and urine in clinical practice. Table 34-7 shows the use of the formula (2 × Na) + (2 × K) + Glucose + Urea (solutes) (Fazekas et al 2013) in the bedside calculation of serum osmolarity for three patients. As the osmolarity of ECF is approximately equal to that of ICF, serum osmolarity is a guide to intracellular osmolarity. Changes in extracellular osmolarity may result in changes in both ECF and ICF volume.

Solutions are classified as *hypertonic*, *isotonic* or *hypotonic*. An **isotonic** solution (a solution of the same osmolarity as blood plasma) expands the body's fluid volume without causing a fluid shift from one compartment to another; a *hypertonic* solution (a solution of higher osmotic pressure) pulls fluid from cells; and a *hypotonic* solution (a solution of lower osmotic pressure) moves fluid into the cells, causing them to enlarge (Figure 34-4, Table 34-8). Each of these actions occurs through osmosis.

TABLE 34-7 Bedside calculation of serum osmolarity

Patient	Na	K	Glucose	Urea	Application of formula (2 × Na) + (2 × K) + Glucose + Urea	Estimated serum osmolarity (ECF)
1	132	3.5	5.5	8	(2 × 132) + (2 × 3.5) + 5.5 + 8	284 (normal – isotonic)
2	140	5	9	10	(2 × 140) + (2 × 5) + 9 + 10	309 (high – hypertonic)
3	125	3	5	6	(2 × 125) + (2 × 3) + 5 + 6	267 (low – hypotonic)

ECF = extracellular fluid; Glucose = glucose level; K = potassium ion (K+) level; Na = sodium ion (Na+) level; Urea = urea level; all levels measured in mmol/L.

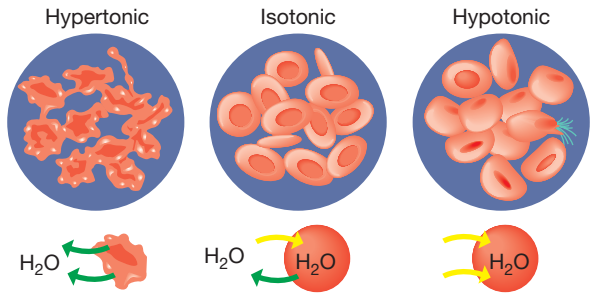


Figure 34-4 Hypertonic, isotonic and hypotonic solutions.

LadyofHats, Wikimedia Commons http://commons.wikimedia.org/wiki/File: Osmotic_pressure_on_blood_cells_diagram.svg.

Nurses need to be fully cognisant of each patient's fluid, nutritional and electrolyte needs in understanding the type of IV fluid prescribed, expected outcomes and associated risks. The administration of an incorrect solution can result in unwanted changes in cell volume and function, which includes a redistribution of water between the intracellular and extracellular fluid (ICF and ECF) compartments, resulting in a rapid change in cell volume and cellular dysfunction or injury.

The osmotic pressure of the blood is affected by plasma proteins, especially albumin. Albumin exerts colloid osmotic (oncotic) pressure, which tends to keep fluid in the intravascular compartment (Hall 2015). Knowledge of the actions of **colloid osmotic pressure** is essential if nurses are to understand situations that cause decreases in osmotic pressure and reasons for the use of intravenous (IV) **colloids** and **crystalloids**. IV colloids may, for example, be used to increase tissue osmotic pressure when an increase in capillary permeability leads to an escape of proteins into the interstitial space resulting in insufficient osmotic pressure to maintain fluid in the intravascular compartment.

The *net filtration pressure* (NFP) is the difference between the hydrostatic pressure (pressure exerted by the fluid) and the **oncotic pressure**. Fluid leaves the capillary and enters the interstitial space when hydrostatic pressure is greater than *oncotic pressure* (Hall 2015). Fluid enters the capillary from the interstitial space when hydrostatic pressure is less than oncotic pressure.

Fluid moves out of the *arterial end* of the capillary into the interstitial space because of a positive NFP of +5 mmHg, the difference between the hydrostatic pressure (30 mmHg) and the oncotic pressure (25 mmHg). Thus, with this dominant hydrostatic pressure, fluid and diffusible solutes move out of the capillary into the interstitial space, and thus flow out of the circulation (Figure 34-5).

Fluid moves out of the interstitial space into the *venous end* of the capillary because of a negative NFP of –5 mmHg, the difference between the hydrostatic pressure (20 mmHg) and the oncotic pressure (25 mmHg). Oncotic pressure therefore dominates at the venous end of the capillary, and fluid and diffusible solutes move *into* the capillary from the interstitial space (Figure 34-5). The excess fluid and solutes remaining in the interstitial space are returned to the intravascular compartment by the lymph channels (Patton & Thibodeau 2016).

Diffusion

Diffusion is the movement of a solute (which can be a dissolved gas) in a solution across a semipermeable membrane from an area of higher solute concentration to an area of lower solute concentration (Figure 34-6) to ensure the maintenance of equilibrium and the even distribution of the solute in the solution or gas. For example, if a small amount of red food colouring is added

TABLE 34-8 Osmotic response to hypotonic, isotonic and hypertonic solutions

Type of solution	Definition	Osmotic response
Hypotonic solution	Dilute solution, with a higher water concentration than the cell Example: 0.45% saline, 0.5% sodium chloride, 0.33% sodium chloride	Cell will gain water through osmosis. Osmotic pressure of the ECF is less than ICF, causing increased cell volume and potentially lysing the cell (breaking down the cell wall – cytolysis).
Isotonic solution	Solution with exactly the same water concentration as the cell Example: O.9 % sodium chloride, lactated Ringer's solution, 5% dextrose in water (D5W) and blood components	No net movement of water across the cell membrane as the osmotic concentration of both ICF and ECF are the same.
Hypertonic solution	Concentrated solution, with a lower water concentration than the cell Example: 5% dextrose in Normal saline, 10% dextrose in water, 3% sodium chloride, 25% albumin, TPN	Cell will lose water by osmosis. Osmotic pressure of ECF exceeds that of ICF and water flows out of cell causing the cells to shrink (crenate).

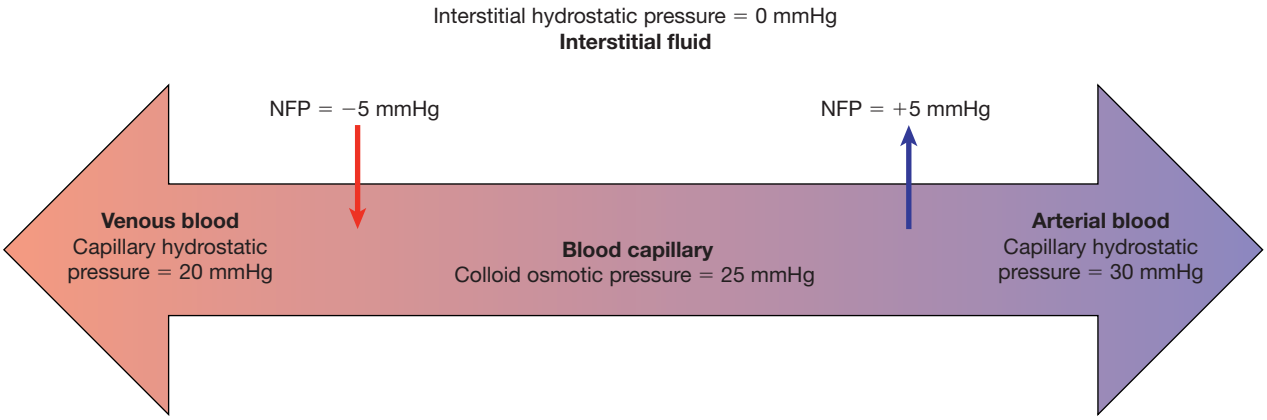


Figure 34-5 **Capillary hydrostatic and osmotic pressure. NFP = net filtration pressure.**

RESEARCH HIGHLIGHT

Research focus

Lymphoedema is a build-up of lymph fluid causing swelling in an area of the body. Lymph fluid comes from capillaries into the body tissues and normally drains into lymph vessels which return the lymph fluid back into the bloodstream. Causes of lymphoedema include blockage, damage, removal or compression of lymph nodes or lymph drainage. Although lymphoedema of the arm is a well-known complication of breast and axillary surgery, breast lymphoedema has received scant attention.

Research abstract

Characterise breast lymphoedema's incidence, associated symptoms, clinical course, and impact on quality of life.

Method

Subjects were enrolled prospectively from a consecutive sample of patients undergoing non-mastectomy breast procedures (excisional biopsy or wide local excision ± lymph node removal) and followed for signs and symptoms of lymphoedema in the operated breast. Symptoms and distress were serially assessed with 11-point linear analog scales. Breast lymphoedema was diagnosed independent of symptoms, based on the distribution and degree of oedema and erythema. One hundred and twenty-four women were followed for a median of 11 months, and breast lymphoedema was diagnosed in 38 (31%) women.

Research findings

Breast lymphoedema was more frequent after breast surgery with axillary node removal (49%) compared to breast surgery alone (0%), $p < 0.0001$. Breast lymphoedema involved multiple quadrants in most women and was characterised by oedema in 100% and erythema in 79%. Patients with breast lymphoedema were significantly more likely than those without breast lymphoedema to report symptoms of breast heaviness (65% vs 22%, $p < 0.0001$), redness (62% vs 29%, $p = 0.0006$), and swelling (59% vs 22%, $p < 0.0001$), but symptom-associated distress was low overall. Three of 32 breast lymphoedema patients with clinical follow-up developed chronic oedema.

Conclusion

Breast lymphoedema occurs in approximately one-half of women who undergo breast surgery with axillary node removal. The condition is characterised by diffuse skin oedema and erythema, as well as self-reported symptoms with a low level of distress.

Reference

Degnim AC, Miller J, Hoskin TL et al 2012 A prospective study of breast lymphoedema: frequency, symptoms, and quality of life. Breast Cancer Res Treat 134(3):915–22.

to a glass of water without stirring, over time the red food colouring molecules will evenly diffuse through the whole glass, giving an overall pink rather than a red appearance. A physiological example is the movement of oxygen and carbon dioxide between the alveoli and blood vessels in the lungs. The difference between the two concentrations is known as a **concentration gradient** (Hall 2015). The diffusion process is relatively slow and can be expedited by several factors, including smaller molecular size of the particles, higher temperature, greater concentration difference between the two compartments, and higher permeability of the substance.

Filtration

Filtration is the process by which water and diffusible substances move together in response to fluid (hydrostatic) pressure. This process is active in capillary beds, where **hydrostatic pressure** differences determine the movement of water (Figure 34-7). When there is increased hydrostatic pressure on the venous side of the capillary bed, as occurs in heart failure (HF), the normal movement of water from the interstitial space into the intravascular space by filtration is reversed, resulting in an accumulation of excess fluid in the interstitial space, known as **oedema**.

Active transport

Unlike diffusion, osmosis and filtration, **active transport** requires metabolic activity and expenditure of energy to move materials across cell membranes. This allows cells to admit larger molecules than they would otherwise be able to admit, or to move molecules 'uphill' from areas of lesser concentration to areas of greater concentration. An example of active transport is the sodium and potassium pump (Figure 34-8). Sodium is pumped out of the cell and potassium is pumped in, against the concentration gradient. This process makes it possible to keep a higher concentration of potassium in the ICF and a higher concentration of sodium in the ECF (Hall 2015).

Active transport is enhanced by carrier molecules in a cell, which bind themselves to incoming molecules. For example, glucose is able to enter cells after it binds with the transport vehicle insulin. Active transport is the mechanism by which cells absorb glucose and other substances to carry out metabolic activities.

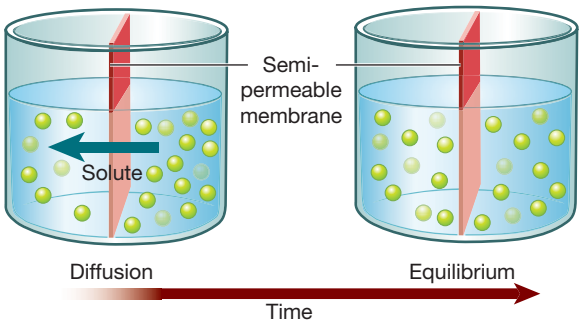


Figure 34-6 Diffusion across a semipermeable membrane.

Regulation of body fluids

Body fluids are regulated by fluid intake, hormonal controls and fluid output. This physiological balance is termed **homeostasis** (Lewis et al 2014). In health, a number of feedback mechanisms work together to maintain homeostasis (Figure 34-9).

Fluid intake

Fluid intake is regulated mainly through the thirst mechanism. *Thirst* is the conscious desire for water and is one of the major factors that determine fluid intake (Patton & Thibodeau 2016). The thirst-control centre, located

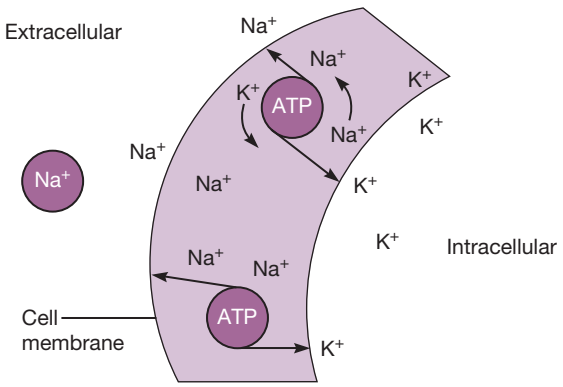


Figure 34-8 Sodium–potassium pump.

Lewis SM et al 2008 Medical–surgical nursing: assessment and management of clinical problems, 6th edn. Mosby, St Louis.

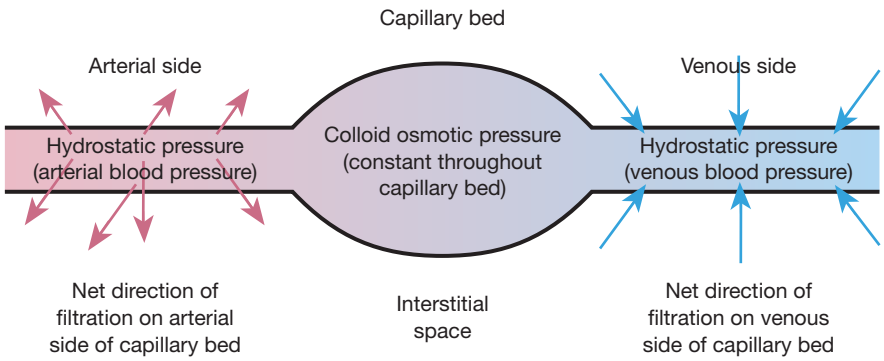


Figure 34-7 An example of filtration and hydrostatic pressure.

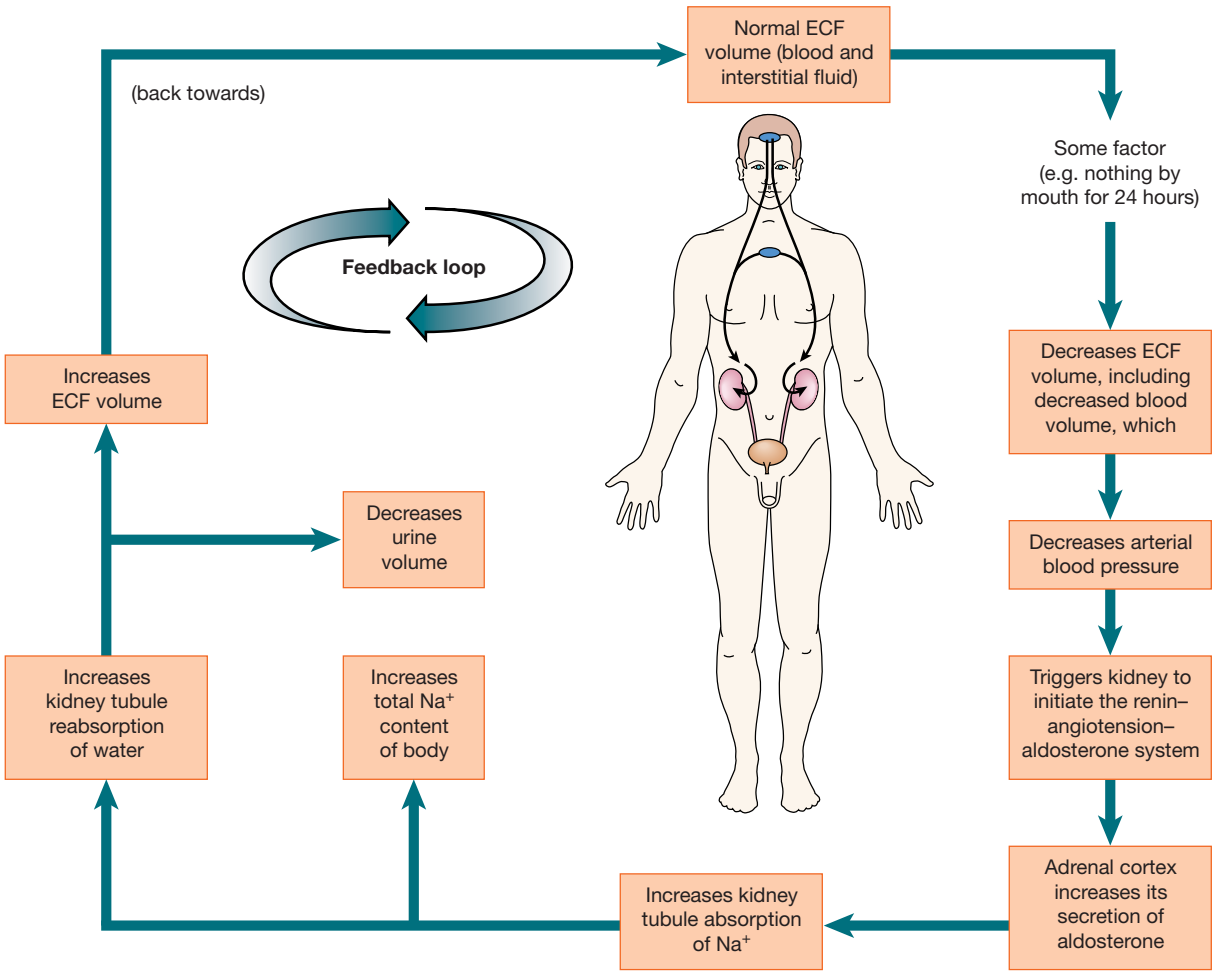


Figure 34-9 **Feedback mechanisms for maintaining fluid balance.**
ECF = extracellular fluid.

within the hypothalamus in the brain, is stimulated by three processes:

- decrease in saliva results in dry mucosa in the mouth and pharynx
- increase in blood osmotic pressure stimulates osmo receptors in the hypothalamus
- decrease in blood volume leads to the renin–angiotensin–aldosterone system (RAAS) stimulating the thirst centre in the hypothalamus (Figure 34-10).

The **osmoreceptors** continually monitor the solute concentration of the plasma. Osmoreceptors indirectly monitor 'water balance' and control the distribution of water between intracellular and extracellular fluid. Osmoreceptors respond to changes in osmotic pressure and tonicity caused by an excess or a deficit of water. Tonicity measures the osmotic pressure gradient between two solutions but only takes into account solutes which cannot cross the semipermeable membrane (Hall 2015).

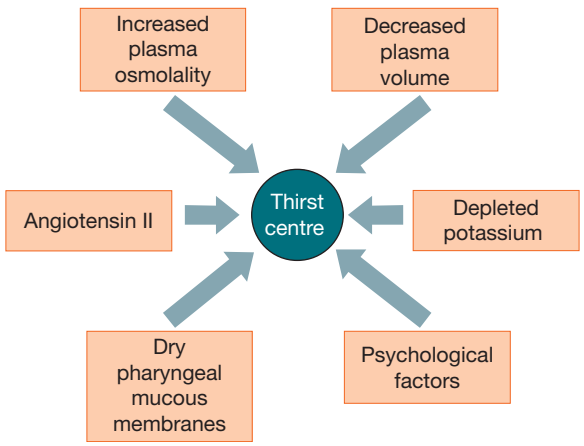


Figure 34-10 **Stimuli affecting the thirst mechanism.**

Osmolarity, on the other hand, measures all solutes – that is, those that can and cannot cross the semipermeable membrane.

When osmolality increases, the hypothalamus is stimulated. Increased plasma osmolality can occur with any condition that interferes with the oral ingestion of fluids, or it can occur with the intake of hypertonic fluids. The hypothalamus will also be stimulated when excess fluid is lost and **hypovolaemia** occurs, as in excessive vomiting and haemorrhage. If the thirst centre is activated, fluid deficit has already occurred to some extent. The response of the thirst reflex to fluid deficit is, however, diminished by older age, hypothalamic dysfunction, diminished cognitive function and infancy. Infants are at a higher risk than adults for dehydration, burns, illnesses or trauma because of a physiological inability of their renal tubules to concentrate urine, a higher metabolic rate, a larger body surface area and a poorly developed thirst mechanism.

Hormonal regulation

Hormones regulate fluid intake through various mechanisms.

Antidiuretic hormone (ADH) is stored in the posterior pituitary gland. The osmoreceptors in the hypothalamus are stimulated to release ADH if there is an increase in blood osmolality. ADH works directly on the renal tubules and collecting ducts to increase their permeability to water. This in turn causes water to return to the intravascular space circulation, which dilutes the blood and decreases its osmolality. As the body attempts to compensate, the patient will experience a temporary decrease in urinary output. When the blood has been sufficiently diluted, the osmoreceptors stop the release of ADH and urinary output is restored.

Aldosterone is released by the adrenal cortex in response to increased plasma potassium levels or as a part of the RAAS to counteract hypovolaemia. It acts on the distal portion of the renal tubule to increase the reabsorption (saving) of sodium and the secretion and excretion of potassium and hydrogen. Because sodium retention leads to water retention, the release of aldosterone acts as a volume regulator (Patton & Thibodeau 2016).

Renin, a proteolytic enzyme secreted by the kidneys, responds to decreased renal perfusion secondary to a decrease in extracellular volume. Renin acts to produce angiotensin I, which causes some vasoconstriction, but angiotensin I almost immediately becomes reduced by an enzyme's action to angiotensin II. Angiotensin II causes massive selective vasoconstriction of many blood vessels and relocates and increases the blood flow to the kidney, improving renal perfusion. Angiotensin II also stimulates the release of aldosterone when the sodium concentration is low (Patton & Thibodeau 2016).

Fluid output

Fluid output occurs through four organs: the kidneys, the skin, the lungs and the gastrointestinal (GI) tract. The kidneys are the major regulatory organs of fluid balance. They receive approximately 180 L of plasma to filter each day and produce 1200–1500 mL of urine daily.

Water loss from the skin is regulated by the sympathetic nervous system, which activates sweat glands. Water loss from the skin can be a sensible or an insensible loss. An average of 400–500 mL of sensible and insensible fluid is lost via the skin each day (Patton & Thibodeau 2016). With fever, another 50 to 75 mL/day may be lost for each 1°C of temperature elevation above normal. **Insensible water loss** from the skin is continuous, and the usual rate of 0.4–0.5 mL/kg/h is not usually perceived by the individual. **Sensible water loss** from the skin occurs through excess perspiration and can be perceived by the patient or by the nurse through inspection. The amount of sensible perspiration is directly related to the stimulation of the sweat glands.

The lungs expire about 400 mL of water daily. This insensible water loss may increase in response to changes in respiratory rate and depth. In addition, devices for administering oxygen can increase insensible water loss from the lungs.

The GI tract plays a vital role in fluid regulation. Approximately 3–6 L each day of isotonic fluid is moved into the GI tract and then returns to the extracellular fluid. Under normal conditions, the average adult loses only 100–200 mL of the 3–6 L gastrointestinal tract (GIT) fluids each day through faeces. However, in the presence of a disease process, for example, diarrhoea, the GI tract may become the site of a large amount of fluid loss. This loss may have a significant impact on maintaining normal fluid regulation.

Regulation of electrolytes

Cations

Major cations within the body fluids include sodium (Na^+), potassium (K^+), calcium (Ca^{2+}) and magnesium (Mg^{2+}). Cations interchange when one cation leaves the cell and is replaced by another. This occurs because cells tend to maintain electrical neutrality. Regulation of individual cations is included in Table 34-9.

Anions

The three major anions of body fluids are chloride (Cl^-), bicarbonate (HCO_3^-) and phosphate (PO_4^{3-}) ions. Their regulation is included in Table 34-10.

TABLE 34-9 Major cations: function, regulation, distribution and imbalances

Cation	Dietary source	Function and regulation	Distribution	Causes of imbalances	Signs and symptoms
Sodium (Na^+) Normal level: 137–145 mmol/L	Table salt, sea vegetables, milk, spinach, beets, celery, drinking water; Worcestershire and soy sauce, onion salt, garlic salt, bouillon cubes; processed meats (bacon, sausages, ham), canned soups and vegetables	Na^+ is a major contributor to maintaining water balance through its effect on serum osmolality; Na^+ accounts for half the osmolarity of ECF Essential for electrical activity of neurons and muscle cells Mechanisms regulating Na^+ are dietary intake, aldosterone, ANP and ADH	Represents about 90% of extracellular cations	*Hyponatraemia* caused by vomiting/diarrhoea, NG suction, decreased Na+ intake, pyrexia, diaphoresis, increased water intake, burns and wounds, renal disease, DKA, malnutrition	*Physical examination:* apprehension, personality change, postural hypotension, dizziness, abdominal cramping, nausea and vomiting, diarrhoea, tachycardia, convulsions and coma *Laboratory findings:* serum $Na^+ < 137$ mmol/L, serum osmolality < 285 mOsm/kg, urine specific gravity < 1.010 (if not caused by SIADH)
				Hypernatraemia caused by increased Na^+ intake, decreased water intake, renal disease, pyrexia, increased insensible water loss, type 2 diabetes, hyperglycaemia	*Physical examination:* thirst, dry and flushed skin, dry and sticky tongue and mucous membranes, fever, agitation, convulsions, restlessness, irritability *Laboratory findings:* serum $Na^+ > 145$ mmol/L, serum osmolality > 295 mOsm/kg, urine specific gravity > 1.030 (if not caused by type 2 diabetes)
Potassium (K^+) Normal level: 3.5–4.2 mmol/L	Legumes, potato skin, tomatoes, bananas, papayas, lentils, dry beans, whole grains, avocados, yams, soybeans, spinach, chard, sweet potato, turmeric, dark leafy greens, potatoes, squash, yoghurt, fish, mushrooms	K^+ major electrolyte and principal cation in the intracellular compartment It regulates many metabolic activities and is necessary for glycogen deposits in the liver and skeletal muscle Establishes resting membrane potential and is essential in the repolarisation phase of action potentials in nervous and muscle tissue K^+ aids maintenance of fluid volume in cells, regulation of pH. Serum level controlled by aldosterone. K+ is regulated by dietary intake and renal excretion. The body conserves potassium poorly, so any condition that increases urine output decreases the serum potassium concentration	Most abundant intracellular cation; Creates most of the osmotic pressure in ICF	*Hypokalaemia* caused by decreased K^+ intake, starvation, malabsorption syndromes, GI losses, diuresis, nephritis, alkalosis	*Physical examination:* weakness and fatigue, decreased muscle tone, intestinal distension, decreased bowel sounds, ventricular dysrhythmias, paraesthesias, weak, irregular pulse *Laboratory findings:* serum $K^+ < 3.1$ mmol/L and ECG abnormalities (e.g. ventricular dysrhythmias)
				Hyperkalaemia caused by increased K^+ intake, renal disease/failure, adrenal insufficiency, metabolic acidosis, severe dehydration, burns, crushing injuries, haemolysis	*Physical examination:* anxiety, dysrhythmias, paraesthesia, weakness, abdominal cramps, diarrhoea *Laboratory findings:* serum $K^+ > 4.2$ mmol/L and ECG abnormalities (bradycardia, heart block, dysrhythmias); eventually widening of QRS pattern and cardiac arrest

continued

TABLE 34-9 ***continued***

Cation	Dietary source	Function and regulation	Distribution	Causes of imbalances	Signs and symptoms
Calcium (Ca^{2+}) Normal level: 2.2–2.6 mmol/L	Dairy products, eggs, canned fish with bones (salmon, sardines), green leafy vegetables, nuts, seeds, tofu, thyme, oregano, dill, cinnamon	Role in bone and teeth formation, blood clotting, hormone secretion, cell membrane integrity, cardiac conduction, transmission of nerve impulses and muscle contraction The primary regulator of plasma levels of Ca^{2+} stems from the parathyroid hormone	Extracellular cation; abundant in the body due to bone content, stored in bone, plasma and body cells	*Hypocalcaemia* caused by decreased dietary calcium, vitamin D deficiency, renal insufficiency, diuretics, hypoparathyroidism, alkalosis, increased serum protein	*Physical examination:* numbness and tingling of fingers and circumoral region, hyperactive reflexes, positive Trousseau's sign (carpopedal spasm with hypoxia), positive Chvostek's sign (facial tick when facial nerve tapped), tetany, muscle cramps, pathological fractures *Laboratory findings:* serum Ca^{2+} < 2.2 mmol/L and ECG abnormalities
				Hypercalcaemia caused by acidosis, prolonged immobilisation, kidney disease, hyperparathyroidism, excessive administration	*Physical examination:* anorexia, nausea and vomiting, weakness, lethargy, low back pain (from renal calculi), decreased level of consciousness, personality changes, cardiac arrest *Laboratory findings:* serum Ca^{2+} > 2.6 mmol/L; ECG abnormalities
Magnesium (Mg^{2+}) Normal levels: 0.7–0.95 mmol/L	Raw nuts, soybeans, cocoa mass, spinach, chard, sea vegetables, tomatoes, halibut, beans, ginger, cumin, cloves	Essential for ATP production, enzyme activities, neurochemical activities and cardiac and skeletal muscle excitability; serum magnesium is regulated by dietary intake, renal mechanisms and actions of PTH	Abundant cation in ICF; 50–60% of Mg^{2+} magnesium contained within the muscles and bone, only 1% within the ECF compartment; the rest located inside the cell	*Hypomagnesia* caused by decreased intake, malabsorption syndromes, increased renal excretion, patients postoperatively, diabetes, alcoholism, burns, hypokalaemia	*Physical examination:* muscular tremors, hyperactive deep tendon reflexes, confusion and disorientation, dysrhythmias, positive Chvostek's sign and Trousseau's sign *Laboratory findings:* serum Mg^{2+} < 0.7 mmol/L
				Hypermagnesia caused by: chronic renal disease, decreased GFR and decreased magnesium excretion, ECF deficit, administration of Mg-containing drugs	*Physical examination:* hypoactive deep tendon reflexes, decreased depth and rate of respirations, hypotension, flushing *Laboratory findings:* serum Mg^{2+} > 0.95 mmol/L

ANP = atrial natriuetic peptide; ATP = adenosine triphosphate; DKA = diabetic ketoacidosis; ECF = extracellular fluid; ECG = electrocardiogram; FVD = fluid volume deficit; ICF = intracellular fluid; GFR = glomerular filtration rate; GI =gastrointestinal; NG = nasogastric; PTH = parathyroid hormone; SIADH = syndrome of inappropriate antidiuretic hormone.

Adapted from Tortora GJ, Grabowski SR 2010 Principles of anatomy and physiology, 8th edn. HarperCollins, New York.

TABLE 34-10 Major anions: function, regulation, distribution and imbalances

Anion	Source	Function and regulation	Distribution	Causes of imbalances	Signs and symptoms
Chloride (Cl^-) Normal level: 98–106 mmol/L	Table salt (sodium chloride) is the main source of dietary intake	Helps balance anions in different fluid compartments; regulates osmotic pressure Regulated by dietary intake and the kidneys; and indirectly by aldosterone, due to relationship with sodium	Most prevalent anion in ECF Diffuses easily between interstitial space and ICF Chloride is a part of HCl in gastric juices and passively follows sodium	*Hypochloraemia* from decreased Cl^- intake or absorption, low dietary Na^+, K^+ deficiency and metabolic alkalosis. IV dextrose without electrolytes, prolonged diarrhoea or diaphoresis, loss of HCl in GIT secretions, increased water intake or use of mercurial diuretics	*Physical examination:* muscle hypertonicity, tetany, shallow depressed breathing, hyponatraemia, muscle weakness and twitching *Laboratory findings:* serum Cl± < 98 mmol/L, serum pH > 7.45
				Hyperchloraemia from increased Cl^- intake, high dietary Na^+, decreased water intake, increased fluid loss e.g. by vomiting or diarrhoea	*Physical examination:* deep rapid breathing, generalised weakness, decreased cognition, coma *Laboratory findings:* serum Cl^- > 106 mmol/L; serum pH < 7.35
Bicarbonate (HCO_3^-) Normal level: 22–32 mmol/L		Major buffer of H+ in plasma Helps maintain correct balance of anions and cations in ECF and ICF Important anion of the bicarbonate buffer system Used to transport CO_2 in blood; excretion and reabsorption and thus serum level controlled by the kidneys	Second most prevalent anion in ECF; small amount found in ICF	*Decreased bicarbonate* caused by increased GIT or IV intake, increased acid production or intake, decreased acid excretion or loss by the renal system	*Physical examination:* fatigue, headache, abdominal pain, nausea, vomiting, respiratory depression, Kussmaul's breathing, metabolic acidosis *Laboratory findings:* metabolic acidosis – low HCO_3^-, acidic urine
				Increased bicarbonate caused by administration or production of alkaline sodium bicarbonate or other antacid, acid-losing alkalosis (loss of H^+ from GIT in chronic vomiting), decreased K^+	*Physical examination:* non-specific signs and symptoms with concurrent hypokalaemia weakness, myalgia and polyuria; hypoventilation from inhibition of the medullary respiratory centre with decreased ionised Ca^{2+} tetany, Chvostek's sign, Trousseau's sign; decreased cognition and seizures *Laboratory findings:* metabolic alkalosis – increased HCO_3^-, increased $PaCO_2$; if secondary to volume depletion, urine Cl^- < 20 mEq/L

continued

TABLE 34-10 ***continued***

Anion	Source	Function and regulation	Distribution	Causes of imbalances	Signs and symptoms
Phosphate (PO_4^{3-}) Normal level: 0.7–1.25 mmol/L	Red meat, dairy foods, fish, poultry, bread, rice, oats	Phosphate is part of DNA, RNA, ATP and phospholipids, as well as the phosphate buffer system; assists in acid–base regulation; helps develop and maintain bones and teeth; promotes normal neuromuscular action; participates in carbohydrate mechanism Regulated by dietary intake, renal excretion, intestinal absorption and PTH	Buffer anion mainly in ICF 85% of the body's phosphate is found in bones and teeth Vitamin D is required to absorb phosphate, through the GIT	*Hypophosphatemia* caused by poor PO_4^{3-} absorption, GIT surgery, vitamin D deficiency, aluminium hydroxide (e.g. Amphogel), low serum Mg^{2+}, high serum Ca^{2+}, urinary loss of bicarbonate in kidney dysfunction, diuretics, hyperactive parathyroid or thyroid gland, type 1 diabetes, alcoholism	*Physical examination:* muscle weakness, tremor and paraesthesia; peripheral hypoxia; neurological irritability *Laboratory findings:* serum PO_4^{3-} 0.64–0.81 mmol/L (moderate), < 0.31 mmol/L (severe); urine PO_4^{3-} increased
				Hyperphosphataemia is usually asymptomatic unless leading to hypocalcaemia, with tetany and seizures	*Physical examination:* signs and symptoms result from accompanying hypocalcaemia and hyperthyroidism; if left untreated, renal dysfunction occurs *Laboratory findings:* serum PO_4^{3-} > 1.45 mmol/L; urine PO_4^{3-} decreased

ATP = adenosine triphosphate; CO_2 = carbon dioxide; DNA = deoxyribonucleic acid; ECF = extracellular fluid; ICF = intracellular fluid; GIT = gastrointestinal tract; HCl = hydrochloric acid; IV = intravenous; $PaCO_2$ = arterial partial pressure of carbon dioxide; PTH = parathyroid hormone; RNA = ribonucleic acid.

Adapted from Tortora GJ, Grabowski SR 2010 Principles of anatomy and physiology, 8th edn. HarperCollins, New York.

Regulation of acid–base balance

Metabolic processes maintain a steady balance between acids and bases to maintain optimal functioning of the cells. Arterial pH is an indirect measurement of hydrogen ion (H^+) concentration: the higher the pH, the more acidic the solution (contains more H^+ ions); a lower pH, a more alkaline solution (fewer H^+ ions) (Hall 2015). pH is a scale for measuring the acidity or alkalinity of a fluid. A pH value of 7 is neutral, below 7 is acid, and above 7 is alkaline. Normal pH values in arterial blood range from 7.35 to 7.45.

The pH is regulated by two broad control systems, the *chemical buffer systems* (bicarbonate, phosphate and protein buffer systems) and the *physiological buffer systems* (the respiratory and renal response systems) (Patton & Thibodeau 2016). A hydrogen ion buffer is a substance or a group of substances that can absorb or release H^+ to correct an acid–base imbalance. Acid–base balance exists when the net rate at which the body produces acids or bases equals the rate at which acids or bases are excreted. Normal hydrogen ion levels are necessary to maintain cell membrane integrity and the speed of cellular enzymatic actions. Although **buffers** can raise the pH of body fluids, they do not remove the H+ from the body; this is left to the physiological buffers (Patton & Thibodeau 2016).

Chemical buffer systems

Several buffering agents bind hydrogen ions to prevent or reduce changes in pH. Extracellular buffers include bicarbonate and ammonium ions; intracellular buffers include proteins and phosphate ions.

The most important chemical buffer in ECF is the *carbonic acid and bicarbonate buffer system*, which reacts to imbalances within seconds (Figure 34-11). The equation below demonstrates how hydrogen ions (H^+) and carbon dioxide (CO_2) concentrations are directly related to each other, in that an increase in one causes an increase in the other. An increase in carbon dioxide concentration produces an increase in hydrogen ions; an increase in hydrogen ions results in increased carbon dioxide production (McCance & Huether 2014).

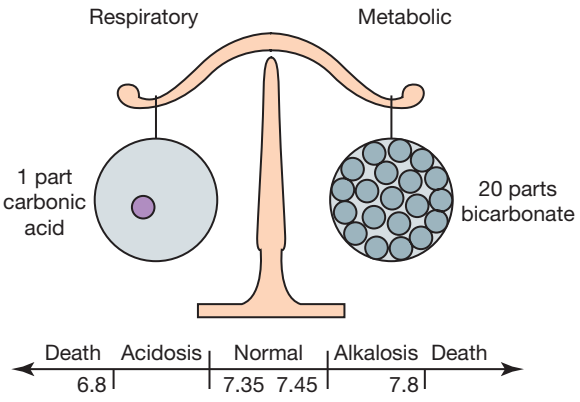


Figure 34-11 Carbonic acid–bicarbonate ratio and pH.

$$CO_2 + H_2O \leftrightarrows H_2CO_3 \leftrightarrows HCO_3^- + H^+$$

A second type of chemical buffering occurs with the *absorption or release of hydrogen ions* by cells. This buffering occurs after the carbonic acid and bicarbonate buffering, and takes 2–4 hours. The positively charged hydrogen ion is exchanged with another positively charged ion, frequently potassium (K^+). In conditions with excess acid, a hydrogen ion enters the cell and a potassium ion leaves the cell and enters the ECF, thus causing elevated serum potassium.

Another buffer is the *haemoglobin–oxyhaemoglobin system*. Carbon dioxide diffuses into the red blood cells (RBCs) and forms carbonic acid. The carbonic acid dissociates into hydrogen ions and bicarbonate ions. The hydrogen ions attach to haemoglobin, and the bicarbonate ion becomes available for buffering by exchanging with extracellular chloride (McCance & Huether 2014).

The last buffer is the *chloride shift* within RBCs. When blood is oxygenated in the lungs, bicarbonate diffuses into the cells and chloride travels from the haemoglobin to the plasma to maintain electrical neutrality. The reverse occurs when CO_2 moves into RBCs in tissue capillary beds.

Physiological buffer systems

The two physiological buffers in the body occur in the lungs and the kidneys. The excretion of CO_2 as a consequence of metabolism is controlled mainly by the lungs, and the excretion of hydrogen and bicarbonate ions is controlled by the kidneys.

The lungs respond rapidly to acid–base imbalances to return the pH towards normal before the biological buffers act. Increased levels of hydrogen ions and CO_2 provide the stimulus for respiration. The lungs expel CO_2, which raises pH, because hydrogen ions have to be consumed with bicarbonate ions in order to produce CO_2. To prevent too many hydrogens ions from being lost, the kidneys remove excess bicarbonate ions. As a result, the equilibrium is shifted to the right (so that more bicarbonate ions are produced to replace the lost ones), and as a result, more hydrogen ions are produced, which lowers the pH. When the body uses energy, CO_2 is produced. This CO_2 is partially dissolved in plasma and red blood cells, but the majority is combined with water to form carbonic acid (H_2CO_3), which further dissociates into H+ ions and HCO_3^- ions. The bicarbonate (HCO_3^-) ions then are transported through the circulation system until they reach the lungs, when they combine with hydrogen ions to form CO_2 and water. This CO_2 is then expelled out by the lungs.

When the concentration of hydrogen ions is altered, the lungs react to correct the imbalance by altering the rate and depth of respiration. For example, when metabolic acidosis is present, respirations are increased, resulting in a greater amount of CO_2 being exhaled; this results in a decrease in the acidic level. Conversely, when metabolic alkalosis is present, the lungs retain CO_2 by decreasing the respirations, thereby increasing the acidic level (Madias & Adrogue 2003).

The kidneys, a powerful acid–base regulatory system, take from a few hours to several days to regulate acid–base imbalance (Hall 2015). In *acidosis* (excess acid):

- cells in the renal tubules reabsorb more bicarbonate ions from the tubule fluid
- cells in the renal collecting duct secrete more hydrogen ions and generate more bicarbonate ions
- there is increased formation of ammonia through the ammonia mechanism (see below).

In addition, the kidneys use a phosphate ion (PO_4^{3-}) to excrete hydrogen ions by forming phosphoric acid (H_3PO_4); sulfuric acid (H_2SO_4) may also be excreted. The ammonia mechanism regulates acid–base balance by certain amino acids being chemically changed within the renal tubules into ammonia; this, in the presence of hydrogen ions, forms ammonium and is excreted in the urine, hence releasing hydrogen ions from the body (Roth & Chan 2001).

In *alkalosis* (acid deficit), the kidneys excrete more bicarbonate ions by decreasing hydrogen ion secretion from the epithelial cells of the renal tubules, and lowering rates of glutamine metabolism and ammonium ion excretion.

Disturbances in electrolyte, fluid and acid–base balances

Disturbances in **electrolyte**, fluid or acid–base balances seldom occur alone, and disrupt many other normal body

processes. Loss of body fluids due to dehydration, burns, illnesses or trauma or an increase of body fluids because of hypervolaemia, acute kidney injury (AKI) or HF, also put the patient at risk of electrolyte imbalances. In addition, some untreated electrolyte imbalances (e.g. potassium loss) result in acid–base disturbances.

Electrolyte imbalances

Sodium imbalances

Hyponatraemia is a lower-than-normal concentration of sodium in the blood (serum), which can occur with a net sodium loss or net water excess (Table 34-9). It occurs frequently in seriously ill patients, but can also occur in water intoxication, when someone drinks too much water too quickly, leading to haemodilution. Almond and others (2005) studied 488 runners in the 2002 Boston marathon; 13% of runners were found to have hyponatraemia (a serum sodium concentration of ≤ 135 mmol/L) and 0.6% critical hyponatraemia (≤ 120 mmol/L). In this situation hyponatraemia was associated with substantial weight gain, consumption of more than 3 litres of water during the race, female gender and low body mass index (BMI).

Nurses' awareness of the effect of medications on serum sodium levels should increase early identification of hyponatraemia through regular appraisal of serum electrolyte results. Antidepressant medication, specifically selective serotonin re-uptake inhibitors (SSRIs), and diuretics were associated with an increased risk of hyponatraemia (Mannesse et al 2010, Movig et al 2002).

Clinical indicators and treatment depend on the cause of the hyponatraemia and association with normal, decreased or increased ECF volume (McCance & Huether 2014). The usual situation is a loss of sodium without a loss of fluid, resulting in decreased ECF osmolality. The body initially adapts by reducing water excretion and thus sodium excretion to maintain serum osmolality at near-normal levels. As the sodium loss continues, the body continues to preserve the blood and interstitial (tissue) volume. As a result, the sodium in ECF becomes diluted.

Hypernatraemia is an increased concentration of ECF sodium, caused by excess water loss or an overall sodium excess (see Table 34-9). When the cause of hypernatraemia is increased aldosterone secretion, sodium is retained and potassium is excreted. When hypernatraemia occurs, the body attempts to conserve as much water as possible through renal reabsorption.

Potassium imbalances

Because the normal levels of serum potassium are low, there is little tolerance for fluctuations.

Hypokalaemia is an inadequate amount of potassium in ECF (see Table 34-9). When severe, hypokalaemia can affect cardiac conduction and function. The most common cause of hypokalaemia is the use of potassium-wasting diuretics such as thiazide and loop diuretics.

Hyperkalaemia is an increased amount of serum potassium. Severe hyperkalaemia produces marked cardiac conduction abnormalities (see Table 34-9). The main cause of hyperkalaemia is renal failure and thus decreased excretion of potassium.

• CRITICAL REFLECTION POINT

Among nurses' responsibilities are monitoring whether prescribed diet and fluids meet each patient's nutritional needs. This cannot be achieved without knowledge of patient diagnoses and interpretation of the pattern and trend of serum electrolytes and consultation/referral to a medical officer and dietitian.

Activity

Mr Stanley Knowles is ordered a diet that is low in potassium as part of the intervention for acute kidney injury (AKI) and hyperkalaemia.

1. **Use the information in Table 34-11 to determine if a lunch menu of 1 piece of fish (Atlantic salmon), baked potato (with skin), spinach ½ cup, ½ sweet potato; dessert – fresh strawberries, 1 cup with plain non-fat yoghurt (237 mL) meets the criteria for a low potassium diet.**
2. **Construct a menu which would be lower in potassium, based on the information in Table 34-11.**

Calcium imbalances

Hypocalcaemia represents a drop in serum and/or ionised calcium levels. It can result from illnesses that directly affect the thyroid and parathyroid glands (see Table 34-9) and from renal insufficiency (in which the kidneys' inability to excrete phosphorus causes the phosphorus level to rise and the calcium level to decline). Signs and symptoms can be related to a diminished function of the neuromuscular, cardiac and renal systems.

Hypercalcaemia is an increase in the total serum concentration of calcium and/or ionised calcium. Hypercalcaemia is frequently a symptom of an underlying disease resulting in excess bone reabsorption with a release of calcium.

Magnesium imbalances

Disturbances in magnesium levels result in changes in neuromuscular excitability (see Table 34-9). *Hypomagnesaemia*, a decrease in serum magnesium, occurs with malnutrition and with malabsorption disorders. Signs and symptoms are directly related to the neuromuscular system.

TABLE 34-11 Foods and potassium content (mg)

Food	Potassium	Food	Potassium	Food	Potassium
Apple 1 large	148 mg	Corned beef 85 g*	61 mg	Peaches 1 medium	186 mg
Apple sauce ½ cup	90 mg	Dried apricots	1162 mg	Pork 85 g	105 mg
Apricots fresh 3	378 mg	Eggs 1	55 mg	Potatoes baked with skin	569 mg
Avocado	485 mg	Fish (Atlantic Salmon)	628 mg	Salmon canned 85 g*	484 mg
Bacon 3 slices*	45 mg	Grapefruit juice ½ cup	180 mg	Spinach 1 cup	840 mg
Banana mashed 1 cup	540 mg	Grapes 10 medium	72 mg	Strawberries 1 cup	255 mg
Banana 1 medium	422 mg	Ham 85 g*	182 mg	Sweet potato1 medium	695 mg
Beef 85 gm	290 mg	Lamb 85 g	259 mg	Squash	437 mg
Blueberries ½ cup	50 mg	Milk fat-free 237 mL	380 mg	Tomato 1 cup	430 mg
Bologna 1 slice	48 mg	Mushrooms	396 mg	Tuna canned 85 g*	484 mg
Broccoli 1 cup	460 mg	Nectarines 1 medium	273 mg	White beans	561mg
Cantaloupe (rockmelon) 1 cup	368 mg	Orange 1 medium	237 mg	Yoghurt plain non-fat 237 mL	579 mg
Chicken 85 gm	383 mg	Orange juice ¾ cup	355 mg		

*Note these foods are high in sodium

Adapted from: Bellows L, Moore R 2013 Potassium and the Diet Fact Sheet No 9.355 © 2015 Colorado State University Extension, www.ext.colostate.edu/pubs/foodnut/09355.html; accessed May 30 2015.

Hypermagnesaemia, an increase in serum magnesium levels, depresses skeletal muscles and nerve function. Hypermagnesaemia occurs during renal failure, aldosterone deficiency and hypothyroidism and by excess intake of antacids containing Mg^{2+}. Hypermagnesaemia causes hypotension, muscle weakness, nausea, vomiting and altered mental functioning (Lewis et al 2014).

Chloride imbalances

Hypochloraemia occurs when serum chloride levels fall below normal (see Table 34-10). Vomiting or prolonged and excessive nasogastric or fistula drainage can result in hypochloraemia because of the loss of hydrochloric acid. The use of loop and thiazide diuretics also results in increased chloride loss, as sodium is excreted. When serum chloride levels fall, metabolic alkalosis results as the body adapts by increasing reabsorption of the bicarbonate ion to maintain electrical neutrality. *Hyperchloraemia* is where the serum chloride levels rise above normal (see Table 34-10), which usually occurs when serum bicarbonate levels fall or sodium levels rise.

Hypochloraemia and hyperchloraemia rarely occur as single disease processes, but are commonly associated with acid–base imbalance. There is no single set of symptoms associated with these two alterations.

Fluid disturbances

The basic types of fluid imbalance are isotonic and osmolar. *Isotonic deficit* and excess exist when water and electrolytes are gained or lost in equal proportions. In contrast, *osmolar imbalances* are losses or excesses of only water, so that the concentration (osmolality) of the serum is affected. Table 34-12 lists the causes and symptoms of common fluid disturbances.

• CRITICAL REFLECTION POINT

Your friend meets with you for coffee after playing cricket (bowling and fielding) on a day when the air temperature is 39.2°C. He appears agitated and is experiencing muscle cramps, lethargy, nausea, problems concentrating and has a severe headache. On asking what he has consumed during the day, he states he has had around 4 litres of plain water.

Activity

Refer to Table 34-12 in determining the type of fluid imbalance and reasons for this imbalance, including appropriateness of his intake throughout the day, knowledge of the fluid and electrolytes he would have lost and possible replacement therapy.

Acid–base balance disturbances

Arterial blood gas (ABG) analysis is the best way to evaluate acid–base balance. Measurement of ABGs

TABLE 34-12 Fluid disturbances

Causes	Signs and symptoms
Isotonic imbalances	
Fluid volume deficit (FVD) – water and electrolytes lost in equal or isotonic proportions	
Losses from the GI system, e.g. diarrhoea, vomiting or drainage from fistulas or tubes Loss of plasma or whole blood, e.g. burns or haemorrhage Loss of fluid: excessive perspiration, fever, diuretics Decreased oral intake of fluids	**Physical examination:** postural hypotension, decreased pulse pressure, decreased MAP, tachycardia, dry mucous membranes, poor skin turgor, thirst, confusion, rapid weight loss*, slow vein filling, lethargy, oliguria, weak pulse **Laboratory findings:** urine specific gravity: 1.025; increased haematocrit level, 50%; and increased BUN level, > 8 mmol/L (haemoconcentration) * Weight is either stationary or increases in third space fluid shift
Fluid volume excess (FVE) – water and sodium retained in isotonic proportions	
Chronic heart failure Renal failure Cirrhosis of the liver Increased serum aldosterone and steroid levels Excessive sodium intake or administration	**Physical examination:** rapid weight gain, peripheral oedema, hypertension, increased pulse pressure, increased MAP, polyuria (if renal mechanisms are normal), increased jugular venous pressure, increased venous pressure, bi-basal lung crepitation **Laboratory findings:** decreased haematocrit level, 35%; and decreased BUN level > 3 mmol/L (haemodilution)
Osmolar imbalances	
Hyperosmolar imbalance – dehydration	
Type 2 diabetes Interruption of neurologically-driven thirst drive Diabetic ketoacidosis Osmotic diuresis Administration of hypertonic parenteral or enteral fluids	**Physical examination:** dry and sticky mucous membranes, flushed and dry skin, thirst, elevated body temperature, irritability, convulsions, coma **Laboratory findings:** increased serum sodium level > 145 mmol/L; and increased osmolality > 295 mOsm/kg
Hypo-osmolar imbalance – water excess	
SIADH Excess water intake	**Physical examination:** nausea, muscle cramps, decreased ability to concentrate, agitation, decreased level of consciousness, convulsions, coma **Laboratory findings:** decreased serum sodium level < 137 mmol/L; and decreased serum osmolality < 285 mOs/kg

BUN = blood urea nitrogen; MAP = mean arterial pressure (of blood); SIADH = syndrome of inappropriate antidiuretic hormone.

involves analysis of six components: pH, $PaCO_2$, PaO_2, oxygen saturation, base excess and HCO_3^-. Deviation from a normal value will indicate that the patient is experiencing an acid–base imbalance.

pH

pH measures hydrogen ion (H^+) concentration. Even a slight change can be potentially life-threatening. An increase in H^+ concentration makes a solution more acidic; a decrease makes the solution more alkaline. Normal pH values are 7.35–7.45 (acidic is < 7.35, and alkaline is > 7.45).

$PaCO_2$

$PaCO_2$ is the partial pressure of carbon dioxide in arterial blood, and reflects the depth of pulmonary ventilation. The normal range is 35–45 mmHg. A $PaCO_2$ of < 35 mmHg is an indication of *hyperventilation*. As rate and depth of respiration increase, more carbon dioxide is exhaled and the carbon dioxide concentration decreases. *Hypoventilation* causes increased $PaCO_2$, above 45 mmHg. As rate and depth of respiration decrease, less carbon dioxide is exhaled and more is retained, increasing the concentration of carbon dioxide.

PaO_2

PaO_2 is the partial pressure of oxygen in arterial blood. It has no primary role in acid–base regulation if it is within normal limits. The normal range is 80–100 mmHg. A PaO_2 of less than 60 mmHg (hypoxaemia) can lead to anaerobic metabolism, resulting in lactic acid production and

metabolic acidosis. There is a normal decline in PaO_2 in older adults. Hypoxaemia also may cause hyperventilation, resulting in respiratory alkalosis (McCance & Huether 2014).

Oxygen saturation

Oxygen saturation (SaO_2) is the percentage of available haemoglobin bound to oxygen. Oxygen saturation can be affected by changes in temperature, pH and $PaCO_2$. The normal range is 95–99%.

Base excess

Base excess is the amount of blood buffer (haemoglobin and bicarbonate) that exists. The normal range is –2 to +2. A high value indicates *alkalosis* and can result from the ingestion of large amounts of sodium bicarbonate solutions (some antacids), citrate excess with rapid blood transfusions or intravenous infusion of sodium bicarbonate to correct ketoacidosis. A low value indicates *acidosis* and is usually the result of the elimination of too many bicarbonate ions. An example is diarrhoea and prolonged loss (vomiting or nasogastric suction) of deep GI contents that force the loss rather than the absorption of bicarbonate-containing fluid (Berry & Pinard 2002).

Bicarbonate

Serum bicarbonate (HCO_3^-) is the major renal component of acid–base balance, and is excreted and produced by the kidneys to maintain a normal acid–base environment. It is the principal buffer of the ECF of the body, and once bicarbonate is in the ECF it is maintained at a concentration of 20 times that of the fluid concentration of carbonic acid (Berry & Pinard 2002). The normal range is 22–26 mmol/L, < 22 mmol/L usually indicates *metabolic acidosis*; > 26 mmol/L indicates *metabolic alkalosis*.

Types of acid–base imbalances

The four main types of acid–base imbalance are respiratory acidosis, respiratory alkalosis, metabolic acidosis and metabolic alkalosis (Table 34-13).

Respiratory acidosis

Respiratory acidosis is marked by an increased arterial carbon dioxide concentration ($PaCO_2$), excess carbonic acid (H_2CO_3) and an increased hydrogen ion concentration (decreased pH). With respiratory acidosis, the cerebrospinal fluid and brain cells become acidic, causing neurological changes. Hypoxaemia occurs because of respiratory depression, resulting in further neurological impairment. Electrolyte changes such as hyperkalaemia and hypercalcaemia may accompany the acidosis.

Respiratory alkalosis

Respiratory alkalosis is marked by decreased $PaCO_2$ levels and increased pH. Like respiratory acidosis, respiratory alkalosis can begin outside the respiratory system (e.g. anxiety with hyperventilation) or within the respiratory system (e.g. initial phase of an asthma attack).

TABLE 34-13 Acid–base imbalances

Causes	Signs and symptoms
Respiratory acidosis	
Hypoventilation resulting from primary respiratory problems	
Atelectasis (obstruction of small airways) Pneumonia Cystic fibrosis Respiratory failure Airway obstruction Chest wall injury	**Physical examination:** confusion, dizziness, lethargy, headache, ventricular dysrhythmias, warm and flushed skin, muscular twitching, convulsions, coma **Laboratory findings:** arterial blood gas alterations – pH 7.35, $PaCO_2$ 45 mmHg, PaO2 80 mmHg; and bicarbonate level normal (if uncompensated) or 32 mmol/L (if compensated)
Hypoventilation resulting from factors outside the respiratory system	
Drug overdose with a respiratory depressant Paralysis of respiratory muscles caused by various neurological alterations Head injury Obesity	**Physical examination:** confusion, dizziness, lethargy, headache, ventricular dysrhythmias, warm and flushed skin, muscular twitching, convulsions, coma **Laboratory findings:** arterial blood gas alterations – pH 7.35, $PaCO_2$ 45 mmHg, PaO_2 80 mmHg; and bicarbonate level normal (if uncompensated) or 32 mmol/L (if compensated)

continued

TABLE 34-13 ***continued***

Causes	Signs and symptoms
Respiratory alkalosis	
Hyperventilation resulting from primary respiratory problems	
Asthma Pneumonia Inappropriate mechanical ventilator settings	**Physical examination:** dizziness, confusion, dysrhythmias, tachypnoea, numbness and tingling of extremities, convulsions, coma **Laboratory findings:** arterial blood gas alterations – pH 7.45, $PaCO_2$ 35 mmHg, PaO_2 normal; and bicarbonate level normal (if short-lived or uncompensated) or 22 mmol/L (if compensated)
Hyperventilation resulting from factors outside the respiratory system	
Anxiety Hypermetabolic states Disorders of the central nervous system (head injuries, infections) Salicylate overdose	**Physical examination:** dizziness, confusion, dysrhythmias, tachypnoea, numbness and tingling of extremities, convulsions, coma **Laboratory findings:** arterial blood gas alterations – pH 7.45, $PaCO_2$ 35 mmHg, PaO_2 normal; and bicarbonate level normal (if short-lived or uncompensated) or 22 mmol/L (if compensated)
Metabolic acidosis	
High anion gap	
Starvation Diabetic ketoacidosis Renal failure Lactic acidosis from heavy exercise Use of drugs (methanol, ethanol, formic acid, paraldehyde, aspirin)	**Physical examination:** headache, lethargy, confusion, dysrhythmias, tachypnoea with deep respirations, abdominal cramps, flushed skin **Laboratory findings:** arterial blood gas alterations – pH 7.35, $PaCO_2$ normal (if uncompensated) or 35 mmHg (if compensated), PaO_2 normal or increased (with rapid, deep respirations); bicarbonate level 22 mmol/L and oxygen saturation normal
Normal anion gap	
Renal tubular acidosis Diarrhoea	In patients with a normal anion gap, the drop in HCO_3^- is almost completely compensated for by an increase in Cl^- and hence is also known as hyperchloraemic acidosis; symptoms are similar to those of the other types of metabolic acidosis
Metabolic alkalosis	
Excessive vomiting Prolonged gastric suctioning Hypokalaemia or hypercalcaemia Excess aldosterone Use of drugs (steroids, sodium bicarbonate, diuretics)	**Physical examination:** dizziness; dysrhythmias; numbness and tingling of fingers, toes and circumoral region; muscle cramps; tetany **Laboratory findings:** arterial blood gas alterations – pH 7.45, $PaCO_2$ normal (if uncompensated) or 45 mmHg (if compensated), PaO_2 normal; and bicarbonate level 32 mmol/L

$PaCO_2$ = partial pressure of carbon dioxide in arterial blood; PaO_2 = partial pressure of oxygen in arterial blood.

Metabolic acidosis

Metabolic acidosis results from abnormal loss of bicarbonate or accumulation of excess metabolic acids causing high acid content of the blood (Hall 2015). Identification of the cause of metabolic acidosis requires an analysis of serum electrolytes to detect an anion gap.

An **anion gap** reflects unmeasurable anions present in plasma, and is calculated by subtracting the sum of chloride and bicarbonate levels from the plasma sodium level (Table 34-14). The anion gap is thus an artefact of measurement, and not a physiological reality. Anion gap is an 'artificial' and calculated measure which is representative of the serum ions not routinely measured when testing serum electrolytes. Unmeasured cations include calcium, magnesium and most other minerals; unmeasured anions include albumin, phosphates, sulfates and organic acids (Kraut & Nagami 2013). Unmeasured cations (~7 mmol/L) include calcium, magnesium, and most other minerals. Unmeasured anions (~24 mmol/L) include proteins such as albumin and compounds such as phosphates, sulfates, and organic acids.

Calculating the anion gap is useful in distinguishing between anion-gap and non-anion-gap metabolic

TABLE 34-14 Differentiation of causes of metabolic acidosis from examination of normal vs elevated anion gap

Anion gap	Values	Causes
Low anion gap	< 12 mmol/L	Low anion gap may suggest: • Hyponatraemia • Multiple myeloma • Hypoalbuminemia • Plasma cell dyscrasia • Monoclonal protein • Bromide intoxication • Normal variant
Normal anion gap	12 (±2) mmol/L	• Loss of bicarbonate (i.e. diarrhoea) • Recovery from diabetic ketoacidosis • Ileostomy fluid loss • Carbonic anhydrase inhibitors (acetazolamide, dorzolamide, topiramate) • Renal tubular acidosis • Arginine and lysine in parenteral nutrition • Ingestion of ammonium chloride • Mineralocorticoid deficiency (Addison disease) • Normal variant
Increased anion gap	> 14 mmol/L	A high anion gap indicates a loss of HCO_3^- without a concurrent increase in Cl^-. Causes include: • Milk-alkali syndrome • Uremia • Diabetic ketoacidosis • Ethylene glycol, methanol, propyl alcohol • Isoniazid intoxication • Lactic acidosis • Ethanol ethylene glycol • Rhabdomyolysis/renal failure • Salicylate and methanol toxicity • Increased fat metabolism (diabetes, alcohol, starvation)

Tortora GJ, Grabowski SR 2010 Principles of anatomy and physiology, 8th edn. New York, HarperCollins; Kraut JA, Nagami GT 2013 The serum anion gap in the evaluation of acid-base disorders: what are its limitations and can its effectiveness be improved? Clin J Am Soc Nephrol 8:2018–24.

CLINICAL EXAMPLE

Mrs Sinclair was admitted with blood pressure 90/70 mmHg, pulse 126 beats per minute, respirations 32 breaths per minutes and a 2-day history of nausea and vomiting, excessive thirst and polyuria. She was recently diagnosed with type 2 diabetes. Her arterial blood gas results reveal metabolic acidosis. Below is the calculation of the anion gap using laboratory information of Na^+ 135, Cl^- 92 and HCO_3^- 16.

$$\text{Anion gap} = Na^+ - (Cl^- + HCO_3^-)$$
$$= 135 - (92 + 16)$$
$$= 135 - 108 = 27 \text{ mmol/L}$$

Interpretation

27 mmol of anions per/L, other than the chloride and bicarbonate anions and thus further assessment and investigations required to confirm a diagnosis.

acidosis, differentiating between causes of metabolic acidosis, assessing the biochemical severity of acidosis, and monitoring response to treatment. If the laboratory report does not include an anion gap it can be calculated from the formula:

$$\text{Anion gap} = Na^+ - (Cl^- + HCO_3^-).$$

Metabolic alkalosis

Metabolic alkalosis is marked by the heavy loss of acid from the body or by increased levels of bicarbonate. The most common causes of acid loss are vomiting and gastric suction. Other causes include the overcorrection of metabolic acidosis, loss of chloride, use of diuretics causing resorption of bicarbonate, hyperaldosteronism and excessive ingestion of alkali (Berry & Pinard 2002).

Application of knowledge of fluid and electrolyte balance to practice

Nurses who are aware of their own and others' fluid and electrolyte requirements and factors contributing to an imbalance in a range of different contexts will be better prepared to assess, interpret and manage early indicators of fluid and electrolyte imbalance. Knowledge of average daily intake and output in healthy adults (Table 34-15) will assist in interpreting reasons for an imbalance.

Nurses' knowledge underpinning fluid and electrolyte balance needs to be more specific than described above. Many formulas exist for calculating the amount of fluid required per day. A general guide for the amount of fluid required in a healthy adult is 30 mL/kg/day (Eaton et al 1999). If, for example, a student weighed 50 kg they would require 30 mL × 50 kg = 1500 mL fluid per day. This is only a rough example and calculations need to be much more specific in calculating the amount of fluid required per day. For example, fluid required per day for a healthy adult can be calculated as: (100 mL/kg for the first 10 kg) + (50 mL/kg for next 10 kg) + (25 mL/kg for the remaining kg) (Austin 1996). Table 34-16 demonstrates the difference between fluid requirements using the general formula and this more specific formula for individuals weighing 50 kg and 60 kg. To obtain hourly required fluid intake, the results of the above calculations would need to be divided by 24. Hourly maintenance fluid volumes can also be calculated using the 4:2:1 method: (4 mL/kg for first 10 kg) + (2 mL/kg for next 10 kg) + (1 mL/kg for remaining kg). If a patient weighed 60 kg, their 24-hour intake would be (1000 + 500 +1000) = 2500 mL/day – hourly fluid intake; therefore, 2500/24 = 104 mL/hr. Using the 4:2:1 method, the hourly fluid intake would be (40 + 20 + 40) = 100 mL/hr.

TABLE 34-15 Daily fluid intake and output

Intake	mL	Output	mL
Oral fluids	1500	Urine	1800
Fluid in food	1000	Faeces	100
Metabolic production	300	Insensible loss – skin (500) and lungs (400)	900
TOTAL	2800		2800

• CRITICAL REFLECTION POINT

This critical thinking exercise is designed to increase understanding of the importance of nurses' calculation and monitoring daily maintenance fluid volume and contribution of diet in achieving minimal fluids requirements.

Activity

Use the information in Tables 34-9 and 34-10 to demonstrate the risks to fluid and electrolyte balance for four patients who decrease dietary intake and only consume 1.5 L total fluid per day over 3 days.

Patients: Mrs Gardener living at home weight 50 kg, Mr Hermes 4 days post hemicolectomy weight 60 kg, Mrs McMaster a nursing home resident weight 70 kg or Mr Kenyard admitted with emphysema weight 80 kg. Complete all calculations for one patient before moving to the next.

1. **Calculate daily maintenance fluid volume using the formula: 100 mL/kg first 10 kg + 50 mL/kg next 10 kg + 25 mL/kg remaining kg.**
2. **Use maintenance volume to calculate fluid required over 3 days.**
3. **Calculate actual fluid intake over 3 days.**
4. **Calculate fluid deficit. Required maintenance volume minus volume consumed over 3 days.**

Process	Example: Ms Hunter weighs 60 kg
1. Calculate maintenance fluid volume using the formula: 100 mL/kg first 10 kg + 50 mL/kg next 10 kg + 25 mL/kg remaining kg	1. Maintenance fluid volume (100 mL/kg for first 10 kg = 1000) + (50 mL/kg next 10 kg = 500) + (25 mL/kg x 40 = 1000) = maintenance volume = 2500 mL/day

TABLE 34-16 Calculating daily fluid requirements

kg	Formula A and B	Calculation	Daily total	Hrly
50	A. 30 mL/kg/day	30 mL × 50 kg	1500 mL	1500/24 = 63 mL
	B. 100 mL/kg first 10 kg + 50 mL/kg next 10 kg + 25 mL/kg remaining kg	(100 mL × 10 kg) + (50 mL × 10 kg) + (25 mL × 30 kg) = (1000 + 500 + 750) mL	2250 mL	2250/24 = 94 mL
60	A. 30 mL/kg/day	30 mL × 60 kg	1800 mL	1800/24 = 75 mL
	B. 100 mL/kg first 10 kg + 50 mL/kg next 10 kg + 25 mL/kg remaining kg	(100 mL × 10 kg) + (50 mL × 10 kg) + (25 mL × 40 kg) = (1000 + 500 + 1000) mL	2500 mL	2500/24 = 104 mL

2. Use maintenance volume to calculate fluid required over 3 days	2. Maintenance fluid volume over 3 days 2500 x 3 = 7500 mL
3. Calculate actual fluid intake over 3 days	3. Calculate actual fluid intake over 3 days 1500 x 3 = 4500 mL
4. Calculate fluid deficit. Required maintenance volume minus volume consumed over 3 days	4. Calculate fluid deficit. Required maintenance volume minus volume consumed over 3 days 7500 – 4500 = 3000 mL fluid volume deficit

Determining the appropriateness of urine output is also important in the assessment of each of the situations described above. Nurses should therefore be aware of the expected urine output based on gender and weight. The minimum urine output is the minimum amount of urine production required to ensure adequate renal function and to eliminate the body of waste products. A general rule is that urine output indicative of adequate renal function should be equal to, or more than, 30 mL/h. This is only a general guide and may lead to over- or underestimation of the adequacy of urine output. A more specific formula for adequate urine output is 0.5 mL/kg for an adult male and 0.4 mL/kg for an adult female; infants and children weighing < 30 kg require 1 ml/kg/h. Thus, the expected urine output for a male weighing 65 kg is 34–5 mL/h and for a female weighing 65 kg is 26 mL/h.

Nurses should assume that every patient is at risk for fluid and electrolyte imbalances. Infants, severely ill adults, disoriented or immobile patients and older adults are often at greater risk because of an inability to independently respond to early signs and symptoms of haemodynamic instability. Over time, the body's adaptive compensatory mechanisms can no longer adequately maintain fluid and electrolyte or acid–base balance, and the patient's health becomes compromised. For example, kidney function, urine concentration, thirst sensation, aldosterone secretion and renin activity are all significantly lowered with age (Lancaster et al 2003, Xiao et al 2004). Prolonged or severe compromises may lead to irreversible chronic health problems that decrease the quality of life of the patient, caregiver(s), guardians, parents, families and/or friends (Box 34-1).



CLINICAL REASONING PROCESS

Nurses have a professional obligation to observe, recognise, discriminate and interpret clinical evidence in order to reach a judgement about a patient's fluid, electrolyte and acid–base balance (Wotton 2011). Any delay in the identification of changes in haemodynamic status has direct consequences for the patient, their family and the healthcare institution.

BOX 34-1 Risk factors for fluid, electrolyte and acid–base imbalances

Risk factor	Specific risk factor
Age	• Very young • Very old
Health status	• Three or more medical conditions • Alterations in mental health status • High or low body mass index • Infection • New admission to a residential care facility/hospital • Swallowing disorders and alteration in oral health status • Hyperglycaemia • Decreased cognition • Dementia
Alterations in sensations	• Decreased olfactory sensation • Decreased taste sensation • Decreased visual acuity • Decreased ability to feel/touch
Environmental extremes	• High temperatures • Exertion in high heat and humidity
Chronic diseases	• Cancer • Cardiovascular disease such as congestive heart failure • Endocrine disease such as Cushing's disease and type 1 diabetes • Malnutrition • Chronic obstructive pulmonary disease • Renal disease such as progressive renal failure
Changes in level of consciousness	
Trauma	• Crush injuries • Head injuries
Burns	• Internal and external losses
Therapies	• Diuretics • Steroids • Intravenous therapy • Total parenteral nutrition • Polypharmacy
Gastrointestinal losses	• Gastroenteritis • Nasogastric suctioning • Fistulas

Clinical reasoning involves the rational analysis and review of all patient data and is not just one episode of thinking, but a cyclical process of data collection and analysis (data interpretation or re-interpretation and problem formulation or re-formulation) in the development of a progressively broader and deeper understanding of patients' fluid and electrolyte status (Wotton 2011). During assessment (Figure 34-12), the nurse must consider all critical-thinking elements, as well as data about the specific patient, to make appropriate nursing diagnoses.

GATHERING RELEVANT INFORMATION AND DATA

Nurses must possess a well-developed understanding of the physiology of fluid, electrolyte and acid–base balances in order to appropriately assess patients. To be able to effectively reason in the nursing domain, nurses require knowledge of their patient. This 'knowledge' is not only theoretical (e.g. relationship of cues to health status), but also refers to 'knowing' the patient. Knowing the patient means understanding the patient's situation and responses to fluid, electrolyte or acid–base balance from a physiological, pharmacological, psychological and social perspective (Wotton et al 2008). A comprehensive assessment which incorporates a review of all information in patient case and bed notes, patient history and physical examination will assist nurses to identify patients at risk of fluid and electrolyte problems and identify all appropriate nursing diagnoses.

Nursing history

The nursing assessment begins with a patient history, which is designed to reveal any risk factors or pre-existing conditions that may cause or contribute to a disturbance of fluid, electrolyte and acid–base balances. The nurse explores with the patient any factors contributing to a disturbance and integrates the information with knowledge of fluid volume regulation, electrolyte concentration and acid–base regulation.

Age

The nurse first considers the patient's age. An *infant's* percentage of total body water is greater than that of children or adults. As infants ingest and excrete a greater daily water volume relative to their weight than adults (McCance & Huether 2014), they are at a greater risk of **fluid volume deficits (FVDs)** and hyperosmolar imbalance because body water loss is proportionately greater per kilogram of weight.

Children aged 2–12 years have higher body water content, higher metabolic rate and a higher turnover of fluids and electrolytes. As regulatory responses to fluid and electrolyte imbalance are less stable, children are more susceptible to volume depletion. Indeed, significant fluid losses may occur rapidly, leading to significant depletion of the intravascular volume. Children frequently respond to illnesses with pyrexia or hyperpyrexia, which increases the rate of insensible water loss.

Adolescents have increased metabolic processes and increased water production because of the major and rapid changes that occur in the anatomical and physiological process of adolescence. Changes in fluid balance are greater in adolescent girls because of hormonal changes associated with the menstrual cycle.

Older adults experience a number of age-related changes that can affect fluid, electrolyte and acid–base balances. The kidneys have a decrease in renal blood flow and functioning glomeruli, causing a decreased glomerular filtration rate (Touhy & Jett 2011). In the presence of fluid and electrolyte imbalances the older adult may be unable to maintain homeostasis and the imbalance is instead worsened. The changes in lung function

APPLYING CRITICAL THINKING

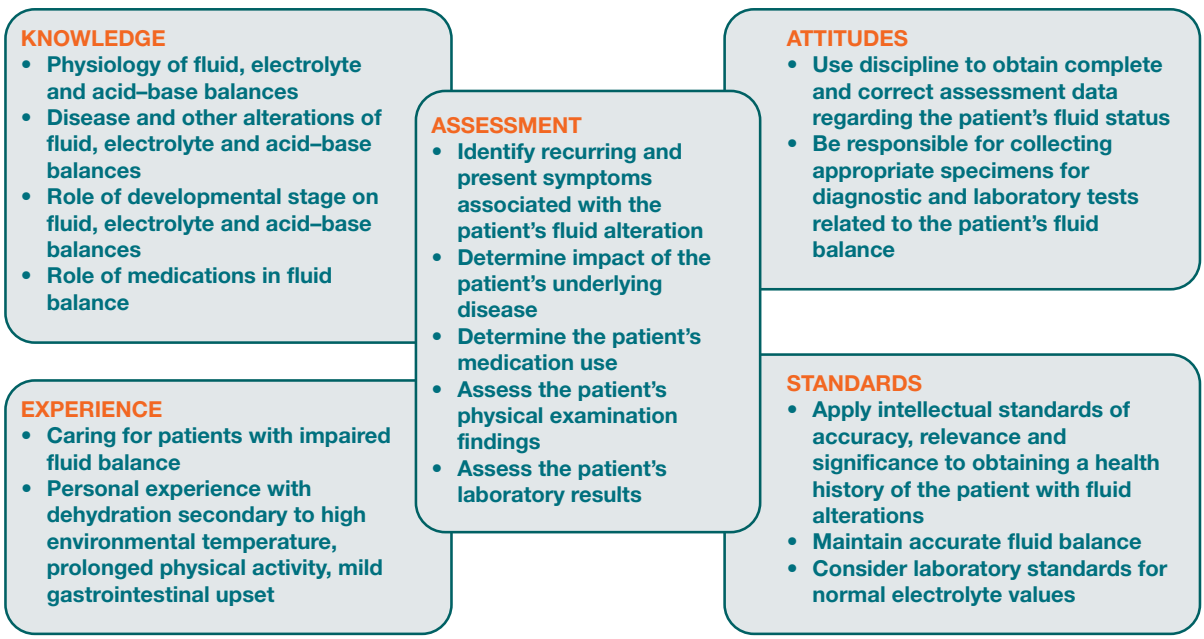


Figure 34-12 Critical thinking associated with the assessment phase for fluid, electrolyte and acid-base balance.

that accompany ageing can lead to respiratory acidosis and the inability to compensate for metabolic acidosis. The older adult who has any condition involving renal function, fluid and electrolyte balance or acid–base balance is more likely than younger adults to experience more serious consequences. Thirst responses in the older adult can be impaired, which increases their vulnerability to dehydration (see *Research highlight*).

Acute illness

Recent surgery, head and chest trauma, shock and burns are conditions that place patients at high risk of fluid, electrolyte and acid–base alterations. The stress response experienced in acute illness may cause fluid-balance changes when aldosterone, glucocorticoids and ADH are increasingly secreted, causing sodium and chloride retention, potassium excretion and decreased urinary output.

Extensive surgical intervention and longer operative time increases both external and internal (third space fluid shift) fluid losses. Patients can also exhibit acid–base changes after surgery. The patient who is reluctant to breathe deeply and cough may develop respiratory acidosis due to retained $PaCO_2$. The patient with nasogastric suction may develop metabolic alkalosis due to the loss of gastric acid, fluids and electrolytes. As well, surgical patients may be dehydrated preoperatively because of the combination of nil by mouth (NBM) for protracted periods of time and delays in surgery.

Leakage of fluid (third space fluid shift)

Resection, inflammation or acute or chronic obstruction of lymphatics contributes to increased capillary permeability and leakage of fluid and plasma proteins directly into extravascular spaces. Where the rate of capillary leakage into the interstitial space exceeds the rate of lymphatic absorption there is decreased return of both fluids and plasma proteins to the venous circulation and therefore decreased circulatory volume (Paula 2011, Wilson et al 2010).

Burns

The greater the body surface burned, the greater the fluid loss (Ibrahim et al 2013). The burns patient loses body fluids by one of five routes (McCance & Huether 2014).

1. Plasma leaves the intravascular space and becomes trapped in the interstitial space. This is also called the *plasma-to-interstitial fluid shift*. This internal 'loss' is accompanied by a loss of serum proteins from the bloodstream into the interstitial space because of increased capillary permeability.
2. Plasma and interstitial fluids are lost externally as burn exudate.
3. Water vapour and heat are lost in proportion to the amount of skin that is burned.
4. Blood leaks from damaged capillaries, adding to the intravascular fluid volume loss.
5. Sodium and water shift into the cells, further compromising extracellular fluid volume.

Respiratory disorders

Many alterations in respiratory function predispose the patient to respiratory acidosis. For example, inadequate gas exchange in pneumonia, sedative and narcotic overdose and exacerbated chronic airflow cause hypoventilation, which interferes with the elimination of carbon dioxide. As the carbon dioxide continues to build up in the bloodstream, the body's compensatory mechanisms can no longer adapt and the pH decreases. Likewise, hyperventilation associated with fever or anxiety causes respiratory alkalosis by the exhalation of too much carbon dioxide with the increased respiratory rate.

Head injury

Head injury can result in cerebral oedema. Occasionally this oedema creates pressure on the pituitary gland and, as a result, ADH secretion is changed. Two alterations can occur;

RESEARCH HIGHLIGHT

Research focus

More than one-third of older adults have a reduced thirst sensation resulting in inadequate water consumption and increased risk of **dehydration**. Awareness of thirst is an important mechanism to increase water consumption.

Method

Data were from three American surveys on national health and nutrition from 1994 to 2000 with a sample of over 8000 adults aged 60 years or older. Participants self-reported their daily dietary intake. Bodyweight was either self-reported or measured by an examiner.

Research findings

Thirty per cent of participants did not meet the recommendation of 30 mL/kg for total water consumption. Additionally, those not meeting the recommendation drank approximately 2–3 times less plain water and consumed about 1.5 times less moisture from foods and beverages than did those meeting the recommendations.

Conclusion

Careful monitoring of fluid intake and types of fluids consumed, dietary intake and living arrangements on a regular basis throughout the day is essential. Nurses should encourage adequate intake of water, increasing intake of foods with high moisture content such as fruit and vegetables and compensating for the diuretic effect of caffeinated fluids such as coffee. Monitoring is also required of the effect of medication on hydration, ensuring rooms are not overheated and avoiding excesses of physical activity.

Reference

Juan W, Basiotis P 2002 More than one in three older Americans may not drink enough water. Nutrition insights. A publication of the USDA Center for Nutrition Policy and Promotion, September.

type 2 diabetes occurs when too little ADH is secreted and the patient excretes large volumes of diluted urine with a low specific gravity; the second alteration is *syndrome of inappropriate antidiuretic hormone* (SIADH) with continued inappropriate secretion of ADH. This results in water intoxication characterised by fluid-volume expansion and hyponatraemia, and hypotonicity of fluids as a result of high urine osmolality and low serum osmolality (McCance & Huether 2014).

Chronic illness

As chronic disease (e.g. cancer, HF, renal disease) can create fluid, electrolyte and acid–base imbalances, the nurse must review the normal course of such conditions to understand how fluid, electrolyte and acid–base status may be affected.

Cancer

Fluid and electrolyte imbalances observed in a patient with cancer depend on the type and progression of the cancer. All electrolyte imbalances can occur in the patient with cancer; they are caused by anatomical distortion and functional impairment from tumour growth, and tumour-caused metabolic and endocrine abnormality. In addition, patients with cancer are at risk of fluid and electrolyte imbalances related to the side effects (e.g. diarrhoea and anorexia) of chemotherapeutic and radiological treatments (Mooney 2013).

Cardiovascular disease

In the patient with chronic cardiovascular disease, a diminished cardiac output reduces kidney perfusion, causing decreased urinary output. Sodium and water are retained, resulting in circulatory overload and the risk of pulmonary oedema. Fluid and electrolyte imbalances associated with heart failure can be controlled for a time with medications, and fluid and sodium restrictions. The goal of restricting fluid intake is to decrease left ventricular workload by reducing the excess circulating fluid volume.

Renal disorders

Kidney disease alters fluid and electrolyte balance by the abnormal retention of sodium, chloride, potassium and water in the extracellular compartment. The usual renal compensatory mechanisms such as bicarbonate reabsorption are not available, so the body's ability to restore normal acid–base balance is limited. The severity of fluid and electrolyte imbalance is proportional to the degree of renal failure. The plasma levels of metabolic waste products, such as blood urea nitrogen and creatinine, are elevated because the kidneys are unable to filter and excrete the waste products of cellular metabolism. This elevation is toxic to cellular processes. Metabolic acidosis results when hydrogen ions are retained due to decreased renal function. Occasionally, shock induced by acute kidney injury (AKI) or a decrease in extracellular fluid will be reversible. Although chronic renal failure is progressive, the patient may be treated successfully with dietary control of protein and salt intake, diuretic medications and fluid restrictions and, ultimately, haemodialysis (Ibrahim et al 2013).

Gastrointestinal disturbances

Gastroenteritis and nasogastric suctioning result in a loss of fluid and potassium and chloride ions. Hydrogen ions are also lost, causing a disturbance in acid–base balance. Timely education of infant and child caregivers is necessary to prevent dehydration when the infant or child is experiencing diarrhoea. Gastrointestinal fistulas can also result in a loss of potassium, resulting in an increased risk of hypokalaemia. The loss of potassium also increases the risk of acid–base disturbances.

Regardless of the presence of any disease process, the nurse must determine how long the patient has suffered from that disease and the type of treatment currently prescribed. In addition to chronic health problems, the nurse determines if the patient has a history of new-onset acute illnesses such as diarrhoea, vomiting, ileostomy, nasogastric suctioning or intestinal drainage. Any condition that results in the loss of GI fluids predisposes the patient to dehydration and a variety of electrolyte disturbances.

Environmental factors

The nurse should include certain environmental factors in the nursing history. Patients who have participated in vigorous exercise or who have been exposed to temperature extremes may have clinical signs of fluid and electrolyte alterations. Exposure to environmental temperatures exceeding 28–30°C results in excessive diaphoresis with weight loss. Loss of fluid from diaphoresis varies, and can reach a maximal rate of 4 L/hour (McCance & Huether 2014). A bodyweight loss above 7% decreases the ability of the cooling mechanism to conserve water. Inadequate fluid replacement can lead to fluid-volume disturbances. High environmental temperatures plus humidity work together to disrupt fluid balance, especially in the elderly and young children.

TABLE 34-17 Fluid requirements based on weight and variations in activity level and climate

Weight	70 kg	70 kg	70 kg	70 kg	70 kg	50 kg	50 kg	50 kg	50 kg	50 kg	50 kg
Activity	*Sedentary*	*Sedentary*	*Moderate Activity*	*Moderate Activity*	*Extreme Activity*	*Sedentary*	*Sedentary*	*Moderate Activity*	*Moderate Activity Active*	*Extreme Activity*	*Extreme Activity*
Climate	Cold	Tropical	Cold	Tropical	Cold	Cold	Tropical	Cold	Tropical	Cold	Tropical
Litres/day	2.5 L	2.8 L	3.1 L	3.3 L	3.7 L	1.9 L	2.1 L	2.3 L	2.5 L	2.7 L	2.9 L

Adapted from Daily Water Intake Calculator, MedIndia, www.medindia.net/patients/calculators/daily-water-requirement.asp#ixzz3UKwQJytj.

• CRITICAL REFLECTION POINT

The daily fluid and electrolyte requirements depend on the person's wellness, activity level and environmental conditions (Table 34-17).

Activity

Consider the fluid and electrolyte loss and the appropriate type and amount of fluid and electrolyte replacement for: a person sitting in their lounge on a winter's day, a person playing tennis in a temperature of 36°C, a bricklayer building an outside wall in summer in an environmental temperature of 39°C or a child with diarrhoea and vomiting with a temperature of 38.6°C.

Diet

A patient's current dietary history is an important component of nursing assessment. Dietary intake of fluids, salt, potassium, calcium, magnesium and the necessary carbohydrates, fats and protein helps maintain normal fluid, electrolyte and acid–base status. Recent changes in appetite or the ability to chew and swallow can affect nutritional status and hydration. When nutritional intake is inadequate, the body tries to preserve its protein stores by breaking down glycogen and fat stores. When excess free fatty acids are released, metabolic acidosis can occur because the liver converts free fatty acids to ketones, a strong acid. However, after normal glycogen and fat stores are depleted, the body begins to destroy protein stores. When serum protein levels decrease below normal, hypoalbuminaemia occurs. Hypoalbuminaemia results in decreased serum colloid osmotic pressure with resultant fluid shifts from the circulating blood volume to interstitial fluid spaces (for example, in the peritoneal cavity) and, ultimately, fluid volume deficit (FVD).

Lifestyle

Lifestyle factors should also be included in the nurse's history. Pre-existing medical risks, such as smoking or caffeine or alcohol consumption, can further impair the patient's ability to adapt to fluid, electrolyte and acid–base alterations. Long-term use of alcohol and tobacco can ultimately cause respiratory depression, which can result in respiratory acidosis and alteration in maintaining adequate fluid and electrolyte balance. Although caffeine acts as a diuretic and could cause tachycardia and arrhythmia in patients with a cardiac disease, it was shown not to make any significant difference in the hydration level of healthy adults (Killer et al 2014).

Alcohol consumption has the potential to increase urine output so that it is greater than fluid intake and therefore cause moderate-to-severe dehydration. Alcohol intake increases urine output because it blocks the release of ADH required for water reabsorption in the kidneys (Wiese et al 2000) resulting in segments of the kidney's tubule system becoming impermeable to water, thus preventing water being reabsorbed back into the circulation (Swift & Davidson 1998). The diuretic effect of alcohol can be quite significant with four shots each containing 50 g of alcohol with a total fluid volume of around 250 mL resulting in urinary elimination of 600 to 1000 mL (Swift & Davidson 1998). As excessive alcohol consumption not only causes dehydration but also prerenal failure, nurses should assess any patient admitted following alcohol consumption for the level of hydration and ensure that dehydration is managed (Wiese et al 2000). Nurses should also be aware of the risk factors of excessive alcohol consumption and be able to use these in community education.

• CRITICAL REFLECTION POINT

This critical thinking exercise is designed to increase understanding of the importance of nursing assessment of hypovolaemia and advocacy for fluids and electrolyte management for patients admitted to hospital with alcohol intoxication.

You are working in the emergency department (ED) for the night shift. At 0230 hrs Travis, a 19-year-old male, is admitted after suffering a knife wound to his left lower arm; admission observations T 36.8, P99, Resps 18, BP 100/80. Travis's wound has been assessed as requiring suturing, but his case is labelled as non-urgent and the RN informs you to let Travis 'sleep it off' as the medical officer is unable to attend for at least another 2 hours. His friend (the nominated driver) transported Travis and his intoxicated girlfriend to the ED. The girlfriend, who vomited in the car, is incoherent and is sleeping on a chair in the waiting room. The friend informs you that Travis, who played soccer that day (environmental temperature 38°C), had about five beers at the club room and around eight alcoholic drinks at the nightclub.

Activity

1. **Use information from Table 34-17 and information above on the effects of alcohol on urine output and renal function to prove if and why both Travis and his girlfriend could have a fluid and electrolyte imbalance.**
2. **Provide a rationale for the need for further monitoring of Travis to the RN who stated to let Travis 'sleep it off'.**

Medication

A final category to include in the nurse's assessment is a history of medication use (Box 34-2).

If the assessment reveals either a prescribed or an over-the-counter medication with the potential to cause a fluid, electrolyte or acid–base disorder, the nurse must closely examine laboratory values and consult with the medical officer. In addition, the nurse should assess the patient's knowledge of side effects and adherence to medication schedules (Touhy & Jett 2011).

Physical assessment

A thorough examination is necessary, because fluid and electrolyte imbalances or acid–base disturbances can affect all body systems. While examining each system, the nurse carefully considers the signs and symptoms expected as a result of any imbalance (see Table 34-18). For example, an examination of the oral cavity is likely to reveal signs of dehydration if the nurse suspects the patient is experiencing a fluid loss.

Measuring fluid intake and output

Immediately measuring and recording all liquid intake and output during each shift, for a 24-hour period and throughout admission (cumulative fluid balance), is a vital part of the patient's assessment for fluid and electrolyte balance. It is important not to wait until the end of the shift, but to also *regularly* review fluid balance charts and note and respond to patterns and trends in the intake and output (e.g. a gradually decreasing urine output can indicate the body's compensation for a fluid volume deficit or hyperosmolar fluid imbalance). A progressive cumulative fluid balance should be recorded

BOX 34-2 Medications that cause fluid, electrolyte and acid–base disturbances

Medication	Disturbance in electrolyte and acid–base balance
Antihistamines	Increased urine output
Diuretics	Metabolic alkalosis, hyperkalaemia and hypokalaemia
Laxatives	Increases water into bowel and therefore increases faecal water content
Steroids	Metabolic alkalosis
Potassium supplements	GI disturbances, including intestinal and gastric ulcers and diarrhoea
Respiratory centre depressants such as narcotic analgesics	Decreased rate and depth of respirations, resulting in respiratory acidosis
Antibiotics	Nephrotoxicity (e.g. vancomycin, methicillin, aminoglycosides); hyperkalaemia and/or hypernatraemia (e.g. azlocillin, carbenicillin, piperacillin, ticarcillin, Unasyn)*
Calcium carbonate (Caltrate, Rennies, Titralac)	Mild metabolic alkalosis with nausea and vomiting*
Magnesium hydroxide (Milk of Magnesia)	Hypokalaemia
Vasodilators	Dilate blood vessels leading to additional venous fluid retention and decreased circulating volume
ACE inhibitors (dilate blood vessels; decrease production of aldosterone)	Decrease aldosterone secretion – increased urine output

** Data from McKenry LM, Salerno E 2003 Mosby's pharmacology in nursing, 21st edn. Mosby, St Louis.*

TABLE 34-18 Physical and behavioural nursing assessment for fluid, electrolyte and acid–base imbalances

Assessment	Imbalance
Weight changes	
2–5% loss	Mild fluid volume deficit (FVD) – reduced urine output, thirst, dry mucous membranes, mild tachycardia
5–10% loss	Moderate FVD – dry mucous membranes, tachycardia, abnormal respiratory pattern, lethargy, reduced skin turgor, sunken eyes
10–15% loss	Severe FVD – all signs for moderate FVD plus poor perfusion (mottled, cool limbs, decreased capillary refill); altered consciousness, shock – thready peripheral pulses with marked tachycardia
15–20% loss	Death
2% gain	Mild fluid volume excess (FVE)
5% gain	Moderate FVE
8% gain	Severe FVE
Head	
History:	
Headache	FVD, metabolic or respiratory acidosis, metabolic alkalosis
Dizziness	FVD, respiratory acidosis or alkalosis, hyponatraemia
Observation:	
Irritability	Metabolic or respiratory alkalosis, hyperosmolar imbalance, hypernatraemia, hypokalaemia
Lethargy	FVD, metabolic acidosis or alkalosis, respiratory acidosis, hypercalcaemia
Confusion, disorientation	FVD, hypomagnesaemia, metabolic acidosis, hypokalaemia

continued

TABLE 34-18 ***continued***

Assessment	Imbalance
Eyes	
Inspection:	
Sunken, dry conjunctivae, decreased or absent tearing	FVD
	FVE
Periorbital oedema, papilloedema	
History:	
Blurred vision	FVE
Throat and mouth	
Inspection:	
Sticky, dry mucous membranes, dry cracked lips, decreased salivation	FVD, hypernatraemia
Longitudinal tongue furrows	
Cardiovascular system	
Inspection:	
Flat neck veins	FVD
Slow venous filling	FVD
Distended neck veins	FVE
Palpation:	
Oedema (dependent body parts: back, sacrum, legs)	FVE
Dysrhythmias (also noted as ECG changes)	Metabolic acidosis, respiratory alkalosis and acidosis, potassium imbalance, hypomagnesaemia
Increased pulse rate	Metabolic alkalosis, respiratory acidosis, hyponatraemia, FVD, hypomagnesaemia
Decreased pulse rate	Metabolic alkalosis, hypokalaemia
Weak pulse	FVD, hypokalaemia
Decreased capillary filling	FVD
Bounding pulse	FVE
Auscultation:	
Blood pressure low – Orthostatic hypotension	FVD, hyponatraemia, hyperkalaemia, hypermagnesaemia
Third heart sound	FVE
Hypertension	FVE
Respiratory system	
Inspection:	
Increased rate	FVE, respiratory alkalosis, metabolic acidosis
Dyspnoea	FVE
Auscultation:	
Crackles	FVE
Gastrointestinal system	
History:	
Anorexia	Metabolic acidosis
Abdominal cramps	Metabolic acidosis

continued

TABLE 34-18 ***continued***

Assessment	Imbalance
Inspection:	
Sunken abdomen	FVD
Distended abdomen	Third-space syndrome
Vomiting	FVD, hypercalcaemia, hyponatraemia, hypochloraemia, metabolic alkalosis
Diarrhoea	Hyponatraemia, metabolic acidosis
Auscultation:	
Hyperperistalsis with diarrhoea, or hypoperistalsis	FVD, hypokalaemia
Renal system	
Inspection:	
Oliguria or anuria	FVD, FVE
Diuresis (if kidneys are normal)	FVE
Increased urine specific gravity	FVD
Neuromuscular system	
Inspection:	
Numbness, tingling	Metabolic alkalosis, hypocalcaemia, potassium imbalances
Muscle cramps, tetany	Hypocalcaemia, metabolic or respiratory alkalosis
Coma	Hyperosmolar or hypo-osmolar imbalances, hyponatraemia
Tremors	Respiratory acidosis, hypomagnesaemia
Palpation:	
Hypotonicity	Hypokalaemia, hypercalcaemia
Hypertonicity	Hypocalcaemia, hypomagnesaemia, metabolicalkalosis
Percussion:	
Decreased or absent deep tendon reflexes	Hypercalcaemia, hypermagnesaemia
Increased or hyperactive deep tendon reflexes	Hypocalcaemia, hypomagnesaemia
Skin	
Body temperature:	
Increased	Hypernatraemia, hyperosmolar imbalance, metabolic acidosis
Decreased	FVD
Inspection:	
Dry, flushed	FVD, hypernatraemia, metabolic acidosis
Palpation:	
Inelastic skin turgor, cold, clammy skin	FVD

FVD = fluid volume deficit (FVD); FVE = Mild fluid volume excess.

Adapted from Tortora GJ, Grabowski SR 2010 Principles of anatomy and physiology, 8th edn. HarperCollins, New York; Wotton K, Crannitch K, Munt R 2008 Prevalence, risk factors and strategies to prevent dehydration in older adults. Contemp Nurse 31(1):44–56.

at least every 24 hours to demonstrate patterns and trends in fluid intake and output throughout the patient's admission (Table 34-19). Nurses must recognise that fluid balance charts do not take into account insensible loss, and must also know whether a positive or negative balance is the expected clinical outcome for the patient for the particular shift. For example, in Table 34-15, the positive 24-hour and cumulative balance for Patient A would be expected to demonstrate appropriateness of replacement fluid; and a negative cumulative balance of 5 L (remember the patient was 6 kg = 6 L overloaded on admission) would be expected for patient B who was admitted with HF treated with IV diuretics.

TABLE 34-19 Examples of cumulative fluid balance

Day	Total intake (mL)	Total output (mL)	24-hour balance (mL) including insensible loss	Cumulative balance (mL)
Patient A admitted with dehydration				
1	3500	1700	1800 +ve (– insensible loss of 400) = 1400 +ve	1400 +ve (Day 1)
2	3200	2000	1200 +ve (– insensible loss of 400) = 800 +ve	2200 +ve (Day 1 + Day 2)
3	3000	2100	900 +ve (– insensible loss of 400) = 500 +ve	2700 +ve (Day 1 + 2 + 3)
Patient B admitted with HF and weight increase of 6 kg and treated with IV diuretics				
1	1500	3500	2000 –ve (+ insensible loss of 400) = 2400 –ve	2400 –ve (Day 1)
2	1500	2500	1000 –ve (+ insensible loss of 400) = 1400 –ve	3800 –ve (Day 1 + Day 2)
3	1500	2300	800 –ve (+ insensible loss of 400) = 1200 –ve	5000 –ve (Day 1 + 2 + 3)

–ve = negative; +ve = positive; HF = heart failure; IV = intravenous.

• CRITICAL REFLECTION POINT

Activity

Please note that calculations for the two patients in Table 34-19 use the lowest average daily insensible loss. Now recalculate the above cumulative balance if:

- **Patient A, admitted with dehydration, also had a temperature of 39°C (calculate the daily insensible loss at 500 mL plus an additional 50–75 mL/day for each 1°C increase above normal body temperature).**
- **Patient B, admitted with HF, also has a respiratory rate above 30 each day so use a daily insensible loss of 800 mL in your recalculation.**

Commencing a fluid balance chart is a nurse-initiated action. In the hospital, forms for recording fluid balance are included in the bedside chart (see Figure 34-13). To ensure that nurses monitor patients' fluid balance throughout the shift, a subtotal of intake and output is usually calculated and documented every 6 hours. The 24-hour total is calculated at midnight or 6.00 a.m., depending on agency policy. Generally, fluid balance is routinely measured for patients after surgery, in cases of chronic cardiopulmonary or renal disease and for patients whose conditions are unstable or deteriorating, patients who have pyrexia and patients prescribed fluid restriction, diuretics, and intravenous (IV) or nasogastric therapy.

• CRITICAL REFLECTION POINT

Activity

Examine the pattern and trend in the 24-hour record of fluid intake and urine output for Mr Henri Gradeven (Figure 34-13).

1. **If Henri's usual weight was 65 kg, what urine volume per hour would indicate adequate kidney function (Male: 0.5 mL × weight = mL/hr)?**
2. **Are you concerned at any stage throughout the 24 hours of the adequacy of urine output? Hint – In the examination of the appropriateness of urine output it is essential to recalculate urine output into mL/hr. For example, Mr Henri Gradeven's urine output from 0200–0600 hours is 200 mL. This is over 4 hours – thus hourly urine output is 200 ÷ 4 = 50 mL/hr.**
3. **Calculate hourly urine output from 1800–2400 hours. What could be the reason for the decreased urine output from 1800–2400 hours?**
4. **Mr Henri Gradeven has an indwelling urinary catheter in situ. Would you change measurement and recording of urine output to hourly? Provide a rationale for your response.**
5. **Calculate whether Mr Gradeven's hourly intake is equal to or above hourly maintenance fluid requirements (see Table 34-16).**

Oral intake includes all liquids taken by mouth, such as custard, ice cream, soup, juice, vegetables, fruit and water. Liquid intake also includes fluids given through nasogastric or jejunostomy feeding tubes (see Chapter 36), liquids given as IV fluids (including both continuous infusions and intermittent IV piggybacks) and blood or its components. Output includes urine, diarrhoea, vomitus, gastric suction and wound drainage (see Chapter 44). Although insensible loss is not recorded, nurses should also approximate such losses.

Ambulatory patients' urinary output is recorded after each trip to the bathroom. The nurse explains the reasons why measurements are required and instructs the patient and family not to dispose of any urine, but to call the nurse. A patient using a toilet should be instructed to use a calibrated insert (if available), which attaches to the rim of the toilet bowl (see Figure 34-14), or ask for a pan/urinal.

When a patient has an indwelling urinary catheter, drainage tube or suction, the output is recorded hourly, 4-hourly, or at the end of each shift, depending on the severity of the patient's condition. The nurse should *measure*, not estimate, intake and output.

Recording accurate and timely fluid balance is essential for accurate assessment of fluid and electrolyte balance or imbalance. Over a 24-hour period, medications administered in liquid form, medications administered nasogastrically and fluids used to flush nasogastric tubes after medication administration

ELSEVIER METROPOLITAN HOSPITAL FLUID BALANCE CHART					Ward/Unit No. Surname Other Names DOB/Sex Address		84632 Gradeven Henri Michael 26:06:1958 Male 28 Cedar Place Nostrom Vic		
Date: Day 1							(24 Hour Chart)		
INTAKE					OUTPUT				
Time	By Mouth or Tube	ml	Intravenous	ML	VOMIT	ML	FAECES AND OTHER DRAINAGE	ML	URINE ML IDC
2400	Jug commenced (1000 mL)		New flask NS (1000 mL)						
0100			Normal saline	84	Clear fluid	80			
0200			IV Flagyl	84 100					280
0300			Normal saline	84					
0400			Normal saline	84			Wound drain	40	
0500	Tea	200	Normal saline	84					
0600			Normal saline	84					200
0700	Milk	180	Normal saline	84			Bowels loose	60	
0800	Tea	200	Normal saline	84					
0900	Juice	250	Normal saline	84					
1000			IV Flagyl	84 100			Wound drain	25	240
1100	Coffee	150	New flask NS (1000 mL)	84					
1200	Lemonade	100	Normal saline	84					
1300	Soup	125	Normal saline	84					
1400			Normal saline	84			Wound drain	20	250
1500			Normal saline	84					
1600	Tea	180	Normal saline	84					
1700			Normal saline	84					
1800	Soup Sweets	125 100	IV Flagyl	84 100					100
1900			Normal saline	84					
2000			Normal saline	84			Wound drain	35	
2100			Normal saline	84					
2200			New flask NS (1000 mL)	84					80
2300			Normal saline	84					25
2400	Jug	200	Normal saline	84					30
TOTALS		1810		2316	80			180	1205
INTAKE GRAND TOTAL			4126		OUTPUT GRAND TOTAL			1465	

Figure 34-13 **Example of completed fluid balance chart.**

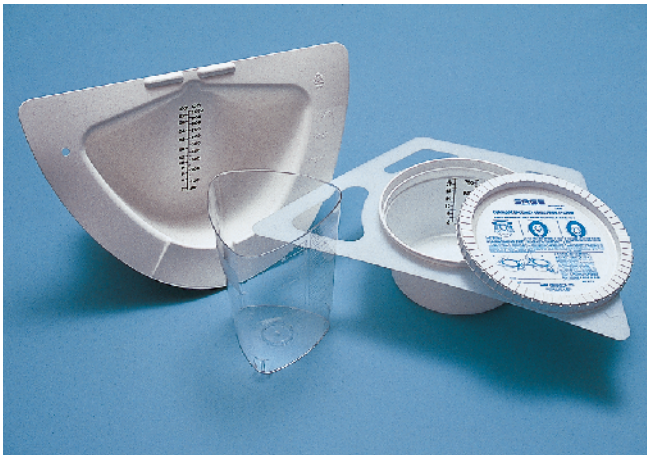


Figure 34-14 Containers for measuring urine output.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

can amount to significant intake and should always be immediately recorded on the fluid balance chart.

Laboratory studies

Laboratory tests include serum and urinary electrolyte levels, haematocrit, serum creatinine, blood urea nitrogen (BUN), urine specific gravity and arterial blood gas (ABG) readings.

Serum electrolytes

Serum electrolytes are routinely measured on patient admission to hospital to screen for alterations and to serve as a baseline for future comparisons. Laboratory results should be reviewed and interpreted in light of the patient's diagnoses, other assessment findings and current treatment modalities to make decisions about fluid, electrolyte and acid–base balance (Box 34-3). The frequency with which these electrolyte levels are measured depends on the severity of the patient's illness.

Full blood count

The full blood count is a determination of the number and type of red and white blood cells per litre of blood. When the patient does not have anaemia, the pattern and trend of haemoglobin (Hb) and haematocrit can be an indication of the hydration status. Haematocrit (Hct) or packed cell volume (PCV) is the volume percentage of red blood cells in the plasma and is normally 45% in males and 40% in females. Relationships between haematocrit and viscosity are important for interpreting fluid imbalance. The Hb and Hct will increase (become more concentrated) in situations where fluid (not blood) is lost, whereas Hb and Hct will decrease where fluid is excessively retained in the vascular space.

Serum creatinine

Serum creatinine is useful in determining kidney function. Creatinine is a normal by-product of muscle metabolism and is excreted by the kidneys at fairly constant levels, regardless of factors such as fluid intake, diet or exercise (Hall 2015). An increased creatinine level indicates renal disease, since no other pathological condition would result in an elevation. Generally, 50% of renal function is lost before there is an increase in the serum creatinine level. A decreased level may reflect a loss of muscle mass. The normal serum creatinine level is 0.05–0.12 mmol/L.

Blood urea nitrogen

Blood urea nitrogen is the amount of nitrogenous substance present in the blood as urea. An elevation in the BUN level may or may not indicate renal dysfunction: rapid cell destruction from an infection or steroidal therapy may produce an elevation. The BUN level is therefore not the most reliable indicator of renal disease. A decreased BUN level may indicate malnutrition or hepatic damage. The normal serum BUN level is 3.0–8.0 mmol/L.

The BUN:creatinine ratio may be a better indicator of renal function. The normal ratio is 10:1. When there is an intravascular fluid volume deficit, the BUN level rises more rapidly than the creatinine level, causing an increase in the ratio. An increase in

RESEARCH HIGHLIGHT

Research focus

To identify and describe current clinical nursing practice in fluid balance monitoring and measurement accuracy in ICUs.

Research abstract

A descriptive, exploratory study design. An audit of 103 ICU records was conducted to establish the current practices and accuracy in recording of fluid balance monitoring.

Research findings

The total of 71 (68.9%) fluid balance charts (n = 103) were incorrect by approximately 500 mL of that calculated by the researcher. Fourteen recorded calculations (13.5%) were incorrect by between 500 mL and 1000 mL, while seven recorded calculations (6.8%) were incorrect by 1000 mL to 2000 mL. Six recorded calculations (5.8%) were incorrect by > 2000 mL. Furthermore, a significant relationship was shown between inaccurate calculation of FBC totals and the inappropriate administration of diuretics.

Conclusion

The majority of fluid balance records were incorrectly calculated. The incorporation of bodyweight and other clinical parameters is essential in interpreting FBC data and in making clinical judgements.

Reference

Diacon A, Bell J 2014 Investigating the recording and accuracy of fluid balance monitoring in critically ill patients S Afr J Crit Care 2014 30(2):55–7.

BOX 34-3 Laboratory data for fluid, electrolyte and acid–base imbalances

Imbalance	Laboratory values
Fluid and electrolyte imbalance	• Altered serum sodium Na^+, potassium K^+, magnesium Mg^+, calcium Ca^+, chloride Cl^- and bicarbonate HCO_3^- (venous carbon dioxide CO_2 contentions) • Increased haematocrit (Hct), blood urea nitrogen (BUN), Na^+ and serum osmolality (related to loss of extracellular fluid or gain of solutes) • Decreased Hct, BUN, Na^+ and serum osmolality (related to gain of extracellular fluid or loss of solutes) • Concentrated urine: urine specific gravity > 1.030 • Dilute urine demonstrated by a specific gravity < 1.012
Metabolic alkalosis	• pH > 7.45 • $PaCO_2$ normal or > 45 mmHg if lungs are compensating • PaO_2 normal • Oxygen saturation (SaO_2) normal • HCO_3^- > 32 mmol/L • K^+ < 3.1 mmol/L
Metabolic acidosis	• pH < 7.35 • $PaCO_2$ normal or < 35 mmHg if lungs are compensating • PaO_2 normal • SaO_2 normal • HCO_3^- < 22 mmol/L • K^+ > 4.2 mmol/L • K^+ < 3.1 mmol/L
Respiratory alkalosis	• pH > 7.45 • $PaCO_2$ < 35 mmHg • PaO_2 normal • SaO_2 normal • HCO_3^- normal • K^+ < 3.1 mmol/L
Respiratory acidosis	• pH < 7.35 • $PaCO_2$ > 45 mmHg • PaO_2 normal or < 80 mmHg, depending on cause of acidosis • SaO_2 normal or < 95%, depending on cause of acidosis • HCO_3^- normal if early respiratory acidosis or > 32 mmol/L if kidneys are compensating • K^+ > 4.2 mmol/L

both the BUN and the creatinine levels is usually an indicator of renal dysfunction.

Serum osmolality

Serum osmolality measures the concentration of the plasma. The osmolality decreases in hypo-osmolar fluid imbalance (water excess) or hyponatraemia. Decreased serum osmolality results in the movement of fluid into body cells (cellular oedema) by osmosis. The osmolality increases in hyperosmolar fluid imbalance (water deficit) or hypernatraemia or other gains of solutes such as glucose (Hall 2015). This results in the movement of fluid out of body cells into the interstitial space (cellular shrinkage). Both cellular oedema and shrinkage will disrupt normal cell processes.

Urine specific gravity

The urine specific gravity (SG) measures the urine's degree of concentration and evaluates the kidney's ability to conserve or excrete water. The specific gravity, measured on the ward with dipsticks, normally ranges between 1.010 and 1.025 and compares the density of urine to the density of water (SG = 1.000). Dark-coloured urine is more concentrated in solutes and increases SG. Clearly, any increase or decrease in urinary SG (Table 34-20) must be reported so that further investigations can be carried out to identify the cause.

Arterial blood gas

Arterial blood gas (ABG) analysis provides information on the status of acid–base balance and the effectiveness of ventilatory

TABLE 34-20 Interpreting changes in urine SG

urine SG	Meaning	Indication
> 1.025	High (hypersthenuria) increased concentration of urinary solutes	Dehydration, diarrhoea, emesis, excessive diaphoresis, urinary tract/bladder infection, hyperglycaemia, renal artery stenosis, hepatorenal syndrome, excess antidiuretic hormone caused by SIADH (McPherson & Pincus 2011).
< 1.101	Low (hyposthenuria) decreased concentration of urinary solutes	Renal failure, pyelonephritis, diabetes insipidus, acute tubular necrosis, interstitial nephritis, and excessive fluid intake, increased intracranial pressure (McPherson & Pincus 2011).

SIADH = syndrome of inappropriate antidiuretic hormone.

function in oxygen–carbon-dioxide exchange. The ABG result should be evaluated using the following systematic approach.

1. *Interpretation of pH*. First decide whether the ABG indicates acidosis or alkalosis. Low pH (below 7.35) indicates an acid state and high pH (above 7.45) indicates an alkaline state. However, acidotic and an alkalotic process can occur at the same time. The pH will indicate which is the stronger of the two processes. For the purpose of interpreting the ABG readings, consider a pH of less than 7.4 being acidotic and above 7.4 being alkalotic.

pH	< 7.35	7.35 to 7.45	> 7.45
	Acidosis	Normal or compensated	Alkalosis

2. *Interpretation of $PaCO_2$*. The second decision is made by examining $PaCO_2$, often called the respiratory parameter. High $PaCO_2$ indicates respiratory acidosis, whereas low $PaCO_2$ indicates respiratory alkalosis.

$PaCO_2$	< 35	35 to 45	> 45
	Respiratory	Normal or compensated	Respiratory

3. *Interpretation of HCO_3^-*. The third component to be considered is whether the reading indicates metabolic involvement. HCO_3^- describes the non-respiratory or metabolic parameter. Two conditions associated with abnormalities in HCO_3^- are metabolic alkalosis and metabolic acidosis. Increased HCO_3^- indicates metabolic alkalosis and decreased HCO_{33}^- indicates metabolic acidosis.

HCO_3^-	< 22	22 to 26	> 26
	Metabolic	Normal or compensated	Metabolic

A method for interpretation of ABGs

Interpretation of ABGs is easy using the arrow method. This involves identification of an increase or decrease from normal for pH, $PaCO_2$ and HCO_3. An upward arrow is placed alongside the data if it is higher than the normal value and a downward arrow if the data is below the normal value. Note that the arrow for the pH should always be placed first.

If the reading is 'Respiratory', the arrow for $PaCO_2$ will be opposite to that for pH.

If the reading is 'Metabolic', the arrow for HCO_3^- will be the same way as for pH (see Table 34-21).

• CRITICAL REFLECTION POINT

You are caring for a 52-year-old man who has been seen in the emergency department (ED) after being involved in a motor vehicle accident. He complains of difficulty breathing, has a suspected pneumothorax and has a respiratory rate of 40 breaths per minute.

Activity

1. **Using information in the discussion of ABGs above, including Table 34-21, interpret the patient's last ABG results: pH 7.30; PaO_2 70; $PaCO_2$ 50; HCO_3^- 24.**
2. **Discuss the possible reasons for your interpretation based on information about reasons for the patient's admission.**

TABLE 34-21 Interpretation of arterial blood gas (ABG) results

Patient	pH Normally [7.35 (7.4) 7.45]	$PaCO_2$ (mmHg) Normally 35–45	HCO_3^- (mmHg) Normally 22–26	Interpretation
A	7.2 ↓ Acid	48 ↑ Respiratory	24 – Normal	Respiratory acidosis
B	7.49 ↑ Alkaline	30 ↓ Respiratory	25 – Normal	Respiratory alkalosis
C	7.25 ↓ Acid	36 – Normal	30 ↑ Metabolic	Metabolic acidosis
D	7.48 ↑ Alkaline	36 – Normal	20 ↓ Metabolic	Metabolic alkalosis

Patient expectations

Often a fluid, electrolyte or acid–base disturbance is so acute that the patient's condition prevents a review of their expectations. If a patient is alert enough to discuss care with the nurse, a review of expectations may reveal short-term needs (e.g. provision of comfort from nausea) or long-term needs (e.g. understanding how to prevent alterations from occurring in the future). The role of the nurse is to ensure that the patient understands the implications of fluid, electrolyte or acid–base changes and is able to express expectations of care.

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

When caring for patients with suspected fluid, electrolyte and acid–base imbalances, it is particularly important that the nurse makes clinical judgements (Box 34-4). Assessment data establishing the risk or actual presence of a nursing diagnosis in these areas may be subtle, and patterns and trends emerge only when the nurse consciously assesses for them. The nurse must keep in mind that many body systems may be involved. Clustering of defining characteristics will lead the nurse to selection of the appropriate diagnoses. For example, the assessment and defining characteristics for the nursing diagnosis of fluid volume deficit is developed in Skill 34-1.

An important part of formulating nursing diagnoses is identifying the relevant causative or related factor. The nursing interventions chosen must treat or modify the related factor for the diagnosis to be resolved. Fluid volume deficit related to loss of GI fluids via vomiting will require therapies that are slightly different from therapies needed for fluid volume deficit related to elevated body temperature.

BOX 34-4 Examples of priority problems associated with fluid, electrolyte and acid–base alterations

- Body temperature, altered
- Breathing pattern, ineffective
- Cardiac output, decreased
- Fluid volume deficit
- Fluid volume excess
- Gas exchange, impaired
- Mobility, impaired
- Oral mucous membrane, altered
- Skin integrity, impaired
- Skin integrity, impaired, risk of
- Tissue integrity, impaired
- Tissue perfusion, altered, peripheral

SETTING PRIORITIES AND ESTABLISHING GOALS

During the planning process, nurses need to synthesise information from multiple sources (Figure 34-15). Critical thinking ensures that the patient's plan of care integrates both scientific and nursing knowledge with comprehensive knowledge about the individual patient. Professional standards are especially important to consider when the nurse develops a plan of care. These standards often establish scientifically

SKILL 34-1

Assessment of fluid status

Delegation considerations

Assessment of fluid status may be undertaken by enrolled and student nurses under the guidance of the RN. Assessment data must be reported to the RN, who is primarily responsible for interpretation of assessment data.

- Ensure review of the distribution, composition, movement and regulation of body fluids and the physiological mechanisms that maintain fluid balance in all body compartments.
- Ensure that hand hygiene is performed and personal protective equipment is worn when appropriate.

Equipment

- Non-sterile gloves
- Bed pan, urinal, catheter bag
- Measuring jug
- Fluid balance chart
- Scales
- Stethoscope and sphygmomanometer
- Tympanic thermometer

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE	
1. Determine need to assess fluid status of patient.	All patients should be assumed to have a fluid imbalance until proven otherwise.	
2. Focused health history – elicit further information about risk factors for fluid imbalance (see Boxes 34-1 and 34-2).		
3. Knowing the patient Critical analysis of existing patient information.	Analysis of pattern and trend in data: from handover, relevant charts, progress notes and diagnostic test results.	
4. History of fluid and dietary intake See Table 34-16 for calculation of minimal daily and hourly fluid intake.	Only applicable for those patients able to control their fluid intake and/or possess the cognitive ability to provide history of fluid and dietary intake.	
	FLUID VOLUME DEFICIT	**FLUID VOLUME OVERLOAD**
	Daily intake less than maintenance fluid requirement.	Daily intake > maintenance fluid requirements or > prescribed fluid restriction.
5. Observe for abnormal losses/ gains of fluids.	V1g, diarrhoea, abdomen distended – internal loss confirmed by intake equal to, or above, maintenance volume, weight normal or increased with signs and symptoms of hypovolaemia.	Intake > maintenance fluid requirements or above prescribed fluid restriction.
6. Physical examination	Needs to be comprehensive as fluid imbalances or disturbances can affect and be affected by all body systems.	
Temperature	Pyrexia	May be subnormal due to the increased circulating volume.
Pulse Rate Depth Orthostatic tachycardia	Tachycardia – weak, difficult to feel pulse because of less blood distending the artery. Absence of tachycardia does not refute FVD. Orthostatic tachycardia increases by 10 beats when position changes from lying to sitting or standing are usually indicative of compensatory phase hypovolaemia.	Tachycardia: very strong, forceful, bounding pulse because of the additional blood volume distending the artery.
Respirations Rate Depth Shortness of breath Auscultation	Respirations increased due to increased sympathetic activity in an attempt to increase oxygen delivery to the tissues.	Tachypnoea, dyspnoea Crackles Shortness of breath in HF usually made worse when lying flat

STEPS	RATIONALE	
	FLUID VOLUME DEFICIT	FLUID VOLUME OVERLOAD
Blood pressure Assess blood pressure (BP) – lying and sitting or standing.	Hypotension late sign of FVD as peripheral vasoconstriction and increased cardiac contractility initially maintains BP. Orthostatic hypotension, SBP decrease by 10 mmHg when position changes from lying to sitting or standing, is an earlier sign of compensatory FVD.	Hypertension associated with initial phase of hypervolaemia. If the LV fails and cardiac output decreases hypotension may be present.
Pulse pressure (PP) Systolic BP – diastolic BP Normal PP between 30 to 50 mmHg	Narrow PP sign of decreasing cardiac output (decreasing SBP) and increasing peripheral vascular resistance (increasing DBP).	PP often increases due to increasing SBP and lowering DBP.
Weight changes 1 kg = 1 litre increase/decrease in body fluid Weight is unattainable in acutely ill and immobile patients.	Weight loss – patient experiences sudden weight loss Calculate % FVD: mild 5%, moderate 5–10%, severe 10%	Sudden weight increase Calculate % FVE: mild 5%, moderate 5–10%, severe 10%
Head Examine anterior fontanelle – usually closes within 7–19 months. Headache	A noticeably sunken fontanelle Headache (due to decrease blood supply to brain), dizziness	Fontanelles bulging Irritability or lethargy, confusion, disorientation
Face	Pinched, drawn facial expression	Puffy eyelids and cheeks
Neck Measuring the level of blood backflow in the internal jugular vein provides a measure of the pressure in the right atrium.	Flat jugular veins where no distention occurs with bed elevated at 30–45°	Inspect neck veins with bed elevated at 30–45°. Suspect FVE if JV visible > 3 cm above sternal angle and if visible when patient lying flat.
Eyes	Dull eyes, slightly sunken, dry conjunctiva, tears absent in moderate FVD	Periorbital oedema, pappiloedema
Mouth Inspect mucous membranes for degree of moisture. Tongue turgor – more accurate than tissue turgor for not age-dependent.	Sticky, dry mucous membrane, dry cracked lips, decreased salivation, longitudinal tongue furrows, tongue smaller	Mouth moist, increased saliva. If pulmonary oedema present, clear frothy with/without, blood-specked sputum

STEPS	RATIONALE	
	FLUID VOLUME DEFICIT	FLUID VOLUME OVERLOAD
Skin Skin temperature Skin turgor (elasticity): pinch a fold of skin on sternum or inner thigh and time how long it takes to return to normal position when released. Loss of elasticity in the elderly makes tissue turgor unreliable.	Dry, flushed, hot skin mild–moderate FVD; severe – skin may be cold and clammy In a well-hydrated person the skin will immediately fall back to its normal position	Cool; moist skin; swollen and puffy skin as excess body fluid leaks into tissues beneath the skin
Axillary moisture	Dry axilla moderate sensitivity and excellent specificity to detect FVD	Moist
Skin turgor Pinch a fold of skin on sternum or inner thigh and time how long it takes to return to normal position when released (brisk within 1–2 seconds).	Skin turgor decreased; document stays tented for 2+, 3+ or 4+ seconds, e.g. clavicular skin recoil 4 seconds Loss of elasticity in the elderly makes tissue turgor unreliable	Tissue turgor – often decreased and described as moist/doughy/boggy
Hand veins Elevate hand – note time for hand vein emptying. Lower hand – note hand vein filling.	When hands lowered takes longer than 3–5 seconds to fill	On elevation of hands takes longer than 3–5 seconds for hand veins to empty
Thirst	Dehydration	Thirst could also be a sign of FVE. Decreased cardiac output stimulates thirst mechanism
Insensible loss Estimate	Lungs 400 mL/day increases with increased rate and depth of respiration. Skin (0.4–0.5 mL/kg/hr) or 400–500 mL/day + additional 50–75 mL/day for each 1°C temperature elevation. GIT 100–200 mL/day in faeces.	
Capillary refill Hold patient's hand at heart level, press for 5 seconds on the pad of the middle finger, releasing pressure and measuring time (seconds) until normal colour returns. Normal < 2–3 seconds; elderly 2–4 seconds.	Slow capillary refill time > 3 seconds	Quick capillary refill < 3 seconds

STEPS	RATIONALE	
	FLUID VOLUME DEFICIT	FLUID VOLUME OVERLOAD
Oedema	Assessing oedema is important for this fluid is not available for general circulation and in some cases, e.g. third space fluid shift, can cause FVD.	Oedema in the legs, ankles and feet, arms, abdomen, face, and around the eyes can be the result of FVE, particularly with concurrent HF or AKI. Pitting oedema assessed by pressing fingertips into the skin and measuring the depth of indentations that slowly disappear. Oedema may not be evident until 6% FVE.
Urine Urine colour Urine specific gravity (SG) – norm 1.016–1.022	Darker amber urine and raised urine specific gravity > 1.022 indicates increased solute to water concentration. Decreased urine output late sign of hypovolaemia; oliguria or anuria.	Light lemon to clear urine and low SG < 1.016 indicative of dilution of solutes in larger amounts of water. Initially larger volume of urine.

■ **Critical decision point: Urinary output is an indicator of fluid status in most patients and normally should not be < 1 mL/kg/hr (children); < 1–2 mL l/kg/hr (infants); < 2 mL/kg/hr (neonates); < 0.5 mL/kg/hr (adult male); < 0.4 mL/kg/hr (adult female).**

RECORDING AND REPORTING

1. Measuring and recording fluid intake and output for 24-hour period – fluid balance charting (FBC).
   a. Identify fluid balance chart/form for the patient.
   b. Record all oral/IV/nasogastric/PEG intake on the FBC throughout a 24-hour period.
   c. Record all urinary/faecal fluid/nasogastric drainage/other drainage e.g. wound on the FBC throughout a 24-hour period.
   d. Cumulative fluid balance. The 24-hour total is collected at midnight or 0600 depending on healthcare facility policy for the 24-hour period. In patient with suspected fluid imbalance FBC is subtotalled every 4 hours.

Where assessment reveals a fluid imbalance documentation should include:

1. Assessment parameters which prove this imbalance.
2. Nursing interventions.
3. Patient's response to intervention – documenting assessment parameters supporting this response.
4. Referral to medical officer.
5. Medical interventions prescribed.
6. Patient's response to intervention – documenting assessment parameters supporting this response.
7. Patient education provided.
8. Plan for continuing monitoring and care.

HOME CARE CONSIDERATIONS

Education for the identification of risk factors affecting fluid status and the interruption of the activities of daily living cycle.

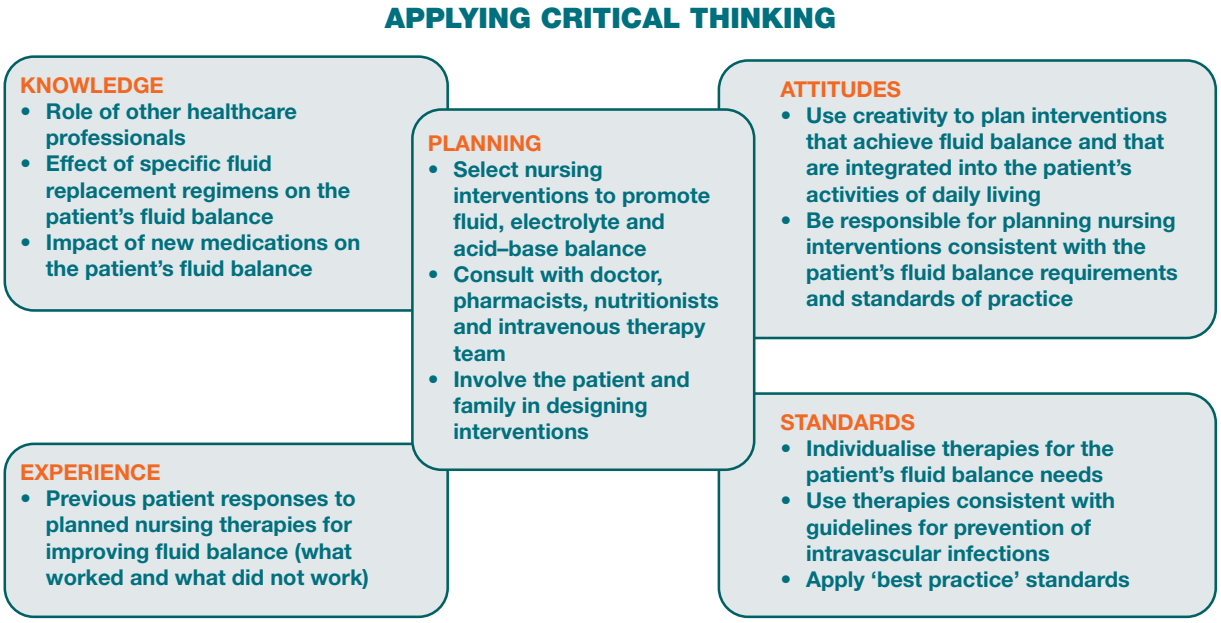


Figure 34-15 **Critical thinking associated with the planning phase for fluid, electrolyte and acid–base balance.**

proven guidelines for selecting effective nursing interventions. For example, the Infusion Nurses Society (2011) *Standards of practice* should be applied when intravenous therapy becomes a part of the plan. The nurse develops an individual plan of care for each of the nursing diagnoses (see *Sample student nursing care plan*).

Goals and outcomes

The nurse and the patient set realistic expectations for care. Goals are to be individualised and realistic, with measurable outcomes. During planning, the nurse collaborates as much as possible with the patient and family and other members of the interdisciplinary healthcare team. The family can be particularly helpful in identifying subtle changes in a patient's behaviour associated with any imbalances (e.g. anxiety, confusion, irritability). The nurse also incorporates patient preferences and resources into the plan of care. One goal for a patient with a fluid volume deficit related to immobility would be to offer frequent fluids so that intake is equal to daily maintenance volume (if not contraindicated). Outcomes for this would be: 'Fluid balance chart indicates intake is at least equal to maintenance fluid requirements (see Table 34-16), urine is clear, straw-coloured, specific gravity of 1.015 and balanced with intake, patient's mucous membranes are moist, patient states she is no longer thirsty (note that thirst may be dampened in the elderly).' If this patient's usual weight is 55 kg, daily fluid intake according to formula B (Table 34-6) should be (100 mL × 10 + 50 mL × 10 + 25 × 35) = 2375 mL/24 hours.

Setting priorities

The patient's clinical condition will determine the priority of diagnoses. Many nursing diagnoses in the area of fluid, electrolyte and acid–base balances are of highest priority because the consequences for the patient can be serious or even life-threatening. Consultation with the patient's doctor may assist in setting realistic timeframes for the goals of care, particularly when the patient's physiological status is unstable.

Continuity of care

Discharge planning must begin as early as possible. The nurse anticipates the needs of the patient and collaborates with other members of the healthcare team such as the doctor, dietitian and pharmacist to ensure that care can continue in the home or long-term care setting with few disruptions. For example, for the patient who is discharged on IV therapy, the nurse must determine the knowledge and skills of the family member or friend who is to assume caregiving responsibilities, provide education to maintain or improve the health of the client and prevent other issues, for example, infection at cannula site, and make a referral to home nursing services as soon as possible. The dietitian can be a valuable resource in recommending food sources to either increase or reduce intake of certain electrolytes. Chapter 44 describes various therapeutic diets (e.g. low sodium). The pharmacist can offer advice on possible side effects affecting fluid, electrolyte or acid–base disturbances of prescribed medications.

PREPARING FOR AND TAKING ACTION

Health promotion

Health promotion activities in the area of fluid, electrolyte and acid–base imbalances focus mainly on patient teaching. Patients and caregivers need to recognise risk factors for these imbalances and implement appropriate preventive measures. For example, parents of infants need to understand that GI losses can quickly lead to serious imbalances; therefore, when vomiting or diarrhoea occur in the infant parents need to promptly seek health care to restore normal balance. Healthy adults are at risk of developing imbalances when subjected to elevated environmental temperatures. In high environmental temperatures nurses need to advise individuals to supplement the fluid loss from perspiration by increasing oral fluids which replace the fluid and electrolytes lost, maintain adequate environmental ventilation and refrain from excessive activity during this period of time.

SAMPLE STUDENT NURSING CARE PLAN

Gathering relevant information and data*

Mrs Hilda Bottomley, 72 years, visited her doctor this morning with complaints of **productive cough, chills, malaise, anorexia, a temperature of 38.3°C and body aches**. She reports a history of respiratory congestion for the last 2 weeks and has noted that her **secretions are now thick and yellow-greenish**. She admits that she **has not felt like eating and drinking** much lately. After an outpatient chest X-ray, Mrs Bottomley was admitted for respiratory physiotherapy, IV antibiotic and fluid therapy. On admission her **vital signs are within normal limits except for a temperature of 38.2°C, an increased respiratory rate of 28 breaths per minute, shortness of breath with activity and rhonchi breath sounds. Arterial blood gas results indicate a mild respiratory acidosis, and the chest X-ray reveals left lower lobe pneumonia**. The doctor orders oxygen at 4 L/min with humidification, respiratory treatments, fluids by mouth and IV, pulse oximetry and activity with assistance.

Priority problem(s)

Ineffective airway clearance because of increased mucous in response to airway infection and manifested by mild respiratory acidosis. Risk of fluid volume deficit related to reduced fluid and dietary intake.

** Important data to cluster in setting priorities in bold.*

Making appropriate judgements and decisions

Setting priorities and establishing goals	Expected outcomes
Mrs Bottomley's airway will be free from secretions with normal arterial blood gas (ABG) levels within 48 hours.	ABG levels will be within normal limits in 48 hours. Respiratory rate will be within normal limits with activity in 48 hours. Temperature will be within normal limits in 48 hours. Breath sounds will be clear on auscultation. Mucous will become thin and clear in 72 hours. Vital signs will remain within normal limits.
Mrs Bottomley's fluid volume will return to within normal limits.	Fluid intake will be consistent with calculations for hourly maintenance volume based on weight with additional fluid to account for fluid loss prior to admission and increased insensible loss during admission. Output (including insensible loss) will demonstrate sufficient blood flow to kidneys > 0.4 mL/kg/hr. Mucous membranes will remain moist.

Preparing for and taking action†	Rationale
Airway maintenance • Schedule coughing and deep-breathing exercises every 2 hours while awake. • Administer chest physiotherapy every 4 hours while Mrs Bottomley is awake to affected regions of the lung. • Encourage Mrs Bottomley to move position every 2 hours and to sit out of bed on chair often. • Provide Mrs Bottomley with an additional 500 mL of non-caffeinated oral fluids every 8 hours.	Cough control exercises and deep breathing promote pulmonary secretion clearance (Strickland et al 2013). Chest physiotherapy, breathing exercises, cough techniques and moving the patient are effective in promoting airway clearance (Strickland et al 2013). Increased fluid intake helps to liquefy pulmonary secretions and facilitate productive coughing (Strickland et al 2013). Additional intake is required to replace insensible loss from increased temperature and increased respirations

† Intervention classification labels from McCloskey JC, Bulechek GM 2000 Nursing interventions classification (NIC), 3rd edn. Mosby, St Louis.

Evaluating impacts and outcomes

- Monitor ABG results, vital signs, fluid balance, daily weight and oxygen saturation levels.
- Auscultate breath sounds every 4 hours.
- Evaluate effectiveness of coughing and deep-breathing exercises.
- Identify methods to provide for adequate rest.

It can sometimes be difficult to separate the effects of age-related changes from changes associated with disease processes (Touhy & Jett 2011). For example, an older adult living with a chronic condition involving renal or respiratory function is more likely to suffer serious consequences when an acute disease process occurs.

All patients with a chronic health alteration are at risk of developing changes in their fluid, electrolyte and acid–base balances. They need to understand and monitor for risk factors and implement measures to avoid imbalances. For example, patients with renal failure must weigh themselves daily and avoid excess intake of fluid, sodium, potassium and phosphorus. Through diet education, these patients learn the types of foods to avoid and the suitable volume of permitted daily fluid (see Chapter 44). A patient with heart failure should be instructed to obtain an accurate bodyweight each day at approximately the same time and to inform the doctor of significant changes of weight from one day to another. Significant increases in weight, shortness of breath, orthopnoea and dependent oedema are associated with fluid retention.

Acute care

Fluid, electrolyte and/or acid–base imbalance can occur in all settings, and in acute care settings the nurse must manage the patient's complex medical care in a shorter span of time.

Daily weights and intake and output measurement

Daily weight and fluid balance measurements are just two of the assessments required when assessing fluid volumes where 1 kg is equal to 1 litre. *Daily weights* are the single most important indicator of fluid status. Weight should be measured at the same time each day, after the patient voids, with the patient wearing the same clothes and using the same scale. The scale should be routinely calibrated.

Fluid balance charts provide additional information about fluid balance (see Assessment section). Intake and output measurements, when examined for trends, can indicate whether excess fluid volume is excreted in the form of urine or whether excretion of fluids through the kidneys has diminished. The fluid balance chart is not as accurate as daily weights in assessing daily fluid balance unless measurement has been strict and precise.

Enteral replacement of fluids

The appropriateness of oral replacement of fluids and electrolytes and the need for rapid fluid replacement depends on the patient's degree of instability. Oral rehydration solutions (ORS) should be encouraged for mild to moderate dehydration. Vomiting and diarrhoea are not initially contraindications for oral rehydration therapy (ORT) (King et al 2003). ORS should be given slowly, in small volumes but frequently, to minimise vomiting. However, oral fluid replacement is contraindicated in protracted vomiting, worsening diarrhoea, where oral replacement fluids are insufficient to replace losses, mechanical obstruction of the GI tract, risks for aspiration, decreased consciousness and impaired swallowing (King et al 2003).

When replacing fluids by mouth in a patient with a fluid deficit, it is wise to choose appropriate fluid volume and fluids with adequate calories and electrolyte content (e.g. fluid replacements like Pedialyte and Gastrolyte) (see Table 34-22; see also Chapter 36). Homemade oral rehydration solutions or fluids with high glucose or lactose content may draw fluid into the gut, causing more diarrhoea. Liquids containing caffeine or a low-sodium content may not be appropriate when the patient has diarrhoea.

TABLE 34-22 Typical fluid content of a range of foods

Food	Volume of fluid (mL)	Food	Volume of fluid (mL)
100 g cooked meat (lamb, beef, pork)	60	1 cup cooked porridge	160
2 tbsp gravy/sauce	40	100 g cantaloupe (rockmelon)	70
100 g ham	80	100 g watermelon	80
100 g cottage cheese	100	1 apple	80
100 g canned asparagus	115	½ cup melon	100
100 g cabbage	70	100 g pineapple	100
100 g potato (baked)	115	1 banana	85
100 g baked beans	80	100 g apricots, canned	70
100 g broccoli	70	100 g fruit salad	100
100 g cucumber	50	2 scoops of ice cream	40
1 large hard-boiled egg	40	½ cup jelly or custard	100
1 cup cooked rice	100	1 small tub yoghurt	160

tbsp = tablespoon.

Adapted from Wotton K, Crannitch K, Munt R 2008 Prevalence, risk factors and strategies to prevent dehydration in older adults. Contemp Nurse 31(1):44–56.

A feeding tube may be appropriate when the patient's GI tract is healthy but the patient cannot ingest fluids (e.g. after oral surgery or with impaired swallowing). Fluids can also be replaced through a gastrostomy or jejunostomy feeding tube, or they can be administered via a small-bore nasogastric feeding tube (see Chapter 36).

Restriction of fluids

Patients who retain fluids and have **fluid volume excess (FVE)** require restricted fluid intake. Fluid restriction is often difficult for patients, particularly if they take medications that dry the oral mucous membranes or they breathe through the mouth and experience the sensation of thirst. The nurse should explain why fluids are restricted and the amount of fluid permitted orally, and should understand that ice chips, gelatine, ice cream and other foods (see Table 34-22) contain fluid. The patient should help to decide the amount of fluid with each meal, between meals, before bed and with medications. Often patients on fluid restriction can swallow a number of tablets with as little as 30 mL of liquid.

A good rule of thumb for fluid restrictions is to allow half of the allotted total oral fluids between 7.00 a.m. and 3.00 p.m., the period when patients are usually more active, receive two meals and take most of their oral medications. Patients on fluid restriction require frequent mouth care to moisten mucous membranes, decrease the chance of mucosal drying and cracking and maintain comfort (see Chapter 34).

Subcutaneous replacement of fluids and electrolytes

Hypodermoclysis (Skill 34-2), the administration of fluids into the subcutaneous layer of the skin, allows fluid to be absorbed into the circulation through the extensive subcutaneous

SKILL 34-2

Subcutaneous infusion (hypodermoclysis)*

Delegation considerations

Initiating SC infusion requires the problem-solving and knowledge-application skills of professional nurses. In Australia, a registered nurse is able to insert SC cannulas. Refer to relevant agency policy.

Equipment

- 24 gauge, 0.75 inch catheter
- Transparent dressing (e.g. Opsite, Tegaderm)
- IV catheter extension set
- 3 mL syringe
- Interlink syringe cannula
- 5 mL 0.9% Normal saline for injection
- Alcohol swabs
- Gloves
- Non-allergenic tape
- Needle disposal container (sharps container)
- Infusion order
- Fluid balance chart

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
PREPARING THE SC SOLUTION	
1. Check solution using the seven rights of drug administration (see Chapter 27). Check type of fluid, amount, rate and route of administration with written doctor's orders.	Solutions are medications and should be carefully checked by two nurses to reduce risk of error. Type of fluid: the most appropriate solutions are sodium chloride 0.9% or 0.45%, and 2.5% glucose in 0.45% sodium chloride. Rate: the usual rate is only 1 mL/minute per site, with maximum of 1.5 L in 24 hours using a single site or 3 L in 24 hours if using two sites.

STEPS	RATIONALE
2. Check solution for colour, clarity and expiration date. Check bag for leaks, which is best done before reaching the bedside.	Solutions that are discoloured, contain particles or are expired are not to be used. Leaky bags present an opportunity for infection and must not be used.
3. Assess patient's history of allergies.	May reveal information that affects insertion of devices, such as allergy to iodine, adhesive or latex.
4. Open infusion set, maintaining sterility of both ends of tubing. Many sets allow for priming of tubing without removal of end cap.	Prevents bacteria from entering infusion equipment.
5. Place roller clamp about 2–5 cm below drip chamber and move roller clamp to 'off' position (see illustration at Step 18).	Close proximity of roller clamp to drip chamber allows more accurate regulation of flow rate. Moving clamp to 'off' prevents accidental spillage of fluid and decreases amount of air bubbles when priming line.
6. Remove protective sheath over IV-giving set tubing.	Provides access for insertion of infusion tubing into solution.
7. Insert infusion set into fluid bag. Remove protector cap from tubing insertion spike (keeping spike sterile), and insert spike into opening of IV bag (see illustration at Step 18).	Prevents contamination of solution from contaminated insertion spike.
8. Prime infusion tubing by filling with IV solution. Compress drip chamber and release, allowing it to fill one-third to half full.	Creates suction effects; fluid enters drip chamber to prevent air from entering tubing.
9. Slowly release roller clamp to allow fluid to travel from drip chamber through tubing to needle or catheter adapter. Line can be primed without removing tubing protector cap. Return roller clamp to 'off' position after tubing is primed (filled with solution).	Slow fill of tubing decreases turbulence and chance of bubble formation. Removes air from tubing and permits tubing to fill with solution. Closing the clamp prevents accidental loss of fluid.
10. Be certain tubing is clear of air and air bubbles.	Prevents bubble formation in the cannula.
11. Remove tubing protector cap and replace with 'threader link cannula' or 'lever lock cannula' leaving the protector on end of these until ready to attach to the 'Interlink injection site', which is an Interlink connector attached to the subcutaneous cannula.	Prepares the IV-giving set for connection to the SC cannula. Maintains system sterility.
INSERTION OF SC CATHETER	
12. Perform hand hygiene and use aseptic technique; observe standard precautions.	Reduces transmission of microorganisms.
13. Explain procedure and expected outcomes to patient. Assess patient's perception of possible discomfort and site preference.	Determines level of emotional support and patient education required.

STEPS	RATIONALE
14. Select appropriate insertion site. a. Suitable sites are abdomen, upper chest, above the breast, over an intercostal space and over the scapula; thighs; and the outer aspect of the upper arm.	The SC infusion should be sited in a position with good lymphatic drainage to maximise absorption.
b. Unsuitable sites include those with pre-existing oedema, lymphoedemata, previous radiotherapy site, skin damage, swelling or scarring, mastectomy site or close to a stoma. Sites over bony prominences or near a joint are also unsuitable.	Any site where tissue viability or perfusion is compromised and absorption is affected should be avoided.
15. Consider the application of EMLA (topical anaesthetic) cream for patients with needle phobia.	EMLA cream makes subcutaneous cannulation relatively painless; must be applied at least 1 to 1.5 hours before the proposed procedure.
16. Prime the SC catheter: Draw 1.5 mL of Normal saline into syringe. Inject 1 mL Normal saline via the sterile Interlink injection cap into the SC cannula and tubing. Clamp tubing to maintain Normal saline in cannula and tubing. Detach syringe. Be careful not to contaminate distal end of tubing.	Priming the IV line ensures that Normal saline will fill dead space and air will not be administered.
17. Put on gloves.	Reduces transmission of microorganisms.
18. Clean insertion site (see illustration): Using a firm, circular motion (middle to outwards), clean with alcohol, and allow to dry. Clean again, using same method, with povidone–iodine solution and allow to dry; refrain from touching the cleaned site. If the patient is allergic to iodine, use 70% alcohol and allow to dry for 60 seconds.	Reduces the risk of transfer of transient microorganisms and resident microorganisms from skin to subcutaneous tissues. Povidone–iodine reduces skin surface bacteria; touching the cleaned area introduces organisms from nurse's glove. Povidone–iodine must dry to be effective in reducing microbial counts. Use of alcohol reduces the possible adverse effects of povidone–iodine.



Step 18 Cleaning insertion site.

STEPS	RATIONALE
19. Using thumb and index finger, pinch the skin and tissue around the insertion site, creating a roll of about 1.25–2.5 cm in diameter.	Pinching the skin elevates the SC tissue and ensures cannulation into SC tissue above the underlying fascia.
20. Insert the entire length of the catheter at a 45-degree angle with the bevel of the needle up.	Shallower positioning, i.e. less than 45°, may shorten the life of the infusion site.
21. Remove the stylet (needle) and discard carefully into the sharps disposal container.	Reduces the risk of needle-stick injury and cross-infection.
22. Check SC placement:	
a. Cleanse Interlink injection cap and attach syringe containing remaining Normal saline.	
b. Draw back to ensure the over-the-needle cannula is not placed in a blood vessel. If blood appears in tubing, remove the over-the-cannula needle, discard used equipment and re-site.	Ensures that cannula has not entered a capillary or vein.
c. If blood does not appear in tubing, flush tubing with remaining 0.5 mL of Normal saline.	Flushing ensures effective hypodermoclysis.
COMMENCING THE SC INFUSION	
23. Attach the IV-giving set to the SC cannula.	To connect the fluid to the cannula.
24. If SC fluids are ordered, remove the protective tubing from the 'threaded link cannula' or 'lever lock cannula' on the patient end of the IV-giving set and connect it to the 'Interlink injection site' (bung/cap) which should now be on the end of the SC cannula. Adjust the flow rate as desired.	Prompt connection of infusion set maintains sterility.
25. Subcutaneous fluids should be administered via gravity using a standard administration set (20 drops/mL).	The administration of SC fluids relies on the permeability of the subcutaneous tissues to gravity-fed fluids. SC fluids should never be given via an infusion pump.
26. Curl a loop of tubing alongside the SC cannula and apply transparent dressing, ensuring that needle and tubing are well anchored.	Creating a loop in the tubing around the needle site avoids inadvertent dislodgement of the needle. Dressing the insertion site with a clear occlusive dressing allows for regular observation of the site. Tape on top of tape makes it easier to access hub/tubing junction. Securing loop of tubing reduces risk of dislodging catheter.
27. Write insertion date on dressing; attach label on IV line with SC fluid in progress.	Noting date of insertion clearly communicates change times for IV tubing. Attaching a label with the SC fluid in progress decreases risk for errors in infusing incorrect fluids; labelling of fluids and lines has been recognised to increase the safe administration of fluids.

STEPS	RATIONALE
28. Check order for SC fluids; calculate drops per minute and commence infusion. Document on infusion record and fluid balance chart.	The administration line should be labelled with the date and time of commencement, and this should also be documented in the patient's health records; this assists in the identification of time and date for change of line.
MANAGING THE SC INFUSION	
29. Check the site within 30 minutes of commencement of infusion and at regular times thereafter. a. Check site within 30 minutes of commencement of hypodermoclysis to assess skin integrity. b. Check site at least 2-hourly for signs of redness, induration, tenderness, bleeding, oedema or leaking. c. A minimum of 4-hourly, check vital signs and analysis of FBC to determine level of hydration.	Regular observation of site will ensure identification of early signs of inflammation (erythema), oedema or poor absorption (hard SC swelling) and need for re-siting of the SC cannula. Redness, swelling or inflammation at infusion site may be due to local reaction to cannula and may require the use of a Teflon cannula to reduce inflammatory response. Tenderness at infusion site may require the position of the cannula to be adjusted/re-sited as the cannula may have been inserted intradermally (at too shallow an angle). Analysis of 4-hourly vital signs aids in the early identification and response to pulmonary oedema, hypovolaemia and the monitoring of clinical progress.
30. Infusion site and giving sets are usually changed every 48–72 hours. The site must be changed according to unit policy regardless of its duration, and when any complications are observed.	Changing SC sites according to unit policy will decrease risk of infection. Sites should be rotated to minimise tissue damage.
DISCONTINUING A CONTINUOUS INFUSION	
31. Check written order for discontinuation.	Discontinuation of a continuous infusion will be undertaken based on doctor's orders.
32. Gather equipment: • Alcohol swabs • Gloves • Interlink cannula (if leaving SC site in situ) • 3 mL syringe (for saline flush) (if leaving SC site in situ) • 5 mL 0.9% Normal saline for injection (if leaving SC site in situ)	
33. Explain procedure and expected outcomes to the patient and/or family.	Patient's awareness of the procedure will reduce anxiety and increase cooperation.
34. Perform hand hygiene. Put on gloves.	Reduces transmission of microorganisms.
35. Stop continuous infusion: disconnect IV tubing. Remove Interlink threaded lock cannula from 'Interlink injection site'.	

STEPS	RATIONALE
36. Remove SC cannula: a. Remove transparent dressing. b. Pull out over-the-needle cannula. c. Discard into medical waste container. d. Apply pressure if bleeding or fluid leakage, followed by application of bandaid or small dressing.	Gentle removal of transparent dressing first will limit any damage to the skin. Immediate discarding of cannula into correct receptacle reduces risk of cross-infection.

RECORDING AND REPORTING

Documentation:

- Sign the infusion therapy chart; complete the time and date started.
- Complete and attach a change of line label to the IV tubing.
- Enter the SC fluid type and volume onto the fluid balance chart.
- Document the insertion site and date in the patient record/care plan/infusion chart.
- Attach a SC time label to the IV bag.
- Record patient's response to SC fluid, amount infused in shift report; integrity and patency of system according to agency policy.
- Report to oncoming nursing staff: type of fluid, flow rate, status of SC site, amount of fluid remaining in present solution, expected time to hang next bag, and any side effects.

HOME CARE CONSIDERATIONS

See Box 34-6.

- Patient and relatives are involved in the assessment of burdens and benefits of SC infusion therapy.
- Teach caregiver to apply pressure with sterile gauze if SC catheter is accidentally removed.
- Teach patient and caregiver to perform bed bath without getting SC tubing wet. Refer to relevant agency policy for management practices.
- Teach patient and family to monitor and report any possible complications.
- Teach patient and family to monitor fluid balance using household measuring devices.

* Procedure adapted from Woodward M 2013 Guidelines to effective hydration in aged care facilities. Aged and Residential Care Services, Heidelberg Repatriation Hospital, Victoria, Australia.

lymphatic and blood vessel network. It can be used for short-term hydration in mild to moderate hypovolaemia in adult patients who are unable to take adequate oral fluids and in whom it is difficult or impractical to insert an IV line. The recommendation for no more than 1 mL per minute (60 mL/h, 1.5 L/day) is not a limitation, as the use of two concurrent subcutaneous infusions sites can deliver around 3 L per day (Moriarty & Hudson 2013). Sites include the upper chest (avoiding breast tissue), abdomen (at least 5 cm from navel), thighs and upper arms. Preferred solutions include Normal saline, half-Normal saline and glucose with saline although lactated Ringer's and solutions containing potassium can also be administered (Remington & Hultman 2007).

As subcutaneous infusions can be initiated by registered nurses (RNs), they are appropriate in residential (Woodward 2103) and palliative care settings (Good et al 2014). These agencies require a protocol that identifies criteria for initiation of hypodermoclysis and rules for determination of type of fluid and hourly volume.

Parenteral replacement of fluids and electrolytes

Fluid and electrolytes may be replaced through infusion directly into the bloodstream rather than via the digestive system. Parenteral replacement includes total parenteral nutrition (TPN), IV fluid and electrolyte therapy (crystalloids) and volume expanders, blood and blood component (colloids) administration.

With the increased risk to health workers of transmission of the human immunodeficiency virus (HIV), the cause of acquired immunodeficiency syndrome (AIDS), hepatitis B virus (HBV) and other infectious diseases, blood and body substance precautions must be practised when administering parenteral fluids (see Chapter 34).

Vascular access devices are catheters, cannulas or infusion ports placed into larger vessels (central veins), which are designed for long-term, repeated access to the vascular system. These devices are more effective than peripherally placed catheters for administering medications and solutions that are irritating to veins, and for the delivery of long-term IV therapy.

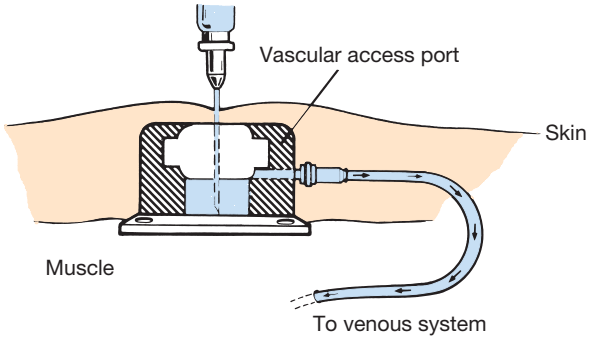


Figure 34-16 Implantable infusion port.

Increased use of central venous catheters and implanted infusion ports (Figure 34-16) requires nurses to be educated in the care of these devices.

Total parenteral nutrition

Total parenteral nutrition is a nutritionally balanced hypertonic solution consisting of glucose and other nutrients and electrolytes given through a peripherally inserted central catheter (PICC) or central venous catheter (CVC) (see Chapter 36).

Intravenous therapy (crystalloids)

The goal of IV fluid administration is to correct or prevent fluid and electrolyte disturbances. It allows for direct access to the vascular system, permitting the infusion of continuous fluids over a period of time. Intravenous fluid therapy must be closely regulated because of continual changes in the patient's fluid and electrolyte balance. Crystalloid solutions contain small molecules (solutes) capable of crystallisation that flow easily across semipermeable membranes, therefore transferring from the bloodstream into the cells and body tissues.

When IV fluid administration is required, the nurse must know reasons for the prescription of the particular solution and amount, the correct prescribed solution, the equipment needed, the procedures required to initiate an infusion, how to regulate the infusion rate and maintain the system, how to identify and correct problems and how and when to discontinue the infusion if necessary.

Administration of intravenous therapy

Types of solutions

Many prepared IV solutions are available (Table 34-23) and include isotonic, hypotonic or hypertonic solutions (Lewis et al 2014). *Isotonic* solutions have the same effective osmolality as body fluids, *hypotonic* solutions have an effective osmolality less than body fluids and *hypertonic* solutions have an effective osmolality greater than body fluids.

In general, isotonic fluids are used most commonly for extracellular volume replacement (e.g. fluid volume deficit after prolonged vomiting). The decision to use a hypotonic or a hypertonic solution is based on the specific fluid and electrolyte imbalance. For example, a patient with a hypertonic fluid imbalance will generally receive a hypotonic IV solution to dilute the extracellular fluids and rehydrate the cells.

All IV fluids should be given carefully, especially hypertonic solutions because these pull fluid into the vascular space by osmosis, resulting in an increased vascular volume that can lead to pulmonary oedema, particularly in patients with heart or renal failure. Certain additives, most commonly vitamins and potassium chloride (KCl), are frequently added to IV solutions.

Patients with normal renal function who are NBM may require potassium added to IV solutions. The body cannot conserve potassium; even when the serum level falls, the kidneys continue to excrete potassium. If there is no oral or parenteral potassium intake, hypokalaemia can develop quickly. Conversely, the nurse should verify current serum potassium level and that the patient has adequate urine output before administering an IV solution containing potassium, because hyperkalaemia can also develop quickly. However, under no circumstances can potassium chloride (KCl) be given as an IV bolus and must therefore be administered with an infusion pump. A direct IV infusion of KCl is fatal. A doctor's prescription for IV fluid must include the required additives, for example: 'Bag 1: 1000 mL 4% dextrose in 0.18% saline with 20 mmol KCl at 125 mL/hour.' Nurses must check the serum electrolyte results before commencing and throughout IV therapy and should check all orders with infusions immediately they are allocated the care of a patient with IV therapy (see *Research highlight*).

Equipment

Correct selection and preparation of IV equipment assists in safe and timely commencement of an IV infusion. Because fluids are instilled into the bloodstream, sterile technique is necessary. The equipment the nurse must have at the bedside includes

TABLE 34-23 Intravenous solutions

Solution	Concentration
Glucose (= dextrose) in water solutions	
Glucose 5% in water*	Isotonic
Glucose 10% in water	Hypertonic
Saline solutions	
0.45% sodium chloride (half-Normal saline)	Hypotonic
0.9% sodium chloride (Normal saline)	Isotonic
3–5% sodium chloride	Hypertonic
Glucose (= dextrose) in saline solutions	
Glucose 5% in 0.9% sodium chloride	Hypertonic
Glucose 5% in 0.45% sodium chloride	Hypertonic
Multiple electrolyte solutions	
Compound sodium lactate Hartmann's solution	Isotonic
Compound sodium lactate and glucose 5% Hartmann's solution and glucose	Hypertonic

* Glucose is quickly metabolised, leaving free water to be distributed evenly in all fluid compartments

Horne MM et al 1997 Mosby's pocket guide series: fluid, electrolyte, and acid–base balance, 3rd edn. Mosby, St Louis.

RESEARCH HIGHLIGHT

Research focus
To assess on a multinational level the frequency, characteristics, contributing factors, and preventive measures of administration errors in parenteral medication in intensive care units.

Research abstract
Observational, prospective 24-hour cross-sectional study.

Research findings
A total of 861 medication errors affected 441 patients. These medication errors equated to 74.5 events per 100 patient days. Three-quarters of the errors were classified as errors of omission. Twelve patients experienced permanent harm or died because of medication errors at the administration stage. Odds ratios for the occurrence of at least one parenteral medication error were raised for number of organ failures; use of any intravenous medication; number of parenteral administrations; larger intensive care unit; number of patients per nurse; and occupancy rate. Parenteral medication errors were decreased where there was increased basic monitoring; an existing critical incident reporting system; an established routine of checks at nurses' shift change; and an increased ratio of patient turnover to the size of the unit.

Conclusions
Parenteral medication errors at the administration stage are common and a serious safety problem in intensive care units. With the increasing complexity of care in critically ill patients, organisational factors such as error reporting systems and routine checks can reduce the risk for such errors.

Reference
Valentin A, Capuzzo M, Guidet B et al 2009 Errors in administration of parenteral drugs in intensive care units: multinational prospective study. BMJ338:b814.

cannulas, tourniquet, gloves, a transparent dressing (e.g. Opsite, Tegaderm), IV solution, various types of tubing, IV pumps or volume-control devices and different types of IV administration sets (see Skill 34-3).

Initiating the intravenous line

This procedure is only initiated by RNs and medical staff accredited in IV cannulation. Preparation for the procedure and assisting the person initiating the IV therapy is a nursing responsibility. The person cannulating assesses the patient for a **venepuncture** site (Skill 34-3) and considers conditions and contraindications that exclude certain sites. Common IV puncture sites include the hand and the arm (Figure 34-17); the foot is used in children, but is avoided in the adult because of the danger of **phlebitis** (Joanna Briggs Institute 2003). The patient should be consulted about the appropriate site

SKILL 34-3

Initiating a peripheral intravenous (IV) infusion

Delegation considerations
Initiating IV therapy requires the problem-solving and knowledge-application skills of professional nurses. For this procedure, delegation is inappropriate. In Australia, a registered nurse (RN) is required to be accredited before being able to routinely cannulate. However, all nurses should be aware of all the components of initiating a peripheral IV infusion, as they are usually required to collect the equipment and assist the medical officer or accredited RNs throughout the procedure. Refer to relevant agency policy. Note that many acute care agencies have an IV trolley which contains all necessary equipment and supplies.

Equipment
- Special patient gown with press-studs at shoulder seams (makes removal with IV tubing easier)
- IV infusion chart
- Prescribed IV fluid (with time tape attached)
- Over-the-needle catheter (ONC) for venepuncture (gauge will vary with patient's body size and reason for IV fluid administration)

For IV fluid infusion:

- Administration set (choice depends on type of solution and rate of administration; infants and children require microdrip tubing, which provides 60 drops/mL)
- Extension tubing (used when a longer IV line is necessary)
- Alcohol and povidone–iodine cleaning swabs or sticks (Rosenthal 2003).
- EMLA cream
- Towel (to place under patient's hand or arm)
- IV pole, rolling or ceiling-mounted
- Disposable gloves

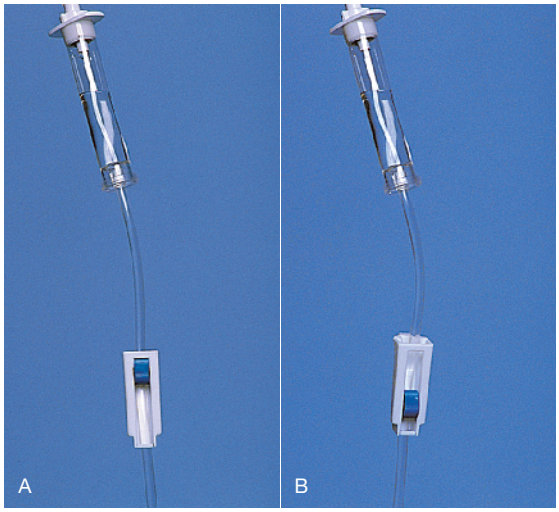
- Tourniquet (can be a source of contamination; use a single-use product)
- Arm board, if needed (used to maintain wrist or elbow joint position)
- Non-allergenic tape
- Needle disposal container (sharps container)
- Transparent dressing (e.g. Opsite, Tegaderm)
- 'Interlink injection site' (also called IV bung/plug/cap); connects to IV cannula; allows needleless connection to the IV cannula
- 'Lever lock cannula' or 'threaded lock cannula'; attaches to the IV-giving set and connects the giving set to the cannula. Note that the giving set is never directly attached to the IV cannula without either of these Interlink connections
- 1–3 mL of Normal saline
- 5 mL syringes with Interlink needle

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
ASSESSMENT	
1. Review doctor's order for type and amount of IV fluid, rate of fluid administration and purpose of infusion. In addition, follow the seven rights for administration of medications (see Chapter 27).	A prescription for peripheral IV fluids must be made by a doctor before the implementation of this procedure. Assists in selection of appropriate access device.
2. Review clinical data for indications of type of fluid and electrolyte imbalance and reason for prescribed infusion; e.g. admission diagnosis, signs and symptoms (e.g. bodyweight, blood pressure, pulse, skin turgor, urine output, fluid balance chart, serum electrolytes, full blood count – haemoglobin [Hb] and haematocrit [Hct]).	Nurse is fully aware of reason for the prescribed solution and rate of infusion and ongoing monitoring required. Provides baseline data for later evaluation of change in fluid and electrolyte status.
3. Assess patient's history of allergies.	May reveal information that affects insertion of devices, such as allergy to iodine, adhesive or latex.
4. Assess patient's previous or perceived experience with IV therapy and arm placement preference.	Determines level of emotional support and patient education required.
5. Consider the application of EMLA cream for children and patients with needle phobia.	Although the application of EMLA cream makes IV cannulation relatively painless, it must be applied at least 1 to 1.5 hours before the proposed procedure. It is effective for up to 4 hours post-application. Not recommended for infants under 3 months of age.
6. Determine whether patient is to undergo any planned surgery or is to receive blood infusion later.	Allows placement of appropriate-size catheter (i.e. 18 or 16 gauge for surgery) which will not interfere with medical procedures.
7. Assess for the following risk factors: child or older adult, presence of heart failure or renal failure or low platelet count.	Persons at extremes in age develop fluid imbalances more rapidly because of a proportionately larger ECF volume; persons with heart failure and acute kidney disease may require fluid restriction and cannot adapt to sudden increases in vascular volume. A low platelet count predisposes patients to bleeding at IV site.

STEPS	RATIONALE
PREPARATION OF PATIENT	
8. Prepare patient and family by explaining the procedure, its purpose and what is expected of patient.	Decreases anxiety and promotes cooperation.
9. Help patient into comfortable sitting or supine position.	
10. Change patient's gown to the more easily removed gown with press-studs at the shoulder.	Use of a special IV gown facilitates safe removal of the gown.
11. Perform hand hygiene.	Reduces transmission of microorganisms.
12. Organise equipment on clean, clutter-free bedside stand or overbed table.	Reduces risk of contamination and accidents. Maintains sterility of equipment and reduces spread of microorganisms.
PREPARING THE IV SOLUTION	
13. Check IV solution and any prescribed additives, using the seven rights of drug administration (see Chapter 27).	IV solutions are medications and should be carefully checked by two nurses to reduce risk of error.
14. Check solution for colour, clarity and expiration date. Check bag for leaks, which is best done before reaching the bedside.	Solutions that are discoloured, contain particles or are expired are not to be used. Leaky bags present an opportunity for infection and must not be used.
15. Open infusion set, maintaining sterility of both ends of tubing. Many sets allow for priming of tubing without removal of end cap.	Prevents bacteria from entering infusion equipment and bloodstream.
16. Place roller clamp about 2–5 cm below drip chamber and move roller clamp to 'off' position (see illustration).	Close proximity of roller clamp to drip chamber allows more-accurate regulation of flow rate. Moving clamp to 'off' prevents accidental spillage of fluid and decreases amount of air bubbles when priming line.



Step 16 A, Position of roller clamp below drip chamber. B, Roller clamp in 'off' position.

STEPS	RATIONALE
17. Remove protective sheath over IV-giving set tubing port on plastic IV solution bag (see illustration). For bottled IV solution, remove metal cap and metal and rubber disks beneath cap.	Provides access for insertion of infusion tubing into solution.
18. Insert infusion set into fluid bag or bottle. Remove protector cap from tubing insertion spike (keeping spike sterile), and insert spike into opening of IV bag (see illustration).	Prevents contamination of solution from contaminated insertion spike.
19. Prime infusion tubing by filling with IV solution. Compress drip chamber and release, allowing it to fill one-third to half full.	Creates suction effects; fluid enters drip chamber to prevent air from entering tubing.
20. Slowly release roller clamp to allow fluid to travel from drip chamber through tubing to needle or catheter adapter. Line can be primed without removing tubing protector cap. Return roller clamp to 'off' position after tubing is primed (filled with IV fluid).	Slow fill of tubing decreases turbulence and chance of bubble formation. Removes air from tubing and permits tubing to fill with solution. Closing the clamp prevents accidental loss of fluid.
21. Be certain tubing is clear of air and air bubbles. To remove small air bubbles, firmly tap IV tubing where air bubbles are located. Check entire length of tubing to ensure that all air bubbles are removed (see illustration).	Large air bubbles can act as emboli.
22. Remove tubing protector cap and replace with 'threader link cannula' or 'lever lock cannula', leaving the protector on end of these until ready to attach to the 'Interlink injection site', which is an Interlink connector attached to the IV cannula.	Prepares the IV-giving set for connection to the IV cannula. Maintains system sterility.



Step 17 Removal of protective sheath.



Step 18 Inserting spike into opening of IV bag.



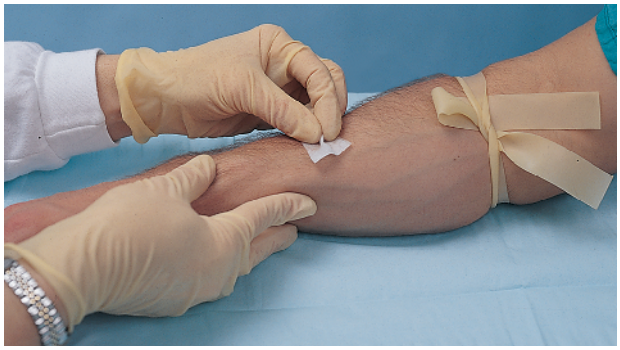
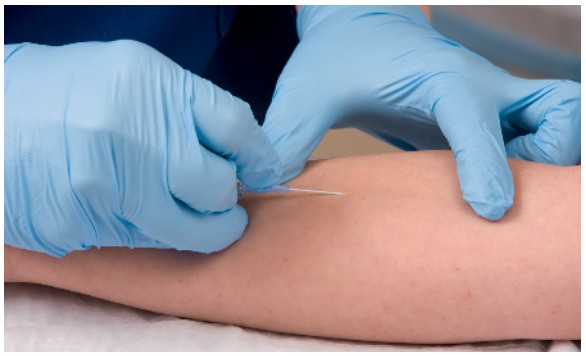
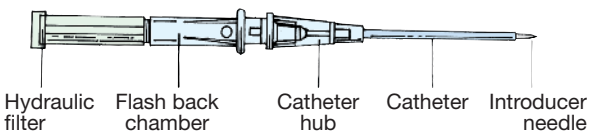
Step 21 Tapping to dislodge small air bubbles in tubing.

STEPS	RATIONALE
INSERTION OF IV CATHETER/CANNULA	
23. Put on disposable gloves.	Reduces transmission of microorganisms.
24. Identify accessible vein for IV placement. Apply tourniquet 10–15 cm above the proposed insertion site (see illustration). Check for presence of radial pulse. Option: Apply blood pressure cuff instead of tourniquet. Inflate to a level just below patient's normal diastolic pressure.	Tourniquet should be tight enough to impede venous return but not occlude arterial flow.

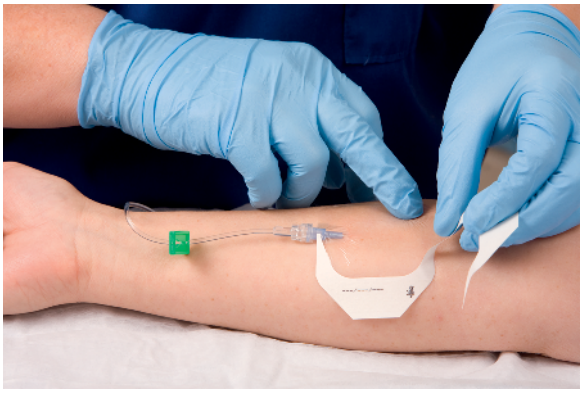


Step 24 Identifying accessible vein after tourniquet applied.

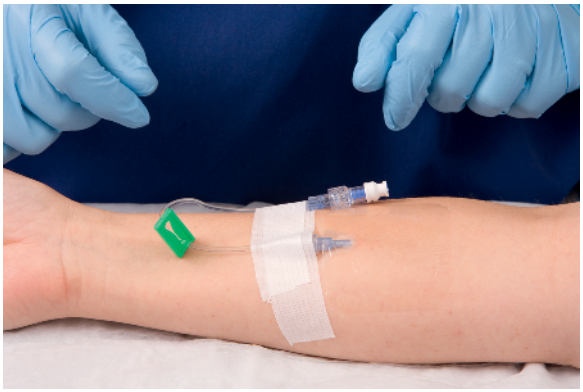
25. Select the vein. a. Use the most distal site in the non-dominant arm, if possible. b. Avoid: • areas that are painful to palpation • areas that interfere with patient's activities of daily living (ADLs) or planned procedures • sites distal to previous venepuncture site • sclerosed or hardened cord-like veins • infiltrated site or phlebotic vessels, bruised areas and areas of venous valves or bifurcation • fragile dorsal veins in older adults and vessels in an extremity with compromised circulation (e.g. in cases of mastectomy, dialysis graft or paralysis). c. Select a vein large enough for catheter placement. d. Palpate the vein by pressing downwards and noting the resilient, soft bouncy feeling as the pressure is released. Always use the same finger to palpate. e. Promote venous distension by instructing the patient to open and close the fist several times, lowering the patient's arm in a dependent position, rubbing or stroking the patient's arm from distal to proximal below proposed site.	Venepuncture should be performed distal to proximal, which increases the availability of other sites for future IV therapy.
26. Release tourniquet temporarily and carefully. Clip arm hair with scissors (if necessary). Do not shave area.	Prevents interruption of venous flow while preparing IV site. Hair impedes venepuncture or adherence of dressing. Shaving can cause microabrasions and predispose patient to infection.

STEPS	RATIONALE
27. Clean insertion site (see illustration).  Step 27 Cleaning the insertion site. a. Using a firm, circular motion (middle to outwards) clean with alcohol and allow to dry. b. Clean again, using same method, with povidone–iodine solution and allow to dry; refrain from touching the cleaned site. If the patient is allergic to iodine, use 70% alcohol and allow to dry for 60 seconds.	Povidone–iodine reduces skin surface bacteria; touching the cleaned area introduces organisms from nurse's hand. Povidone–iodine must be dry to be effective in reducing microbial counts. Use of alcohol improves visualisation of the IV site and reduces the possible adverse effects of povidone–iodine.
28. Reapply tourniquet.	Tourniquet time should be as short as possible. Avoid the use of a tourniquet in areas of compromised circulation. The tourniquet should not interfere with arterial blood flow to the extremity.
29. Perform venepuncture. Anchor vein by placing thumb over vein and by stretching the skin against the direction of insertion 5–7.5 cm distal to the site.	Places needle parallel to vein. When vein is punctured, risk of puncturing posterior vein wall is reduced.
30. To puncture the vein, the catheter is held in the dominant hand. With the bevel up, the skin is entered in the direction of the vein at a 30- to 45-degree angle (see illustration).	 Step 30 Angle for entering vein.
31. After just entering into the vein the angle of the catheter is reduced until it is nearly parallel to the skin. If the vein appears to roll (move), the venepuncture is commenced applying counter-tension against the skin just below the entry site using the non-dominant hand.	
32. The catheter is advanced into the vein until blood is seen in the flashback chamber of the catheter (see illustration).	 Step 32 Diagram of ONC catheter showing flash back chamber.
33. After the vein is entered, the needle is left stationary and the plastic catheter (over the needle) is advanced into the vein. The plastic catheter should slide forward easily and should not be forced into the vein.	
34. The tourniquet should now be released.	

STEPS	RATIONALE
35. Gentle pressure is applied over the vein proximal to the entry site while the needle is removed from the catheter and disposed of into the sharps container. The needle should never be reinserted into the catheter as there is a risk of shearing off a part of the plastic catheter causing an embolus.	Prevents risk of exposure to blood.
36. Attach the 'Interlink injection site' (bung/cap) to the IV cannula and flush the IV line.	Flushing will reaffirm patency and decrease risk of intra-cannula clotting.
37. If IV fluids are ordered, remove the protective tubing from the 'threaded link cannula' or 'lever lock cannula' on the patient end of the IV-giving set and connect it to the 'Interlink injection site' (bung/cap) which should now be on the end of the IV cannula. Adjust the flow rate as desired.	Prompt connection of infusion set maintains patency of vein. Maintains sterility.
38. If no IV fluids are ordered, flush IV cannula with 1–3 mL of sterile Normal saline (saline lock), using an Interlink needle through the 'Interlink injection site' (bung/cap).	
39. Tape the catheter in place using a transparent (clear) dressing. a. Carefully remove adherent backing. b. Apply one edge of dressing and then gently smooth remaining dressing over site, leaving end of 'Interlink injection site' (bung/cap) uncovered (see illustration).	Transparent dressing allows early observation for phlebitis. Securing the catheter and tubing prevents movement and tension on the device, reducing mechanical irritation and possible phlebitis or infection. It is advisable not to use the 'chevron' taping technique.
40. Curl a loop of tubing alongside the arm and place a second piece of tape to secure tubing in two places (see illustration).	Tape on top of tape makes it easier to access hub/tubing junction. Securing loop of tubing reduces risk of dislodging catheter from accidental pull.
41. Label the IV site with the date, time and initials.	



Step 39 Applying transparent dressing to secure catheter.



Step 40 Securing tubing.

■ **Critical decision point: No more than three attempts at inserting an IV should be made by a single nurse (check agency policy).**

STEPS	RATIONALE
42. Release roller clamp slowly to begin infusion at a rate to maintain patency of IV line (not necessary with a heparin/saline lock).	Permits venous flow and prevents clotting of vein and obstruction of flow of IV solution.

■ **Critical decision point: Be sure to calculate rate so as not to infuse IV solution too rapidly or slowly.**

43. Note date and time, gauge size and size of catheter and placement of IV line and dressing.	Documents when IV was inserted and when subsequent changes in IV cannula are required (check agency policy).
44. Dispose of used needles in appropriate sharps container. Discard supplies in contaminated waste bin. Remove gloves and perform hand hygiene.	Reduces transmission of microorganisms and protects staff from injury.
45. Observe patient every hour to determine if fluid is infusing correctly. a. Check if correct amount of solution is infused as prescribed by looking at time tape. b. Count flow rate. c. Check patency of IV catheter or needle: briefly compress cannulated vein proximal to site. Observe for slowing or cessation of IV rate. d. Also observe patient during compression of the vein for signs of discomfort. e. Inspect insertion site for absence of infiltration, phlebitis or inflammation (Table 34-19).	Compression results in mechanical obstruction of vein. When IV catheter is patent, compression results in slowing or cessation of flow rate. No change in flow rate may indicate infiltration. Provides continuous evaluation of type and amount of fluid delivered to patient. Hourly inspection prevents accidental fluid overload or inadequate infusion rate and identifies early incidence of vein inflammation or tissue damage.
46. Observe patient every hour to determine response to therapy (i.e. measure vital signs, conduct post-procedure assessments).	IV fluids and additives are given to maintain or restore fluid and electrolyte balance. They can also cause unexpected effects, which can be serious.

RECORDING AND REPORTING

- Documentation:
  - sign the infusion therapy chart; complete the time and date started (see illustration)
  - complete and attach a change of line label to the IV tubing
  - enter the IV fluid type and volume onto the fluid balance chart
  - document the insertion site and date in the patient record/care plan/infusion chart
  - attach an IV time label to the IV bag.
- Record patient's response to IV fluid, amount infused in shift; report integrity and patency of system every hour or according to agency policy.
- Report to oncoming nursing staff: type of fluid, flow rate, status of venepuncture site, amount of fluid remaining in present solution, expected time to hang next IV bag or bottle and any side effects.

HOME CARE CONSIDERATIONS

See Box 34-6.

- Teach caregiver to apply pressure with sterile gauze if catheter falls out and, if patient is on anticoagulant therapy, to tape several pieces of sterile gauze in place for at least 20 minutes or until bleeding stops.
- Teach patient and caregiver to perform bed bath without getting IV tubing wet. For showering, the patient must insert hand and forearm into a plastic bag. Tape bag in place to ensure that IV site is completely covered. IV pumps are not designed to be located in moist bathroom environments during the bathing or showering process. Refer to relevant agency policy for management practices.
- Teach patient and family to monitor fluid balance using household measuring devices.

INTRAVENOUS THERAPY ORDERS

					Ward/Unit No.	9876908	
					Surname	Hallow	
					Other Names	David John	
					DOB/Sex	2 July 1946 66yrs/ M	
					Address	64 Playford Drive	
					Body weight	66kg	
					Height	143 cm	
Order sent	Flask no	Date	Fluid & Additives	Volume (mL) / Duration (h) or Rate (mL/h)	Ordered by: *Medical Officer—sign, print name*	Commenced by: *signature* / Time	PHARM USE ONLY
	1	Admit	4% Dextrose 1/5 N/Saline	1000 mL / 12 hrs	E Halford E. Halford	Sign RJ / Time 0500	
	2	Postop	0.9% N/Saline	500 mL / 8 hrs	E Halford E. Halford	Sign RJ / Time 1900	
	3	Postop	Hartmanns	1000 mL / 8 hrs	E Halford E. Halford	Sign RJ / Time 1900	
						Sign / Time	

Completed infusion therapy chart.

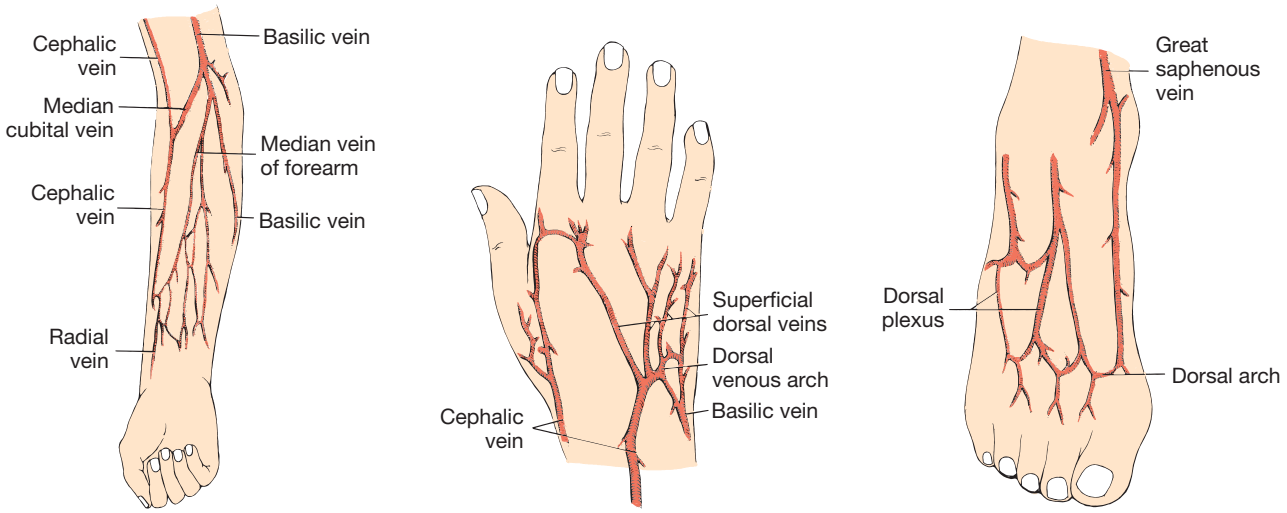


Figure 34-17 Common IV sites. A, Inner arm. B, Dorsal surface of hand. C, Dorsal surface of foot (used only for children).

for the IV catheter. Because the very young, and older adults, have fragile veins, the dorsal surface of the hand should be avoided (see *Working with diversity* boxes). Venepuncture is contraindicated in a site that has signs of infection (red, tender, swollen, warm to the touch, exudate), infiltration or thrombosis and an extremity with a vascular (dialysis) graft/fistula or on the side of a mastectomy. An infected site is not used because of the danger of introducing bacteria from the skin surface into the bloodstream. Where possible, IV cannulas should be placed at the most distal point which allows for future use of proximal sites if the patient needs a venepuncture site change.

Venepuncture

Venepuncture is a technique in which a vein is punctured through the skin by a sharp, rigid stylet, a partially covered plastic catheter (over-the-needle catheter, ONC) or a needle

WORKING WITH DIVERSITY

Focus on older adults

- In older adults, use the smallest gauge intravenous (IV) catheter or needle possible (e.g. 24 to 26 gauge), depending on prescribed IV fluid and rate. This gauge is less traumatic to the vein. This gauge can be used for hourly flow rates of crystalloids of 75–100 mL/h.
- Avoid the back of the older adult's hand or the dominant arm for venepuncture because these sites greatly interfere with the older adult's independence.
- If the older adult has fragile skin and veins, use minimal tourniquet pressure.
- When the older adult has lost subcutaneous tissue, the veins lose stability and will roll away from the needle. To stabilise the vein, apply traction to the skin below the projected insertion site.
- Using an angle of 5–15 degrees on insertion is helpful because the older adult's veins are more superficial.
- In the older person with fragile skin, prevent skin tears by minimising the amount of tape used.

Reference

Infusion Nurses Society, Alexander M, Corrigan A et al 2011 Infusion nursing: an evidence based approach. Crit Care Nurse 31(3):92.

attached to a syringe. The general purposes of venepuncture are to collect a blood specimen, instill a medication, start an IV infusion or inject a radio-opaque or radioactive tracer for special examinations. Although central venous catheters are inserted by doctors, nurses are responsible for their maintenance.

Regulating the infusion flow rate

After the IV cannula is secured and the line is patent, the nurse must regulate the rate of infusion according to the doctor's prescription (Skill 34-4). The nurse calculates the infusion rate to prevent too-slow or too-rapid administration of the IV fluids. The minimal rate used to keep a vein patent is about 10–15 mL/h using a microdrip infusion. An **infusion pump** (e.g. an IVAC) is designed to deliver a measured amount of fluid over a period of time (e.g. millilitres per hour). The pump has a drop sensor and an alarm that will sound if drops are not detected at the appropriate rate. There are also alarms to alert the nurse to increased system pressure that can occur with an **infiltration** (IV fluid seeping into the tissue instead of the vascular space).

A second type of infusion device is an IV-giving set that delivers fluids with the aid of gravity; IV-giving sets deliver fluids based on a determination of millilitres per hour. The rate is controlled by a roller clamp that is adjusted to a specified number of drops per minute. The rate of infusion depends on the height of the IV fluid container, diameter of IV tubing and fluid viscosity. IV-giving sets are less precise than the IV pump in delivering IV fluids.

Close monitoring is required to verify infusion of the correct IV solution and to detect the occurrence of any complications. *Patency* of the IV catheter confirms lack of clots within or at the tip of the cannula, the cannula tip is

WORKING WITH DIVERSITY

Focus on infants and children

- Consider application of 0.5–1g EMLA to site 60–90 minutes prior to insertion (Department of Health and Human Services 2015, The Royal Children's Hospital 2015).
- Ensure another person to hold, comfort and reassure infant or child.
- Vein selection should include: vein runs straight, stands up a little and fills and empties easily (The Royal Children's Hospital 2015).
- The saphenous vein (knee and ankle), cubital fossa and superficial temporal vein should be avoided for peripheral cannulas and reserved for insertion of percutaneous central venous catheters (DHHS 2015, The Royal Children's Hospital 2015).
- Accurate replacement in infants and children needs to be very closely monitored. Such monitoring includes weighing the infant or child prior to the commencement of therapy, 6 hourly if ongoing losses and otherwise daily (Wells et al 2005).
- Nurses need to regularly check serum electrolytes results.
- Timely fluid balance chart documentation and analysis of all input, losses and urine output (dry weight of infant nappies should be written on the nappy; urine output is difference between dry and wet nappy weight: weight on removal of nappy – dry weight of nappy).
- Because children are susceptible to fluid excess and deficit and are generally active (even when ill), care of an intravenous (IV) line becomes imperative. Hockenberry et al (2003) suggest:
  - use a needleless system to administer the solution
  - use an infusion pump to deliver the ordered fluid at the prescribed rate
  - secure the IV catheter firmly and cover it with a transparent dressing
  - secure the IV line so the child cannot accidentally dislodge it
  - consider a commercial protective device to prevent the child from interfering with the insertion site.

Reference

Hockenberry MJ et al 2003 Wong's nursing care of infants and children, 7th edn. Mosby, St Louis.

not against the vein wall and the dressing does not impede fluid flow. The nurse can assess patency by checking fluid flow from the drip chamber when the roller clamp is open (to IV rate ordered) by applying pressure distal to the insertion site; if patent, the IV flow should stop on finger pressure and commence when finger pressure is relieved (Wotton et al 2008). The tubing and area around the insertion site should be inspected for: a knot or kink in the tubing, patient not lying or sitting on tubing and position of wrist or elbow does not impede flow rate. The occasional use of an arm

SKILL 34-4

Regulating intravenous flow rate

Delegation considerations

Regulating IV therapy requires the problem-solving and knowledge-application skills of professional nurses. For this procedure, delegation is inappropriate.

Equipment

- IV infusion chart with IV order
- Watch with second-hand
- Paper and pencil
- IV infusion pump (optional)
- Volume-control device (optional)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Observe for patency of IV line and needle or catheter:	For fluid to infuse at proper rate, IV line and cannula must be free of kinks, knots and clots.
a. Compress cannulated vein slightly proximal to the end of the catheter and observe the drip chamber.	Cessation of drops from drip chamber indicates cannula is in vein. If fluid continues to drip, infiltration may be present.
2. Check patient's medical record for correct solution, any additives and time of infusion. Record also shows time over which each litre is to infuse.	Seven rights of drug administration ensure correct fluids are given to correct patient.
3. Check patient's knowledge of how positioning of the IV site affects flow rate.	Fosters patient participation in maintaining most effective position of arm with IV equipment.
4. Verify with patient how venepuncture site feels (e.g. determine whether there is pain or burning).	Pain or burning may be early indication of phlebitis. Includes patient in decision-making.
5. Have paper and pencil to calculate flow rate.	The beginning student is unfamiliar with IV fluid rates and should use mathematical calculations to obtain correct rate.
6. Know calibration (drop factor) in drops per millilitre of infusion set: a. Microdrip: 60 drops/mL b. Macrodrip: 20 drops/mL	Microdrip tubing, also called paediatric tubing, universally delivers 60 drops/mL and is used when small or very precise volumes are to be infused. Macrodrip tubing should be used when large quantities or fast rates are necessary.

■ **Critical decision point: Know the drip rate of the infusion sets your agency uses; calculations must be checked by two nurses.**

STEPS	RATIONALE
7. Determine hourly rate by dividing volume by hours; for example: 1000 mL over 8 hours = 125 mL/h 3 L over 24 hours = 3000/24 = 125 mL/h	Provides even infusion of fluid over prescribed hourly rate.
8. Select following formula to calculate flow rate (drops per minute, DPM) after determining mL/h: $\text{Flow rate (DPM)} = \frac{\text{Vol/h} \times \text{Drop factor}}{\text{Time in minutes*}}$ *Note: a. If time is per hour, the hour will be multiplied by 60 to convert the time into minutes. b. If the time is already in minutes, no further conversion is required.	Once hourly rate has been determined, the formulas for drops per minute (DPM) gives correct flow rate.
Example: Using 20-drop factor infusion set a. 125 mL/h using drop factor of 20 = $\frac{125 \times 20}{1\text{ h} \times 60} = 42$ DPM b. 100 mL over 20 minutes using drop factor of 20 = $\frac{100 \times 20}{20} = 100$ DPM	
Example: Using 60-drop factor infusion set a. 125 mL/h using drop factor of 60 = $\frac{125 \times 60}{1\text{ h} \times 60} = 125$ DPM b. 100 mL over 20 minutes using drop factor of 60 = $\frac{100 \times 60}{20} = 300$ DPM	
9. Place adhesive or fluid indicator tape on IV bag next to volume markings (see illustration).	Time-taping IV bag gives nurse visual cue as to whether fluids are being administered over correct period of time. Time tapes should be used for all IV infusions, including those on therapies infused via electronic infusion devices.



Step 9 Time-taping the IV bag.

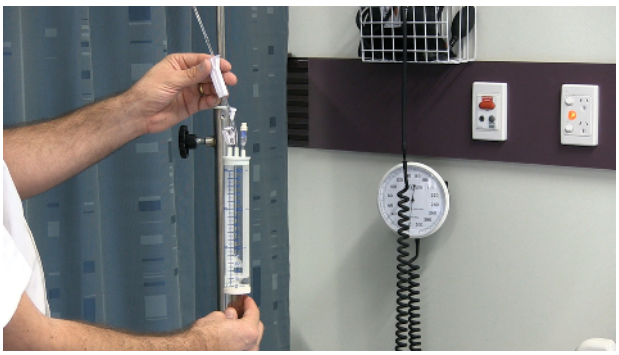
■ **Critical decision point: Do not use felt-tip pens or permanent markers on IV bags, because ink could contaminate the solution.**

STEPS	RATIONALE
10. Time flow rate by counting drops in drip chamber for 1 minute by watch, then adjust roller clamp to increase or decrease rate of infusion (see illustration).	Determines whether fluids are being administered too slowly or too fast.



Step 10 Timing of flow rate.

11. Follow the manufacturer's directions for set-up of the infusion (see illustration) using infusion controller or pumps in your organisation: a. Drip regulator must be open while infusion controller or pump is in use.	Infusion pumps move fluid by compressing and milking IV tubing, thus propelling fluid through tubing. Infusion controllers or pumps are not infallible and do not replace frequent, accurate nursing assessments.
b. Monitor infusion rates and IV site for infiltration according to agency policy.	Infusion pumps may continue to infuse IV fluids after an infiltration has begun.
c. Assess patency and integrity of system when alarm sounds.	Alarm indicates that electronic eye has noted imprecise number of drops from drip chamber, an empty solution bag or bottle, kink in tubing, closed drip regulator, infiltrated, clotted catheter and/or air in the tubing.



Step 11 Setting up infusion.

Critical decision point: Special infusion tubing is required for some pumps (check agency policy).

12. Follow this procedure for volume-control device (burette): a. Place burette between IV bag and insertion spike of infusion set (see illustration). b. Place 2 hours' allotment of fluid into burette.	Prevents IV line from running dry if nurse does not return in exactly 60 minutes. In addition, if there is accidental increase in flow rate, patient receives at most only a 2-hour allotment of fluid.

STEPS	RATIONALE
c. Assess system at least hourly; add fluid to burette. Regulate flow rate.	Reduces risk of sudden increase in fluid volume.



Step 12a Examples of positioning of burette.

13. Observe patient for signs of overhydration or dehydration to determine response to therapy and restoration of fluid and electrolyte balance.	Signs and symptoms of dehydration or overhydration warrant changing rate of fluid infused.
14. Evaluate for signs of infiltration: inflammation at site, clot in catheter, kink or knot in infusion tubing.	Prevents decrease or cessation of flow rate.

RECORDING AND REPORTING

- Record name of solution, rate of infusion, DPM and mL/h in nurses' notes every shift or according to agency policy.
- Record IV fluid administered every hour on the fluid balance chart.
- Immediately record in nurses' notes any new IV fluid rates.
- Document use of any infusion-controlling device and number on that device.
- At change of shift or when leaving on break, report rate of infusion and amount remaining in bag to be infused to nurse in charge or next nurse assigned to care for patient.

HOME CARE CONSIDERATIONS

- Ensure that patient is able and willing to operate the infusion device (if applicable) and administer IV therapy, or that there is a reliable caregiver or nursing support personnel at home to provide this IV therapy care.
- Teach patient and primary caregiver to time DPM using watch with second hand.

board may help to keep the joint extended (Figure 34-18) and provides some protection to the IV site and tubing. The incorrect height of the IV bag can also affect flow rates; therefore raising the bag usually increases the rate because of increased gravitational pressure.

A cool, clammy, swollen and in some cases painful insertion site could signal an infiltration, where the cannula has dislodged from the vein and is in the subcutaneous space. When an infiltration occurs, the IV cannula must be discontinued and a new cannula inserted. When caring for a patient with an infusion, the nurse should assess the site and the infusion rate at least every hour.

A sudden increase in IV infusion rate can cause a rapid increase in vascular volume, which can make the patient critically ill or even cause death. Volume-control devices, such as a burette, can prevent sudden excessive increases in the volume of IV solution infused.

Maintaining the system

After insertion of the IV cannula and regulation of the flow rate, the nurse must maintain the system. Agency policy provides guidelines for when peripheral and central IV cannulas must be removed and reinserted, the time for IV line changes and the response to an IV site scoring system, for example, phlebitis



Figure 34-18 IV arm board.

Potter PA, Perry AG 2004 Fundamentals of nursing, 6th edn. Mosby, St Louis.

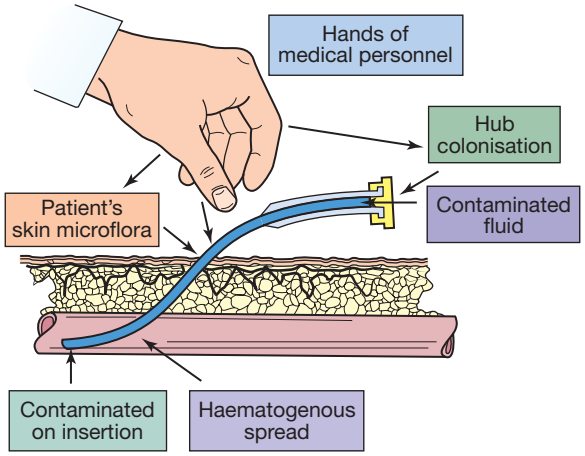


Figure 34-19 Potential sites for contamination of an intravascular device.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

score. Line maintenance is achieved by (1) keeping the system sterile, (2) changing solutions, tubing and for CVC lines site dressings and (3) assisting the patient with self-care activities so as to not disrupt the system.

Figure 34-19 demonstrates the potential sites for contamination of an IV device. Procedures during IV insertion should control the patient's microflora and thus potential contamination during insertion. Other factors are controlled through conscientious use of infection-control principles. This begins with the use of thorough handwashing before and after the nurse handles any component of the IV system.

The maintenance of a closed circuit will ensure the integrity of the IV system. The nurse never disconnects tubing because it becomes tangled or when positioning or moving a patient. If a patient needs more room to manoeuvre, extension tubing can be added to an IV line. A sterile bung must be attached to all available IV ports. The connection of a luer-lock bung to the IV catheter decreases the risk of accidental disconnection and decreases risk of infection by ensuring the maintenance of a closed circuit.

An injection port must be cleaned thoroughly with 70% alcohol or povidone–iodine solution before accessing the system. Needleless intravascular devices and ports are now the equipment of choice for IV medication regimens, to reduce the number of needle-stick injuries. IV administration sets can remain sterile for 72 hours (O'Connell et al 2008). The exception is tubing containing blood, blood products and lipid emulsions, which are more likely to promote bacterial growth and require more-frequent tubing changes. It is easier to change tubing when a new IV bag or bottle is being hung. To prevent entry of bacteria into the bloodstream, sterility must be maintained during tubing and solution changes (Skill 34-5).

SKILL 34-5

Changing intravenous solution and infusion tubing

Delegation considerations

Changing IV solutions and tubing requires the problem-solving and knowledge-application skills of professional nurses. For this procedure, delegation is inappropriate.

Equipment

- Bag of IV solution as ordered by doctor
- Time tape
- Infusion tubing
- J-loop, or short extension tubing (if necessary)
- 'Lever lock cannula' or 'threaded lock cannula'; attaches to the IV-giving set and connects the giving set to the cannula

Normal saline flush:

- Syringes
- Transparent IV dressing
- Tape
- Disposable non-sterile gloves

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems

- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
CHANGING IV SOLUTION	
1. Check doctor's orders.	Ensures that correct solution will be used.
2. Determine the compatibility of all IV fluids and additives by consulting appropriate literature or the pharmacy.	Incompatibilities can cause physical, chemical and therapeutic patient changes.
3. Determine patient's understanding of need for continued IV therapy.	Reveals need for patient instruction.
4. Assess patency of current IV access site.	If patency is not verified, a new IV access site may be needed. Notify doctor.
5. Have next solution prepared at least 30 minutes before needed. If prepared in pharmacy, ensure it has been delivered to the patient's hospital unit. Check that solution is correct and properly labelled. Check solution expiry date.	Adequate planning reduces risk of clot formation in vein caused by empty IV bag. Checking prevents medication error.
6. Prepare to change solution when less than 50 mL of fluid remains in bottle or bag.	Prevents air from entering tubing and vein from clotting from lack of flow.
7. Prepare patient and family by explaining the procedure, its purpose and what is expected of patient.	Decreases anxiety and promotes cooperation.
8. Be sure drip chamber is at least half full.	Provides fluid to vein while bag is changed.
9. Perform hand hygiene.	Reduces transmission of microorganisms.
10. Prepare new solution for changing. If using plastic bag, remove protective cover from IV tubing port. If using glass bottle, remove metal cap and metal and rubber disks. Determine sterility of bag. Check seven rights of drug administration. Make sure prescribed additives and an additive label have been added. Check solution for colour, clarity, expiry date.	Permits quick, smooth and organised change from old to new solution. IV solutions are medications and as such should be carefully checked to reduce risk of error.
11. Move roller clamp to stop flow rate.	Prevents solution remaining in drip chamber from emptying while changing solutions.
12. Remove old IV fluid container from IV pole.	Brings work to nurse's eye level.
13. Quickly remove spike from old solution bag or bottle and, without touching tip, insert spike into new bag or bottle.	Reduces risk of solution in drip chamber running dry and maintains sterility.

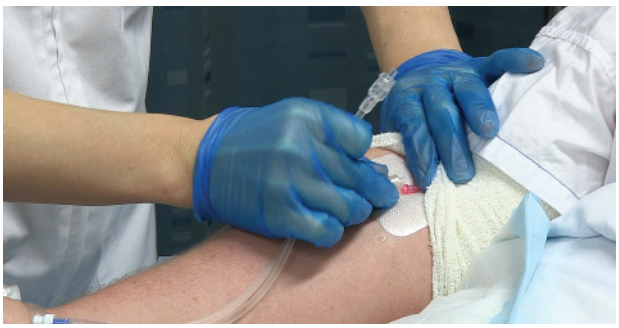
STEPS	RATIONALE
Critical decision point: If spike is contaminated, a new IV tubing set is required.	
14. Hang new bag or bottle of solution.	Gravity assists with delivery of fluid into drip chamber.
15. Check for air in tubing. a. If bubbles form, they can be removed by closing the roller clamp, stretching the tubing downwards, and tapping the tubing with the finger (the bubbles rise in the fluid to the drip chamber). b. For a larger amount of air, use a pair of forceps below the injection port of the IV tubing, insert a needle and syringe into a port below the air and aspirate the air into the syringe; remove forceps. Swab port with alcohol and allow to dry before inserting needle into port. Reduce air in tubing by priming slowly instead of allowing a wide-open flow.	Reduces risk of air embolus. Use of an air-eliminating filter also reduces this risk.
16. Make sure drip chamber is one-third to half full. If the drip chamber is too full, pinch off tubing below the drip chamber, invert the container, squeeze the drip chamber, hang up the flask/bottle and insert giving set into the flask.	Reduces risk of air entering tubing.
17. Release roller clamp and regulate flow to prescribed rate.	Maintains measures to restore fluid balance and deliver IV fluid as ordered.
18. Observe patient for signs of overhydration or dehydration to determine response to IV fluid therapy.	Provides ongoing evaluation of patient's fluid and electrolyte status.
19. Observe IV system for patency and development of complications (e.g. infiltration or phlebitis).	Provides ongoing evaluation of IV system.
CHANGING IV TUBING	
20. Determine when new infusion set is needed:	
a. Agency policy will indicate frequency of routine change for IV administration sets and heparin flushes.	Tubing change no more often than 72-hour intervals unless blood/blood products or TPN has been infused (Marschall et al 2014).
b. Puncture of infusion tubing.	Punctured tubing results in fluid leakage and bacterial contamination.
c. Contamination of tubing.	Contamination of tubing allows entry of bacteria into patient's bloodstream.
21. Observe for occlusions in existing tubing. Such occlusions can occur after infusion of packed red cells, whole blood, albumin or other blood components.	Whole blood or blood component products can occlude or partially occlude tubing, because viscous solutions adhere to walls of tubing and decrease the size of the lumen.

STEPS	RATIONALE
22. Prepare patient and family by explaining the procedure, its purpose and what is expected of patient.	Decreases anxiety, promotes cooperation and prevents sudden movement of extremity, which could dislodge IV needle or catheter.
23. Perform hand hygiene.	Reduces transmission of microorganisms.
24. Open new infusion set, keeping protective coverings over infusion spike, remove protection from connector at patient end of giving set and attach to 'lever lock cannula' or 'threaded lock cannula'.	Provides nurse with ready access to new infusion set and maintains sterility of infusion set.
25. Put on non-sterile, disposable gloves.	Reduces risk of exposure to HIV, hepatitis and other blood-borne bacteria.
26. If needle or catheter hub is not visible, remove IV dressing. Do not remove tape securing needle or catheter to skin.	Catheter or needle hub must be accessible to provide smooth transition when removing old and inserting new tubing.
27. **For IV infusion:**	
a. Move roller clamp on new IV tubing to 'off' position.	Prevents spillage of solution after bag or bottle is spiked.
b. Slow rate of infusion by regulating drip rate on old tubing. Be sure rate is at keep vein open (KVO) rate, usually around 20 mL/h.	Prevents complete infusion of solution that remains in tubing, which can increase risk of occlusion of IV catheter or needle.
c. With old tubing in place, compress drip chamber and fill chamber.	Provides surplus of fluid in drip chamber so there is enough fluid to maintain IV patency while changing tubing.
d. Remove old tubing from solution and hang or tape drip chamber on IV pole 90 cm above IV site.	Allows fluid to continue to flow through IV catheter while nurse is preparing new tubing.
e. Place insertion spike of new tubing into old solution bag opening, and hang solution bag on IV pole.	Permits flow of fluid from solution into new infusion tubing.
f. Compress and release drip chamber on new tubing; slowly fill drip chamber one-third to half full.	Allows drip chamber to fill and promotes rapid, smooth flow of solution through new tubing.
g. Slowly open roller clamp, flush tubing with solution. Usually no need to remove protective cap from 'lever lock cannula' or 'threaded lock cannula'.	Removes air from tubing and replaces it with fluid.
h. Turn roller clamp on old tubing to 'off' position.	Prevents spillage of fluid as tubing is removed from needle or catheter hub.

STEPS	RATIONALE
28. For heparin lock:	
a. Swab 'lever lock cannula' or 'threaded lock cannula' (bung/injection cap) with alcohol.	Removes air to prevent introduction into the vein.
b. Insert syringe with 1–3 mL saline and inject through the bung into the loop or short extension tubing.	Prevents accidental displacement of catheter or needle.
29. Stabilise hub of catheter or needle and apply pressure over vein just above insertion site. Gently pull out old tubing (see illustration). Maintain stability of hub and quickly insert 'lever lock cannula' or 'threaded lock cannula' on the IV-giving set into the 'Interlink injection site' (bung) on the cannula (see illustrations). Re-tape IV tubing along arm.	Prevents clot formation in catheter or needle and backflow of blood.
30. Open roller clamp on new tubing. Allow solution to run rapidly for 30–60 seconds.	Permits IV solution to enter catheter to prevent catheter occlusion.
31. Regulate IV drip according to doctor's orders and monitor rate hourly (see illustration).	Maintains infusion flow at prescribed rate.
32. If necessary, apply new dressing.	Reduces risk of bacterial infection from skin.
33. Discard old tubing in contaminated waste bin.	
34. Remove and dispose of gloves. Wash hands.	Reduces accidental transmission of microorganisms.
35. Evaluate flow rate and observe connection site for leakage.	Maintains prescribed rate of flow of IV fluid and determines if fit is secure.



A.



B.



Step 29A–C Removal of old tubing and insertion of new cannula.

STEPS	RATIONALE



Step 31 Monitoring IV drip rate.

RECORDING AND REPORTING

- Record changing of tubing and solution on patient's record. A special parenteral therapy flow sheet may be used.
- Place a piece of tape or preprinted label with the date and time of tubing change and attach to tubing below the level of drip chamber.

HOME CARE CONSIDERATIONS

- Emphasise to patient and family the importance of changing solutions when IV tubing still contains fluid.

The dressings over IV sites are applied to reduce the entrance of bacteria into the insertion site. Dressings are usually transparent, but for CVC cannula (particularly where the jugular vein is used) these may be gauze. Transparent dressings reliably secure the IV device, allow continuous visual inspection of the IV site, are less easily soiled or moistened and require less-frequent changes than standard gauze (O'Connell et al 2008). Agency policy may require IV dressings to be routinely changed within a certain timeframe (e.g. 48–72 hours) (Skill 34-6).

To prevent the accidental disruption of an IV system, the nurse may need to help the patient with hygiene, comfort measures, meals and moving. Because a patient with an infusion in the arm finds it difficult to meet hygiene needs, the nurse should help with bathing and changing gowns. It helps to use a gown specifically made with press-studs along the top sleeve seam to facilitate changing the gown without disturbing the venepuncture site. Normal gowns are changed by following these seven steps, for maximum arm mobility and speed:

1. Remove the sleeve of the gown from the arm without the infusion onto the tubing connected to the arm with the infusion.
2. Remove the IV bag from its stand and pass it and the tubing through the sleeve ensuring the IV bag is above the patient's arm. If this involves removing the tubing from an IV pump, use the roller clamp to temporary slow/stop the infusion to prevent the accidental infusion of a large volume of solution or medication.
3. Place the clean gown sleeve over the arm with the infusion over the container as if it were an extension of the client's arm, from the inside of the gown to the sleeve cuff.
4. Place the IV bag and tubing through the sleeve (of the arm with IV cannula in situ) of the clean gown and hang it on its stand. (If the IV is connected to a pump, reassemble, recheck orders, reprogram, open the roller clamp and turn the pump on.)
5. Place the IV arm through the gown sleeve.
6. Place the non-IV arm through the gown sleeve.
7. Ensure that rate of flow of the infusion is correct before leaving the bedside.

Where a patient with an IV in situ is allowed to mobilise, the IV solution/pump will need to be transferred to an IV pole with

SKILL 34-6

Changing a peripheral intravenous dressing

Delegation considerations

Changing a peripheral IV dressing requires the problem-solving and knowledge-application skills of professional nurses. For this procedure, delegation is inappropriate.

Equipment

- Povidone–iodine swab/stick according to agency policy
- Alcohol swab/stick
- Adhesive remover (if needed)
- Strips of non-allergenic tape
- Disposable gloves

For gauze dressing:

- Sterile 5 cm × 5 cm gauze pad

OR

For transparent dressing (preferred):

- Sterile transparent dressing

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Determine when dressing was last changed. Many institutions require nurse to write date and time on dressing and date the device was first placed.	Provides information regarding length of time present dressing has been in place. Transparent occlusive dressing usually only changed when integrity has been breached; central venous catheter (CVC) changed weekly (Rosenthal 2003).
2. Observe present dressing for moisture and intactness.	Moisture is a medium for bacterial growth and renders dressing contaminated.
3. Observe IV system for proper functioning or complications: kinks in infusion tubing or IV catheter. Palpate the catheter site through the intact dressing for inflammation or after subjective complaints of pain or burning.	Unexplained decrease in flow rate requires the nurse to investigate placement and patency of the IV catheter. Pain can be associated with both phlebitis and infiltration.
4. Inspect exposed catheter site for swelling or infiltration.	Indicates fluid infusing into surrounding tissues. Will require removal of IV catheter.
5. Assess patient's understanding of need for continued IV infusion.	Determines need for patient instruction.
6. Explain procedure and purpose to patient and family. Explain that affected extremity must be held still and how long procedure will take.	Decreases anxiety, promotes cooperation and gives patient timeframe around which personal activities can be planned.
7. Perform hand hygiene. Put on disposable gloves.	Reduces transmission of microorganisms.

STEPS	RATIONALE
8. Remove tape, gauze and/or transparent dressing from old dressing one layer at a time, leaving tape that secures IV needle or catheter in place. Be cautious if catheter tubing becomes tangled between two layers of dressing. When removing transparent dressing, hold catheter hub and tubing with non-dominant hand.	Prevents accidental displacement of catheter or needle.
9. Observe insertion site for signs and/or symptoms of infection, namely redness, swelling and exudate.	
10. If infiltration, phlebitis or clot occurs, or if ordered by doctor, discontinue infusion.	
11. If IV is infusing properly, gently remove any tape securing needle or catheter. Stabilise needle or catheter with one hand. Use adhesive remover to clean skin and remove adhesive residue, if needed.	Exposes venepuncture site. Stabilisation prevents accidental displacement of catheter or needle. Adhesive residue decreases ability of new tape to adhere tightly to skin.
12. Keep one finger over catheter at all times until tape or dressing is replaced.	Prevents decannulation from vein.
13. Using circular motion, clean peripheral IV insertion site with alcohol, then povidone–iodine solution (check that patient is not allergic to iodine) starting at insertion site and working outwards, creating concentric circles (see illustration). Allow each solution to dry for 2 minutes.	Circular motion prevents cross-contamination from skin bacteria near venepuncture site.

■ **Critical decision point: Do not tape over connection of access tubing or port to IV catheter.**



Step 13 Cleaning insertion site.

14. Apply new transparent or gauze dressing. (Tape the catheter in place using a transparent (clear) dressing.)	Ensures protection of IV site and reduces chance of infection.
15. Remove and discard gloves and used materials into contaminated waste bin.	Reduces transmission of microorganisms.
16. Anchor IV tubing with additional pieces of tape. When using polyurethane dressing, minimise the tape placed over dressing.	Prevents accidental displacement of IV needle or catheter or separation of IV tubing from needle adapter.

STEPS	RATIONALE
17. Place date and time of dressing change and size and gauge of catheter directly on dressing.	Documents dressing change.
18. Discard equipment and wash hands.	Reduces transmission of microorganisms.
19. Observe functioning and patency of IV system in response to changing dressing.	Validates that IV is patent and functioning correctly.
20. Monitor patient's body temperature.	Elevated temperature indicates an infection that may be associated with bacterial contamination of the venepuncture site.

RECORDING AND REPORTING

- Record appearance of IV site, type of dressing and status of IV fluid infusion.
- A special parenteral fluid flow sheet may be used for recording.

wheels. The nurse helps the patient out of bed and places the pole next to the involved arm. The patient is instructed to hold on to the pole with the involved hand and to push it while walking. The nurse should assess the equipment to ensure the appropriateness of the height of the IV bag, no tension on the tubing and that correct flow rate continues. The patient should be instructed to report blood in the tubing, a stoppage in the flow or increased discomfort.

Complications of intravenous therapy

Infiltration

An infiltration (*tissuing* or *extravasation*) occurs when IV fluids enter the subcutaneous space around the venepuncture site. This manifests as swelling (from increased tissue fluid) and pallor (caused by decreased circulation) around the venepuncture site. In an infiltration, IV flow may continue or may stop; pain may also be present (from pressure of oedema) and increases proportionately as the infiltration continues.

When infiltration occurs, the infusion must be discontinued and the extremity raised to promote venous drainage. Where the IV fluid or its additives are potentially necrotic, procedures for managing extravasations of necrotoxic solutions (e.g. IV antibiotics, chemotherapeutic agents) need to be followed. If IV therapy is still necessary, another cannula needs to be inserted into another extremity.

Phlebitis is an inflammation of the vein. Selected risk factors for phlebitis include the type of catheter material, chemical irritation from IV additives and drugs (e.g. IV antibiotics) and the anatomical position of the catheter. Signs and symptoms include pain, increased skin temperature over the vein and, in some instances, redness travelling along the path of the vein (see Table 34-24). When phlebitis develops, the IV therapy must be discontinued and a new cannula inserted in another vein. Warm, moist heat on the site of phlebitis can offer some relief to the patient (see Chapter 30). Phlebitis can be dangerous because blood clots (thrombophlebitis) can occur and in some cases may result in emboli. Phlebitis is prevented by the routine removal and rotation of IV sites. Most agencies recommend replacing peripheral venous catheters and rotating sites every 48–72 hours (Joanna Briggs Institute 2003).

TABLE 34-24 Phlebitis scale

Score	Clinical signs	Interpretation and response
0	No clinical symptoms	No action required
1	Erythema at access site with or without pain Oedema may or may not be present No streak formation No palpable venous cord	Possible signs of phlebitis Continue to assess
2	Erythema with or without pain Oedema may or may not be present Streak formation No palpable venous cord	Early signs of phlebitis Re-site cannula
3	Erythema with or without pain Oedema may or may not be present Streak formation Palpable venouscord	Signs of phlebitis Re-site cannula Consider treatment

Alexander M, Corrigan A et al 2008 Infusion nursing: an evidence based approach, 3rd edn. Saunders Elsevier, Philadelphia; Smith SF et al 2008 Clinical nursing skills: basic to advanced skills, 7th edn. Prentice Hall, Upper Saddle River, NJ.

Fluid volume excess (FVE)

Fluid volume excess (FVE) occurs when a patient has received a too-rapid administration of IV solutions. The assessment findings include shortness of breath, lung crepitations and tachycardia. The nurse should slow the rate of infusion, notify the doctor,

raise the head of the bed and lower the foot of the bed (if not contraindicated by the patient's underlying condition) and monitor vital signs.

Bleeding

Bleeding can occur around the venepuncture site during the infusion or through the infusion cannula or tubing if these become inadvertently disconnected. Bleeding is common in patients who have received anticoagulant therapy or who have a bleeding disorder (e.g. leukaemia or thrombocytopenia). If bleeding occurs around the venepuncture site and the catheter is in the vein, a pressure dressing may be put over the site to control the bleeding. Bleeding from a vein is usually a slow, continuous seepage and is not serious.

Discontinuing intravenous infusions

Discontinuing an infusion is necessary after the prescribed amount of fluid has been infused, when an infiltration occurs, if phlebitis is present or if the infusion cannula develops a clot at its tip. The nurse discontinuing an infusion first puts on disposable gloves, moves the roller clamp to the off/closed position and then removes the tape and dressing. The nurse places a sterile 5 cm × 5 cm gauze pad over the venepuncture site and, using the other hand, withdraws the cannula by pulling straight back away from the puncture site (Figure 34-20). If necessary, an alcohol swab can be used to remove dried blood or other drainage from around the site. The nurse elevates the extremity and applies pressure to the site for 1–2 minutes to control bleeding and prevent haematoma formation. Patients who have received heparin require longer pressure because of the action of heparin on blood-clotting mechanisms. The nurse records the amount of fluid infused and the time of the discontinuation.



Figure 34-20 **IV catheter is removed slowly, keeping catheter parallel to vein.**

• CRITICAL REFLECTION POINT

You are caring for Betty, a 59-year-old woman, following a total knee replacement. She weighed 74 kg on admission. The doctor ordered Keflin (cephalothin) 1 g in 50 mL Normal saline to run over 30 minutes IV piggyback three times daily. Betty has a continuous infusion of Hartmann's at 75 mL/h in the left forearm.

Activity

1. **Calculate:**
   a) **drops per minute of the Keflin infusion using microtubing (60 drops/mL)**
   b) **drops per minute for the Hartmann's infusing using macrotubing (20 drops/mL).**
2. **Discuss whether the Hartmann's is an appropriate IV solution and 75 mL/h is an appropriate amount for this postoperative patient who is also ordered nil by mouth. Hint: refer to formulas for daily maintenance volumes in Table 34-16.**

Transfusion (colloids)

Transfusion is the IV administration of whole blood or a component such as plasma, packed red blood cells (RBCs) or platelets (see Skill 34-7). The objectives for blood transfusions are to:

1. increase circulating blood volume after surgery, trauma or haemorrhage
2. increase the number of RBCs and to maintain haemoglobin levels in patients with severe anaemia
3. provide selected cellular components as replacement therapy (e.g. clotting factors, platelets, albumin).

Blood groups and types

The most important grouping for transfusion purposes is the ABO system, which includes A, B, O and AB blood types. The determination of blood groups is based on the presence or absence of A and B red-cell antigens. Individuals with A antigens, B antigens, or no antigens belong to groups A, B and O, respectively. The person with A and B antigens has AB blood. People with type A blood naturally produce anti-B antibodies in their plasma. Similarly, type B people naturally produce anti-A antibodies. A type O person has neither type A nor type B antigens, and thus is considered a universal blood donor. A type AB person produces neither antibody, which is why such a person can be a universal recipient and receive any type of blood.

If blood that is mismatched with the patient's blood is transfused, a *transfusion reaction* occurs. The transfusion reaction is an antigen–antibody reaction, and can range from a mild response to severe anaphylactic shock which can be life-threatening.

Another consideration when matching for blood transfusions is the Rhesus (Rh) factor, which is an antigenic substance in the erythrocytes of most people. A person with the factor is Rh positive, and a person without it is Rh negative.

Autologous transfusion

Autologous transfusion is the collection and administration of a patient's own blood. The blood for an autologous

SKILL 34-7

Care of the patient requiring a blood transfusion

Delegation and other considerations

Management of a blood transfusion requires the problem-solving and knowledge-application skills of RNs. For this procedure, delegation is inappropriate.

Equipment

- Special patient gown with press-studs at shoulder seams (makes removal with IV tubing easier)
- Blood transfusion chart (written order for blood, together with patient identification required to retrieve required blood product from facility blood bank)
- 0.9% sodium chloride (Normal saline) for priming line
- Cross-checked blood product

Equipment for the initiation of IV fluid infusion if not in situ

For IV fluid infusion:

- Blood transfusion giving set with a 170–200 micron filter
- Alcohol and povidone–iodine cleaning swabs or sticks (Rosenthal 2003)
- EMLA cream
- Towel (to place under patient's hand or arm)
- IV pole, rolling or ceiling-mounted
- Disposable gloves
- Tourniquet (can be a source of contamination; use a single-use product)
- Arm board, if needed (used to maintain wrist or elbow joint position)
- Non-allergenic tape
- Needle disposal container (sharps container)
- Transparent dressing (e.g. Opsite, Tegaderm)
- 1–3 mL of Normal saline
- 5 mL syringes with Interlink needle

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Check medical notes for reason for transfusion for this patient and patient's past and present medical history.	Knowledge of reasons for the transfusion assists in understanding reason for choice of transfused blood product, monitoring required throughout and post-transfusion and reason for the administration of any medications post-transfusion – e.g. administration of IV Frusemide.
ASSESSMENT	
2. Check patient's vital signs before commencing the transfusion.	Establishes a baseline prior to initiating the blood transfusion so changes in the patient's condition during the transfusion are monitored. A temperature > 37.8°C should be reported to the doctor before proceeding with the transfusion.
3. Check informed consent has been documented on a generic or transfusion-specific consent form or in the medical records.	Documentation of informed consent should provide evidence that patient informed of reason for the transfusion, risks and benefits of the transfusion as well as consequences of not receiving the transfusion.
4. Check doctor's written orders for blood transfusion on transfusion-specific form. Should include patient identification – family and given name, DOB, patient ID; date, timing and urgency of transfusion, blood product, number of units, duration of transfusion; if blood warmer, medications required prior to or during	Ensures that correct blood product and type will be used.

STEPS	RATIONALE
transfusion; known patient allergies and history of adverse drug or previous transfusion reactions and legibly written doctor's full name, contact number.	The doctor ordering the transfusion must be clearly identifiable to minimise delays if the orders require clarification.
5. Blood product must be handed to the RN responsible for commencing the transfusion. Two RNs must then confirm correct blood product, blood type and expiry date, rate of fluid administration and purpose of infusion with patient ID. In addition, RNs must follow the seven rights for administration of medications.	The blood product should never be left anywhere unattended.

■ **Critical decision point: Do not prime, add or infuse medications or solutions through the same tubing with blood components, except 0.9% sodium chloride injection. Dextrose solutions cause red blood cells to clump, swell and haemolyse. Solutions containing calcium (e.g. Haemaccel and lactated Ringer's) counteract citrated anticoagulants in the blood product (Australian Red Cross Blood Service 2015).**

6. Determine patient's understanding of need for blood transfusion.	Reveals need for patient instruction.
7. Assess patient's history of allergies.	May reveal information that affects blood transfusions.
8. Assess patency of current IV access site. Ensure IV giving set and cannula is primed with Normal saline or blood component.	If patency is not verified, notify medical officer for new IV access site.
PREPARATION OF THE PATIENT	
9. Prepare patient and family by explaining the procedure, its purpose and what is expected of patient. Provide patient information brochure on blood transfusion.	Decreases anxiety and promotes cooperation. Patients should be able to articulate what symptoms they need to immediately report to staff during and after the transfusion.
10. Perform hand hygiene.	Reduces transmission of microorganisms.
11. Identify the patient and blood product according to policy. The blood transfusion must be initiated within 30 minutes of arrival; if not, it must be returned to the facility blood bank for storage.	Minimises the risk of bacterial contamination.
12. Inspect and ensure the blood product bag is not compromised (e.g. leaking, spiked, vented, discolouration, turbidity or clots) prior to use.	Do not proceed if indication of break in integrity of the bag or damage to the blood product.
13. Two RNs check the patient identification, blood order sheet and information on the blood product to ensure they are all the same. Checks are: patient's name and ID number, original prescription for blood, group and type of blood, expiry date of the blood unit/ product, and blood product ID number. If there are any discrepancies the blood is not used.	Minimum that should be checked to minimise transfusion errors. If there is no appropriately completed identification wrist band in situ there is no transfusion.

■ **Critical point: You have 30 minutes from retrieval of blood product from blood and initiation of transfusion. If the 30 minutes is exceeded, return the unit to the blood bank fridge. Never use the ward/medication refrigerator for blood storage.**

STEPS	RATIONALE
INITIATING THE BLOOD TRANSFUSION	
14. Gently invert the bag several times.	To ensure cells and plasma are mixed.
15. Wearing gloves, attach the unit of blood to the giving set. Remove protector cap from tubing insertion spike (keeping spike sterile), and insert spike into opening of blood unit.	Prevents contamination of solution from contaminated insertion spike.
16. Prime infusion tubing by filling with blood. Compress drip chamber/filter and release, allowing it to fill one-third to half full.	Creates suction effects; blood enters drip chamber to prevent air from entering tubing.
17. Slowly release roller clamp to allow blood to travel from drip chamber through tubing to cannula. If large volumes of blood are to be transfused rapidly, a blood-warming device is ordered by doctor to prevent hypothermia.	Slow fill of tubing decreases turbulence and chance of bubble formation. Removes air from tubing and permits tubing to fill with blood. Closing the clamp prevents accidental loss of fluid.
18. Begin the transfusion slowly (5 mL/min) for first 15 minutes. The nurse remains with the patient for the first 15 minutes to observe for potential reactions. If no signs of a transfusion reaction, increase to ordered rate for transfusion. Normally blood is transfused over 90 minutes to 4 hours.	Beginning the transfusion slowly reduces the amount of blood the system will react to, and will reduce the severity of the reaction if one occurs.
19. Monitor the patient; take vital signs at 15-minute intervals for the first hour of the transfusion and then every half-hour for the remainder of the transfusion, or according to policy. Observe for signs of febrile reactions: fever, chills, headache and malaise.	Where continuous visual observation is not possible, nurses need to attend the patient for the first 30 minutes of the transfusion as two-thirds of all possible reactions occur within the first 30 minutes after transfusion commencement.
20. Complete the transfusion when the blood unit is empty (or if 4 hours has elapsed since unit of blood removed from the blood fridge). a. Flush the line with Normal saline. b. Wearing gloves, disconnect the blood transfusion giving set from the IV cannula. c. Consult doctor's orders for continuation of IV therapy. d. Dispose of blood unit according to policy. e. Continue to monitor patient's vital signs hourly for 4 hours and then 4th-hourly for 24 hours or according to the patient's clinical status or heath unit policy.	Continue to observe and monitor patient post transfusion, for delayed reaction could still occur. Post transfusion re-check Hb and Hct, bleeding time, serial platelet count according to patient's diagnoses and condition or institution's policy. Discard blood bag and BT set and sharps according to institution's guidelines.

DOCUMENTION AND REPORTING

- Documentation: Many healthcare facilities have specific blood transfusion forms. A synopsis of commencement and completion of transfused components and patient's response needs to be documented in nurse's shift report.

HOME CARE CONSIDERATIONS

- Blood transfusions are not usually a home nursing procedure.

DOCUMENTION AND REPORTING *continued*

The following signs indicate need for immediate nursing intervention:

- Allergic reaction: flushing, urticaria, wheezing, pruritus.
- Haemolytic reaction: restlessness, anxiety, flushing, chest/lumbar pain, tachypnoea, tachycardia, chills and fever.
- Circulatory overload: dyspnoea, hypertension, chest pain, rales and rhonchi, anxiety, diaphoresis, haemoptysis.

The transfusion is stopped if any of these reactions become apparent; signs and symptoms are reported to medical officer immediately; IV access maintained.

Complete the institution's transfusion reaction form for adverse reaction. Documentation of a transfusion reaction in nursing shift report should include: Time and date of transfusion reaction; type and amount of blood infused; clinical signs and symptoms of reaction in order of occurrence; specimens sent to lab; ward urine test results; date and time doctor notified and orders; interventions implemented and patient response.

transfusion can be obtained by preoperative donation up to 5 weeks before the planned surgery (e.g. heart, orthopaedic, plastic, gynaecological). The blood will be tested for HIV and HBV. Another way to collect blood for an autologous transfusion is by perioperative blood salvage (e.g. during vascular and orthopaedic surgery, organ transplant surgery and traumatic injuries) and from mediastinal and chest-tube drainage. The salvaged blood is then reinfused during surgery. Autologous transfusions are safer for the patient because they decrease the risk of complications such as mismatched blood and exposure to blood-borne infectious agents.

Management of blood transfusions (see Skill 34-7)

The medical team is responsible for the decision to transfuse. Such decisions must be based on a comprehensive clinical assessment and be clearly documented in the patient's clinical notes (Australian Red Cross Blood Service 2015). The RN is responsible for assessment before, during and after the transfusion and for regulation of the transfusion. Assessment is critical because of the risk of allergic reactions.

The nurse should assess the venepuncture site for signs of infection, patency and infiltration. An 18-gauge cannula is recommended because blood is more viscous than IV crystalloids. IV administration for blood administration has an inline filter. The tubing should be primed with 0.9% Normal saline prior to commencing the transfusion.

Pre-transfusion assessment also includes information on the patient's knowledge of the reason for the blood transfusion and any history of previous transfusion or transfusion reactions. A prior transfusion reaction does not increase the risk of a reaction with a subsequent transfusion. Before commencing the transfusion, the nurse explains the procedure and instructs the patient to report any side effects (e.g. chills, dizziness, fever) once the transfusion begins. The nurse also checks that the patient has signed an informed consent.

Because of the danger of transfusion reactions, it is important to use specific precautions in administering blood or blood products. The nurse must obtain the patient's baseline vital signs before the transfusion begins. These data allow the nurse to determine when changes in vital signs occur, which can indicate that a transfusion reaction is developing. To ensure that the right patient receives the correct type of blood or blood product, a thorough procedure is used to check the identity of the blood products and the patient and the compatibility of the blood and the patient. The nurse, although not involved in the blood labelling process, is responsible for determining that the blood delivered to the patient corresponds to the patient's blood type

listed in the medical record. Two RNs or one RN and an enrolled nurse (depending on agency policy) must together check the label on the blood product for the type of blood product, expiry date on the bag, the patient's identification number, blood group and complete name. This is then checked against the patient's ID band and chart. If even a minor discrepancy exists, the blood should not be given and the blood bank should be notified immediately.

Initiation of a transfusion begins slowly, to allow for the early detection of a transfusion reaction (Australian Red Cross Blood Service 2015). The RN maintains the infusion rate, monitors for side effects, assesses vital signs and promptly records all findings. The nurse usually stays with the patient during the first 15 minutes, the time when a reaction is most likely to occur (timing of reactions depends on rate of the transfusion flow; the nurse may need to stay with the patient longer if the transfusion rate is slow). The nurse will continue to monitor the patient and obtain vital signs periodically during the transfusion as directed by agency policy. If a transfusion reaction is anticipated or suspected, the nurse will obtain vital signs more frequently (Table 34-25).

The rate of transfusion is usually specified in the doctor's prescription. Ideally, a unit of whole blood or packed RBCs is transfused in 2 hours. This time can be lengthened to 4 hours if the patient is at risk of FVE. Beyond 4 hours there is a risk of the blood becoming contaminated.

When patients have a severe blood loss such as with haemorrhage, they may receive rapid transfusions through a central venous catheter. In this case, a blood-warming device is often necessary, because the tip of the central venous catheter

TABLE 34-25 Adverse transfusion reactions/complications

Reaction	Usual cause	Clinical features	Management	Prevention
Allergic reaction	Hypersensitivity to allergens or plasma proteins in the transfused unit; rarely due to donor medication Occurs in 1–3% of plasma infusions	*Mild allergic reaction:* localised urticaria, pruritus and rash *Severe allergic reaction:* flushing, wheezing, hypotension or angio-oedema	Stop transfusion immediately; follow other steps for managing suspected transfusion reactions (see below) *Mild reaction:* administer antihistamine. Transfusion may be restarted slowly and completed within 4 hours when reaction abates *Severe reaction:* medical emergency – administer adrenaline and/or corticosteroids. Consult haematologist before administering additional blood	Consider premedication and/or washed cells if the patient has recurrent allergic reactions to transfusion
Anaphylactoid reactions or anaphylaxis	Mainly reported in IgA-deficient patients who have anti-IgA antibodies of the IgE class Also due to IgE-mediated allergy to other plasma proteins Rarely due to donor medication Occurs in 1:20,000 to 1:50,000 of transfusions	May be a fatal reaction Sudden onset of cough, bronchospasm, laryngospasm, respiratory distress, vascular instability, nausea, abdominal cramps, vomiting, diarrhoea, shock and loss of consciousness	Stop transfusion immediately; remove the IV line from the cannula; follow other steps for managing suspected transfusion reactions (see below) Maintain airway and intravenous line Administer adrenaline and corticosteroids Treat hypotension, if present Notify blood service	Where appropriate, use autologous, washed components from IgA-deficient donors if future transfusion required Check the recipient's pretransfusion sample for IgA deficiency and presence of anti-IgA antibodies
Circulatory overload	Transfusion-related circulatory overload (TACO) due to rapid or massive transfusion of blood in patients with diminished cardiac reserve or chronic anaemia Occurs in up to 1% of patients receiving transfusions	Dyspnoea, orthopnoea, cyanosis, tachycardia, hypertension, and pulmonary oedema Chest X-ray: septal lines, cephalisation and enlarged vascular pedicle (> 65 mm) Distended neck veins, S3 murmur on cardiac examination and peripheral oedema	Stop transfusion immediately Place the patient in an upright position and treat symptoms with oxygen and diuretics therapy	In susceptible patients, transfusion should be administered slowly and in the most concentrated form possible

continued

TABLE 34-25 ***continued***

Reaction	Usual cause	Clinical features	Management	Prevention
Iron overload	Long-term complication of repeated red cell transfusions with iron deposition in organs Each transfusion contributes about 250 mg of iron	Symptoms and signs of organ damage or failure, especially liver, cardiac and arthropathy Incidence increases with multiple transfusions, especially more than 20 units	Prescribe iron chelating agents for treatment and for prevention, where anticipated	*Investigations:* request serum ferritin and transferrin saturation; organ imaging and liver biopsy
Metabolic complications including hypothermia	Rapid infusion of large volumes of cold blood can depress the body temperature and result in metabolic complications, such as acidosis, hyperkalaemia, hypocalcaemia	Depends on clinical situation, but transfused patients have a great risk of cardiac arrhythmia or cardiac arrest	Slow rate of infusion Use blood warmers where appropriate Use fresh blood components	*Investigations:* perform electrolyte analysis and cardiac monitoring
Non-haemolytic transfusion reaction	Often due to alloimmunisation to donor HLA or other antigens Cytokine accumulation during storage may also precipitate this reaction Occurs in 0.1–1% of transfusions with universal leucocyte depletion; patients previously alloimmunised by transfusion or pregnancy	Unexpected temperature rise of ≥ 1°C from baseline during or shortly after transfusion, in the absence of other pyrexic stimulus Chills, rigors and headache may accompany this reaction	Stop transfusion immediately; follow other steps for managing suspected transfusion reactions (see below)	Clinically assess transfused patients for fever, chills, rigors and headache Exclude other causes, as fever alone may be the first manifestation of a life-threatening reaction Rule out haemolysis, septic reaction and TRALI (see below)
Post-transfusion purpura	Alloimmunisation to platelet-specific antigens, most often HPA-1a While the immune specificity may be to a platelet-specific antigen, both autologous and allogeneic platelets are destroyed	Rare reaction Patients develop dramatic, sudden and self-limiting thrombocytopenia, typically 7–10 days after a blood transfusion	IVIg at 1 g/kg as a total dose, repeat as necessary Request to blood service or jurisdictional approver to access IVIg	*Investigation:* demonstrate antiplatelet antibody
Transfusion-acquired graft-versus-host disease	Viable T lymphocytes in the transfused component engraft in the recipient and react against tissue antigens in the recipient Increased risk in severely immunocompromised recipients	Rare but fatal reaction Transfused patients present with fever, rash, liver function abnormalities and pancytopenia	Provide supportive care Prevention is by gamma irradiation	*Investigations:* request skin biopsy; demonstrate donor leucocyte engraftment
Transfusion-related acute lung injury (TRALI)	Specific pathogenesis not completely understood: due to either HLA or HNA antibodies found in the donor's blood directed against the recipient's leucocyte antigen Variable incidence: occurs in 1:5000 to 1:190,000	Reaction activates neutrophils in the pulmonary microcirculation, releasing oxidases and proteases that cause increased capillary permeability Onset of fever, chills, dyspnoea, tachypnoea, tachycardia, hypotension, hypoxia and non-cardiogenic pulmonary oedema during or within 6 hours of transfusion	Stop transfusion immediately; follow other steps for managing suspected transfusion reactions (see below) Provide cardiovascular and airway support Administer supplemental oxygen and employ ventilation as necessary Notify blood service so they can quarantine and test related components from the same donor	*Investigations:* test the donor or recipient serum for HLA or granulocyte antibody; chest X-ray will show bilateral interstitial infiltrates Record the episode and actions/outcomes in the patient's notes for future reference

continued

TABLE 34-25 ***continued***

Reaction	Usual cause	Clinical features	Management	Prevention
Haemolysis				
Acute intravascular haemolysis	Immunological destruction of transfused red cells, due to incompatibility of antigen on transfused cells with antibody in the recipient circulation Most common cause is transfusion of ABO-incompatible blood (incidence: 1:12,000 to 1:77,000 of transfusions) Rare causes: damage to transfused red cells; may be *physical* (thermal injury due to freezing or overheating) or *chemical* (effects of drugs co-administered with transfusion; or bacterial toxins)	Commences with an increase in temperature and pulse rate Symptoms may include chills, rigors, dyspnoea, chest and/or flank pain, discomfort at infusion site, abnormal bleeding or shock (hypotension) Transfused patients develop oliguria, haemoglobinuria and haemoglobinaemia DIC may be the first signs in an anaesthetised patient	Stop transfusion immediately; remove IV line from cannula; follow other steps for managing suspected transfusion reactions (see below) Seek urgent medical assistance Do not administer additional blood packs until cleared by haematologist or blood service	*Investigations:* Clinically assess patients for common features of haemolysis occurring within 4 hours of transfusion Check clerical records, such as ABO typing of patient and unit Perform DAT and IAT, renal function, and tests for haemolysis (urinary haemosiderin, serum haptoglobulin) Meticulously verify and document patient identification from sample collection to component infusion Ensure correct storage to avoid thermal injury to red cells
Delayed (usually extravascular) haemolysis	Previously red-cell-alloimmunised patients in whom antigens on transfused red cells provoke anamnestic production of red cell antibody Occurs in 1:2500 to 1:11,000 of transfusions	Reaction usually develops in 2–14 days after transfusion Patients may present with unexplained fever, positive DAT, jaundice and unexplained decrease in haemoglobin	Most delayed haemolytic reactions have a benign course and require no treatment If an antibody is identified, antigen-negative blood will be requested for further transfusions	*Investigations:* DAT, IAT, liver function tests and markers of haemolysis
Infectious reactions				
Several infectious agents are transmissible by blood transfusion. Organisms responsible for transfusion-transmitted diseases include bacteria, malaria, variant Creutzfeldt-Jakob disease and viruses.				
Bacterial infection	Gram-positive and Gram-negative bacteria may enter the blood during collection or preparation of components Common in platelets (as these are stored at room temperature) and red-cell components stored for several weeks Occasionally due to contamination of ports during thawing of frozen products in a water bath Incidence: 1:75,000 for platelets and 1:500,000 for red cells	Reaction can be acute, severe and fatal High fever, severe chills, hypotension or circulatory collapse during or soon after transfusion	Stop transfusion immediately; follow other steps for managing suspected transfusion reactions (see below) Seek urgent medical assistance Commence broad-spectrum antibiotics following septic screen Notify blood service	*Investigations:* request septic screen and perform culture and Gram-stain of the blood component Keep the blood bag and giving set (sealed) for further investigation Collect, process, store, thaw and transfuse blood products according to blood service standards and infuse within 4 hours of starting time

continued

TABLE 34-25 ***continued***

Reaction	Usual cause	Clinical features	Management	Prevention
Malaria infection	Malaria is a protozoan disease involving four species of the genus *Plasmodium*; *P. falciparum*, *P. vivax*, *P. ovale* and *P. malariae* invade red cells and pose a risk for transmission by blood Estimated residual risk per blood unit for malaria is 1:4.9 million to 1:10.2 million	Rare transfusion-transmitted infection Fever, headache, nausea, vomiting and orthostatic hypotension Classic malarial paroxysms depend on the specific infecting *Plasmodium* species	Treat the specific parasite with antimalarial drugs Notify blood service	*Investigations:* Clinically assess patients for malaria; request thick and thin blood films to demonstrate the asexual forms of the parasite
Variant Creutzfeldt-Jakob disease (vCJD)	vCJD is a result of an exposure to tainted beef from cattle with bovine spongiform encephalopathy (BSE). Risk of vCJD is possible but not yet reported in Australia. The United Kingdom has reported a small number of cases of putative transfusion transmission since 2004	vCJD is a prion disease that affects the central nervous system Patients can present with fatigue, weight loss, headache, malaise and deficits in higher cortical function	Clinically assess patients for neurodegenerative signs and symptoms Seek expert advice and notify the blood service	No routine tests are available to predict or prevent vCJD from transmission by transfusion
Viral infection	Transfusion-transmitted viral infections may occur due to window-period transmissions	Clinical features of different viral infections, such as hepatitis and human immunodeficiency virus (HIV), are variable Severity can range from asymptomatic to fatal	Treat the specific diagnosis, if available Notify the blood service	*Investigation:* the risk of CMV transmission can be reduced by requesting CMV-seronegative or leucocyte-depleted blood components

ABC = airway, breathing, circulation; ABO = ABO blood classification system; CMV = cytomegalovirus; DAT = direct antiglobulin test; DIC = disseminated intravascular coagulation; HLA = human leucocyte antigen; human neutrophil antigen (HNA); HPA-1a = human platelet antigen 1a; IAT = indirect antiglobulin test; IgA = immunoglobulin A; IgE = immunoglobulin E; IVIg = intravenous immunoglobulin.

Adapted from Australian Red Cross Blood Service 2015 Blood component information: circular of information – an extension of blood component labels. Australian Red Cross Blood Service, Melbourne; and information available on the Australian Red Cross Blood Service website, http://resources.transfusion.com.au/cdm/ref/collection/p16691coll1/id/18; accessed 13 Jan 2016.

lies in the superior vena cava, above the right atrium. Rapid administration of cold blood can result in cardiac dysrhythmias (Lewis et al 2014).

• CRITICAL REFLECTION POINT

Mrs Coleman is admitted with diagnosis of anaemia related to ongoing haemorrhage. She has a haemoglobin level (Hb) of 80 g/L, temperature 36.8°C, pulse 112 beats per minute, blood pressure 88/56 mmHg, respirations 26 breaths per minute.

Activity

1. **What blood product would she receive and why?**
2. **A transfusion was commenced. After 15 minutes the patient states she feels a little hot; her temperature is now 37.4°C. Make a decision on whether you would continue or stop the transfusion and provide a rationale for your decision.**
3. **Can the monitoring of a patient with a blood transfusion be delegated to a student or enrolled nurse?**

Transfusion reactions

A transfusion reaction is a systemic response by the body to incompatible blood. Causes include RBC incompatibility and allergic sensitivity to the components of the transfused blood or to the potassium or citrate preservative in the blood. Several types of acute reactions can result from blood transfusions, as well as other complications (see Box 34-5).

A second category of reactions includes diseases transmitted by infected blood donors who are asymptomatic. Diseases transmitted through transfusions are malaria, hepatitis and HIV. Because all units of blood collected must undergo serological testing and screening for HIV and HBV, the risk of acquiring blood-borne infections from blood transfusions is reduced.

Circulatory overload is a risk when a patient receives massive whole blood or packed RBC transfusions for haemorrhagic shock or when a patient with normal blood volume receives blood. Patients particularly at risk of circulatory overload are children, older adults and those with cardiopulmonary diseases.

Blood transfusion reactions are life-threatening, but prompt nursing intervention can maintain the patient's physiological stability.

BOX 34-5 Steps for managing suspected transfusion reactions

1. Stop the transfusion immediately.
2. Remove the IV line from the cannula (IV line still contains blood which should not be administered to the patient).
3. Maintain intravenous (IV) access (do not flush existing line or cannula) – another cannula is usually inserted in a different site. Transfusing even the small amount of mismatched blood remaining in the tubing can cause a major reaction. A 0.9% Normal saline infusion is commenced using a new line and often a new IV site.
4. Seek urgent medical assistance as this may become an emergency.
5. Remain with the patient, observing signs and symptoms and monitoring vital signs as often as every 5 minutes.
6. Prepare to administer emergency drugs such as antihistamines, vasopressors, fluids and steroids as per doctor's order.
7. Check the right pack has been given to the right patient.
8. Prepare to perform cardiopulmonary resuscitation.
9. Obtain a urine specimen and send it to the laboratory.
10. Keep the blood bag and giving set (sealed) for further investigation.
11. Record the episode and actions/outcomes in the patient's notes for future reference.
12. Notify the medical officer and blood service.
13. Send blood pack to the blood service for urgent culture and Gram stain.

Adapted from Australian Red Cross Blood Service, Blood component information: circular of information – an extension of blood component labels, March 2015.

Interventions for acid–base imbalances

Nursing interventions to promote acid–base balance support prescribed medical therapies and are aimed at reversing an existing acid–base imbalance. Such imbalances can be life-threatening and require rapid correction. The nurse must maintain a functional IV line and frequently check the doctor's orders for new medications or fluids. Prescribed drugs and fluid and electrolyte replacement should be given promptly. Chapter 31 reviews appropriate therapies for patients with respiratory acidosis.

The nurse also monitors patients closely for changes in acid–base balance. Patients with acid–base disturbances usually require repeated ABG analysis. This procedure provides arterial blood samples for analysis of hydrogen ion concentration.

Arterial blood gases

Determination of ABG levels requires the removal of a sample of blood from an artery to assess the patient's acid–base status and the adequacy of ventilation and oxygenation. Arterial blood is drawn from a peripheral artery (usually the radial) or from an existing arterial line inserted by a doctor. After the specimen is obtained, care is taken to prevent air from entering the syringe because this will affect the blood gas analysis. To reduce metabolism of cells, the syringe is submerged in crushed ice and transported immediately to the laboratory. The nurse applies pressure to the puncture site for at least 5 minutes to reduce the risk of bleeding or haematoma formation. The nurse might also reassess the radial pulse after pressure has been removed.

Restorative care

After experiencing acute alterations in fluid, electrolyte or acid–base balance, patients often require ongoing maintenance to prevent a recurrence of health alterations.

Older adults and the chronically ill require special considerations to prevent complications from developing. The following *Research highlight* demonstrates the often unrecognised degree of chronic dehydration in older adults and the need for an interprofessional approach to discharge planning. A discharge plan for all patients who have experienced or are at risk for fluid and electrolyte disturbances (particularly older adults, infants and children) should include a written list of clinical signs and

RESEARCH HIGHLIGHT

Research focus

To compare in-hospital risks and mortality of hypernatraemia for patients admitted to hospital from either a nursing home or their home.

Research abstract

A retrospective observational study of 21,160 patients aged over 65 years.

Research findings

Patients admitted from care homes had 10-fold higher prevalence of hypernatraemia than those from their own homes. Nine in 10 cases of hypernatraemia were nursing home residents. After correcting for age, gender, mode of admission and dementia, care home residents were significantly more likely to be admitted with hypernatraemia than were own-home residents. Compared with own-home residents, care home residents were also at about a two-fold higher risk of in-hospital mortality compared with non-care home residents.

Conclusion

Patients admitted to hospital from care homes are commonly dehydrated on admission and, as a result, appear to experience significantly greater risks of in-hospital mortality.

Reference

Wolff A, Stuckle D, McKee M 2015 Are patients admitted to hospitals from care homes dehydrated? A retrospective analysis of hypernatraemia and in-hospital mortality J R Soc Med 108(7):259–65.

BOX 34-6 Client teaching for home intravenous (IV) therapy

- Explain to the patient and caregiver the importance of IV therapy in maintaining hydration and access for the delivery of medications.
- Emphasise the risks involved when the IV system is not kept sterile.
- Be sure the patient and/or caregiver is able to manipulate the required equipment.
- Instruct the patient or caregiver in how to change IV solutions, tubing and dressing when they become soiled or dislodged. (Note: the home health nurse may be able to visit often enough to perform scheduled tubing and dressing changes or to assess patient's/family's ability.)
- Instruct the patient and caregiver about signs and symptoms of overhydration, infiltration, phlebitis and infection and to notify the home health nurse immediately.
- Instruct the patient and caregiver to notify the home health nurse if the infusion slows or stops or if blood is seen in the tubing.
- Teach the patient, with the caregiver's assistance, how to walk or move, perform hygiene and participate in other activities of daily living without dislodging or disconnecting catheter and tubing.

symptoms of fluid and electrolyte disturbance, frequency, type and amount of maintenance fluids required and when to seek advice.

Home intravenous therapy

IV therapy is used for patients requiring long-term hydration, parenteral nutrition (see Chapter 36) or long-term medication administration. The patient must have a family member available to assist them to manage the IV therapy. A home care nurse will work closely with the patient to ensure that a sterile IV system is maintained and that complications are avoided or recognised promptly. Box 34-6 summarises patient education guidelines for home IV therapy.

Nutritional support

Most patients who have had electrolyte disorders or metabolic acid–base disturbances require ongoing nutritional support. Depending on the type of disorder, fluid or food intake may be encouraged or restricted (see Chapter 36). The patient needs a nutritionally well-balanced diet. If patients are still responsible for preparing their own meals, they should learn to look at the lists of nutrient content of foods and to read the labels of commercially prepared foods. Nurses should possess knowledge of the fluid content of various foods if they are to be innovative in assisting patients who are reluctant to drink to maintain an appropriate level of fluid intake (see Table 34-22). Nursing staff should identify individual plans for each patient and ensure that such plans include strategies appropriate to the patient and their degree of haemodynamic stability (Table 34-26).

TABLE 34-26 Strategies to maintain oral intake

Aspect	Strategy
Document	Usual fluid intake and eating habits
	Usual weight, usual vital signs
	Fluid preference and preferred temperature of beverage
	Calculate expected maintenance volume based on patient's usual weight
Educate patients and relatives	Importance of hydration and encouragement of drinking, even when not thirsty
	Importance of fluid and foods to hydration
	Early recognition of any decrease in usual patterns
Educate nursing staff	Appropriate and timely assessment of the appropriate initiation of oral rehydration solutions, nasogastric feeding, subcutaneous or intravenous rehydration
	Evaluation of medications for possible dehydrating effects
	Interpretation of patient data, including laboratory results
Strategies to increase fluid consumption	Identify anorexia
	Replenish and refresh fluid supplies regularly
	Balance caffeinated and alcoholic drinks with other fluids
	Offer fluids regularly and encourage their consumption – if necessary 1- to 2-hourly. Use beverage carts to encourage fluid consumption throughout the day, not just at meal-times
	Fluid intake should equate to approximately 75% of the required daily fluid requirement
	Calculation of the required hourly volume depends on dietary intake. If no dietary intake, the hourly required oral intake (taking into account only waking hours) would be approximately 100 mL
	Offer icypoles and fluid-rich foods
	Ensure access to drinks, positioning of residents, use of drinking straws, feeder cups
	Use of visual reminders to drink, e.g. posters
	Check environment for obstacles

Adapted from Wotton K, Crannitch K, Munt R 2008 Prevalence, risk factors and strategies to prevent dehydration in older adults. Contemp Nurse 31(1):44–56.

CRITICAL REFLECTION POINT

Edwin Schell is an elderly resident of a long-term care facility. He is quite immobilised by severe arthritis, and needs help to get into and out of his chair.

Activity

1. **How would you assess his fluid balance?**
2. **What measures could you implement to decrease risk for dehydration?**
3. **What measures could be implemented in the long care facility to manage a diagnosis of dehydration?**

Medication safety

Numerous medications contain components or create potential side effects that can alter fluid and electrolyte balance. Patients with chronic disease who receive multiple medications and those with renal or liver disorders are at significant risk for experiencing medication complications. Once patients return to a restorative-care setting, whether in the home, long-term care or a nursing home, drug safety becomes very important. Patient and family education is essential to provide information on knowing what is contained in a drug and how to monitor for and when to report side effects. The nurse should review all medications with patients and encourage them to consult with the local pharmacist, especially before taking over-the-counter medications.

EVALUATING IMPACTS AND OUTCOMES

Patient care

The evaluation of a patient's clinical status is especially important if an acute fluid and electrolyte or acid–base disturbance exists. The patient's condition can change very quickly, and the nurse must be able to recognise the signs and symptoms of impending problems. To do this well, the nurse uses knowledge about the health alterations of the patient, the effects of medications and fluids, and the patient's presenting clinical status and past medical history (Figure 34-21).

The nurse performs evaluative measures and determines whether changes have occurred from the last patient assessment. For example, if the nurse assesses an increase in serum potassium for a patient diagnosed with hypokalaemia, the implementation of management strategies should see a concurrent decrease in the physical signs and symptoms of hypokalaemia. The patient's heart rhythm becomes more regular and normal bowel function returns.

For patients with less-acute alterations, evaluation is likely to occur over a longer period of time. In this situation the nurse's evaluation may also focus on behavioural changes (e.g. the patient's ability to follow dietary restrictions and medication schedules). The family's ability to anticipate alterations and prevent problems from recurring is also an important element of evaluation.

The patient's level of progress determines whether the nurse needs to continue or revise the plan of care. If there is a failure to meet expected outcomes, the nurse may need to consult with a doctor and discuss additional methods, such as increasing the frequency of an intervention (e.g. provide more fluids to a dehydrated patient), introducing a new therapy (e.g. initiate insertion of an IV) or discontinuing a particular therapy. Once outcomes have been met, the nurse can resolve the nursing diagnosis and focus on other priorities.

Patient expectations

The nurse routinely reviews with the patient any success in meeting their expectations of care, taking into account the patient's likes and dislikes regarding nutritional intake. 'Tell me how you feel' is a question that the nurse might raise if the patient's expectations revolve around comfort and symptom management. If the patient's concerns involve having a better understanding of a chronic problem, the nurse's evaluation might focus on the patient's satisfaction with educational offerings. Often the patient's level of satisfaction with care also depends on the nurse's success in involving family and friends. If the patient has concerns about returning home or to a different care setting, it will be important to evaluate whether the patient feels prepared for the transition from acute care.

• CRITICAL REFLECTION POINT

Mr Green, 56 years of age, weighs 80 kg and has been consuming 1200 mL of fluid (estimated from food and fluid intake) each day for the last week. He attends the emergency department because he was feeling dizzy and passing small amounts of dark, concentrated urine. The hourly urine output for the last 2 hours following the insertion of an indwelling urine catheter was 20 mL and 22 mL.

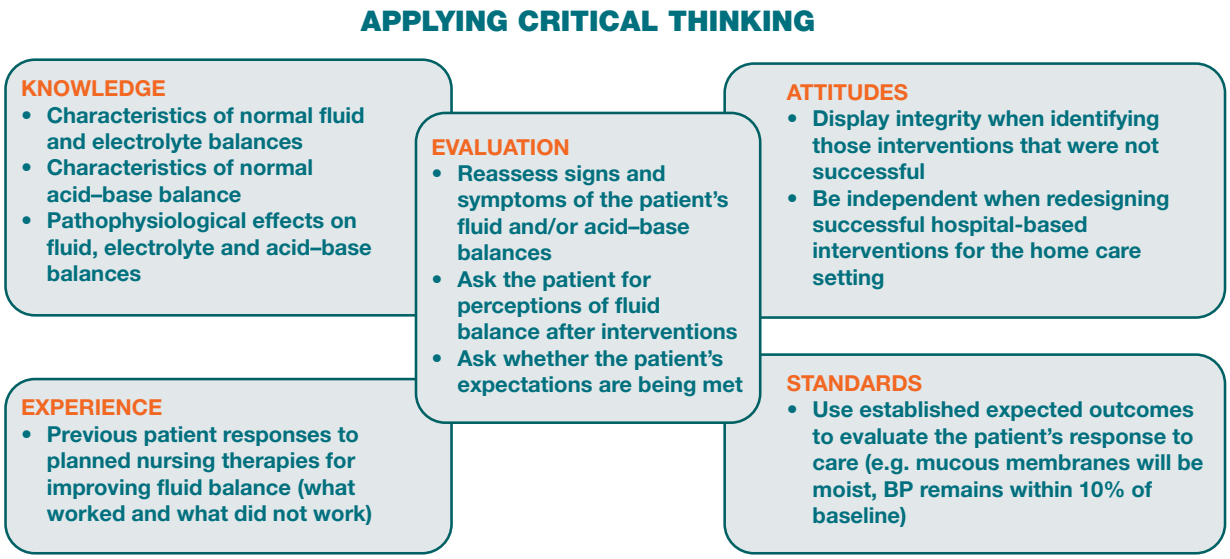


Figure 34-21 **Critical thinking associated with the evaluation phase for fluid, electrolyte and acid–base balance.**

Activity

1. **Use one of the formulas in Table 34-16 to calculate Mr Green's minimal fluid requirement to make a decision on the appropriateness of his current intake.**
2. **Use information in this chapter to determine the adequacy of hourly urine output.**

Key concepts

- Body fluids are distributed in extracellular fluid and intracellular fluid compartments and are composed of electrolytes, minerals, cells and water.
- Body fluids are regulated through fluid intake, output and hormonal regulation.
- Volume disturbances include isotonic and osmolar deficits and excesses.
- Electrolytes are regulated by dietary intake and hormonal controls.
- Acid–base imbalances are buffered by chemical and physiological buffering, especially the lungs and kidneys.
- Patients who are very young or very old, or who are chronically or seriously ill, are at greater risk of fluid, electrolyte and acid–base imbalances.
- Assessment for fluid, electrolyte and acid–base alterations includes nursing history, physical and behavioural assessment, measurements of fluid balance, daily weights and specific laboratory data.
- Osmolar imbalances and fluid volume deficit can be corrected by enteral or parenteral administration of fluid.
- Common complications of intravenous therapy include infiltration, phlebitis, infection, fluid volume excess and bleeding at the infusion site.
- Blood transfusions are given to replace fluid volume loss from haemorrhage, to treat anaemia or to replace coagulation factors.
- Blood transfusions can be donor or autologous, or obtained through perioperative salvage.
- Administration of blood or blood products requires the nurse to follow a specific procedure to identify transfusion reactions quickly.
- The risks of transfusion include transfusion reactions, hyperkalaemia, hypocalcaemia, fluid volume excess and infection.
- Treatment for electrolyte disturbances includes dietary and pharmacological interventions.
- The goals of therapy for acid–base imbalances are to treat the underlying illness and to restore the arterial pH to normal.

References

Alexander M, Corrigan A et al 2008 Infusion nursing: an evidence based approach, 3rd edn. Saunders Elsevier, Philadelphia.

Almond CSD, Shin AY, Fortescue EB et al 2005 Hyponatremia among runners in the Boston Marathon. NewEngl J Med 352:1550–6.

Austin C 1996 Water: guidelines for nutritional support. NutrSupport Serv 6:27–9.

Australian New Zealand Society of Blood Transfusion 2003 Microagregate filters. Topics in Transfusion 10(1):10. www.anzsbt.org.au/publications/TTM.cfm; accessed 8 June 2016.

Australian Red Cross Blood Service 2015 Administration of blood components. Online. Available: www.transfusion.com.au/transfusion_practice/administration; accessed 23 May 2015.

Bailey RL, Fulgoni III VL, Keast DR, Dwyer JD 2011 Dietary supplement use is associated with high intakes of minerals from food sources. Am J ClinNutr 94:1376–81.

Bellows L, Moore R 2013 Potassium and the diet fact sheet no 9.355. Colorado State University Extension. Online. Available: www.ext.colostate.edu/pubs/foodnut/09355.html; accessed 30 May 2015.

Berry BE, Pinard AE 2002 Assessing tissue oxygenation. CritCare Nurse 22(3):22.

Crisp J, Taylor C, Douglas C, Rebeiro G 2013 Potter & Perry's fundamentals of nursing, 4th edn. Elsevier, Chatswood, NSW.

Department of Health and Human Services (DHHS) 2015 Peripheral intravenous (IV) catheter insertion for neonates. State Government of Victoria, Melbourne. Online.

Eaton D, Bannister P, Mulley GP et al 1999 Axillary sweating in clinical assessment of dehydration in ill elderly patients. Br Med J 308:1271.

Erstad BL 2003 Osmolality and osmolarity: narrowing the terminology gap. Pharmacother 23(9):1085–6.

Fazekas AS, Funk GC, Klobassa DS et al 2013 Evaluation of 36 formulas for calculating plasma osmolality. Intensive Care Med 39:302–8.

Good P, Richard R, Syrmis W et al 2014 Medically assisted hydration for adult palliative care patients. Cochrane Database Syst Rev. Apr 23;4:CD006273.

Hall JE 2015 Guyton and Hall textbook of medical physiology 13th edn. Elsevier, Philadelphia.

Haynie DT 2008 Biological thermodynamics. Cambridge University Press, Cambridge.

Hockenberry MJ, Wilson D 2015 Wong's nursing care of infants and children, 10th edn. Mosby, St Louis.

Ibrahim AE, Sarhane KA, Fagan SP, Goverman J 2013 Renal dysfunction in burns: a review. Ann Burns Fire Disasters 31;26(1):16–25.

Infusion Nurses Society 2011 Infusion Nurses Society Standards of Practice. Journal of Infusion Nursing 34(1S):1–96. ISSN www.journalofinfusionnursing.com

Joanna Briggs Institute (JBI) 2003 Aged care practice manual, 2nd edn. JBI, Adelaide.

Killer SC, Blannin AK, Jeukendrup AE 2014 No evidence of dehydration with moderate daily coffee intake: a counterbalanced cross-over study in a free-living population. PLoS ONE 9(1):e84154.

King CK, Glass R, Bresee JS, Duggan C, Centers for Disease Control and Prevention 2003 Managing acute gastroenteritis among children: oral rehydration, maintenance, and nutritional therapy. MMWR Recomm Rep 21;52:1–16.

Kraut JA, Nagami GT 2013 The serum anion gap in the evaluation of acid-base disorders: what are its limitations and can its effectiveness be improved? Clin J Am Soc Nephrol 8:2018–24.

Lancaster KJ, Smiciklas-Wright H, Heller DA et al 2003 Dehydration in black and white older adults using diuretics. Ann Epidemiol 13(7):525–9.

Lewis SM et al 2014 Medical–surgical nursing; assessment and management of clinical problems, 6th edn. Mosby, St Louis.

McCance K, Huether S 2014 Pathophysiology: The biologic basis for disease in adults and children, 7th edn. Mosby, St Louis.

McPherson RA, Pincus MR 2011 Henry's Clinical Diagnosis and Management by Laboratory Methods, 22nd edn. Elsevier Saunders, Philadelphia.

Madias E, Adrogue H 2003 Cross talk between two organs: how the kidney responds to disruption of acid–base balance by the lung. Nephron 93(3):61.

Mannesse C, van Puijenbroek E, Jansen P et al 2010 Hyponatraemia as an adverse drug reaction of antipsychotic drugs: a case-control study in VigiBase. Drug Saf 33(7):569–78.

Maret W, Sandstead HH 2006 Zinc requirements and the risks and benefits of zinc supplementation. J Trace Elem Med Biol 20:3–18.

Marschall J, Mermel LA, Fakih M et al 2014 Strategies to prevent central line-associated bloodstream infections in acute care hospitals. Infect Control Hosp Epidemiol 35(7):753–71.

Mhaskar DM, Mahajan SK, Pawar KC 2013 Significance of serum magnesium levels in reference to acute myocardial infarction and role of intravenous magnesium therapy in prevention of cardiac arrhythmias following myocardial infarction. Int J Med Public Health 3:187–91.

Mooney J 2013 Effect of regularly scheduled artificial hydration on treatment outcomes in head and neck cancer patients undergoing radiotherapy Scholar Archive. Paper 950.

Moriarty D, Hudson E 2013 Hypodermoclysis for rehydration in the community. British Journal of Community Nursing 6(9):437–43.

Movig KL, Leufkens HG, Lenderink AW et al 2002 Association between antidepressant drug use and hyponatraemia: a case-control study. Br J Clin Pharmacol 53(4):363–9.

Nations SP, Boyer PJ, Love LA et al 2008 Denture cream: an unusual source of excess zinc, leading to hypocupremia and neurologic disease. Neurology 71(9):639–43.

O'Connell A, Craig A, Lockwood C 2008 Management of peripheral intravascular devices: technical report. Joanna Briggs Institute, Adelaide.

Patton KT, Thibodeau GA 2016 Anatomy and physiology, 9th edn. Mosby Elsevier, St Louis, Missouri.

Redden M, Wotton K 2001 Clinical decision making by nurses when faced with third space fluid shift: How well do they fare? Gastroenterology Nursing 24(4):182–91.

Remington R and Hultman T 2007 Hypodermoclysis to treat dehydration: A review of the evidence. Journal of the American Geriatrics Society 55(12):2051–5.

Rosenthal K 2003 Pinpointing intravascular device infections. Nurs Manage 34(6):35.

Roth KS, Chan JCM 2001 Renal tubular acidosis: a new look at an old problem. ClinPediatr (Phila) 40(10):533–43.

Royal Children's Hospital 2015 Intravenous Fluids Guidelines Melbourne. Online. Available: www.rch.org.au/clinicalguide/guideline_index/Intravenous_Fluids/; accessed 12 Jan 2016.

Shepherd A 2011 Measuring and managing fluid balance. Nursing Times 107:28.

Smith SF et al 2008 Clinical nursing skills: basic to advanced skills, 7th edn. Prentice Hall, Upper Saddle River, NJ.

Strickland SL, Rubin BK, Drescher GS et al 2013 AARC Clinical practice guideline: Effectiveness of nonpharmacologic airway clearance therapies in hospitalized patients. Respiratory Care 58(12):2187–93.

Swift R, Davidson D 1998 Alcohol hangover: mechanisms and mediators. Alcohol Health & Research World 22(1):54–60.

Tollefson, J 2010 Clinical psychomotor skills: Assessment tools for nursing students. Cengage Learning Australia, South Melbourne.

Tortora GJ, Grabowski SR 2010 Principles of anatomy and physiology, 8th edn. HarperCollins, New York.

Touhy TA, Jett KF 2011 Ebersole and Hess' toward healthy aging: human needs and nursing response, 8th edn. Mosby, St Louis.

Wells JCK, Fewtrell MS, Davies PSW et al 2005 Prediction of total body water in infants and children. Arch Dis Child; 90:965–71.

Wiese JG, Shlipak M, Browner WS 2000 The alcohol hangover. Ann Int Med 132(11):897–902.

Woodward M 2013 Guidelines to Effective Hydration in Aged Care Facilities. Aged & Residential Care Services Heidelberg Repatriation Hospital, Melbourn. Online. Available: www.hydralyte.ca/wp-content/uploads/2014/07/HBR9-0413_Hydration-in-aged-care-facilities-12pp_V2.pdf; accessed 12 Jan 2016.

Wotton K 2012 Chapter 39 Fluid, electrolyte and acid–base balance in Crisp J et al (eds) 2012 Potter and Perry's fundamentals of nursing, 2nd edn. Mosby, Sydney.

Wotton K 2011 Clinical reasoning module. Flinders University, Adelaide.

Wotton K, Crannitch K, Munt R 2008 Prevalence, risk factors and strategies to prevent dehydration in older adults. Contemp Nurse 31(1):44–56.

Xiao H, Barber J, Campbell ES 2004 Economic burden of dehydration among the hospitalised elderly patients. Am J Health Syst Pharm 61(23):2534–40.

Zajac P, Holbrook A et al 2013 An overview: Current clinical guidelines for the evaluation, diagnosis, treatment, and management of dyspepsia. Osteopathic Family Physician 5(2):79–85.

CHAPTER

35

Preserving oxygenation

Natashia Scully

Learning outcomes

Mastery of content will enable you to:

- describe the structure (anatomy) and function (physiology) of the cardiovascular and pulmonary systems
- identify physiological processes of cardiac output, myocardial blood flow and coronary artery circulation
- describe the relationship between cardiac output, stroke volume (preload, afterload, contractility) and heart rate
- identify physiological processes involved in ventilation, perfusion and exchange of oxygen and carbon dioxide
- describe neural and chemical regulation of ventilation
- describe the impact of a patient's level of health, age, lifestyle and environment on tissue oxygenation
- identify and describe clinical outcomes as a result of disturbances in conduction, altered cardiac output, impaired valvular function, myocardial ischaemia and impaired tissue perfusion
- identify and describe clinical outcomes of ventilation/perfusion mismatch, diffusion impairment, alveolar hypoventilation and alveolar hyperventilation
- identify nursing care interventions in the primary care, acute care and restorative and extended-care settings that promote oxygenation
- develop foundation skills in undertaking and interpreting electrocardiograms (ECGs).

KEY TERMS

Airway resistance, p. 1250
Alveolar hyperventilation, p. 1260
Alveolar hypoventilation, p. 1260
Angina pectoris, p. 1259
Angiography, p. 1271
Arrhythmias, p. 1255
Atelectasis, p. 1260
Bronchoscopy, p. 1280
Cardiac catheterisation, p. 1278
Cardiopulmonary rehabilitation, p. 1315
Cardiopulmonary resuscitation (CPR), p. 1310
Chest percussion, p. 1288
Chest physiotherapy (CPT), p. 1288
Chest tube, p. 1297
Compliance, p. 1250
Cyanosis, p. 1261
Diaphragmatic breathing, p. 1316
Diffusion, p. 1251
Diffusion impairment, p. 1261
Dyspnoea, p. 1266
Echocardiography, p. 1278
Electrocardiogram (ECG), p. 1246
Electrophysiological study (EPS), p. 1271
Exercise stress tests, p. 1270
Haematemesis, p. 1267
Haemoptysis, p. 1267
Haemothorax, p. 1301
Holter monitor, p. 1271
Humidification, p. 1287
Hypovolaemia, p. 1253
Hypoxia, p. 1261
Incentive spirometer resistive breathing device (ISRBD), p. 1315
Incentive spirometry, p. 1297
Left-sided heart failure, p. 1258
Myocardial contractility, p. 1245
Myocardial infarction, p. 1259
Myocardial ischaemia, p. 1259
Normal sinus rhythm (NSR), p. 1246
Orthopnoea, p. 1266
Oximetry, p. 1279
Peak expiratory flow rate (PEFR), p. 1279
Pneumothorax, p. 1297
Postural drainage, p. 1288
Preload, p. 1245
Pulmonary function tests, p. 1278
Pursed-lip breathing, p. 1315
Right-sided heart failure, p. 1259
Scintigraphy, p. 1278
Thoracentesis, p. 1281
Valvular heart disease, p. 1259
Ventilation, p. 1250
Ventilation/perfusion mismatch, p. 1252
Vibration, p. 1288
Wheezing, p. 1267

Introduction

Oxygen is required for the human body's cells to sustain life. The function of the cardiac and respiratory systems is to supply the body's oxygen demands. Cardiopulmonary physiology involves delivery of deoxygenated blood to the right side of the heart and then to the pulmonary circulation where oxygen uptake occurs from the air breathed into the lungs. Oxygenated blood then moves from the lungs to the left side of the heart and is subsequently delivered to the tissues. Blood is oxygenated and carbon dioxide (which is produced by body cells through their metabolic process) is eliminated through the mechanisms of ventilation: the mechanical movement of gas into and out of the lungs; and respiration: the exchange of oxygen and carbon dioxide at tissue level. Neural and chemical regulators control respiratory rate and depth in response to changing tissue oxygen demands.

Cardiovascular physiology

The function of the cardiovascular system is to deliver oxygen, nutrients and other substances to the tissues and to remove the waste products of cellular metabolism through the cardiac pump, the circulatory vascular system and the integration of other systems, including respiratory, gastrointestinal and renal systems.

Structure and function

It is extremely important for nurses to be aware of normal cardiac anatomy and physiology in order to accurately assess patients and interpret assessment findings. The right ventricle pumps blood through the pulmonary circulation while the left ventricle pumps blood to the systemic circulation, supplying oxygen and nutrients to the tissues and removing carbon dioxide and wastes (Figures 35-1 and 35-2). The circulatory system exchanges oxygen, carbon dioxide, nutrients and waste products between the blood and the tissues.

Cardiac blood flow

In normal cardiac anatomy and physiology, blood flow through the heart is unidirectional. There are four heart valves that ensure this forward blood flow (Figure 35-2). Blood flows from the veins into the vena cava (the inferior and superior brances), to the right atrium, through the tricuspid valve to the right ventricle, through the pulmonary semilunar valve, to the pulmonary artery, to the pulmonary capillaries (where diffusion of oxygen from the alveoli to the blood and carbon dioxide from the blood to the alveoli occurs), to the pulmonary vein, to the left atrium, through the bicuspid valve, to the left

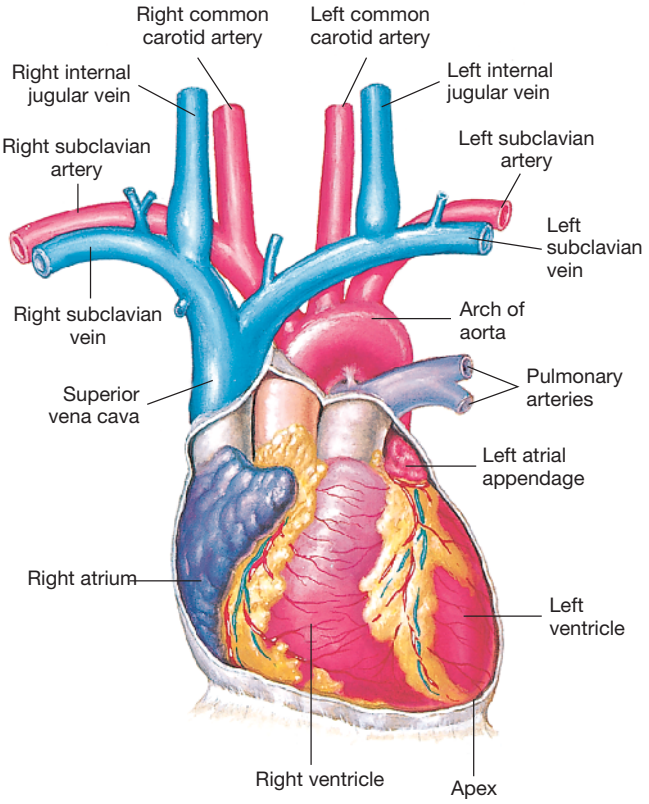


Figure 35-1 Serially connected pulmonary and systemic circulation.

Right heart chambers propel unoxygenated blood through the pulmonary circulation; left heart chambers propel oxygenated blood through the systemic circulation.

Canobbio MM 1990 Cardiovascular disorders. Mosby, St Louis.

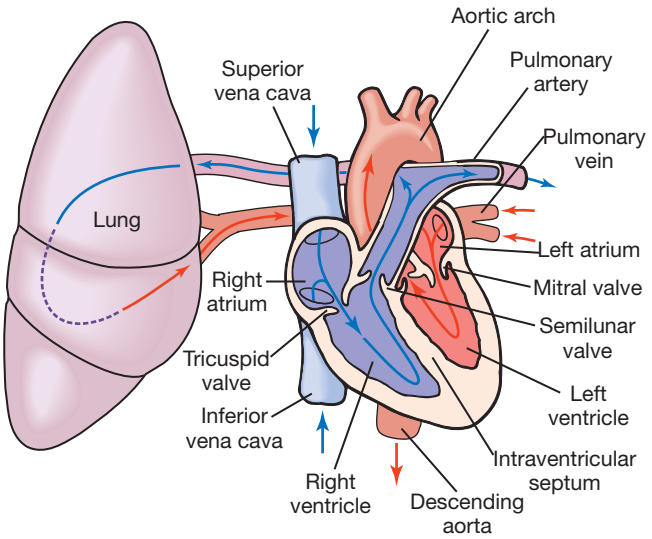


Figure 35-2 Schematic representation of blood flow through the heart. Arrows indicate direction of flow.

Lewis SM et al 2004 Medical–surgical nursing: assessment and management of clinical problems, 6th edn. Mosby, St Louis.

ventricle, through the aortic semilunar valve to the aorta (Figure 35-2).

Cardiac cycle and the myocardial pump

A principle of the movement of blood through the circulatory system is that under normal function, blood flows from an area of higher pressure to lower pressure and it flows unidirectionally (that is, is should not flow backwards). The principal role of the heart is to contract to create a pressure the enables blood to be pumped from the right side of the heart to the lung and the left side of the heart to the systemic circulation. The heart also needs to relax to enable two venous systems (systemic and pulmonary) to deliver blood to the heart. The cardiac cycle refers to the physiology of one full heartbeat – it involves one pump of the heart, when functioning normally, and produces two distinct heart sounds which can be heard with a stethoscope.

When the heart is relaxed (in diastole), the atria fill with blood. During this phase, the atrioventricular (AV) valves (the tricuspid valve between the right atria and ventricle; and the bicuspid valve between the left atria and ventricle) are open and blood moves passively between the atria and the ventricles. When the atria contract they actively push blood from the atria into the ventricles. This adds approximately 30% more blood volume to the ventricles. When the ventricles start to contract the pressure builds up. When the pressure in the ventricles becomes higher than the atria, the AV valves snap shut to prevent the blood from flowing back into the atria. This causes the first heart sound (S1). As the ventricles continue to contract, the pressure continues to rise. When the pressure in the ventricles is higher than in the pulmonary artery and aorta, the semilunar (SL) valves open (the pulmonary SL valve between the right ventricle and pulmonary artery; and the aortic SL valve between the left ventricle and the aorta), allowing blood to flow into those arteries. When the ventricles begin to relax, the pressure in them drops. When the pressure drops below the pressure in the pulmonary artery and aorta, the SL valves snap shut to prevent the blood from flowing back into the ventricles. This produces the second heart sound (S2) (see Figure 35-3).

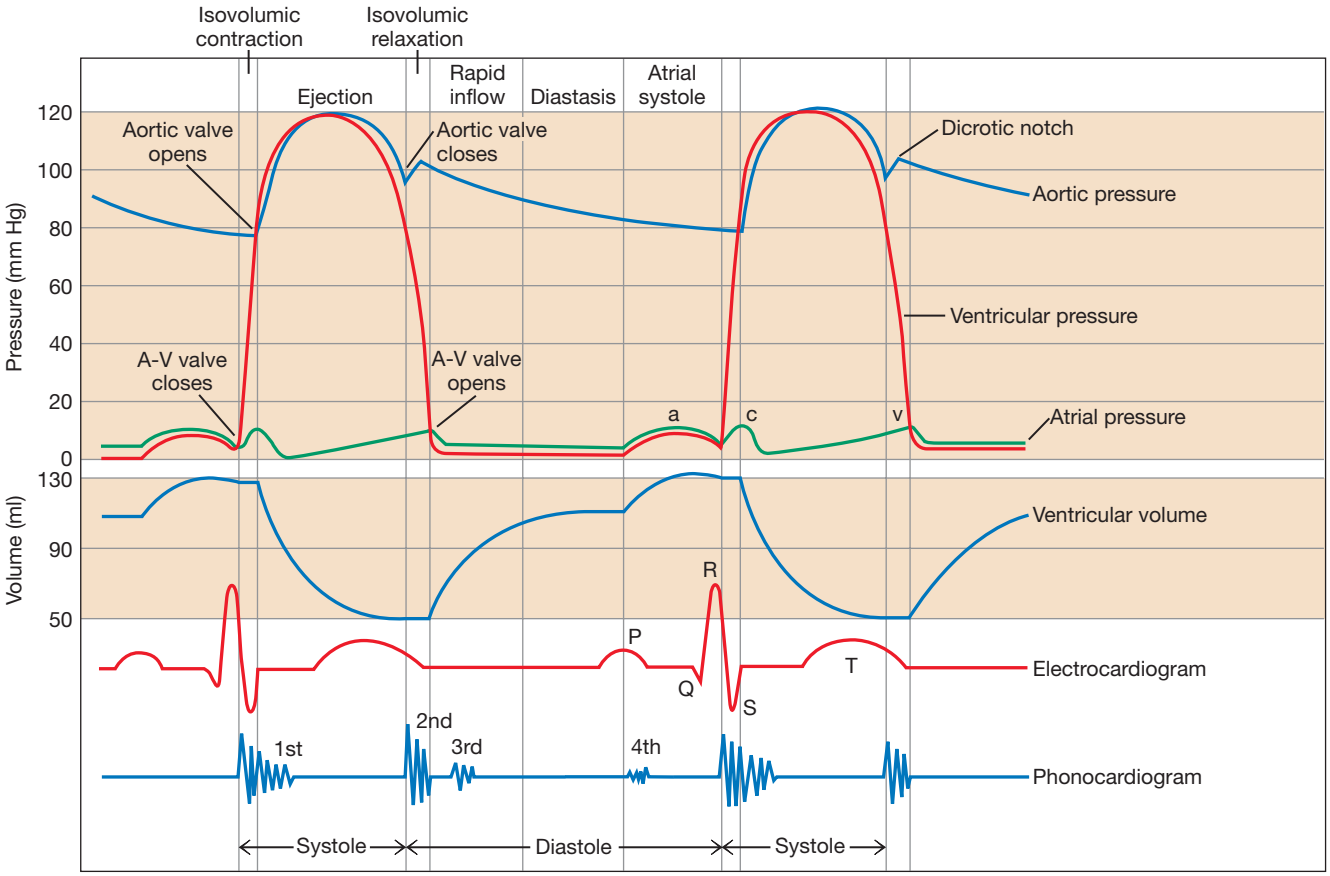


Figure 35-3 Cardiac cycle.

Copstead L, Banasik J 2010 Pathophysiology. Elsevier, Sydney.

The effectiveness of the cardiac cycle can be assessed by monitoring the patient's blood pressure, heart rate and listening to their heart sounds.

The pumping action of the heart is essential for the maintenance of oxygen delivery. Decreased pump effectiveness, as occurs in heart failure, results in a diminished *stroke volume* – the volume of blood ejected from the ventricles during each contraction. Shock, haemorrhage and dehydration decrease pump effectiveness by reducing the volume of circulating blood, thereby decreasing stroke volume.

The chambers of the heart, the right and left atria and ventricles, fill during diastole and partially empty during systole. The effectiveness of the diastolic and systolic events of the cardiac cycle can be assessed by monitoring the patient's blood pressure (see Chapter 24). The myocardial fibres have contractile properties that enable them to stretch during filling. In a healthy heart this stretch is proportionally related to the strength of contraction. As the myocardium stretches, the strength of the subsequent contraction increases; this is known as Starling's law of the heart (or Frank–Starling relationship). In the diseased heart, Starling's law does not apply because the stretch of the myocardium is beyond the heart's physiological limits. The subsequent contractile response results in insufficient ventricular ejection (volume), and blood begins to 'back up' in the pulmonary (left heart failure) or systemic (right heart failure) circulation.

Coronary artery circulation

To maintain adequate blood flow to the pulmonary and systemic circulation, myocardial blood flow must supply sufficient oxygen and nutrients to the myocardium itself. Blood in the atria and ventricles does not supply oxygen and nutrients to the myocardium. The *coronary circulation* is the branch of the systemic circulation that supplies the myocardium with oxygen and nutrients and removes waste. The right and left coronary arteries arise from the aorta just above and behind the aortic valve through openings called the *coronary ostia* (coronary openings). The coronary arteries fill during ventricular diastole. The left coronary artery generally feeds the left atrium and ventricle, while the right coronary artery feeds the right atrium and ventricle. However, there is variation in branching of coronary arteries among individuals (Figure 35-4, Box 35-1).

Systemic circulation

The arteries of the systemic circulation deliver nutrients and oxygen to the tissues and the veins of the systemic circulation remove waste, such as carbon dioxide, from them. Oxygenated blood flows from the left ventricle by way of the aorta and into large systemic arteries. These arteries branch into smaller arteries, then into arterioles and finally into the smallest vessels, the capillaries. At capillary level, oxygen and nutrients diffuse from the blood to the tissues, resulting in tissue oxygenation and cellular metabolism. Carbon dioxide and other waste products of cellular metabolism are diffused from the tissues into the capillaries. The waste products exit the capillary network by way of the venules that join to form veins. These veins form larger veins, which carry deoxygenated blood to

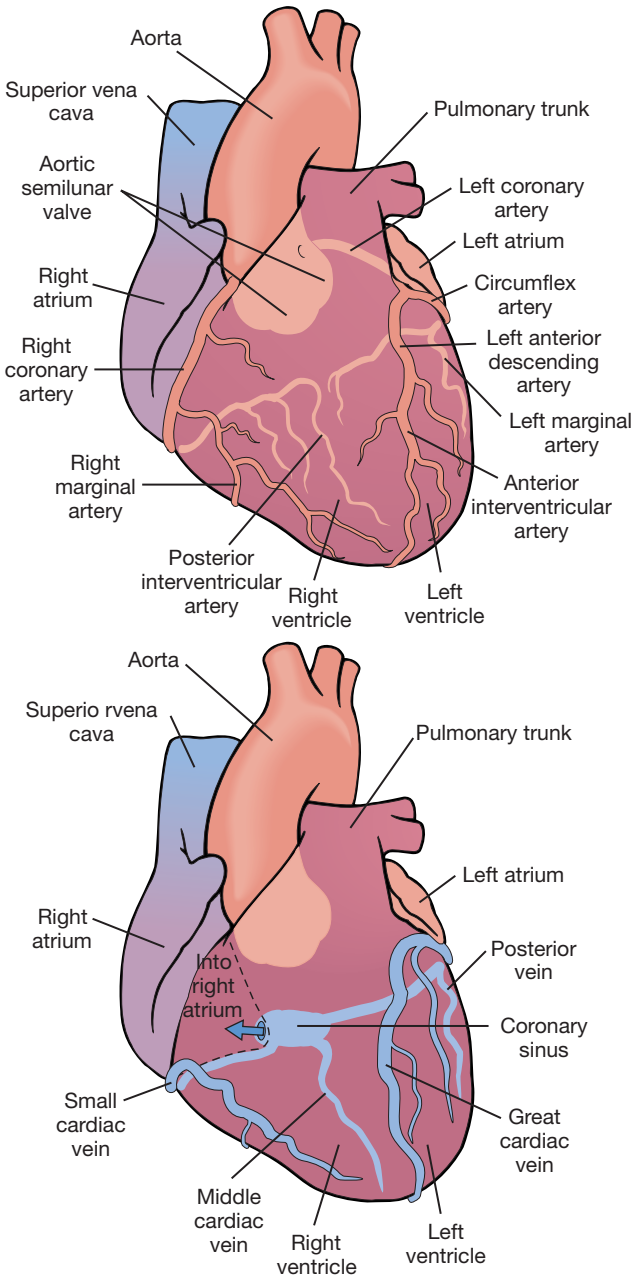


Figure 35-4 Coronary arteries and veins.

Lewis SM et al 2004 Medical–surgical nursing: assessment and management of clinical problems, 6th edn. Mosby, St Louis.

BOX 35-1 Coronary arteries

Right coronary artery

Supplies:

Right atrium

Right ventricle

Part of posterior and inferior surface of left ventricle

AV node, bundle of His (90% of population)

Sinus node (55% of population)

Left coronary arteries

Left anterior descending (LAD) artery

Supplies:

Lateral left ventricular wall

Majority of septum

Anterior and diaphragmatic aspects of left ventricle

Circumflex artery

Supplies:

Sinus node (45% of population)

Left atrium

Posterior surfaces of left ventricle

Posterior aspects of septum

NB: further anatomical variations exist in the population.

Adapted from Bond EF 2010 Cardiac anatomy and physiology. In Woods SL, Froelicher ESS, Motzer SU et al (eds), Cardiac nursing, 6th edn. Lippincott Williams & Wilkins, Philadelphia.

the right side of the heart, where it is returned to the pulmonary circulation.

Cardiac output and blood flow regulation

The amount of blood ejected from the left ventricle each minute is the cardiac output. The normal cardiac output is 4–6 L/min in a healthy 70 kg adult at rest. The circulating volume of blood changes according to the oxygen and metabolic needs of the body. For example, during exercise, pregnancy and fever the cardiac output increases, but during sleep it decreases. Cardiac output is represented by the following formula:

Cardiac output (CO) = Stroke volume (SV) × Heart rate (HR)

Stroke volume is the amount of blood ejected from the left ventricle with each contraction. It can be affected by three entities:

1. the amount of blood in the left ventricle at the end of diastole (*preload*)
2. the resistance to left ventricular ejection (*afterload*)
3. the ability of the heart muscle to contract (*myocardial contractility*).

Preload is essentially the end-diastolic volume. As the ventricles fill, they stretch. The greater the stretch on the ventricle, the greater the contraction and the greater the stroke volume (Starling's law). In clinical situations, the preload and subsequent stroke volume can be manipulated by changing the amount of circulating blood volume. That is, by administering intravenous fluid we can increase the circulating volume, therefore increasing the amount of fluid that is available to fill the heart. For example, in the patient with haemorrhagic shock, fluid therapy and replacement of blood increases volume, thus increasing the preload and cardiac output. If volume is not replaced, preload decreases, the cardiac output decreases and ultimately the venous return to the right atrium decreases, further decreasing preload and cardiac output.

Afterload is the resistance to *left ventricular ejection* – the work the heart must overcome to fully eject blood from the left ventricle. Remember that for normal heart function to occur, blood flows from areas of higher pressure to lower pressure. This means the ventricles need to contract to produce a pressure that is higher than the arteries they intend to inject blood into (the pulmonary artery and the aorta). The pressure in these arteries that the heart must overcome in order to pump out blood is referred to as the 'afterload'. The diastolic aortic pressure is a good clinical measure of afterload. In a patient with an acute hypertensive crisis, the afterload is increased, increasing the cardiac workload (as the heart has to pump harder to produce a higher pressure in order to make the blood flow out into the artery). Afterload in this situation can be manipulated by decreasing systemic blood pressure.

Myocardial contractility also affects stroke volume and cardiac output. Poor contraction of the myocardium decreases the amount of blood ejected by the ventricles during each contraction. Myocardial contractility can be increased by drugs that increase the force of contraction, such as digitalis preparations (e.g. digoxin) and sympathomimetic drugs (drugs that mimic the effects of the sympathetic nervous system), for example, adrenaline. Injury to the myocardial muscle, such as an acute myocardial infarction, can cause a decrease in myocardial contractility. The myocardium of the older adult is more rigid and slower in recovering its contractility (Steven 2011).

Heart rate affects blood flow because of the interaction between rate and diastolic filling time. Diastole is an important part of the cardiac cycle as this is when the heart is relaxed and filling with blood. If there is insufficient time to fill with blood, preload is affected. With a sustained heart rate greater than 160 beats per minute, diastolic filling time decreases, decreasing stroke volume and cardiac output. For a consistent and viable cardiac output,

a regular heart rate is required. Irregular heart rates affect stroke volume and, subsequently, cardiac output and tissue perfusion. The heart rate of the older adult is slow to increase under stress. With the normal ageing process there are significant changes to cardiac structure and function, and the stroke volume may increase to increase the cardiac output and blood pressure (Jet 2008). Heart rate and rhythm can be manipulated and controlled with various anti-arrhythmic medication.

The continuous monitoring of cardiovascular haemodynamics is usually performed in critical-care units. Some step-down or special-care units may also have the capability to continuously monitor haemodynamics.

Conduction system

The rhythmic relaxation and contraction of the atria and ventricles depend on continuous, organised transmission of electrical impulses. These impulses are generated and transmitted by way of the cardiac conduction system (Figure 35-5).

The heart's conduction system generates the necessary action potentials that conduct the impulses required to initiate the electrical chain of events resulting in the heartbeat. The principle of 'excitation–contraction coupling' means that there must be an excitation of the muscle fibres for a contraction to take place, hence why it is necessary for a nurse to have an understanding of the electrical activity that occurs in the heart to assess correct functioning.

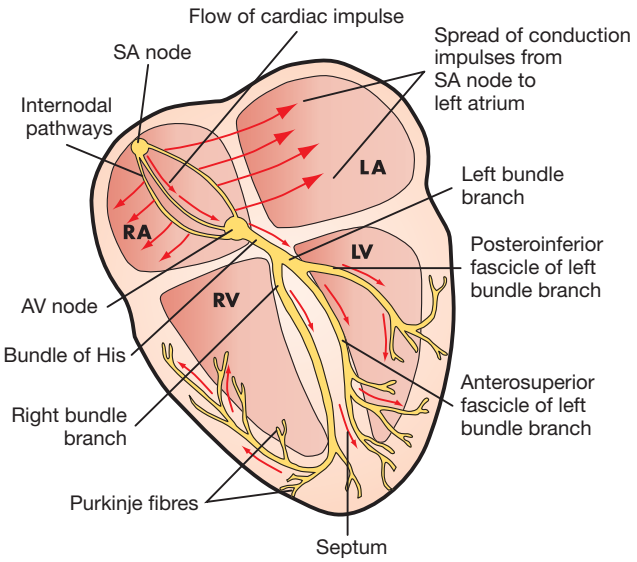


Figure 35-5 Conduction system of the heart.

LA, left atrium; LV, left ventricle; RA, right atrium; RV, right ventricle; SA, sinoatrial; AV, atrioventricular.

Lewis SM et al 2007 Medical–surgical nursing: assessment and management of clinical problems, 7th edn. Mosby, St Louis.

The autonomic nervous system, consisting of sympathetic and parasympathetic branches, influences the rate of impulse generation as well as the speed of transmission through the conductive pathway and the strength of atrial and ventricular contractions. Sympathetic nerve fibres, which increase the rate of impulse generation and the speed of impulse transmission, innervate all parts of the atria and ventricles. Parasympathetic fibres from the vagus nerve, which decrease this rate, also innervate these parts, as well as the sinoatrial and atrioventricular nodes.

The conduction pathway, illustrated in Figure 35–5, originates with the sinoatrial (SA) node, the 'pacemaker' of the heart. The SA node is in the right atrium next to the entrance of the superior vena cava. Impulses are initiated at the SA node at an intrinsic rate of 60–100 beats per minute, reflecting the resting adult rate, which ranges from 60 to 100 beats per minute. Resting heart rate for infants and children varies with age: 80–150 beats per minute for age 3 months to 2 years, 70–110 beats per minute for 2–10 years and 55–90 beats per minute for over 10 years (Hockenberry et al 2009).

The electrical impulses are then transmitted through the atria along intra-atrial pathways to the atrioventricular (AV) node. The AV node mediates impulses between the atria and the ventricles. The intrinsic rate of the normal AV node is 40–60 beats per minute. The AV node assists atrial emptying by delaying the impulse before transmitting it through the *bundle of His*, which is divided into left and right bundle branches which run down the septum of the ventricles, and the ventricular *Purkinje network*, which are located around the outer margins of the ventricles. The intrinsic rate of the bundle of His and the ventricular Purkinje network is 20–40 beats per minute.

Electrocardiogram

An **electrocardiogram (ECG)** reflects the electrical activity of the conduction system. It monitors the regularity and path of the electrical impulse through the conduction system; however, it does not reflect muscular work of the heart. This electrical impulse is required to stimulate the myocardium to then generate the mechanical event of ventricular contraction. The normal sequence of impulse movement through the conduction system on the ECG is called **normal sinus rhythm (NSR)** (Figure 35-6).

NSR implies that the impulse originates at the SA node and follows the normal sequence through the conduction system. The muscle fibres must depolarise so they can then contract before repolarising to ensure a new impulse can be generated. Hence a normal sequence of electrical impulses travelling through the heart needs to have a

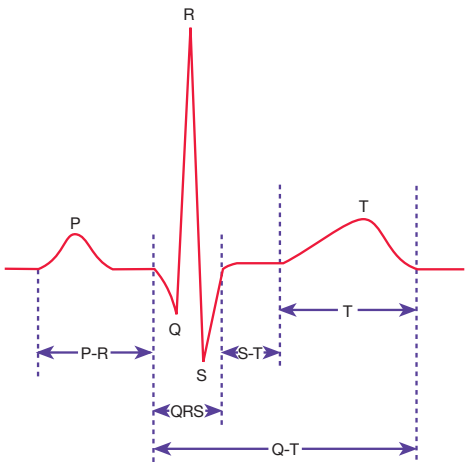


Figure 35-6 Normal ECG waveform.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

depolarisation phase and then a repolarisation phase. Note that the ECG displays only the electrical activity in the heart, not the mechanical activity (i.e. contraction). There needs to be an electrical excitation for a contraction to occur. That is why it is important for a nurse to assess this.

An ECG is recorded on standardised paper. It contains small squares 1 mm^2, which represent 0.04 seconds. Five small squares make one large square, which represents 0.20 seconds. The standardised speed of the paper should be 25 mm/second to ensure accurate interpretation.

ECG interpretation for disease-related abnormalities is an advanced nursing skill; however, all registered nurses (RNs) must know how to identify normal ECG characteristics so they can recognise a deviation from the norm and therefore know when to seek assistance from qualified staff. Below is an explanation of normal ECG characteristics. When conducting an ECG, it is important to interpret the recording immediately, so it may be necessary to find an experienced staff member to assist in completing this task. Figure 35-6 depicts a normal ECG waveform and indicates relevant intervals and segments.

Waves in the ECG

NB: Please refer to Figure 35-6 when reading through this section for a visual representation. Also, please note that this section describes what is seen in a normal, disease-free ECG.

The *P wave* represents atrial depolarisation: the electrical conduction through both atria and is normally small and rounded. Normal P wave duration is approximately 0.12 second. Atrial contraction follows the P wave.

The *QRS complex* indicates ventricular depolarisation: that the electrical impulse has travelled through the ventricles. Normal QRS duration is 1.5–3 small squares on the ECG paper (0.06–0.12 second). An increase in QRS duration indicates a delay in conduction time through the ventricles. Ventricular contraction follows the QRS complex. A QRS complex wider than 3 small squares (0.12 second) should be reported. Every P wave is followed by a QRS complex in a normal ECG, indicating normal cardiac conduction.

The *T wave* represents ventricular repolarisation. The T wave is normally rounded, rising more slowly from the baseline than it returns. Each QRS complex is followed by a T wave in normal cardiac conduction.

It is important to note that the atria also repolarise; however, this is happening at the same time as the ventricles are depolarising so the impulse generated is masked by the QRS complex as this is a much larger electrical event.

Segments and intervals

NB: Please refer to Figure 35-6 when reading through this section for a visual representation.

The *P–R interval* represents the impulse travel time from the SA node through the AV node and the bundle of His to the Purkinje fibres. The normal length of the P–R interval is 3–5 small squares on the ECG paper (0.12–0.20 second). An increase in the P–R of > 5 small squares (0.20 second) indicates that there is a block in the impulse transmission through the AV node, whereas a P–R interval of < 2 small squares (0.08 second) indicates the initiation of the electrical impulse from a source other than the SA node. A P–R interval of > 5 small squares (0.20 second) should be reported. If abnormalities are detected, ensure a suitably qualified health professional is notified as soon as possible.

The *S–T segment* extends from the end of the QRS complex (J point) to the start of the T wave and should be at the baseline (the same level as the line before the P wave, also known as the isoelectric line). Significant displacement from the baseline may be indicative of disease processes such as acute coronary syndrome (Jacobson 2010a).

An ECG can be recorded in different ways, the two main versions of an ECG being continuous cardiac monitoring (also referred to as telemetry) and the 12-lead ECG. Performing an ECG in these forms is covered in Skills 35-1 and 35-2. A 'lead' refers to the aspect in which the heart is being viewed. The electrodes that are attached to the patient are used to create these leads. Think about each lead as being like a camera looking at the heart from a different angle. The formation of the P wave, QRS complex and T wave will appear differently in each lead as the heart is being viewed from different angles.

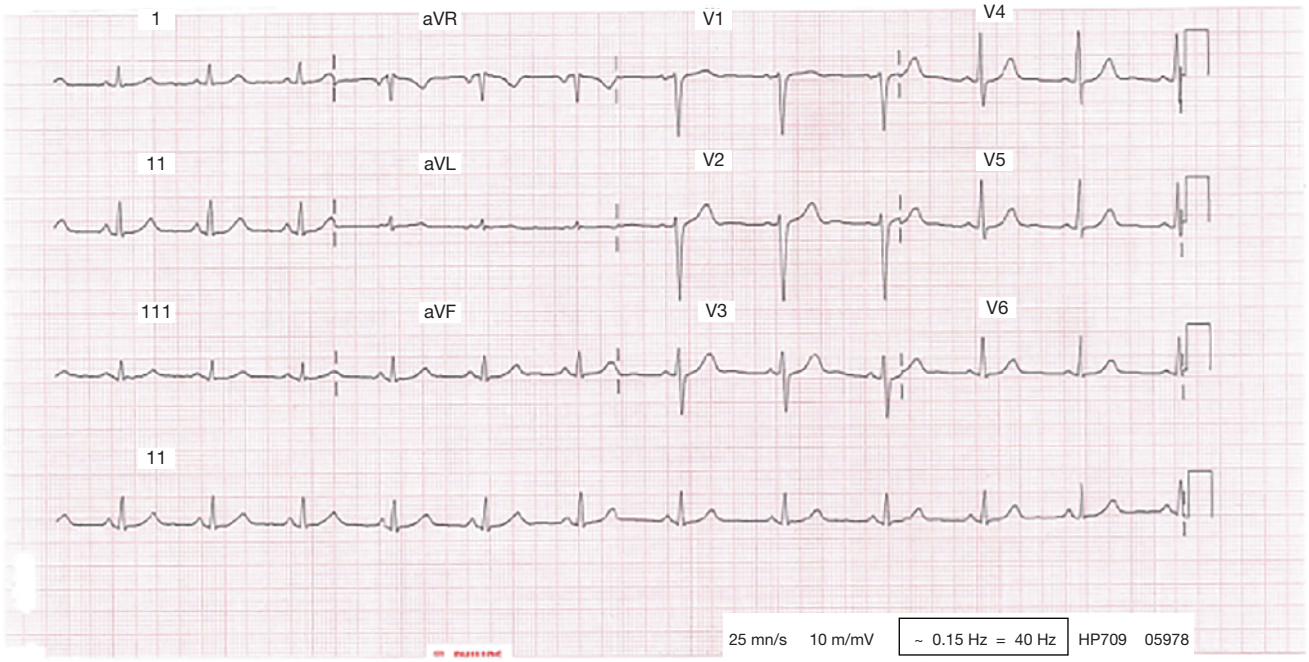


Figure 35-7 Normal 12-lead ECG.

Courtesy N. Scully.

A 12-lead ECG shows 12 different aspects (or views) of the heart and uses 10 electrodes to create these. A 12-lead ECG is like a snapshot of the heart at a particular point in time. The 12 leads are shown in Figure 35-7. Continuous cardiac monitoring generally uses 3 or 5 electrodes. The heart is monitored in one lead at a time (sometimes more if the patient is in a critical care area) and this is usually in lead II as this lead gives the best view of the entire conduction pathway.

Respiratory physiology

Most cells in the body obtain their energy from chemical reactions involving oxygen and the elimination of carbon dioxide. The purpose of the lungs is to facilitate the diffusion of oxygen from the air breathed into them into the blood and the diffusion of carbon dioxide from the blood to the alveoli to be breathed out of the lungs.

Structure and function

Normal adult respiratory rate ranges between 12 and 20 breaths per minute. Respiratory rate in infants and children varies: 25–30 breaths per minute for age 3 months to 2 years, 19–25 breaths per minute for 2–10 years, and 16–19 breaths per minute for over 10 years (Hockenberry et al 2009). Respiration can be altered by conditions or diseases that change the structure and function of the lung. The respiratory muscles, pleural space, lungs and alveoli (Figure 35-8) are essential for ventilation, perfusion and exchange of oxygen and carbon dioxide (Box 35-2). The *pleura* is a membrane which adheres to the lungs and then folds back to connect to the chest wall. The visceral pleura adheres to the lungs, while the parietal pleura adheres to the chest wall. The area between these two is the *pleural space*, normally a potential space containing a small amount of fluid and negative in pressure relative to atmosphere. Problems arise if the negative pressure of this space is not maintained, as, for example, when air (pneumothorax), blood (haemothorax) or fluid (pleural effusion) enters the space.

The exchange of oxygen and carbon dioxide occurs between environmental air and the blood (Figure 35-8). There are three steps in the process of oxygenation: *ventilation/work of breathing*, *perfusion of the lungs* (*pulmonary circulation*) and *diffusion* (*exchange of oxygen and carbon dioxide*). Many of the respiratory disorders arise from a problem with one or more of these mechanisms.

Ventilation and work of breathing

For the exchange of oxygen and carbon dioxide to occur, the organs, nerves and muscles of respiration must be intact and the central nervous system able to regulate the respiratory cycle (Figure 35-9). The respiratory centre lies in the brainstem, which contains a group of neurons (dorsal respiratory group) that regulate the automatic

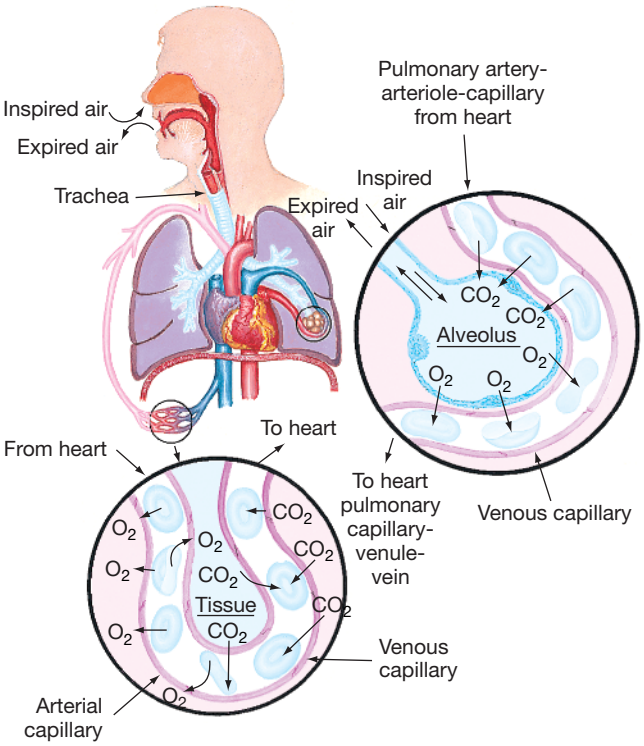


Figure 35-8 Structures of the pulmonary system.

Thompson J et al 1993 Mosby's manual of clinical nursing, 3rd edn. Mosby, St Louis.

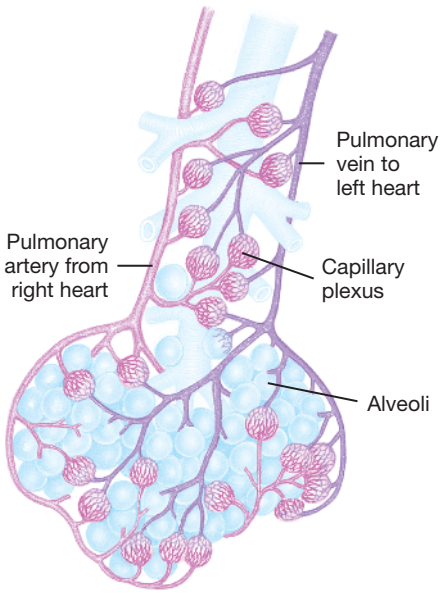


Figure 35-9 Alveoli at the terminal end of the lower airway.

Thompson J et al 1993 Mosby's manual of clinical nursing, 3rd edn. Mosby, St Louis.

BOX 35-2 Major anatomical structures of the thorax and their functions

Inspiratory muscles

Diaphragm

Contraction causes the diaphragm to descend, creating a negative pleural pressure and increasing the vertical dimension of the lungs, which contributes to inflation of the lungs. The increase in vertical dimension and the decrease in intrapulmonary pressure (negative with respect to atmospheric pressure) cause air to enter the lungs.

External intercostal muscles

Contraction elevates the anterior ends of the ribs, causing them to move upwards and outwards. This increases the anteroposterior dimension of the thorax.

Accessory muscles

Accessory muscles include the scalene, sternocleidomastoid and trapezius muscles. Contraction elevates the first two ribs and the sternum.

Expiratory muscles

Internal intercostal muscles

Contraction pulls the ribs down and in, thereby decreasing the anteroposterior diameter of the thorax.

Abdominal respiratory muscles

Abdominal respiratory muscles include the rectus, transversus abdominis, internal oblique and external oblique muscles. Contraction depresses the lower ribs, forces the diaphragm up and decreases the vertical dimension of the thoracic cavity.

Pleural space

The pleural space is a potential space that is only a thin film of liquid lying between the outer layer of the lung (visceral pleura) and the inner layer of the chest cavity (parietal pleura). It permits a smooth, gliding movement of the lungs along the chest wall. Normally, air is not present in the pleural space.

Lungs

Left (two lobes) and right (three lobes)

The lungs transfer oxygen from the atmosphere into the alveoli and carbon dioxide from the alveoli to the lungs to be excreted as a waste product. They also filter toxic material from circulation and metabolise compounds such as angiotensin I, bradykinin and prostaglandins.

Alveoli

Alveoli transfer oxygen and carbon dioxide to and from the blood through the alveolar membrane. These tiny air sacs expand during inspiration, greatly increasing the surface area over which exchange of oxygen and carbon dioxide occurs.

rhythm of respiration. The pneumotaxic and apneustic centres of the respiratory centre adjust inspiratory rate and depth. Central chemoreceptors detect slight changes in pH in spinal fluid, reflecting arterial carbon dioxide (see Chapter 34). Changes in carbon dioxide and therefore pH are detected and inspiratory rate and depth adjusted accordingly. Peripheral chemoreceptors detect arterial carbon dioxide and oxygen, but predominantly

oxygen, and are therefore principally responsible for adjusting respiration in response to hypoxaemia. Central chemoreceptors are more sensitive than peripheral chemoreceptors.

Ventilation is the process of moving gases into and out of the lungs. Normal ventilation occurs at a rate of approximately 4 L/min. Ventilation requires coordination of the muscular and elastic properties of the lung and thorax, as well as intact innervation. The major inspiratory muscle of respiration is the diaphragm. It is innervated by the phrenic nerve derived from spinal nerves C3, C4 and C5. A mnemonic to aid memory of the innervation of the diaphragm is 'C3, 4, 5 keeps the diaphragm alive'.

Breathing is the effort required to expand and contract the lungs. The work of breathing is determined by the degree of compliance of the lungs, airway resistance, presence of active expiration, and use of accessory muscles of ventilation.

During normal respiration, we are what is referred to as negative pressure breathers. This means that to draw air into our lungs we create a negative pressure within the lungs. As we know from our study of the heart and blood flow, things travel from an area of high pressure to lower pressure. The process of breathing in air from the atmosphere into our lungs is called bulk flow.

Inspiration is an active process, stimulated by chemical receptors in the aorta. During inspiration the diaphragm contracts and flattens and the external intercostal muscles contract which pulls the ribs up and out. This increases the size of the lungs and decreases the pressure within them to less than atmospheric pressure. Air moves into the lungs from the area of higher pressure (the atmosphere) to lower pressure (the lungs), hence we breathe in.

Expiration is a passive process that depends on the elastic recoil properties of the lungs, requiring little or no muscle work. The diaphragm and external intercostal muscles relax, which decreases the size of the lungs and therefore increases the pressure to higher than atmospheric, hence we breathe out. Other muscles can be utilised to make breathing out a more active process, such as internal intercostal and abdominal muscles.

Elastic recoil is produced by elastic fibres in lung tissue and by surface tension in the fluid film lining the alveoli. *Surfactant* is the chemical produced in the lungs by alveolar type 2 cells that reduces the surface tension of the alveoli and keeps them from 'sticking shut' when collapsed. Patients with advanced chronic obstructive pulmonary disease (COPD) lose the elastic recoil of the lungs and thorax. As a result, the patient's work of breathing is increased.

Accessory muscles of respiration can increase lung volume during inspiration, although not as effectively as the diaphragm. Accessory muscles include the sternocleidomastoid and scalene muscles on the side of the neck and the intercostal muscles. Patients with COPD, especially emphysema, frequently use these muscles to increase lung volume. During assessment nurses may see obvious movement of these neck muscles and retraction of the muscles between the ribs. Prolonged use of the accessory muscles of respiration does not promote effective ventilation and causes fatigue.

Compliance is the ability of the lungs to distend or expand in response to increased intra-alveolar pressure. Compliance is decreased in diseases such as pulmonary oedema, interstitial and pleural fibrosis, and congenital or traumatic structural abnormalities such as kyphosis (curving of the spine causing a roundness of the back) or fractured ribs.

Airway resistance is the pressure difference between the mouth and the alveoli in relation to the rate of flow of inspired gas. Airway resistance can be increased by an airway obstruction, small-airway disease (such as asthma) and tracheal oedema. When resistance is increased, the amount of air travelling through the anatomical airways is decreased.

Decreased lung compliance, increased airway resistance, active expiration or the use of accessory muscles, increases the work of breathing, resulting in increased energy expenditure. To meet this expenditure, the body increases its metabolic rate, and the need for oxygen, as well as for the elimination of carbon dioxide, increases. This sequence is a vicious cycle for a patient with impaired ventilation, causing further deterioration of respiratory status and the ability to oxygenate adequately.

Lung volumes and capacities

Spirometry is used to measure the volume of air entering or leaving the lungs. Variations in lung volumes may be associated with health states such as pregnancy, exercise, obesity or obstructive and restrictive conditions of the lungs. The amount of surfactant, degree of compliance and strength of respiratory muscles can affect pressures and volumes within the lungs.

The volume of air in the lungs is measured in various ways and combined to describe lung capacities (see pulmonary function tests later in the chapter).

Gases are moved into and out of the lungs through pressure changes (Figure 35-10). Intrapleural pressure is negative relative to atmospheric pressure, which is 760 mmHg at sea level. For air to flow into the lungs, intrapleural pressure must become more negative, setting

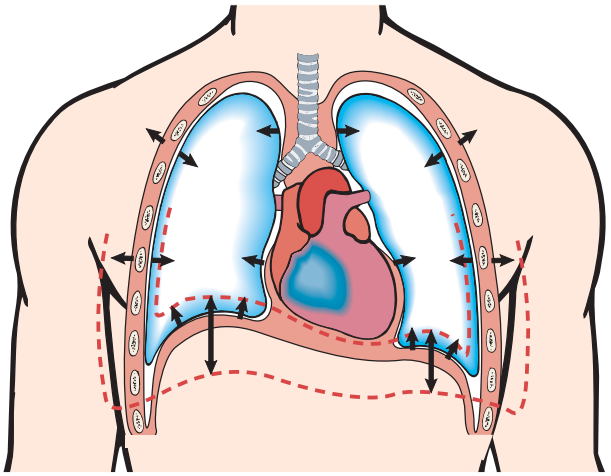


Figure 35-10 Frontal section of chest showing movement of the lung and chest wall during inspiration and expiration.

During inspiration the inspiratory muscles contract and the chest expands. Alveolar pressure becomes subatmospheric with respect to pressure at the airway opening, and air flows into the lungs. During expiration the inspiratory muscles relax. Recoil of the lung causes alveolar pressure to exceed pressure at the airway opening and air to flow out of the lungs. Single arrows show excursion of the lungs and chest wall. Double arrows show movement of the lung bases.

Lewis SM et al 2004 Medical–surgical nursing: assessment and management of clinical problems, 6th edn. Mosby, St Louis.

up a pressure gradient between the atmosphere and the alveoli.

Perfusion/pulmonary circulation

The main function of the pulmonary circulation is to move blood to and from the alveolocapillary membrane for gas exchange to occur. The pulmonary circulation is a reservoir for blood so that the lung can increase its blood volume without large increases in pulmonary artery or venous pressures. The pulmonary circulation also acts as a filter, removing small thrombi before they can reach vital organs.

The pulmonary circulation begins at the pulmonary artery, which receives poorly oxygenated mixed venous blood from the right ventricle. Blood flow through this system depends on the pumping ability of the right ventricle, which has an output of approximately 5 L/min. The flow continues from the pulmonary artery through the pulmonary arterioles to the pulmonary capillaries, where blood comes in contact with the alveolar–capillary membrane and the exchange of oxygen and carbon dioxide occurs. The now oxygen-rich blood then circulates through the pulmonary venules and pulmonary veins, returning to the left atrium.

Pressure and resistance within the pulmonary circulatory system is lower than that within the systemic circulatory system. The walls of the pulmonary vessels are thinner and contain less smooth muscle. The lung accepts the total cardiac output from the right ventricle and, except in some specific pathophysiological circumstances, does not direct blood flow from one region to another.

Diffusion/exchange of oxygen and carbon dioxide

Oxygen and carbon dioxide are exchanged in the alveoli and the capillaries of the body tissues. Oxygen is transferred from the alveoli of the lungs to the pulmonary circulation, and carbon dioxide is transferred from the pulmonary circulation to the alveoli to be exhaled as a waste product. At the tissue level, oxygen is transferred from the arterial blood to tissues, and carbon dioxide is transferred from tissues to the venous blood to return to the pulmonary circulation and alveoli and be exhaled. This transfer depends on the process of *diffusion*.

Diffusion is the movement of molecules from an area of higher concentration to an area of lower concentration (see Chapter 34). Diffusion of oxygen and carbon dioxide occurs at the alveolar–capillary membrane. Oxygen diffuses into the pulmonary circulation from the alveoli and carbon dioxide diffuses from the pulmonary circulation into the alveoli to be expired.

Oxygen transport

The oxygen transport system consists of the respiratory and cardiovascular systems. Delivery depends on the amount of oxygen entering the lungs (ventilation), blood flow to the lungs and tissues (perfusion), rate of diffusion, and oxygen-carrying capacity. The capacity of the blood to carry oxygen is influenced by the amount of dissolved oxygen in the plasma, amount of haemoglobin and tendency of haemoglobin to bind with oxygen. Only a relatively small amount of required oxygen, less than 1%, is dissolved in the plasma (Brashers 2010a). Most oxygen is transported by haemoglobin, which serves as a carrier for oxygen and carbon dioxide. The haemoglobin molecule combines with oxygen to form oxyhaemoglobin. The formation of oxyhaemoglobin is easily reversible, allowing haemoglobin and oxygen to dissociate, which frees oxygen to enter tissues.

Carbon dioxide transport

Carbon dioxide diffuses into red blood cells and is rapidly hydrated into carbonic acid (H_2CO_3) because of the presence of carbonic anhydrase. The carbonic acid

then dissociates into hydrogen (H^+) ions and bicarbonate (HCO_3^-) ions. The reversible process is expressed below:

$$CO_2 + H_2O \leftrightarrow H_2CO_3 \leftrightarrow HCO_3^- + H^+$$

The hydrogen ion is buffered by haemoglobin, and the HCO_3^- diffuses into the plasma (see Chapter 34). In addition, some of the carbon dioxide in red blood cells reacts with amino acid groups, forming carbamino compounds. This reaction can occur rapidly without the presence of an enzyme. Reduced haemoglobin (*deoxyhaemoglobin*) can combine with carbon dioxide more easily than oxyhaemoglobin, and therefore venous blood transports the majority of carbon dioxide.

Regulation of respiration

Regulation of respiration is necessary to ensure sufficient oxygen intake and carbon dioxide elimination to meet the body's demands (e.g. during exercise, infection or pregnancy). Neural and chemical regulators control the process of respiration. Neural regulation includes the central nervous system control of respiratory rate, depth and rhythm. Chemical regulation involves the influence of chemicals such as carbon dioxide and hydrogen ions on the rate and depth of respiration (Box 35-3).

BOX 35-3 Neural and chemical regulation of respiration

Neural regulation

Maintains rhythm and depth of respiration and balance between inspiration and expiration.

Cerebral cortex

Voluntary control of respiration delivers impulses to the respiratory motor neurons by way of the spinal cord; accommodates speaking, eating and swimming.

Medulla oblongata

Automatic control of respiration occurs continuously.

Chemical regulation

Maintains appropriate rate and depth of respirations based on changes in the blood's carbon dioxide, oxygen and hydrogen ion (H^+) concentration. Chemical regulation can occur during physical exercise and in some illnesses. It is a short-term adaptive mechanism.

Chemoreceptors

Located in the medulla, aortic body and carotid body. Changes in chemical content of oxygen, carbon dioxide and hydrogen ions stimulate chemoreceptors, which in turn stimulate neural regulators to adjust the rate and depth of ventilation to maintain normal arterial blood gas levels.

Factors affecting oxygenation

Adequacy of ventilation, perfusion and transport of oxygen to the tissues is influenced by four types of factors: (1) physiological, (2) developmental, (3) behavioural and (4) environmental. Physiological factors are outlined below; developmental, behavioural (lifestyle) and environmental factors are discussed in the following section.

Physiological factors

Any condition that affects cardiopulmonary functioning directly affects the body's ability to meet oxygen demands. The general classifications of cardiac disorders include disturbances in conduction, impaired valvular function, myocardial hypoxia, cardiomyopathic conditions and peripheral tissue hypoxia. Respiratory disorders are caused by one or more of the following factors: **ventilation/perfusion (V/Q) mismatch**, diffusion impairment, alveolar hypoventilation and alveolar hyperventilation.

Other physiological processes affecting oxygenation are presented in Table 35-1.

V/Q mismatch: decreased ventilation due to lung infection

Lung infections such as pneumonia decrease the available alveolar space for air to enter, thus deceasing the surface area available for gas exchange. This results in a decrease in oxygen and carbon dioxide diffusion (see Figure 35-11).

Decreased oxygen-carrying capacity

Haemoglobin carries 99% of the diffused oxygen to tissues (Brashers 2010a). Anaemia and inhalation of toxic substances decrease the oxygen-carrying capacity

TABLE 35-1 Physiological processes affecting oxygenation

Process	Effect on oxygenation
Airway obstruction	Limits delivery of inspired oxygen to alveoli
Anaemia	Decreases oxygen-carrying capacity of blood
Decreased chest wall motion (e.g. from musculoskeletal impairments)	Prevents lowering of diaphragm and reduces anteroposterior diameter of thorax on inspiration, reducing volume of air inspired
Fever, pregnancy, infection	Increases metabolic rate and tissue oxygen demand
High altitude	Atmospheric oxygen concentration is lower and inspiratory oxygen concentration decreases
Toxic inhalant	Decreases oxygen-carrying capacity of blood

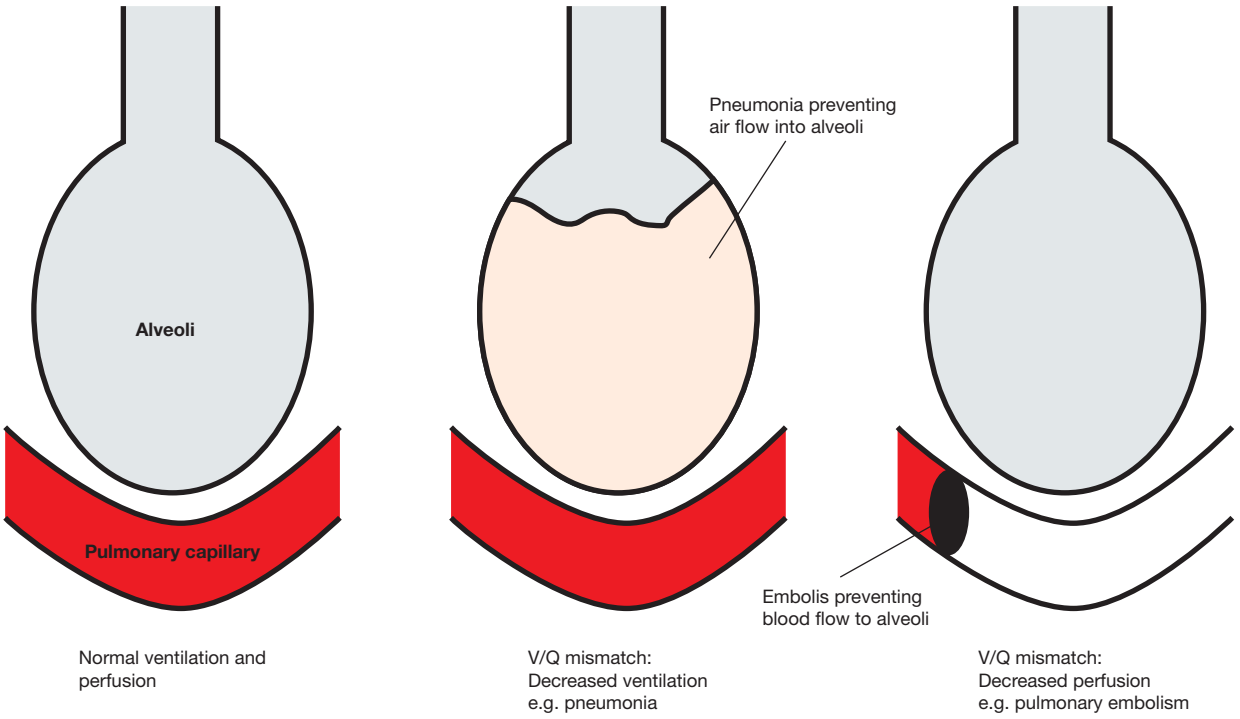


Figure 35-11 **How V/Q mismatch occurs.**

of blood by reducing the amount of available haemoglobin to transport oxygen. *Anaemia*, a lower than normal haemoglobin level, is a result of decreased haemoglobin production, increased red blood cell destruction and/or blood loss. Patients complain of fatigue, decreased activity tolerance and increased breathlessness, as well as pallor (especially seen in the conjunctiva of the eye) and an increased heart rate.

Carbon monoxide is the most common toxic inhalant that decreases the oxygen-carrying capacity of blood. The affinity for haemoglobin to bind with carbon monoxide is greater than 200 times its affinity to bind with oxygen, creating a functional anaemia. Because of the bond's strength, carbon monoxide is not easily dissociated from haemoglobin, making the haemoglobin unavailable for oxygen transport.

Decreased inspired oxygen concentration

When the concentration of inspired oxygen declines, the oxygen carried by the blood is decreased. Decreases in the fraction of inspired oxygen concentration (FiO_2) can be caused by an upper-airway obstruction (e.g. croup in the child) or lower-airway obstruction (e.g. COPD in the adult) limiting delivery of inspired oxygen to alveoli; decreased environmental oxygen, such as at high altitudes; or decreased inspiration as a result of an incorrect oxygen concentration setting on respiratory therapy equipment.

V/Q mismatch: decreased perfusion due to hypovolaemia

Conditions such as shock and severe dehydration resulting from extracellular fluid loss and reduced circulating blood volume cause **hypovolaemia**. With a significant fluid loss, the body tries to adapt by increasing the heart rate and peripheral vasoconstriction through sympathetic nervous system stimulation to increase the volume of blood returned to the heart and, in turn, increase the cardiac output. Consider the child with vomiting and diarrhoea from gastroenteritis. The nursing assessment will likely reveal a child who speaks minimally and is tachypnoeic (Airway and Breathing); pale, tachycardic with capillary refill greater than 3 seconds (Circulation); and is listless (Disability). The loss in circulating volume caused by the extreme fluid loss from the vomiting and diarrhoea means that preload and therefore stroke volume (SV) fall, dropping cardiac output (CO). Remember that CO = SV × HR. The sympathetic nervous system responds by increasing HR (*tachycardic*) and causing vasoconstriction which increases afterload (*pale and capillary refill greater than 3 seconds*), all to try to improve CO. At the same time, the respiratory centre is stimulated to increase respiratory rate (*tachypnoeic*) in an effort to deliver more oxygen. As CO has fallen, perfusion to the brain is diminished and so the child is *listless*.

Increased metabolic rate

Increases in metabolic activity result in an increased oxygen demand. When body systems are unable to meet this increased demand, the level of oxygenation declines. An increased metabolic rate is a normal physiological response to pregnancy, wound healing and exercise because the body is building tissue. Most people can meet the increased oxygen demand and do not display signs of oxygen deprivation. Fever increases the tissues' need for oxygen, and as a result carbon dioxide production also increases. If the febrile state persists, the metabolic rate remains high and the body begins to break down protein stores, resulting in muscle wasting and decreased muscle mass. Respiratory muscles such as the diaphragm and intercostal muscles are also wasted. The body attempts to adapt to the increased carbon dioxide levels by increasing the rate and depth of respiration. The patient's work of breathing increases and the patient eventually displays signs and symptoms of hypoxaemia. Those patients with pulmonary diseases are at greater risk of hypoxaemia and hypercapnoea due to V/Q mismatch and alveolar hypoventilation (see later in the chapter). Assessment findings include an increased rate and depth of respiration, use of the accessory muscles of respiration, pursed-lip breathing and decreased activity tolerance.

V/Q mismatch: decreased ventilation due to conditions affecting chest wall movement

Any condition that reduces chest wall movement can result in decreased ventilation. If the diaphragm cannot fully descend with breathing, the volume of inspired air decreases and less oxygen is delivered to the alveoli and subsequently to tissues. For example, thoracic or abdominal injury or surgery will cause considerable pain, which inhibits diaphragmatic and chest wall movement, reducing inspiration and therefore delivery of oxygen.

Pregnancy

As the fetus grows during pregnancy, the greater size of the uterus pushes abdominal contents upwards against the diaphragm. In the last trimester of pregnancy, the inspiratory capacity declines, resulting in dyspnoea on exertion and increased fatigue.

Obesity

Obese patients have reduced lung volumes from the heavy lower thorax and abdomen, particularly when in the recumbent and supine positions. Obese patients have a reduction in compliance as a result of encroachment of the abdomen into the chest, increased work of breathing and decreased lung volumes, and they may have fatigue and carbon dioxide retention. In some patients an obesity–hypoventilation syndrome develops in which oxygenation is decreased and carbon dioxide is retained, resulting in daytime sleepiness. The obese patient is also susceptible to pneumonia after an upper respiratory tract infection because the lungs cannot fully expand and pulmonary secretions are not mobilised in the lower lobes.

Musculoskeletal abnormalities

Musculoskeletal impairments in the thoracic region reduce oxygenation. Such impairments may result from abnormal structural configurations, trauma, muscular diseases and diseases of the central nervous system. Abnormal structural configurations impairing oxygenation include those that affect the rib cage, such as pectus excavatum (abnormal development of ribs causing caved in appearance), and those that affect the vertebral column, such as kyphosis.

Trauma

Two or more ribs fractured in two or more places results in a flail chest, a condition in which fractures cause instability in part of the chest wall. The unstable chest wall allows the lung underlying the injured area to contract on inspiration and bulge on expiration, resulting in hypoxia. Chest wall or upper abdominal incisions may also decrease chest wall movement as the patient uses shallow respirations to minimise chest wall movement to avoid pain. Narcotic analgesia, for example, morphine, is often prescribed to relieve the pain, thereby facilitating improved chest wall expansion. Should excessive or high doses of narcotic analgesics be administered, this may depress the respiratory centre in the brain, further decreasing respiratory rate and chest wall expansion and therefore decreasing oxygenation.

Neuromuscular diseases

Diseases such as muscular dystrophy affect oxygenation of tissues by decreasing the patient's ability to expand and contract the chest wall. Ventilation is impaired, and atelectasis, hypercapnoea and hypoxaemia can occur. Myasthenia gravis and Guillain-Barré syndrome affect respiratory functioning and result in alveolar hypoventilation (see later in the chapter). Myasthenia gravis interferes with the normal transmission of impulses from nerves to muscles, involving the whole body, including muscles of respiration. Guillain-Barré syndrome causes inflammation and paralysis of muscle groups, which usually results in an ascending pattern of paralysis. Respiratory muscles become paralysed as paralysis ascends to the thoracic region.

Central nervous system alterations

Diseases or trauma involving the medulla oblongata and spinal cord may result in impaired respiration. When the medulla oblongata (contains the respiratory centre) is affected, neural regulation of respiration is damaged and abnormal breathing patterns may develop. If the phrenic nerve is damaged, the diaphragm may not descend, thus reducing inspiratory lung volumes and causing hypoxaemia. Cervical trauma at vertebrae C3 to C5 can result in paralysis of the phrenic nerve. Spinal cord trauma below the fifth cervical vertebra usually leaves the phrenic nerve intact but damages nerves that innervate the intercostal muscles, preventing anteroposterior chest expansion.

Influences of chronic disease

Oxygenation can be decreased as a direct consequence of chronic disease. It can also be decreased as a secondary effect, as with anaemia. The physiological response to chronic hypoxaemia is the development of a secondary polycythaemia. This adaptive response is the body's attempt to increase the amount of circulating haemoglobin to increase the available oxygen-binding sites.

Alterations in cardiac functioning

Illnesses and conditions that affect cardiac rhythm, strength of contraction, blood flow through the atria and ventricles, myocardial blood flow and peripheral circulation cause alterations in cardiac functioning. Remember the following equation when learning about various cardiac conditions and how they affect normal functioning:

Cardiac output = Heart rate (HR) × Stroke volume (SV)

Factors affecting heart rate and rhythm will impact on overall cardiac function, such as disturbances in conduction and influence of hormones. Likewise factors affecting stroke volume, and therefore the three elements determining stroke volume: preload, afterload and contractility, will also affect cardiac function.

Please revise these elements before continuing here as this background knowledge is vital to understanding the pathophysiology of the cardiovascular system.

Disturbances in conduction

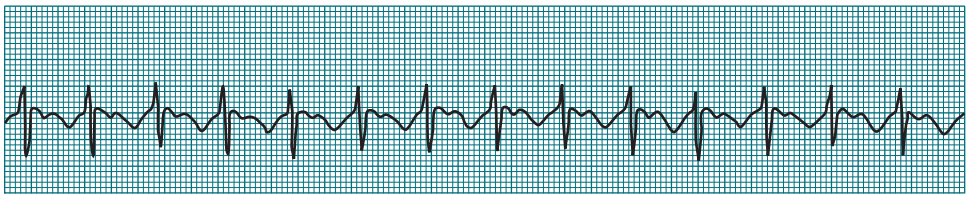
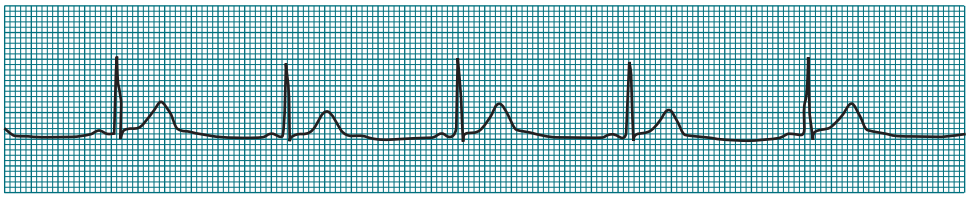
Some disturbances in conduction are a result of electrical impulses that do not originate from the SA node. These rhythm disturbances are called **arrhythmias**, meaning a deviation from the normal sinus rhythm. Some of the common arrhythmias are included in Table 35-2. As mentioned before, ECG interpretation of disease processes is an advanced nursing skill which is continually developed throughout your career and this chapter is designed as an introduction to this. However, all RNs need to be able to recognise normal sinus rhythm and knowledge of these common arrhythmias is a general requirement during your initial experience. Please pay particular attention to the imminently life-threatening arrhythmias. Arrhythmias may occur as a primary conduction disturbance as a response to ischaemia, valvular abnormality, anxiety or drug toxicity; caffeine, alcohol or tobacco use; or as a complication of acid–base or electrolyte imbalance (see Chapter 34).

Arrhythmias are classified by site of impulse origin and mechanism of the cardiac response. Cardiac response can be one of *tachycardia* (> 100 beats per minute), *bradycardia* (< 60 beats per minute), a *premature (early) beat* or a *blocked (delayed or absent) beat*. Tachyarrhythmia can lower cardiac output and blood pressure. Tachyarrhythmia reduces cardiac output by decreasing diastolic filling time. Bradyarrhythmia lowers cardiac output because of the decreased heart rate.

Abnormal impulses originating above the ventricles are referred to as *supraventricular arrhythmias*. The abnormality of the waveform is the configuration and placement of the P wave. Ventricular conduction usually remains normal and a normal QRS complex is observed. Junctional arrhythmias represent an abnormal site of impulse conduction above or below the AV node. The P wave can occur before, during or after the QRS complexes and is often inverted if visible. Because the beat originates above the ventricle, ventricular conduction and the QRS complex are usually normal. One of the most common supraventricular arrhythmias is *atrial fibrillation* and occurs most frequently with ageing and in heart failure. There is disorganised chaotic depolarisation of the atria at a very rapid rate (400–600 beats/min) resulting in fibrillatory waves. Conduction of many of these beats is blocked at the AV node and conduction through the ventricle is usually normal. The ventricular rate varies but is usually quite rapid. Due to the lack of synchrony between atria and ventricles, thrombi can form in the atria, potentially causing a stroke when sinus rhythm is restored (Jacobson 2010b). Patients often require anticoagulation, usually with warfarin. A new anticoagulant, dabigatran, appears superior with fewer side effects (Talati & White 2011). Management focuses on either rate control or rhythm control, with neither approach holding an outcome advantage over the other (Van Gelder et al 2002, Wyse et al 2002).

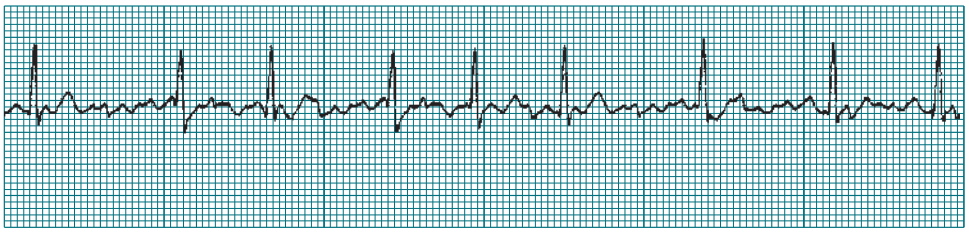
Ventricular arrhythmias represent an ectopic site of impulse formation within the ventricles. The configuration

TABLE 35-2 Common cardiac arrhythmias

Rhythm characteristics	Aetiology	Clinical significance	Management
Sinus tachycardia			
Regular rhythm, rate 100–180 beats/min (higher in infants), normal P wave, normal QRS complex	Rate increase may be normal response to exercise, emotion or stressors such as pain, fever, heart failure, hyperthyroidism and certain drugs (e.g. caffeine, nitrates, atropine, adrenaline, isoprenaline, nicotine)	May have haemodynamic consequence in patient with damaged heart that is unable to sustain increased workloads (increased myocardial oxygen consumption) brought on by persistent increases in heart rate	Correct underlying factors, remove offending drugs
			
Sinus bradycardia			
Regular rhythm, rate less than 60 beats/min, normal P wave, normal P–R interval, normal QRS complex	Rate decrease may be normal response to sleep or in well-conditioned athlete; abnormal drops in rate may be caused by diminished blood flow to sinoatrial node, vagal stimulation (coughing, gagging, vomiting), hypothyroidism, increased intracranial pressure or pharmacological agents (e.g. digoxin, beta-blockers, calcium channel blockers)	No clinical significance unless associated with signs and symptoms of reduced cardiac output such as dizziness or syncope or presence of chest pain	Symptomatic bradycardia (hypotension with decreased cardiac output) is treated with atropine
			
Sinus arrhythmia			
Irregular rhythm; possibly phasic with respiration, slowing during inspiration and increasing with expiration; rate of 60–100 beats/min; normal P wave; normal P–R interval; normal QRS complex	Sinus rhythm with cyclic variation caused by vagal impulses that influence rhythm during respiration; occurs commonly in children, young adults and older adults; usually disappears as heart rate increases	No clinical significance unless heart rate decreases and symptoms of dizziness occur with decreased rate	None indicated unless heart rate decreases and symptoms occur
			

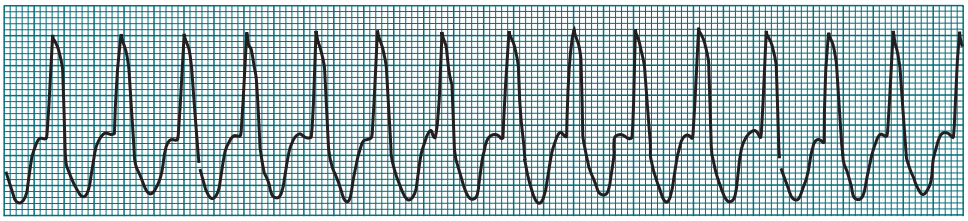
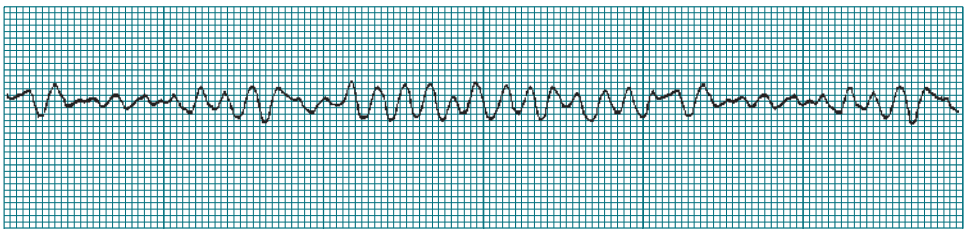
continued

TABLE 35-2 ***continued***

Rhythm characteristics	Aetiology	Clinical significance	Management
Atrial fibrillation (AF)			
Irregularly irregular arrhythmia resulting from uncoordinated atrial activity. P waves are absent replaced by fibrillatory (F) waves which vary from wave to wave. Atrial rate 400–600 beats/min, ventricular rate varies 60–160 beats/min as atrioventricular blocks many of the impulses. P–R interval absent as no P waves, QRS usually normal	Prevalent in the elderly (9% in those over 80 years) Common cardiac causes include heart failure, hypertension, valvular disease Non-cardiac causes include alcohol (binge drinking), hyperthyroidism and chronic obstructive pulmonary disease	May have haemodynamic consequences of decreased cardiac output due to loss of synchrony between atria and ventricles. This loss of synchrony between atria and ventricles results in pooling of blood in the atria and the potential for thrombus formation leading to stroke. Thromboembolism and stroke from AF have significant morbidity and mortality	Management choices are rate control or rhythm control with no evidence that one approach is superior to another Rate-control drug choices include beta-blockers and digoxin. The patient should also be anticoagulated Rhythm control can be achieved electrically through elective cardioversion. The patient must first be anticoagulated to prevent thromboembolism. Rhythm-control drug choices include amiodarone and flecainide
			
Premature ventricular contractions (PVCs)			
Irregular rhythm with ectopic beats followed by full compensatory pause; rate normal or increased, depending on number of ectopic beats; P wave absent in ectopic beat; P–R interval absent; QRS complex widened and distorted; T wave in opposition to R wave	Caused by irritable focus within ventricle, commonly associated with myocardial infarction; other causes include hypoxia, hypocalcaemia, acidosis	PVCs occurring frequently (more than 6/min) or in pairs, indicating increased ventricular irritability	Suppress PVCs; if PVCs are frequent, administer intravenous bolus of lignocaine 1–1.5 mg/kg IV push followed by continuous IV infusion; administer additional antiarrhythmic agents as needed; treat underlying cause
			
Ventricular tachycardia (VT)			
Rhythm slightly irregular, rate 100–200 beats/min, P wave absent, P–R interval absent, QRS complex wide and bizarre, > 0.12 second	Caused by irritable ventricular foci firing repetitively, commonly caused by ischaemic heart disease, trauma and underlying electrolyte abnormalities	Often a forerunner of ventricular fibrillation; if condition is persistent and rapid, causes decreased cardiac output because of decreased ventricular filling time VT can present with or without a clinically detectable cardiac output. VT without a clinically detectable cardiac output is referred to as pulseless VT	VT with a cardiac output: most episodes terminate abruptly without treatment; administer lignocaine bolus 1–1.5 mg/kg IV followed by continuous IV drip; cardioversion may be indicated Pulseless VT: proceed straight to defibrillation

continued

TABLE 35-2 ***continued***

Rhythm characteristics	Aetiology	Clinical significance	Management
			
Ventricular fibrillation (VF)			
Chaotic ventricular rhythm. P wave absent, P–R interval absent, QRS absent. Deflections from baseline undulate with different shape and amplitude	Commonly caused by ischaemic heart disease, electrolyte abnormalities, increased sympathetic nervous system activity, heart failure, hypertrophy	As there is no coordinated depolarisation of the ventricles, the myocardium does not contract and there is no cardiac output and therefore no pulse	VF is always a cardiac arrest situation – proceed straight to defibrillation
			

Aehlert B 2011 ECGs made easy, 4th edn. Mosby, St Louis; Australian Resuscitation Council (ARC) 2016 Guideline 8, cardiopulmonary resuscitation. ARC, Melbourne. Online. Available: www.resus.org.au; accessed 1 April 2016; Moser DB, Riegel B 2008 Cardiac nursing: a companion to Braunwald's heart disease. Saunders, Philadelphia. Images from Aehlert 2011.

of the QRS complex is usually widened and bizarre. P waves may or may not be present; often they are buried in the QRS complex. Ventricular tachycardia and ventricular fibrillation are life-threatening arrhythmias that require immediate intervention. Ventricular tachycardia is considered a life-threatening arrhythmia because of the decreased cardiac output and the potential to deteriorate into ventricular fibrillation (Jacobson 2010b).

Altered cardiac output

Failure of the myocardium to eject sufficient volume to the systemic and pulmonary circulations can result in heart failure. Failure of the myocardial pump results from primary coronary artery disease, cardiomyopathic conditions, valvular disorders and pulmonary disease. Some of the common cardiac disorders are discussed here. It may be beneficial to review the cardiac anatomy and physiology before studying the following section to remind yourself of normal function and terminology.

Left-sided heart failure

Left-sided heart failure is an abnormal condition characterised by impaired functioning of the left ventricle due to elevated afterload. If left ventricular failure is significant, the amount of blood ejected from the left ventricle (stroke volume) drops greatly, resulting in decreased cardiac output. Consider the patient experiencing an acute episode of heart failure. The nursing assessment will likely reveal a person who speaks in phrases, is tachypnoeic, is using accessory muscles of respiration, has crackles on auscultation of lung fields, has low oxygen saturations (Airway and Breathing) and is hypotensive and tachycardic with capillary refill greater than 3 seconds (Circulation). As the left ventricle is unable to pump effectively and stroke volume and therefore CO is reduced (*hypotensive*), sympathetic nervous system stimulation increases HR (tachycardic) and causes vasoconstriction (*capillary refill greater than 3 seconds*) to compensate. The increased volume and therefore pressure in the left ventricle due to its ineffective pumping action causes the pressure to be reflected backwards into the pulmonary circulation. The increased pressure forces fluid out of the pulmonary circulation into the interstitium and alveoli (*crackles on auscultation*), impairing oxygenation (*low oxygen saturations*). The respiratory centre is stimulated, resulting in an increased respiratory rate (*tachypnoeic*) to compensate and try to deliver more oxygen. Other assessment findings may include decreased activity

tolerance, dizziness and confusion as a result of tissue hypoxia from the diminished cardiac output. Also, cough and paroxysmal nocturnal dyspnoea may be evident due to the pulmonary congestion.

Right-sided heart failure

Right-sided heart failure results from impaired functioning of the right ventricle characterised by venous congestion in the systemic circulation. Right-sided heart failure more commonly results from pulmonary disease or as a result of long-term left-sided failure (both of which cause an increased afterload on the right ventricle). The primary pathological factor in right-sided failure is elevated pulmonary vascular resistance (PVR), which increases afterload on the right ventricle. As the PVR continues to rise, the right ventricle must generate more work, and the oxygen demand of the heart increases. As the failure continues, the amount of blood ejected from the right ventricle declines, and blood begins to 'back up' in the systemic circulation. Clinically, the patient has weight gain due to fluid retention, distended neck veins, hepatomegaly and splenomegaly and dependent peripheral oedema.

Impaired valvular function

Valvular heart disease is an acquired or congenital disorder of a cardiac valve characterised by stenosis and obstructed blood flow or valvular degeneration and regurgitation of blood. When stenosis occurs in the semilunar valves (aortic and pulmonic valves), the adjacent ventricles must work harder to move the ventricular volume beyond the stenotic valve. Over time, the stenosis can cause the ventricle to hypertrophy (enlarge), and if the condition is untreated, left- or right-sided heart failure can occur. If stenosis occurs in the atrioventricular valves (mitral and tricuspid valves), the atrial pressure rises, causing the atria to hypertrophy. When regurgitation occurs, there is a backflow of blood into an adjacent chamber. For example, in mitral regurgitation the mitral leaflets do not close completely. When the ventricle contracts, blood escapes back into the atria, causing a murmur or 'whooshing' sound (see Chapter 24).

Myocardial ischaemia/ acute coronary syndrome

Myocardial ischaemia results when the supply of blood to the myocardium from the coronary arteries is insufficient to meet the oxygen demands of the organ. This is most often due to the development of atherosclerosis. Atherosclerotic plaque develops, narrowing the lumen of the coronary artery and leading to thrombus formation and eventually occlusion. Two common manifestations of this ischaemia are angina pectoris and myocardial infarction. These collectively are termed *acute coronary syndrome*. When a patient first presents with ischaemic type chest pain, the diagnosis of acute coronary syndrome is made until it is determined whether the presentation is angina pectoris or a myocardial infarction. This prevents delay in management.

Angina

Angina pectoris is usually a transient imbalance between myocardial oxygen supply and demand due to reversible myocardial ischaemia. The condition results in chest pain that is aching, sharp, tingling or burning, or that feels like pressure. The chest pain may be left-sided or substernal and may radiate to the left or both arms, and to the jaw, neck and back. In some patients, anginal pain may not radiate and may present atypically, such as with back pain or a more generalised pain; this is particularly common for women. Patients report that pain is often precipitated by activities that increase myocardial oxygen demand (e.g. exercise, anxiety or stress). The pain is usually relieved with rest and coronary vasodilators, the most common being a glyceryl trinitrate preparation.

Myocardial infarction

Myocardial infarction results from sudden decreases in coronary artery blood flow or an increase in myocardial oxygen demand without adequate coronary artery perfusion. Infarction occurs when ischaemia (which is reversible) remains untreated or inadequately treated or there is a complete blockage to one or more coronary arteries and results in necrosis (which is not reversible) of myocardial tissue.

Chest pain associated with myocardial infarction is usually described as crushing, squeezing or stabbing. The pain may be retrosternal and left praecordial, and it may radiate down the left arm to the neck, jaws, teeth, epigastric area and back. The pain occurs at rest or exertion, lasts more than 30 minutes and is unrelieved by rest, position change or sublingual glyceryl trinitrate administration.

Research indicates that there is a significant difference between men and women in relation to coronary artery disease. It is known that women do not always present the same type of symptoms as men (Miracle 2010). Symptoms are likely to be more subtle in women, with atypical presentation such as a sensation of indigestion, heaviness or general discomfort. Dyspnoea, fainting, nausea, fatigue and palpitations are also common symptoms in women. A first presentation of coronary artery disease in women is likely to be angina, while in men a first presentation is more likely to be a myocardial infarction (Miracle 2010). Oestrogen replacement in healthy postmenopausal

women may reduce and prevent coronary artery disease. Additional risk factors for coronary artery disease in women include menopause and hormonal contraceptives, such as birth-control pills.

• CRITICAL REFLECTION POINT

Wanda Johnson is a 56-year-old postmenopausal woman with a history of hypertension. What would you include in the teaching portion of her plan of care?

Alterations in respiratory functioning

Illnesses and conditions that affect ventilation or oxygen transport cause alterations in respiratory functioning. The main alterations are ventilation/perfusion (V/Q) mismatch, diffusion impairment, alveolar hypoventilation, alveolar hyperventilation and hypoxia.

Alveolar hyperventilation

The goal of ventilation is to produce a normal arterial carbon dioxide tension ($PaCO_2$) between 35 and 45 mmHg and maintain a normal arterial oxygen tension (PaO_2) between 95 and 100 mmHg. Arterial oxygen levels can be monitored using a non-invasive oxygen saturation monitor. The normal range is 95–100%.

Alveolar hyperventilation is a state of ventilation in excess of that required to eliminate the normal venous carbon dioxide produced by cellular metabolism. Anxiety, infections, drugs or an acid–base imbalance can induce alveolar hyperventilation, as well as hypoxia associated with pulmonary embolus or shock. Acute anxiety can lead to alveolar hyperventilation and may cause loss of consciousness from excess carbon dioxide exhalation. Fever can cause alveolar hyperventilation. For each increase of 1°C there is a 12% increase in metabolic rate, thereby increasing carbon dioxide production. The clinical response is an increased rate and depth of respiration.

Alveolar hyperventilation may also be chemically induced. Salicylate (aspirin) poisoning causes excessive stimulation of the respiratory centre as the body attempts to compensate for excess carbon dioxide. Amphetamines also increase ventilation by raising carbon dioxide production. Alveolar hyperventilation can also occur as the body tries to compensate for metabolic acidosis by producing a respiratory alkalosis. For example, the patient with diabetes mellitus who has gone into diabetic ketoacidosis is producing large amounts of metabolic acids. The respiratory system tries to correct the acid–base imbalance by increasing the respiratory rate. Ventilation increases to reduce the amount of carbon dioxide available to form carbonic acid (see Chapter 34).

TABLE 35-3 Differentiating alveolar hyperventilation from hypoventilation

Hyperventilation	Hypoventilation
Features	
Mental status	Disorientation
Disorientation	Lethargy
Light-headedness	Dizziness
Dizziness	Headache
	Decreased ability to follow instructions
	Convulsions
	Coma
Cardiovascular signs and symptoms	
Tachycardia	Arrhythmias
Chest pain	Cardiac arrest
Shortness of breath	
Neurological signs and symptoms	
Blurred vision	
Paraesthesias	
Extremity and circumoral numbness	
Carpopedal spasm (tetany)	
Tinnitus	
Other	
Acid–base and electrolyte imbalances	Acid–base and electrolyte imbalances

Alveolar hyperventilation produces many signs and symptoms that can be assessed (Table 35-3). Haemoglobin does not release oxygen to tissues as readily, and tissue hypoxia results. As symptoms worsen, the patient may become more agitated, which further increases the respiratory rate and can result in respiratory alkalosis.

Alveolar hypoventilation

Alveolar hypoventilation occurs when alveolar ventilation is inadequate to meet the body's oxygen demand or to eliminate sufficient carbon dioxide. As alveolar ventilation decreases, $PaCO_2$ is elevated (hypercapnoea). Severe atelectasis can produce alveolar hypoventilation. **Atelectasis** is a collapse of the alveoli that prevents normal diffusion of oxygen and carbon dioxide. As alveoli collapse, less of the lung can be ventilated and alveolar hypoventilation occurs.

Patients with chronic obstructive pulmonary disease (COPD) have a progressive deterioration of the airways, leading to a loss of lung function resulting in alveolar hypoventilation. COPD is an umbrella term which

includes the two conditions: chronic bronchitis and emphysema. Some people with COPD have a chronically elevated $PaCO_2$ and low PaO_2. In this instance, the central chemoreceptors primarily responsible for detecting changes in pH (and $PaCO_2$) are less sensitive, and peripheral chemoreceptors are now the primary stimulus to ventilation. Remember that peripheral chemoreceptors are more sensitive to oxygen than carbon dioxide (Brashers 2010a). A small percentage of these patients in response to supplemental oxygen will experience a significant elevation in $PaCO_2$, which causes drowsiness and lethargy. This is known as *hypercapnoeic encephalopathy* or *CO_2 narcosis* (Simmons & Simmons 2004). To avoid this complication, supplemental oxygen therapy should be titrated to achieve oxygen saturations of 88–92% (Beasley et al 2011).

Signs and symptoms of alveolar hypoventilation are presented in Table 35-3. If untreated, the patient's status can rapidly decline. Convulsions, unconsciousness and death can result. Treatment for alveolar hyperventilation and alveolar hypoventilation requires improving tissue oxygenation, restoring ventilatory function, treating the underlying cause and achieving acid–base balance.

Ventilation/perfusion mismatch

For oxygenation to occur, both adequate ventilation (airflow into the alveoli) and adequate perfusion (blood flow to the alveoli) are needed. This is termed the ventilation/perfusion (V/Q) ratio and is normally approximately 4 : 5 (ventilation 4 L/min : perfusion 5 L/min). If there is impairment with either mechanism, a V/Q mismatch occurs. The patient with pneumonia will have V/Q mismatch due to impaired ventilation, as the alveoli are blocked with secretions and pus; a patient with a pulmonary embolism will have a V/Q mismatch due to impaired perfusion as the embolism is blocking blood flow to a region of the lungs. The overall result is a lowering of oxygen (Pierce 2007). See Figure 35-11 for a visual illustration of the V/Q mismatch.

Diffusion impairment

The rate of diffusion of oxygen can be affected by the thickness of the alveolar–capillary membrane and the available surface area for diffusion. Increased thickness of the membrane impedes diffusion because oxygen takes longer to diffuse across the membrane. Patients with pulmonary oedema or pneumonia have an increased thickness of the alveolar–capillary membrane, resulting in slowed diffusion, slowed exchange of oxygen and impaired delivery of oxygen to tissues. The surface area of the membrane can be altered as a result of a chronic disease (e.g. emphysema), an acute disease (e.g. pneumothorax) or a surgical process (e.g. lobectomy). The alveolar–capillary membrane can be destroyed or may thicken, changing the rate of diffusion. When fewer alveoli are functioning, the surface area is decreased. This alteration in membrane thickness and/or surface area which results in impaired gas exchange is termed **diffusion impairment** (Pierce 2007).

Tissue hypoxia

Hypoxia is inadequate tissue oxygenation at the cellular level. This can result from a deficiency in oxygen delivery or oxygen utilisation at the cellular level. Hypoxia can be caused by:

1. a decreased haemoglobin level and lowered oxygen-carrying capacity of the blood
2. a diminished concentration of inspired oxygen, which may occur at high altitudes
3. the inability of the tissues to extract oxygen from the blood, as with cyanide poisoning
4. diffusion impairment as in pneumonia
5. poor tissue perfusion with oxygenated blood, as with shock
6. V/Q mismatch as with multiple rib fractures or chest trauma.

The clinical signs and symptoms of hypoxia include apprehension, restlessness, inability to concentrate, a declining level of consciousness, dizziness and behavioural changes (Box 35-4). The patient with a narcotic overdose, such as a heroin overdose, which depresses the respiratory centre leading to a decreased ventilatory drive, may display signs of alveolar hypoventilation. During early stages of hypoxia, the blood pressure is elevated unless the condition is caused by shock. As the hypoxia worsens, the respiratory rate may decline as a result of respiratory muscle fatigue.

Cyanosis, blue discolouration of the skin and mucous membranes caused by the presence of desaturated haemoglobin in capillaries, is a late sign of hypoxia. The presence or absence of cyanosis is not a reliable measure of oxygenation status. Central cyanosis, observed in the tongue, soft palate and conjunctiva of the eye, where blood flow is high, indicates hypoxaemia. Peripheral cyanosis, seen in the extremities, nail beds and earlobes, is often a result of vasoconstriction and stagnant blood flow.

Hypoxia is a life-threatening condition. Untreated, it can lead to metabolic acidosis due to anaerobic metabolism which can produce fatal cardiac arrhythmias. Hypoxia is managed by administration of oxygen and treatment of the underlying cause, such as airway obstruction.

BOX 35-4 Tissue hypoxia – signs and symptoms

Restlessness
Apprehension, anxiety
Disorientation
Decreased ability to concentrate
Decreased level of consciousness
Increased fatigue
Dizziness
Behavioural changes
Increased pulse rate
Increased rate and depth of respiration
Elevated blood pressure
Cardiac arrhythmias
Pallor
Cyanosis
Clubbing
Dyspnoea
Hypoventilation

Paediatric cardinal signs

Restlessness
Irritability
Increased rate of respiration
Increased pulse rate
Profuse sweating
Nasal flaring
Intercostal, subcostal recession
Tracheal tug
Grunt on expiration
Head bobbing

Developmental factors

The developmental stage of the patient and the normal ageing process can affect tissue oxygenation.

Premature infants

Premature infants are at risk of respiratory distress syndrome (previously known as hyaline membrane disease), which is caused by a surfactant deficiency. The surfactant-synthesising ability of the lungs develops late in pregnancy, around the seventh month, and may therefore be lacking in preterm infants (Wheeler 2009).

Infants and toddlers

Maternal antibodies provide protection from infection in the infant under 3 months of age. Infants and toddlers are at risk of upper respiratory tract infections as a result of frequent exposure to other children and exposure to secondhand smoke. In addition, during the teething process some infants develop nasal congestion, which encourages bacterial growth and increases the potential for respiratory tract infection. Upper respiratory tract infections are usually not dangerous, and infants or toddlers recover with little difficulty. Common airway infections are nasopharyngitis (e.g. rhinoviruses, respiratory syncytial virus and adenovirus), pharyngitis (e.g. viral and beta-haemolytic streptococci), *Haemophilus influenzae* infection and tonsillitis. Airway obstruction can also occur with aspirated foreign objects, such as food, buttons and lollies. Airways are smaller in younger children and can narrow considerably from oedema of mucous membranes accompanying an infection. The chest wall is thin and therefore very compliant, and accessory muscles of respiration are poorly developed. Both of these characteristics limit the child's ability to increase depth of breathing or tidal volume, the volume of air in a breath. Consequently, tachypnoea is a characteristic response to illness (Kendrick & Morrison 2007, Wilson 2009).

School-age children and adolescents

School-age children and adolescents are exposed to respiratory infections and respiratory risk factors such as second-hand smoke and cigarette smoking. A healthy child usually does not have adverse pulmonary effects from respiratory infections. A person who starts smoking in adolescence and continues to smoke into middle age, however, has an increased risk of cardiopulmonary disease and lung cancer.

Young and middle-aged adults

Young and middle-aged adults are exposed to multiple cardiopulmonary risk factors: an unhealthy diet, lack of exercise, stress, occupational hazards, drugs and smoking. Reducing these modifiable factors may decrease the patient's risk of cardiac or pulmonary diseases. This is also the time when lifelong habits and lifestyles are established. It is important to help these patients make good choices and informed decisions about the rest of their lives and their healthcare practices.

Older adults

The cardiac and respiratory systems undergo changes throughout the ageing process. In the arterial system, atherosclerotic plaques develop and the systemic blood pressure may rise. Chest wall compliance is decreased in the older adult as a result of osteoporosis and calcification of the costal cartilages. The respiratory muscles weaken, and the pulmonary vascular circulation becomes less

distensible (see *Working with diversity*). The trachea and large bronchi become enlarged from calcification of the airways, and alveoli enlarge, decreasing the surface area available for gas exchange. In addition, the number of functional cilia is reduced. Decreased ciliary action and effectiveness of cough mechanisms put the older adult at increased risk of respiratory infections (Ebersole et al 2008). Ventilation and diffusion of oxygen and carbon dioxide decline with age. Osteoporotic changes of the thoracic cage and kyphosis of the vertebrae occur normally with ageing (Jet 2008). With these changes the lungs are unable to expand fully, leading to lower oxygenation levels (Table 35-4).

WORKING WITH DIVERSITY

Focus on older adults

- Older adults generally have a respiratory rate between 16 and 25 breaths per minute. Positioning can greatly affect the older adult as they depend on changes in intra-abdominal pressure. Position the patient to maximise ventilation. Positions such as semi-Fowler's and high-Fowler's provide the best ventilation. The older patient should be encouraged to sit up in the chair to promote good lung expansion.
- Frequent, smaller meals and fewer bloating and gas-producing foods will help prevent an over-distended abdomen and reduce pressure on the diaphragm.
- Obese patients may need to sleep in semi-Fowler's position.

TABLE 35-4 Changes in the ageing lung

Function	Pathophysiological change	Key clinical findings
Breathing mechanics	Decreased chest wall compliance Decreased pulmonary compliance Loss of elastic recoil Decreased respiratory muscle mass and strength Uneven alveolar ventilation	Decreased thoracic wall excursion Decreased vital capacity Increased residual volume Decreased forced expiratory volume Decreased airway clearance (coughing)
Oxygenation	Increased physiological dead space Ventilation/perfusion mismatch Decreased alveolar surface area Decreased carbon dioxide diffusion capacity	Decreased arterial partial pressure of oxygen (PaO_2) Increased alveolar–arterial oxygen gradient
Ventilation control and breathing pattern	Decreased responsiveness of central and peripheral chemoreceptors to hypoxaemia and hypercapnia	Decreased tidal volume Increased respiratory rate Increased minute ventilation Decreased airway clearance
Lung defence mechanisms	Decreased number of cilia and effectiveness of the mucociliary clearance Decrease in mucous production Diminished cough reflex Decreased T-cell function Decreased immunoglobulin A (IgA) production	Increased risk of infection Thickened secretions Increased risk of aspiration
Sleep and breathing	Decreased ventilatory drive Decreased tone of upper airway muscles Decreased arousal	Increased risk of apnoea, hypopnoea and arterial oxygen desaturation during sleep Increased risk of aspiration Snoring Obstructive sleep apnoea
Exercise capacity	Muscle deconditioning and efficiency Decreased muscle mass Decreased reserves	Decreased maximum oxygen consumption Breathlessness at low exercise levels

Modified from Pierson DJ 1992 Effects of aging on the respiratory system. In Pierson DJ, Kacmarek RM (eds) Foundations of respiratory care. Churchill Livingstone, New York; Criddle LM 2009 Caring for the critically ill elderly patient. In Carlson KK (ed) 2009 Advanced critical care nursing. Saunders, St Louis.

Lifestyle factors

Lifestyle factors that influence cardiopulmonary functioning include nutrition, exercise, cigarette smoking, substance abuse and stress (Box 35-5).

Nutrition

Nutrition affects cardiopulmonary function in several ways. Severe obesity decreases lung expansion, and the increased bodyweight increases oxygen demands to meet metabolic needs. The malnourished patient may experience respiratory muscle wasting, resulting in decreased muscle strength and respiratory excursion. Cough efficiency is reduced secondary to respiratory muscle weakness, putting the patient at risk of retention of pulmonary secretions. Diets high in fat increase cholesterol and atherogenesis in the coronary arteries.

Patients who are obese and/or malnourished are at risk of anaemia. Diets high in carbohydrates may play a role in increasing the carbon dioxide load for patients with carbon dioxide retention. As carbohydrates are metabolised, an increased load of carbon dioxide is created and excreted via the lungs.

Restricting dietary sodium levels to below 75 mmol/day can reduce blood pressure by 4–5 mmHg in hypertensive patients. The effect is more marked in systolic blood pressure and on standing, and is greater in the elderly and in severely hypertensive patients (National Heart Foundation of Australia 2006a).

Potassium supplements can also lower blood pressure in people with moderate to severe hypertension. Potassium supplements should not normally be used with potassium-sparing diuretics or angiotensin-converting enzyme (ACE) inhibitors or in patients with renal insufficiency (National Heart Foundation of Australia 2006a).

BOX 35-5 Cardiopulmonary health promotion*

- Maintain ideal bodyweight.
- Eat a low-fat, low-salt, kilojoule-appropriate diet.
- Monitor cholesterol and triglyceride levels.
- Engage in regular aerobic exercise.
- Use stress-reduction techniques.
- Be smoke-free.
- Avoid secondhand smoke and other pollutants.
- Use a filter mask when exposed to occupational hazards.
- Monitor blood pressure.
- Get an annual influenza vaccine if at risk of developing influenza.
- Get a pneumococcal vaccine if appropriate.
- Reduce exposure to secondary infections.

* Target population: young to older adults.

Exercise

Exercise increases the body's metabolic activity and oxygen demand. The rate and depth of respiration increase, enabling the person to inhale more oxygen and exhale excess carbon dioxide. A physical exercise program has many benefits (see Chapter 28). People who exercise 3–4 times per week for 20–40 minutes have a lower pulse rate and blood pressure, decreased cholesterol level, increased blood flow and greater oxygen extraction by working muscles. In addition to the effects on blood pressure, exercise training has the potential to make people feel better, will facilitate weight reduction in the obese and has metabolic benefits (National Heart Foundation of Australia 2006b).

Cigarette smoking

Cigarette smoking is associated with a number of diseases, including heart disease, COPD and lung cancer. Cigarette smoking can worsen peripheral vascular and coronary artery diseases (National Heart Foundation of Australia 2009). Inhaled nicotine causes vasoconstriction of peripheral and coronary blood vessels, increasing blood pressure and decreasing blood flow to peripheral vessels. The risk of lung cancer is 10 times greater for a person who smokes than for a non-smoker. Exposure to secondhand smoke increases the risk of lung cancer in the non-smoker. While lung cancer rates among men are falling, the rates among women continue to rise. Women who take oral contraceptive pills and smoke cigarettes are at increased risk of cardiovascular problems such as thrombophlebitis and pulmonary emboli (Cancer Council New South Wales 2005).

Substance abuse

Excessive use of alcohol and other drugs can impair tissue oxygenation in two ways. First, the person who chronically abuses substances often has a poor nutritional intake. With the resultant decrease in intake of iron-rich foods, haemoglobin production declines. Second, excessive use of alcohol and certain other drugs can depress the respiratory centre, reducing the rate and depth of respiration and the amount of inhaled oxygen. Substance abuse, by either smoking or inhaling substances such as crack cocaine or inhaling fumes from paint or glue cans, causes direct injury to lung tissue that can lead to permanent lung damage and impaired oxygenation.

Stress/anxiety

A continuous state of stress or severe anxiety increases the body's metabolic rate and the oxygen demand. The body responds to anxiety and other stresses with an increased rate and depth of respiration. Most people can adapt, but some, particularly those with chronic illnesses or acute life-threatening illnesses such as a myocardial infarction, cannot tolerate the oxygen demands associated with anxiety.

Environmental factors

The environment can also influence oxygenation. The incidence of pulmonary disease is higher in smoggy, urban areas than in rural areas. In addition, a person's workplace may increase the risk of pulmonary disease. Occupational pollutants include asbestos, talcum powder, dust and airborne fibres. For example, agricultural workers are exposed to airborne grain dust, pesticides and microorganisms. Asbestosis is an occupational lung disease that develops after exposure to asbestos. The lung in asbestosis is characterised by diffuse interstitial fibrosis, creating a restrictive lung disease. It can also cause pleural mesotheliomas and pleural plaques. People at risk of developing asbestosis include those working with textiles, fireproofing or milling, or in the production of paints, plastics or some prefabricated construction. People exposed to asbestos who also smoke are at increased risk of developing lung cancer.



CLINICAL REASONING PROCESS

Successful critical thinking requires a synthesis of knowledge, experience, information gathered from patients, critical-thinking attitudes, and intellectual and professional standards. Nursing practice occurs often in unpredictable and dynamic environments. Clinical judgements and decisions need to reflect this; they are dynamic and require nurses to anticipate the information necessary, analyse the data and make decisions regarding the patient. During assessment nurses must consider all elements that build towards identifying appropriate nursing problems (Figure 35-12).

When considering a patient with a primary cardiovascular problem, to understand the oxygen demands of a patient and the ability of the patient's body to meet those demands, the

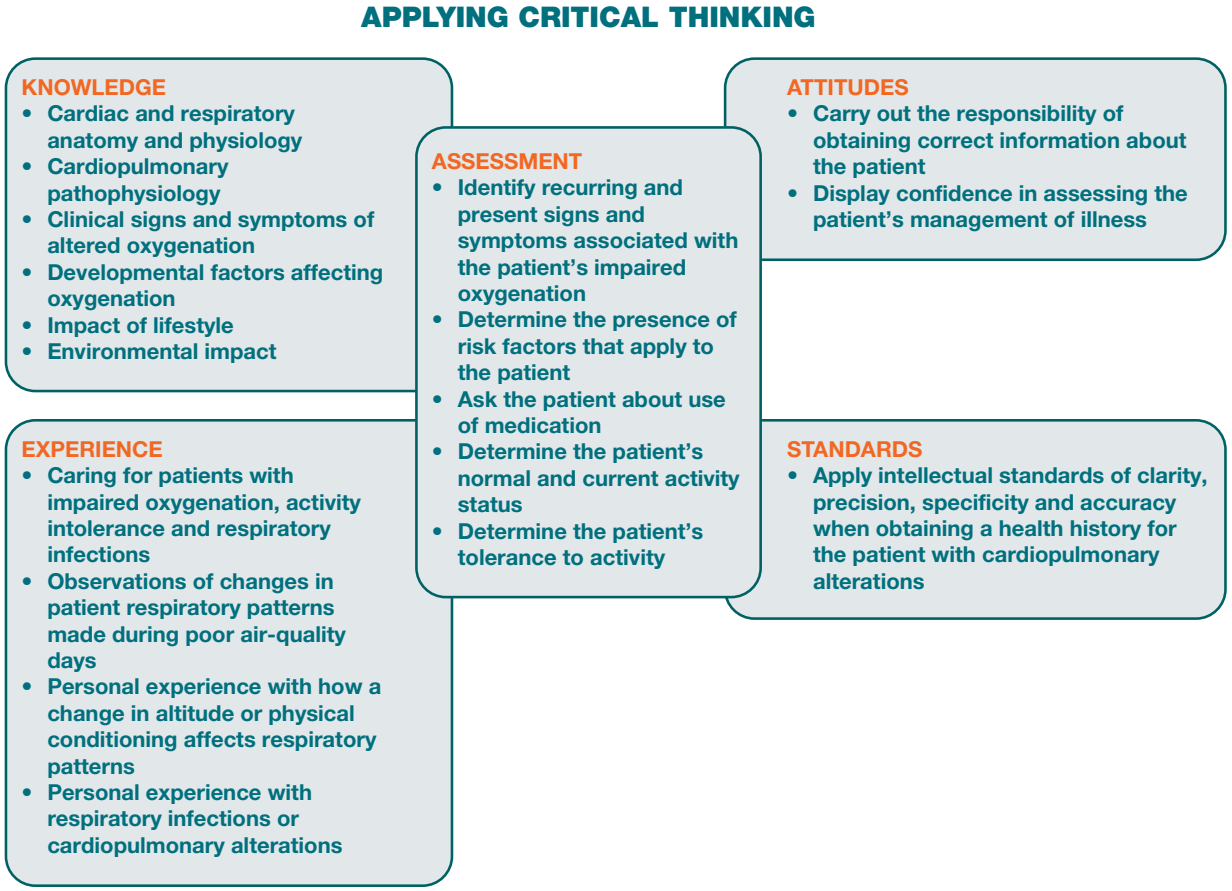


Figure 35-12 **Critical thinking associated with the assessment phase for oxygenation.**

nurse integrates knowledge from nursing and other disciplines, previous experiences, and information gathered from patients. Nurses must consider current and future oxygenation demands, plan for change in patient status and develop a plan that can change with the changing demands of the patient. The use of resources such as those supplied by the Cancer Council, the National Heart Foundation of Australia, the Australian Safety and Compensation Council and Asthma Australia, along with the guidelines set by professional bodies, are valuable in the care, education and management of patients with altered oxygenation.

The possession of sound clinical reasoning skills to provide safe, effective and excellent evidence-based care is a cornerstone of the profession.

GATHERING RELEVANT INFORMATION AND DATA

The nursing assessment of a patient's cardiopulmonary functioning should include data collected from the following areas:

- nursing history of the patient's normal and present cardiopulmonary function, past impairments in circulatory or respiratory functioning, and measures that the patient may use to optimise oxygenation
- physical examination of the patient's cardiopulmonary status, including inspection, palpation, percussion and auscultation
- review of laboratory and diagnostic test results, including a full blood count, ECG, pulmonary function test, sputum, and oxygenation such as arterial blood gas tests or pulse oximetry.

Nursing history

The nursing history should focus on the patient's ability to meet oxygen needs. The nursing history for cardiac function includes pain and characteristics of pain, dyspnoea, fatigue, peripheral circulation, cardiac risk factors and the presence of past or concurrent cardiac conditions. The nursing history for *respiratory function* includes the presence of a cough, sputum production, shortness of breath, changes in exercise tolerance, wheezing, pain, environmental exposure, frequency of respiratory tract infections, pulmonary risk factors, past respiratory problems, current medication use and smoking history or secondhand smoke exposure.

Fatigue

Fatigue is a subjective sensation in which the patient reports a loss of endurance. Fatigue in the patient with cardiopulmonary alterations is often an early sign of a worsening of the chronic underlying process. There are numerous fatigue scoring tools available, most of which require further research for validation. A visual analogue fatigue scale is a simple and quick tool to use. This rates fatigue on a scale of 0–10, with 10 being the worst level of fatigue and 0 representing no fatigue. Other short tools which have good psychometric properties are the Fatigue Severity Scale, the Fatigue Impact Scale and the Brief Fatigue Inventory (Whitehead 2009).

Dyspnoea

Dyspnoea is a clinical sign of hypoxia and manifests as breathlessness. It is the subjective sensation of difficult or uncomfortable breathing. *Physiological dyspnoea* is shortness of breath associated with exercise or excitement. *Pathological dyspnoea* is the inability to catch a breath without relation to activity or exercise.

Dyspnoea can be associated with clinical signs such as exaggerated respiratory effort, use of the accessory muscles of respiration, nasal flaring and marked increases in the rate and depth of respirations. There are a number of dyspnoea scoring tools available; two validated tools include the Modified Medical Research Council (MMRC) Dyspnoea Scale and the Modified Borg Scale (Australian Lung Foundation 2009). The Modified Borg Scale is an easy-to-use 10-point scale with descriptors to quantify the severity of breathlessness, and can be used to determine the effect of treatment (Australian Lung Foundation 2009) (Box 35-6). The Modified Borg Scale is an effective tool to assess the dyspnoea associated with heart failure and COPD.

The nursing history of dyspnoea includes the circumstances under which it occurred, such as with exertion, stress or respiratory tract infection. The extent to which dyspnoea affects the patient's activities of daily living should also be assessed. Nurses also determine whether the patient's perception of dyspnoea affects the ability to lie flat. **Orthopnoea** is an abnormal condition in which the person must use multiple pillows when preparing for sleep and rest or must sit with the arms elevated and leaning forward to breathe. The number of pillows required for sleeping, such as two or three, usually quantifies the presence of orthopnoea.

Cough

A cough is a sudden, audible expulsion of air from the lungs. The person breathes in, the glottis is partially closed and the accessory muscles of expiration contract to expel the air forcibly. Coughing is a protective reflex to clear the trachea, bronchi and lungs of irritants and secretions. The carina, the point of bifurcation of the right and left mainstem bronchi, is the most sensitive area for cough production. A cough is difficult to evaluate, and almost everyone has periods of coughing. Patients with a chronic cough tend to deny, underestimate or minimise their coughing, often because they are so accustomed to it that they are unaware of how often it occurs.

BOX 35-6 Borg Scale – breathlessness

0	Nothing at all
0.5	Very, very slight
1	Very slight
2	Light breathlessness
3	Moderate
4	Somewhat severe
5	Severe
6	
7	Very severe
8	
9	Very, very severe
10	Maximal

Borg CR10 Scale®. © Gunnar Borg. To obtain the scale with correct instructions see http://www.borgperception.se/

Coughing is classified according to the time when the patient most frequently coughs. Patients with chronic sinusitis may cough only in the early morning or immediately after rising from sleep. This clears the airway of mucous resulting from sinus drainage occurring overnight in sleep. Patients with chronic bronchitis generally produce sputum all day, although greater amounts are produced after rising from a semi-recumbent or supine position. This is as a result of the dependent accumulation of sputum in the airways and is associated with reduced mobility (see Chapter 28).

Once the nurse determines that the patient has a cough, it must be identified as productive or non-productive and its frequency must be assessed. A productive cough results in the patient producing sputum, material coughed up from the lungs that may be swallowed or expectorated. Sputum contains mucous, cellular debris and microorganisms, and it may contain pus or blood. Nurses must collect data about the type and quantity of sputum (Box 35-7). The patient is instructed to try to produce some sputum, being careful not to simply clear the throat to produce a sample of saliva. Sputum should not be collected after meals, as the specimen may be contaminated by food. Nurses then inspect it for colour, consistency, odour and amount. The patient is asked about the amount of sputum produced in a day, using household measures to estimate amounts (teaspoon, tablespoon, cupful).

If **haemoptysis** (bloodstained sputum) is reported, the nurse determines if it is associated with coughing and bleeding from the upper respiratory tract, from sinus drainage or from the gastrointestinal tract (**haematemesis**). In addition, the haemoptysis should be described according to amount, colour and duration and whether it is mixed with sputum. When a patient reports bloody or blood-tinged sputum, diagnostic tests, such as examination of sputum specimens, chest X-ray examinations, bronchoscopy and other X-ray studies, should be performed.

BOX 35-7 Sputum characteristics

Colour
Clear
White
Yellow
Green
Brown
Red
Streaked with blood

Changes in colour
Same colour throughout the day
Clearing with coughing
Progressively darker

Odour
None
Foul

Quality
Same as usual
Increased
Decreased

Consistency
Frothy
Watery
Tenacious, thick

Presence of blood
Occasional
Early morning
Bright or dark red
Blood-tinged

Wheezing

Wheezing is characterised by a high-pitched musical sound caused by high-velocity movement of air through a narrowed airway. Wheezing may be associated with asthma, acute bronchitis or pneumonia. Wheezing can occur on inspiration, expiration or both. Nurses should determine any precipitating factors, such as respiratory infection, allergens, exercise or stress.

Pain

The presence of chest pain needs to be thoroughly evaluated with regard to location, duration, radiation and frequency. Cardiac pain does not occur with respiratory variations and is most often on the left side of the chest and radiates to the left arm in men. Chest pain in women is much less definitive and may be a sensation of choking, breathlessness or pain that radiates through to the back. Pericardial pain resulting from an inflammation of the pericardial sac is usually non-radiating and may occur with inspiration.

Pleuritic chest pain is peripheral and may radiate to the scapular regions. It is worsened by inspiratory manoeuvres, such as coughing, yawning and sighing. Pleuritic pain is often caused by an inflammation or infection in the pleural space and is described as knife-like, lasting from a minute to hours and always in association with inspiration.

Musculoskeletal pain may be present following exercise, rib trauma and prolonged coughing episodes. This pain is also aggravated by inspiratory movements and may easily be confused with pleuritic chest pain.

Environmental or geographical exposures

Environmental exposure to many inhaled substances is closely linked to respiratory disease. Nurses should investigate exposure in the patient's home and workplace. The most common environmental exposures in the home are cigarette smoke and carbon monoxide. Nurses should determine whether a patient who is a non-smoker is passively exposed to smoke. Carbon monoxide poisoning can result from a blocked flue or chimney or from a poorly maintained heater. The patient may have vague complaints of general malaise, flu-like symptoms and excessive sleepiness. People are particularly at risk in the late autumn when central heating or other heating devices are used or they begin to use a fireplace again.

An employment history is obtained to assess exposure to substances such as asbestos, coal, cotton fibres, fumes or chemical inhalants. This is particularly important with middle-aged and older adults, who may have worked in places without regulations to protect workers from carcinogens, such as asbestos.

Exposure to substances may occur during travel. Severe acute respiratory syndrome (SARS) is an infection of the respiratory system that causes about 10% fatality. From its inception in China, it subsequently spread to many South-East Asian countries and threatened Australia and New Zealand.

Respiratory infections

A nursing history should contain information about the patient's frequency and duration of respiratory tract infections. Although everyone occasionally experiences a cold, for some people it can result in bronchitis or pneumonia. On average, people will have four colds per year. Nurses should determine if the patient has had a pneumococcal or flu vaccine in the past and should also

RESEARCH HIGHLIGHT

Research focus

For many years, clinicians (both nursing and medical) believed that patients with chronic obstructive pulmonary disease (COPD) would stop breathing if given oxygen or too much oxygen. This was related to the hypoxic drive theory, which has been disproven. Despite the theory being disproven, some clinicians continued to follow this belief (Simmons & Simmons 2004). On the other hand, other clinicians administered high concentrations of oxygen, desiring to avoid the significant risks associated with hypoxia (Beasley et al 2011). However, research has shown that high concentrations of oxygen in some patients with COPD can significantly increase carbon dioxide levels, resulting in drowsiness and lethargy, termed hypercapnoeic encephalopathy or CO_2 narcosis. The British Thoracic Society therefore developed guidelines for administration of oxygen to patients with COPD, recommending titration of oxygen to achieve oxygen saturation levels of 88–92% (O'Driscoll et al 2008). These guidelines have not been widely adopted. Researchers hypothesised that the poor uptake of the guidelines may be related to the lack of clear evidence of benefit for titrated oxygen (Austin et al 2010).

Research abstract

A randomised controlled trial was conducted to compare high-flow oxygen therapy with titrated oxygen therapy for patients with an acute exacerbation of COPD (Austin et al 2010). The setting was Hobart, Tasmania. A total of 405 patients with a presumed diagnosis of COPD participated in the trial: 226 patients received high-flow oxygen, while 179 received oxygen titrated to an oxygen saturation level of 88–92%. Titrated oxygen is any inspired oxygen concentration that achieves a patient oxygen saturation level of 88–92%. Mortality was 9% for those patients receiving high-flow oxygen and 4% for those patients receiving titrated oxygen. Of those patients who were proven to have COPD confirmed by lung-function testing, mortality was 9% in the high-flow oxygen group and 2% in the titrated oxygen group.

Also, the COPD patients who received titrated oxygen were less likely to have a respiratory acidosis or hypercapnoea. Overall, the use of titrated oxygen significantly reduced mortality for COPD patients. Mortality was also significantly reduced for those patients with breathlessness but who did not have COPD (Austin et al 2010).

Evidence-based practice

- Titrated oxygen therapy to achieve an oxygen saturation level of 88–92% should be administered to all patients with COPD.
- Nurses should closely monitor oxygen saturations, increasing or decreasing inspired oxygen to achieve the target oxygen saturation.
- Education plans should be developed to effect this change in practice. This should include identification of facilitators and barriers to implementation. Education strategies should optimise facilitators and overcome barriers.

References

Austin MA, Wills KE, Blizzard L et al 2010 Effect of high flow oxygen on mortality in chronic obstructive pulmonary disease patients in prehospital setting: randomized controlled trial. Br Med J 341:c5462. DOI: 10.1136/bmj.c5462.

Beasley R, Patel M, Perrin K et al 2011 High-concentration oxygen therapy in COPD. Lancet 378(9795):969–70

O'Driscoll BR, Howard LS, Davison AG 2008 Guideline for emergency oxygen use in adults patients. Thorax 63 (Supplvi):1–80.

Simmons P, Simmons M 2004 Informed nursing practice: the administration of oxygen to patients with COPD. Medsurg Nurs 13(2):82–6.

ask about any known exposure to tuberculosis and the results of the tuberculin skin test.

The patient's risk of human immunodeficiency virus (HIV) infection is also determined. Patients with a history of intravenous (IV) drug use and multiple unprotected sexual partners are at risk of developing HIV infection. Patients may not display any symptoms of HIV infection until they present with *Pneumocystis carinii* (PCP) or *Mycoplasma pneumoniae*. Presentation with PCP or *Mycoplasma pneumoniae* indicates a significant depression of the patient's immune system and progression to acquired immune deficiency syndrome (AIDS).

Risk factors

Nurses must also investigate familial and environmental risk factors, such as a family history of lung cancer or cardiovascular disease. Documentation should include which blood relatives have had the disease and their present level of health or age at time of death. Other family risk factors include the presence of infectious diseases, particularly tuberculosis. Nurses should determine who in the patient's household has been infected and the status of treatment.

Medications

The last component of the nursing history should describe medications the patient is using. These include prescribed and over-the-counter medicines, traditional medicine, herbal medicines, alternative therapies and illicit drugs and substances. Such medications may have adverse effects by themselves or because of interactions with other drugs. A person using a prescribed bronchodilator drug, for example, may decide that using an over-the-counter inhalant as well will be beneficial. Many of these contain ephedrine or ma huag, a natural ephedrine, which acts like adrenaline. This product may react

with the prescribed medication by increasing or decreasing the effect of the prescribed medication.

As with all medication, nurses assess the patient's knowledge and ability to use the 'five rights' (or 'seven rights') of medication administration (see Chapter 27) (Levett-Jones et al 2010). Of particular importance is the nurses' assessment of the patient's understanding of potential side effects of the medications. Patients should be able to recognise adverse reactions and be aware of the dangers in combining prescribed medications with over-the-counter drugs (Levett-Jones et al 2010).

When patients are prescribed drugs for which toxic levels can be monitored by blood analysis, nurses need to review these laboratory values. Common drugs that can be monitored include theophylline preparations, digoxin preparations and anticoagulants such as warfarin. Toxic effects of these medications can impair cardiopulmonary functioning. Illicit drugs, particularly parenterally administered narcotics, which are often diluted with talcum powder, can cause pulmonary disorders resulting from the irritant effect of the powder on lung tissues.

Physical examination

The physical examination performed to assess the patient's level of tissue oxygenation includes evaluation of the entire cardiopulmonary system. Inspection, palpation, auscultation and percussion techniques are used (see Chapter 24).

Examination techniques

INSPECTION Using inspection techniques, nurses perform a head-to-toe observation of the patient for skin and mucous membrane colour, general appearance, level of consciousness, adequacy of systemic circulation, breathing patterns and chest wall movements (Tables 35-5 to 35-7). Any abnormalities should be investigated during palpation, percussion and auscultation.

Inspection includes observations of the nails for clubbing. Clubbed nails, obliteration of the normal angle between the base of the nail and the skin, are seen in patients with prolonged oxygen deficiency, endocarditis and congenital heart defects.

PALPATION Palpation of the chest provides assessment data in several areas. It documents the type and amount of thoracic excursion, elicits any areas of tenderness and can identify tactile fremitus, thrills, heaves and the apical impulse. Palpation also allows the nurse to feel for abnormal masses or lumps in the axilla and breast tissue.

Palpation of the extremities provides data about the peripheral circulation, the presence and quality of peripheral pulses, skin temperature, colour and capillary refill (see Chapter 24). Palpation should assess for the presence or absence of peripheral oedema in the feet and legs. Patients with alterations in their cardiac function, such as those with chronic heart failure or hypertension, often have pedal or lower extremity oedema. Oedema is graded from 1+ to 4+, depending on the depth of visible indentation after firm application of a finger.

Palpation of the pulses in the neck and extremities is performed to assess arterial blood flow. A scale of 0 (absent pulse) to 3+ (full, bounding pulse) is used to describe what is palpated. The normal pulse is graded as 2+, and a weak, thready pulse is graded as 1+.

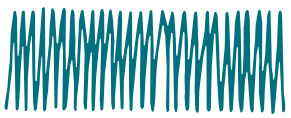
PERCUSSION Percussion allows the nurse to detect the presence of abnormal fluid or air in the lungs. It is also used to determine diaphragmatic excursion (see Chapter 24).

TABLE 35-5 Inspection of cardiopulmonary status

Location	Abnormality	Cause
Eyes	Xanthelasma (yellow lipid lesions on eyelids)	Hyperlipidaemia
	Corneal arcus (whitish opaque ring around junction of cornea and sclera)	Hyperlipidaemia in young to middle-aged adults, normal finding in older adults with arcus senilis
	Pale conjunctivae	Anaemia
	Cyanotic conjunctivae	Hypoxaemia
	Petechiae on conjunctivae	Fat embolus or bacterial endocarditis
Mouth and lips	Cyanotic mucous membranes	Decreased oxygenation (hypoxia)
	Pursed-lip breathing	Associated with chronic lung disease
Neck veins	Distension	Associated with right-sided heart failure
Nose	Flaring nares	Air hunger, dyspnoea
Chest	Retractions	Increased work of breathing, dyspnoea
	Asymmetry	Chest wall injury
Skin	Peripheral cyanosis	Vasoconstriction and diminished blood flow
	Central cyanosis	Hypoxaemia
	Decreased skin turgor	Dehydration (normal finding in older adults as a result of decreased skin elasticity)
	Dependent oedema	Associated with right- and left-sided heart failure
	Periorbital oedema	Associated with kidney disease
Fingertips and nail beds	Cyanosis	Decreased cardiac output or hypoxia
	Splinter haemorrhages	Bacterial endocarditis
	Clubbing	Chronic hypoxaemia

AUSCULTATION Auscultation enables the nurse to identify normal and abnormal heart and lung sounds (see Chapter 24). Auscultation of the cardiovascular system should include assessment for normal S1 and S2 sounds, the presence of abnormal S3 and S4 sounds (gallops) and murmurs or rubs. Auscultation of murmurs and rubs is an advanced skill. Auscultation is also used to identify a bruit (pronounced '*brew-ee*') over the carotid arteries, abdominal aorta and femoral arteries.

TABLE 35-6 Respiratory pattern

Type and pattern	Rate (breaths per minute)	Clinical significance
Eupnoea	16–20	Normal
		
Tachypnoea	> 35	Respiratory failure Response to fever Anxiety Shortness of breath Respiratory infection
		
Bradypnoea	< 10	Sleep Respiratory depression Drug overdose Central nervous system (CNS) lesion
		
Apnoea	Periods of no respiration lasting > 15 seconds	May be intermittent, such as in sleep apnoea Respiratory arrest
		
Hyperpnoea	16–20	Can result from anxiety or response to pain Can cause marked respiratory alkalosis, paraesthesia, tetany, confusion
		
Kussmaul's	Usually > 35, may be slow or normal	Tachypnoea pattern associated with diabetic ketoacidosis, metabolic acidosis or renal failure
		
Cheyne-Stokes	Variable	Increasing and decreasing pattern caused by alterations in acid–base status; underlying metabolic problem or neurocerebral insult
		
Biot's	Variable	Periods of apnoea and shallow breathing caused by CNS disorder; found in some healthy people
		
Apneustic	Increased	Increased inspiratory time with short grunting expiratory time; seen in CNS lesions of the respiratory centre
		

Weilitz PB 1991 Pocket guide to respiratory care. Mosby, St Louis.

TABLE 35-7 Assessment of abnormal chest wall movement

Abnormality	Cause
Increased anteroposterior diameter	Emphysema, chronic obstructive pulmonary disease, advancing age
Paradoxical breathing – asynchronous breathing; chest contraction during inspiration and expansion during expiration	Flail chest resulting from rib fractures due to chest trauma or cardiopulmonary resuscitation
Retraction or recession – sinking in of soft tissues of chest between and around cartilaginous and bony ribs, such as intercostal space, intraclavicular space and trachea, and substernally* worsening with need for increased inspiratory effort	Any condition that causes increased inspiratory effort (e.g. airway obstruction, asthma, tracheobronchitis)

*Infants can experience sternal and substernal retractions with only slight inspiratory effort because the thin chest wall is highly compliant.

Auscultation of lung sounds involves listening for movement of air throughout all lung fields: anterior, posterior and lateral. Adventitious breath sounds such as crackles and wheeze occur with collapse of a lung segment, fluid in a lung segment or narrowing or obstruction of an airway. Auscultation also evaluates the patient's response to interventions for improving the respiratory status.

Examination of infants and children

Due to the physiological characteristics whereby the ability to increase tidal volume is limited, infants and young children with respiratory distress will exhibit tachypnoea without an increase in depth of breathing. Also evident may be tracheal tug (recession of trachea), nasal flaring, tachycardia and listlessness. Poor feeding may be apparent due to fatigue and the energy required for feeding and breathing (Kendrick & Morrison 2007, Wilson 2009). The older child in respiratory distress will show increased depth of breathing as well as tachypnoea. Substernal, suprasternal and intercostal retractions may also be seen, along with restlessness and anorexia (Wilson 2009). A previously present stridor or wheeze which suddenly disappears may indicate deterioration, as the child is unable to produce enough tidal volume to cause the added sounds. This is a sign of imminent collapse. Also, a decreasing respiratory rate needs to be closely monitored as this may also indicate imminent collapse due to fatigue rather than improvement. Signs of early cardiovascular compromise are often subtle, and include unexplained tachycardia, pale, cool peripheries, tachypnoea and irritability. Hypotension is a late sign of cardiovascular compromise (Kendrick & Morrison 2007, Wilson 2009).

Diagnostic tests

Cardiac conduction tests

Tests used to determine the cardiac conduction of the heart include ECG, Holter monitor, the **exercise stress test** and electrophysiological studies.

ELECTROCARDIOGRAM The 12-lead ECG produces a graphic recording of the heart's electrical activity from 12 separate views, detecting transmission of impulses and the electrical position of the heart (the axis). This is covered in Skill 35-2.

HOLTER MONITOR The **Holter monitor** (also referred to as continuous cardiac monitoring or telemetry) is a portable device that records the heart's electrical activity and produces a continuous ECG tracing over a specified period, generally for 24 hours. The Holter monitor allows patients to continue with their normal activities while recording the heart's electrical activity. Patients keep a diary of activity, noting when they experience rapid heartbeats or periods of dizziness. Correlation between activities and abnormal electrical activity can then be determined. Continuous cardiac monitoring is covered in Skill 35-1.

EXERCISE STRESS TESTS are used to evaluate the cardiac response to physical stress. These provide information on myocardial response to increased oxygen requirements and determine the adequacy of coronary blood flow. Heart rate, electrical activity and cardiac recovery time are reflected in the ECG tracing. In addition, data about the patient's blood pressure, presence of chest pain, changes in respiration, colour and rate of muscular fatigue are monitored. There are more false-positive findings in women; it is therefore a less valuable tool for evaluation of cardiac response in women.

THALLIUM STRESS TEST Thallium imaging involves IV injection of thallium-201, a potassium analogue that accumulates in the heart in proportion to blood flow. Stress testing determines whether coronary blood flow changes with increased activity (treadmill exercises).

ELECTROPHYSIOLOGICAL STUDIES An **electrophysiological study (EPS)** is an invasive measure of electrical activity. An electrode catheter is inserted into the right atrium, usually via the femoral vein. Electrical stimulation is then delivered through the catheter while the ECG monitors and computers record the heart's electrical response to the stimulus. Specific arrhythmias can also be induced to determine the pathways through the heart, provide more specific information about difficult-to-treat arrhythmias and assess the adequacy of antiarrhythmic medication.

Myocardial contraction and blood flow studies

Echocardiography, scintigraphy, cardiac catheterisation and **angiography** are used to determine myocardial contraction and blood flow.

SKILL 35-1

Continuous cardiac monitoring ECG

Delegation considerations

Establishing ECG continuous cardiac monitoring (CCM) requires the skill of the registered nurse or an enrolled nurse. A registered nurse with the ability to rapidly interpret the ECG tracings needs to be monitoring the patient constantly – this interpretation part of the skill cannot be delegated.

Equipment

- ECG continuous monitor and telemetry device with the ability to record in all limb leads and V lead.
- 3 to 5 adhesive electrodes
- 3 to 5 electrode cords (one for each electrode) attached to telemetry device (see illustration) labelled as follows:
  - RA (white), LA (black), LL (red), RL (green) and V (brown)
- Razor (to shave body hair to ensure appropriate electrode attachment
- Tape (to secure electrodes if necessary, e.g. diaphoresis)
- Disposable bag for waste
- Gauze/alcohol wipes



Therapeutic relationship and patient considerations

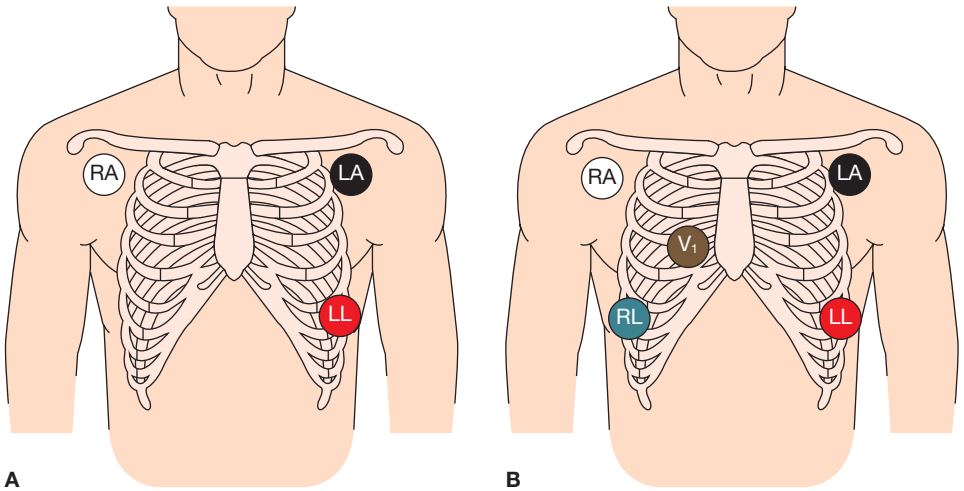
- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Ensure correct indication for ECG continuous cardiac monitoring (CCM).	CCM is used to continuously monitor a person's heart rate and rhythm. It is indicated in patients who have been diagnosed with a cardiac abnormality or a condition which could lead to a cardiac abnormality necessitating monitoring. These include conditions such as chest pain, acute coronary syndrome, syncope, arrhythmia, etc. Knowing the indication for CCM is paramount to their continued nursing care.

■ **Critical decision point: It is important to determine if 3 or 5 electrode monitoring is required; this is based on the indication for CCM: 3 electrodes enables leads I, II and III to be monitored; 5 electrodes also enables leads aVR, aVL and aVF as well as either V1 or V2 to be monitored, and is used for more complex patient conditions. The number of electrodes used can be a nursing or medical decision.**

2. Gather and prepare equipment and position patient.	Attach the lead wires and clips to the electrodes. Supine or semi-Fowler's/semi-recumbent positions are generally used for establishing CCM.
3. Explain procedure to the patient, assess patient's understanding of procedure and obtain verbal consent.	Reveals need for patient instruction and encourages cooperation. The patient will be wearing the device continually; it is necessary for them to understand how to care for it and what to do if something goes wrong.
4. Ensure telemetry device and monitor are operational.	CCM can occur with the patient connected directly to a monitor at the bedside (such as in an emergency department or intensive care unit) or via telemetry, where the patient is connected to a device which sends signals to a remote monitor, generally located at the staff base in the ward.
5. Perform hand hygiene, don non-sterile gloves and other PPE if indicated.	Consider risk for contact with blood products or respiratory secretions.
6. Prepare the region where the electrodes will be placed (based on the system to be used): a. Remove clothing from upper body to expose the person's chest. b. Clean the skin with gauze or alcohol wipes. c. Shave excess hair.	Shaving or clipping excess hair ensures good contact of electrodes with skin to prevent artefact.
7. Place adhesive electrodes on cardiac landmarks (see illustration). a. Remove the backing from the pre-gelled electrode first. Ensure the gel is moist, otherwise discard. b. Apply the electrode to the site and press firmly to ensure a tight seal. c. Attach correct clips/leads to each of them. Repeat with the remaining electrodes. **A. For 3 electrode monitoring:** RA: Right arm (Red) LA: Left arm (Black) LL: Left leg (White)	While the limp electrodes can be placed on any part of the patient's limbs, as many patients are mobile during CCM, it is often wise to place the 'arm' electrodes on the shoulders and the 'leg' electrodes on the hips or lower torso to facilitate accurate reading as well as to maximise patient comfort.

STEPS	RATIONALE
B. For 5 electrode monitoring: RA: Right arm (Red) LA: Left arm (Black) LL: Left leg (White) RL: Right leg (Green) V: V1 or V2 location (4th intercostal space, right or left sternal border) (Brown)	



Step 7 Electrode placement for continuous cardiac monitoring. A, 3-electrode system. B, 5-electrode system.

■ **Critical decision point: The placement of the coloured leads is often confusing. Here is a way to recall lead placement: 'white' rhymes with 'right', the 'black' above 'red' because 'smoke goes over a fire' and 'brown' is in the middle because it is chocolate, which, if loved, is 'close to the heart'.**

8. Enter the patient's details into the monitor or telemetry device.	This ensures that the continuous ECG tracing appearing on the monitor is clearly identified with the correct patient details.
9. Turn on the monitor or telemetry device. a. Once the monitoring device has been switched on, check the waveform for clarity, position and size for accuracy. b. Select an appropriate lead for monitoring.	Ensuring the ECG tracing is clear and free from artefact at the commencement of monitoring prevents issues with interpretation of rhythm. The lead selected for monitoring depends on the indication for CCM. Lead II is the most common as it provides a clear picture of the entire cardiac conduction system.
10. Set the upper and lower limits of heart rate alarms based on patient condition and unit policy	Refer to the hospital protocol for emergency medical response criteria (e.g. Code blue/ MET call) and to the patient's notes for acceptable range of heart rate.
11. Obtain a rhythm strip by pressing the record key at either the bedside or staff base depending on monitoring type, to interpret the rhythm strip for baseline reference. a. Determine if it is normal sinus rhythm: is there a P wave, QRS complex and T wave in each beat? b. Determine the heart rate. c. Determine the regularity.	Do not delay the interpretation of the ECG – refer to an experienced and qualified RN or medical officer.

STEPS	RATIONALE
Author's note: The interpretation of ECG is a complex skill which is considered an advanced nursing skill. The RN is expected to have basic ECG interpretation skills, and to be able to identify quickly if there are abnormalities that require further interpretation by a more experienced person.	
12. Measure patient's vital signs after commencing CCM.	This provides a baseline reference. Palpating the pulse to measure heart rate and comparing to the ECG tracing provides a cross-reference.
■ **Critical decision point: It is important to read the ECG recording of the patient's heart rate and palpate the pulse simultaneously. Rate and rhythm can be observed from the ECG recording, but by palpating the pulse the strength and presence of cardiac systole can only be determined, as pulseless electrical activity (PEA)/electromechanical dysfunction (EMD) is possible. Blood pressure is also an excellent indicator of cardiac output, hence giving vital information as to the effectiveness of the heart's contractions.**	
13. Clean used equipment and dispose of any waste.	
14. Document in the patient's notes.	Document in the patient progress notes that the CCM has been established, the initial interpretation and how often the monitor should be assessed by an RN. If a rhythm strip was printed, this should be added to the patient's medical record.
15. Monitor the patient for signs of cardiac dysfunction.	Regardless of the indication, if a patient requires CCM it is because they require monitoring for cardiac dysfunction. The frequency by which the monitor should be checked depends on the one indication for CCM and general stability of the patient's condition. Patients and monitors should be checked routinely and not only when the monitor alarms.

SKILL 35-2

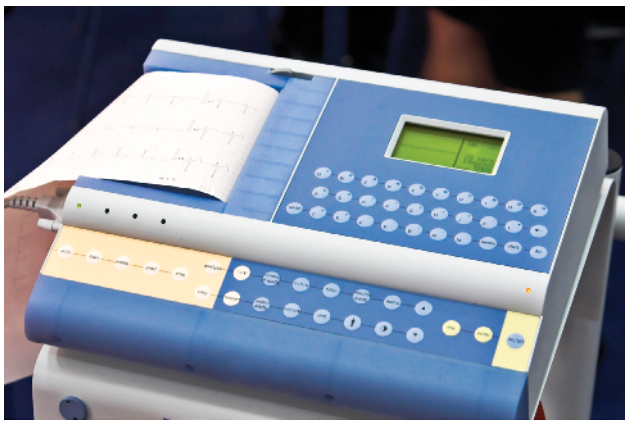
Conducting a 12-lead ECG

Delegation considerations

Performing an ECG requires the skill of the registered nurse or an enrolled nurse. Ideally this skill would be performed by a registered nurse with the ability to interpret the results immediately. Delegation to healthcare workers who are not registered or enrolled nurses is inappropriate.

Equipment

- ECG machine/monitor (see illustration) with the ability to record 12-lead ECGs
- 10 adhesive electrodes
- 10 electrode cords attached to the ECG machine labelled as follows:
  - V1, V2, V3, V4, V5, V6
  - LL, RL, LA, RA
- ECG paper
- Razor (to shave body hair to ensure appropriate electrode attachment)
- Tape (to secure electrodes if necessary, e.g. diaphoresis)
- Disposable bag for waste
- Gauze/alcohol wipes

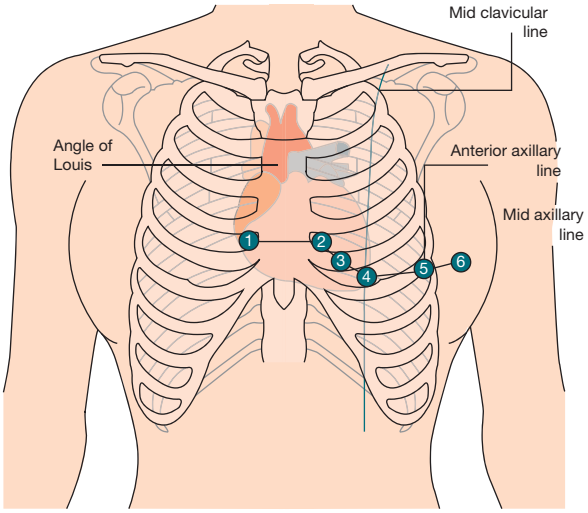


Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Determine the indication for 12-lead ECG.	ECG is an important diagnostic tool for heart disease such as acute coronary syndromes (angina and acute myocardial infarction) as well as arrhythmias and other disruptions to normal cardiac function. Also used to assess patient's responses to medication and other interventions. Used to provide a baseline measure of cardiac function. Knowing why an ECG is indicated assists in both conducting it and interpreting the results.
2. Gather equipment. a. Position patient in a supine or semi-Fowler's/ semi-recumbent position. b. Maintain privacy and dignity of the patient. c. Measures to minimise/eliminate artefact.	The patient should be comfortable and in a position to ensure minimal muscle movement while exposing the chest for the purpose of performing the ECG. Artefact is the distortion of the ECG tracing that occurs due to interference with electrical activity or muscle movement. Remove any electronic devices (including mobile phones) which may interfere with ECG recording.
3. Explain procedure to the patient. a. Assess patient's understanding of procedure and obtain verbal consent.	Reveals need for patient instruction and encourages cooperation.
4. Ensure the ECG machine is loaded with standardised paper set to a speed of 25 mm/second and calibrated with an amplitude recording of 2 large squares.	This is the set standard for recording of ECGs in Australia and New Zealand. If the machine is calibrated differently, interpretation of the ECG will be inaccurate.
5. Perform hand hygiene, don non-sterile gloves and other PPE if indicated.	Consider risk for contact with blood products or respiratory secretions.
6. Prepare the region where the electrodes will be placed (based on the system to be used): a. Remove clothing from upper body to expose the person's chest. b. Clean the skin with gauze or alcohol wipes. c. Shave excess hair.	This will ensure good contact of electrodes with skin and prevent artefact.

STEPS	RATIONALE
7. Place adhesive electrodes on the patient's cardiac landmarks. a. Remove the backing from the pre-gelled electrode. Ensure the gel is moist, otherwise discard. b. Apply the electrode to the site and press firmly to ensure a tight seal and attach correct clips/cords to each of them. c. Repeat with the remaining electrodes. **A. Limb electrodes:** RA: Right arm LA: Left arm RL: Right leg LL: Left leg **B. Chest electrodes:** V1: 4th intercostal space, right sternal margin V2: 4th intercostal space, left sternal margin V3: midway between V2 and V4 V4: 5th intercostal space, mid clavicular line V5: midway between V4 and V6 V6: 5th intercostal space, mid axillary line	Limb electrodes can be placed on any part of the patient's limb. Place them close to the shoulder/thigh to prevent excess muscle movement interference. All adhesive electrodes should be placed in equivalent positions (i.e. both LA and RA on the forearm/shoulder etc.) and pointing in the same direction. Place chest leads V2 and V4 before placing V3; likewise place V4 and V6 before placing V5. Avoid placing electrodes over burnt or damaged skin where possible. Ensure accurate placement of electrodes on women with large breasts. Chest leads should be placed according to anatomical cardiac landmarks. This ensures correct lead placement over the heart for accurate interpretation of the ECG recording.

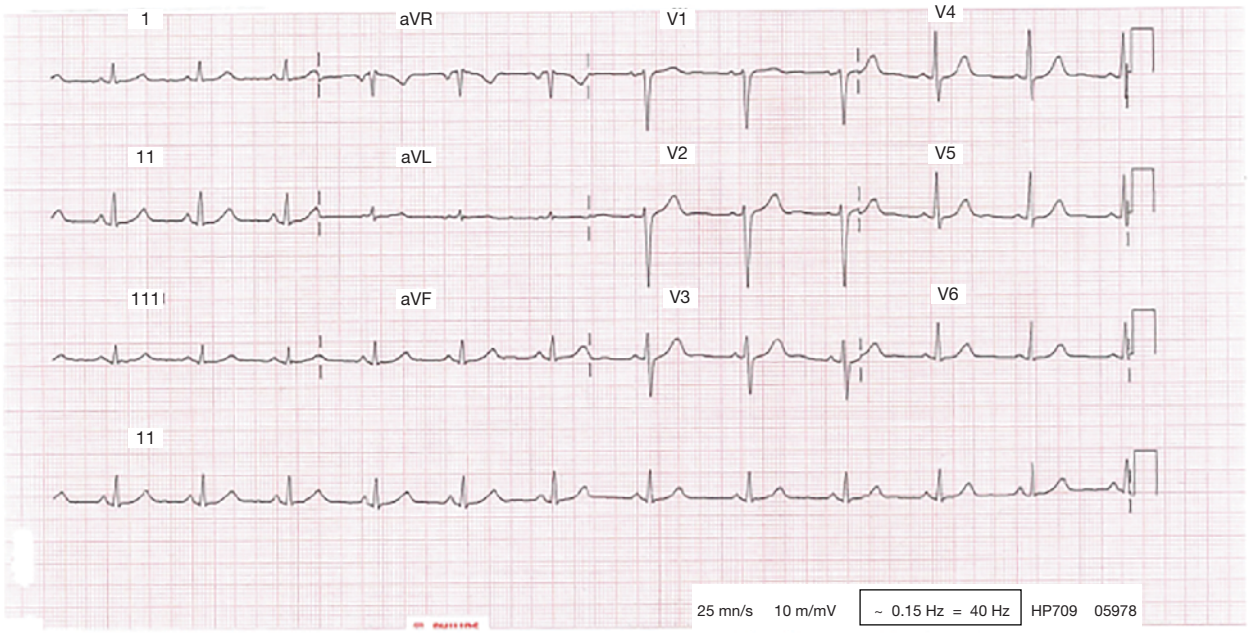


Step 7B Placement of 6 chest electrodes.

Critical decision point: The terms 'electrode' and 'lead' are not interchangeable. 'Electrode' refers to the often pre-gelled device that is placed on the patient's chest. A 'lead' provides the aspect from which the heart is viewed and constitutes the actual recording printed on the ECG paper. Ten electrodes are placed in specific positions to create 12 leads in the ECG.

8. Enter the patient's details into the ECG machine.	To ensure the printed ECG belongs to the correct patient. If the machine does not have this function use the patient's Unit Record label to place on the ECG printout; write the patient's details on the printout immediately the recording is complete.

STEPS	RATIONALE
9. Start the machine. a. Instruct the patient to lie still while the ECG is recorded. b. Observe the trace quality. The machine will record all 12 leads automatically, recording 3 consecutive leads simultaneously. c. Record the ECG and print a copy ensuring the presence of the rhythm strip in addition to the 12-lead ECG.	Ensure a clear recording with no artefact present. See illustration for an example of a normal 12-lead ECG.



A normal 12-lead ECG.

10. Annotate the presence of relevant symptoms on the ECG printout.	Recording the indication for the ECG is beneficial in being able to accurately interpret it. For example, chest pain, dizziness, palpitations, medications, blood tests (such as troponin) taken at the same time are all relevant. Recording the blood pressure also provides a comprehensive picture of the patient's health at the time the ECG is recorded. If the patient is having serial ECGs recorded, also record the current ECG number in the series.

■ **Critical decision point: Interpreting ECGs is a complex skill. An ECG alone is rarely used as a diagnostic tool; it is usually used in conjunction with other assessment tools and procedures. A short annotation of the patient's symptoms and vital signs is valuable to the interpretation process, and provides important assessment data leading to diagnosis.**

11. Refer the ECG immediately to a qualified RN or doctor for analysis and interpretation: **A. Interpretation of the rhythm strip:** a. Determine if it is normal sinus rhythm: is there a P wave, QRS complex and T wave in each beat?	An ECG should never be filed in the patient's notes for interpretation at a later time. Even if the indication is for a baseline recording, the ECG should be interpreted immediately by a qualified RN or the medical officer.

STEPS	RATIONALE
b. Determine the heart rate. c. Determine the regularity. **B. Using the 12 leads:** a. Group the leads according to heart region. b. Interpret the leads in each group together to determine common abnormalities.	

■ **Critical decision point: The automatic interpretation on the printout (including the heart rate) should not be used in the actual interpretation process.**

Author's note: The interpretation of 12-lead ECG is a complex skill which is considered an advanced nursing skill. The RN is expected to have basic ECG interpretation skills, and to be able to identify quickly if there are abnormalities that require further interpretation by a more experienced person.

12. Clean a used equipment and dispose of any waste.	
13. Document in the patient's notes.	Document in the patient's progress notes that the ECG has been performed and if there were any abnormalities or interventions as a result. Once analysed, the ECG printout must also be filed in the patient's medical record.
14. Monitor the patient for signs of cardiac dysfunction.	Depending on the indication for the 12-lead ECG, the patient may require further monitoring for cardiac dysfunction.

- **Echocardiography** is a non-invasive measure to evaluate the internal structures of the heart and heart wall motion. Sonar (radar) technology is used to measure ultrasonic waves and translate them into formed images. The echocardiogram graphically demonstrates overall cardiac performance. This can be performed using a transthoracic or transoesophageal approach.
- **Scintigraphy**, or radionuclide angiography, is a non-invasive imaging technique. Radioisotopes are used to evaluate cardiac structures, myocardial perfusion and contractility.
- **Cardiac catheterisation** and angiography are invasive procedures used for viewing cardiac chambers, valves, the great vessels and coronary arteries and to measure pressure and volumes within the four chambers. The procedures require insertion of a catheter into the heart via a percutaneous venous puncture. Contrast material is injected through the catheter, and fluoroscopic pictures are obtained. Often a device called a stent is inserted to open the occluded coronary artery. Both right- and left-sided catheterisation can be performed.

Diagnostic cardiac catheterisation is usually done as a day-surgery procedure. If there are no complications from the procedure, the patient may go home in 4–8 hours. Some patients may need to stay overnight for observation. Other patients may be taken directly to the operating room if the catheterisation reveals significant, life-threatening coronary artery disease and/or blockage. Complications associated with the cardiac catheterisation procedure include arrhythmias, bleeding at the puncture site, haematoma and stroke.

Ventilation and oxygenation studies

Pulmonary function tests, peak expiratory flow rates, arterial blood gas tests, oximetry and full blood counts (see section on blood studies) are used to assess the adequacy of ventilation and oxygenation.

Pulmonary function tests determine the ability of the lungs to efficiently exchange oxygen and carbon dioxide. Basic ventilation studies are performed with a spirometer and recording device as the patient breathes through a mouthpiece into a connecting tube. For example, measurements can include tidal volume (Vt), inspiratory reserve volume (IRV) residual volume (RV) and functional residual capacity (FRC) (Table 35-8). Pulmonary functions are variable by ethnic group (see *Working with diversity*).

Pulmonary function tests are usually performed in a pulmonary function laboratory. A nose clip prevents air from being inhaled or exhaled through the nose. The patient breathes through a mouthpiece attached to a spirometer for measuring lung volume, and is asked at certain times in the test to inhale or

TABLE 35-8 Pulmonary function measurements

Measurement	Description	Average value	Clinical significance
Functional residual capacity (FRC)	Volume of air (mL) left in lungs after a normal exhalation	2400 mL	Increased in patients with obstructive lung disease and older patients as a result of changes in chest wall compliance, elastic recoil of the lungs and decreased respiratory muscle mass and strength
Residual volume (RV)	Volume of air (mL) left in lungs after a maximal exhalation	1200 mL	Increased in patients with chronic obstructive pulmonary disease and older patients as a result of changes in elastic recoil of the lungs, chest-wall compliance and decreased respiratory muscle mass and strength
Total lung capacity (TLC)	Total volume of air (mL) in lungs following a maximal inhalation	6000 mL	Decreased in restrictive lung disease; increased in obstructive lung disease
Tidal volume (VT)	Volume of air (mL) inhaled or exhaled per breath	5–10 mL/kg	Decreased in restrictive lung disease and older adult
Vital capacity (VC)	Volume of air (mL) exhaled after a maximal inhalation	4800 mL	Decreased in association with decreased flow rates found in pulmonary oedema, atelectasis and changes associated with ageing, such as decreased respiratory muscle strength and chest wall compliance

WORKING WITH DIVERSITY

Focus on cultural care

Pulmonary functions vary between cultures as a result of the variation in chest size. Caucasians have the largest chest volumes, followed by Africans then Asians. The variations in the chest size affect the forced expiratory volume (FEV1), forced vital capacity (FVC) and the FEV1/FVC ratio.

	FEV1 (L)	FVC (L)	FEV1/FVC (%)
Caucasian	3.22	4.3	74.4
African	2.85	3.7	76.7
Asian	2.53	3.27	77.0

Reference

Modified from Lueckenotte AG 2000 Gerontologic nursing, 2nd edn. Mosby, St Louis.

exhale as much air as possible. The patient's cooperation is critical to ensure accurate results.

PEAK EXPIRATORY FLOW RATE The **peak expiratory flow rate (PEFR)** is the point of highest flow during maximal expiration. The PEFR reflects changes in large-airway sizes and correlates well with the FEV1 (forced expiratory volume in 1 second). The peak expiratory flow meter is a handheld instrument that allows patients with asthma to monitor their disease. All patients with asthma should monitor their PEFR, just as patients with diabetes monitor their blood glucose level.

ARTERIAL BLOOD GAS TESTS Arterial blood gas (ABG) measurement is performed in conjunction with pulmonary function tests to determine the hydrogen ion concentration, partial pressure of carbon dioxide and oxygen concentration and oxyhaemoglobin saturation. ABG tests provide information about diffusion of oxygen and carbon dioxide across the alveolar–capillary membrane and adequacy of tissue oxygenation (see Chapter 34). ABGs can provide information on conditions such as metabolic and respiratory acidosis and alkalosis. Taking an ABG sample and analysis of the results are advanced nursing skills.

OXIMETRY Continuous measurements of capillary oxygen saturation are available with cutaneous **oximetry** (see Skill 23-2). Oxygen saturation is the percentage of haemoglobin saturated with oxygen. Transcutaneous oximeter measurements have the advantages of being easy to use, non-invasive and readily available. Patients with ventilation/perfusion (V/Q) abnormalities such as pneumonia, emphysema, chronic bronchitis, asthma, pulmonary embolism or chronic heart failure are ideal candidates for pulse oximetry.

The most common oximetry is done with the pulse oximeter, which displays the amplitude of the pulse with the oxygen saturation reading. The nurse usually attaches a non-invasive sensor to the patient's finger, toe, earlobe or bridge of the nose to monitor capillary blood oxygen saturation. If using the finger or toe, dark-coloured or frosted nail polish should be removed as this may interfere with sensing and result in falsely low readings. Similarly, false fingernails may also interfere with readings. The nasal probe is recommended in low perfusion states because the blood flow in the nasal septum anterior ethmoid artery remains greater than peripheral flow in compromised flow states. Continuous monitoring of oxygen saturation is useful in assessing sleep disorders, exercise tolerance, weaning from mechanical ventilation, and transient decreases in oxygen saturation. Use during cardiac resuscitation is not reliable (Pierce 2007).

The accuracy of the pulse oximetry value is directly related to the perfusion of the probe area. Patients with poor tissue perfusion caused by shock, hypothermia or peripheral vascular diseases may not have reliable oximetry measures. The accuracy of the pulse oximetry is decreased when the systolic blood pressure is less than 90 mmHg. Spot-check oximetry readings have little clinical value; trends over time provide the best information about the patient's oxygenation.

Blood studies

FULL BLOOD EXAMINATION A full blood examination (FBE) determines the number and type of red and white blood cells per cubic millimetre of blood. The nurse obtains a venous blood sample by performing a venepuncture. Normal values for a FBE vary with age and gender.

The FBE measures the haemoglobin level in the red blood cells (erythrocytes). A deficiency in red blood cells decreases the blood's oxygen-carrying capacity because there are fewer haemoglobin molecules available to carry oxygen to tissues. When the number of red blood cells is increased, such as with polycythaemia in chronic lung conditions and cyanotic heart conditions, the oxygen-carrying capacity of the blood is increased. However, increased red blood cells increase blood viscosity and the patient's risk of thrombus formation.

Cardiac enzymes are used to diagnose acute myocardial infarction. The primary markers of myocardial damage are the plasma cardiac troponins I (TnI) and T (TnT) (Chew et al 2011). Blood is taken for troponin levels when the patient first presents with symptoms, and serial serum levels are repeated over several days. Elevated tropionin levels are indicative of a myocardial infarction (Chew et al 2011).

Other, less specific markers include creatine phosphokinase (CK) and CKMB (isoenzyme portion of CK specific for myocardial damage).

SERUM ELECTROLYTES It is important to monitor the serum electrolytes of patients with cardiac disease, and especially if receiving diuretic therapy for hypertension and suffering from chronic heart failure. The potassium (K^+) level should be between 3.5 and 5 mmol/L. Patients receiving diuretic therapy are at risk of hypokalaemia. Patients taking diuretics are usually monitored within 4 weeks of initiation of therapy, then every 6–12 months.

Nurses should also be alert for hyperkalaemia (elevated potassium) in patients receiving ACE inhibitors. ACE inhibitors are used for patients with chronic heart failure or left ventricular dysfunction following acute myocardial infarction, and to treat systemic hypertension. Hypokalaemia and hyperkalaemia can result in cardiac arrhythmias.

Cholesterol patients with risk factors for coronary artery disease need to have their cholesterol, low-density lipoprotein (LDL) cholesterol, high-density lipoprotein (HDL) cholesterol and triglyceride levels measured and monitored. A fasting total triglyceride level should be less than 1.5 mmol/L, and total cholesterol should be less than 5.0 mmol/L. LDL should be less than 2.0 mmol/L and HDL should be greater than 1.0 mmol/L (National Heart Foundation of Australia and the Cardiac Society of Australia and New Zealand 2005).

Factors such as cigarette smoking, obesity, lack of regular exercise, beta-adrenergic blocking agents, genetic disorders of HDL metabolism, hypertriglyceridaemia and type 2 diabetes contribute to low levels of HDL cholesterol. High levels of LDL cholesterol (hypercholesterolaemia) are caused by excessive intake of saturated fatty acids, dietary cholesterol intake and obesity. Familial hypercholesterolaemia and hyperlipidaemia are also contributing factors, as well as hypothyroidism, nephrotic syndrome and type 1 diabetes. Obesity, excessive alcohol intake, type 1 diabetes, beta-adrenergic blocking agents and familial hypertriglyceridaemia cause hypertriglyceridaemia.

• CRITICAL REFLECTION POINT

Chen Lee, age 72 years, has been having chest pain, shortness of breath and pain down his left arm for about 2 hours. He comes to the emergency department for care. What problems can you identify for this patient?

Viewing structures of the respiratory system

Chest X-ray examination, bronchoscopy and lung scans are used to show structures of the respiratory system.

CHEST X-RAY EXAMINATION A chest X-ray consists of a radiograph of the thorax that allows the doctor and nurse to observe the lung fields for fluid (e.g. occurs with pneumonia), masses (e.g. lung cancer), fractures (e.g. rib and clavicular fractures) and other abnormal processes (e.g. tuberculosis). Usually anterior/posterior (AP) and lateral films are taken to adequately show all the lung fields.

BRONCHOSCOPY is a visual examination of the tracheobronchial tree through a narrow, flexible fibre-optic bronchoscope. **Bronchoscopy** is performed to obtain a biopsy and fluid or sputum samples and to remove mucous plugs or foreign bodies that have become lodged in the airways.

The patient is usually kept NBM (nil by mouth) for 4 hours or more before bronchoscopy. Nurses may prepare the patient for the procedure by administering medications such as a sedative or atropine to reduce oral secretions. Nurses continue to observe and monitor the patient after the procedure for signs and symptoms of respiratory distress, haemoptysis or hypoxia. Before beginning oral fluids, nurses assess that the patient's gag and swallow reflex is intact, as often a topical local anaesthetic agent is sprayed on the posterior pharyngeal wall.

LUNG SCAN The most common lung scan is the *computed tomography* (CT) scan. CT scanning combines radiographical and computer technology. X-ray beams pass through a section or plane of the thorax from different angles, and the computer calculates tissue absorption and displays a printout and scan picture of the tissues, showing densities of various intrathoracic structures. A CT scan can identify abnormal masses by size and location but cannot identify tissue types; this requires a biopsy.

Determining abnormal cells or infection in the respiratory tract

Tests to determine whether there are abnormal cells or infection in the respiratory tract include throat cultures, sputum specimens, skin testing and thoracentesis. Any specimens collected for culture and sensitivity (C&S) to detect the presence of pathogenic microorganisms should be collected prior to the commencement of antibiotics.

THROAT CULTURES A throat culture sample is obtained by swabbing the oropharynx and tonsillar regions with a sterile swab. The throat culture determines the presence of pathogenic microorganisms. If a C&S is ordered, the antibiotics to which the microorganisms are resistant and those to which they are sensitive can also be determined.

When obtaining a throat culture, the nurse inserts the swab into the pharyngeal region and passes it along reddened areas and areas with exudate. Some patients have an active gag reflex, making it difficult to obtain the specimen. The reflex may be less active if the patient is sitting straight and leaning forward

slightly. The patient may be able to control gagging if told that the procedure will take only a few seconds.

Sputum specimens are obtained to identify the type of organism growing in the sputum. Early-morning specimens yield the most reliable results. A C&S identifies a specific microorganism and its drug resistance and sensitivities. A sputum specimen may also be obtained to screen for the presence of acid-fast bacilli (AFB). The AFB specimen is obtained on three consecutive days in the early morning before eating. Sputum for cytology is a sputum specimen obtained to identify abnormal lung cancer by cell type. It also involves a serial collection of three early-morning specimens before eating.

Nurses must teach the patient to cough effectively so that the sputum specimen consists of mucous from deep in the bronchus, and not saliva. The colour, consistency, amount and odour of the sputum are recorded, and the date and time the specimen was sent to a specific laboratory for analysis is documented.

Skin testing enables the clinician to determine the presence of bacterial, fungal or viral pulmonary diseases. The antigen is injected intradermally (see Chapter 27); the injection site may be circled, and the patient is instructed not to wash it off. This procedure enables the clinician to evaluate the response. Tuberculin skin tests are read at 48 hours. Positive results are based on the size of the induration, which is a palpable, elevated, hardened area around the patient's injection site. It is caused by oedema and inflammation from the antigen–antibody reaction. The induration is measured in millimetres. Reddened flat areas are not positive reactions and should not be measured. Tuberculin testing in older adults is less reliable (see *Working with diversity*).

Thoracentesis is perforation of the chest wall and pleural space with a needle to aspirate fluid for diagnostic or therapeutic purposes or to remove a specimen for biopsy. The procedure is performed with aseptic technique using a local anaesthetic. The patient usually sits upright with the anterior thorax supported by pillows or an overbed table (Figure 35-13).



Figure 35-13 Position for thoracentesis.

Wilson SF, Thompson JM 1990 Respiratory disorders. Mosby, St Louis.

Whether this procedure is painful depends on the patient's tolerance for pain (see Chapter 41). Nurses can reduce the patient's anxiety by explaining the procedure and telling the patient what to expect. The patient must understand the importance of holding the breath as requested and of not coughing during the procedure. Sudden movements may result in lung puncture by the thoracentesis needle. The patient is instructed to notify the doctor before coughing or sneezing, so that the needle can be withdrawn.

After the procedure the nurse monitors the patient for signs of pneumothorax (air in the pleural space): sudden shortness of breath (see Box 35-6), tracheal deviation, oxygen desaturation and anxiety. The development of a pneumothorax following thoracentesis is an emergency. This type of pneumothorax is known as a tension pneumothorax and can result in cardiopulmonary arrest if it is not treated promptly.

Patient expectations

Nurses should ask patients what they expect with regard to their care, including what they expect from the encounter and what their priority is for management of their health. It also includes involving patients in the decision-making process about what will happen to them. For example, planning a quit-smoking or weight-reduction program for a patient who is not ready for the change will be frustrating for both the patient and nurses. Short-term realistic goals should be established that build to a larger goal. For example, reducing the fat in the patient's diet may start out with replacing food such as whole milk with 2% milk and gradually introducing skimmed milk. A plan for adding exercise to the patient's lifestyle may start with a commitment to exercise once a week for 20 minutes, or the patient may commit to a weight-reduction plan of 2 kg per month.

It is important to remember that the goals and expectations of nurses may not always coincide with those of the patient. By considering the patient's concerns and expectations, nurses will establish a relationship that can encompass other healthcare goals and expected outcomes.

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

Patients with an altered level of oxygenation can have problems that are primarily of a cardiovascular or pulmonary

WORKING WITH DIVERSITY

Focus on older adults

- The tuberculin skin test is an unreliable indicator of tuberculosis in older adults. They frequently display false-positive or false-negative skin test reactions. Older adults are at an increased risk of reactivation of dormant organisms that have been present for decades as a result of age-related changes in the immune system.
- The standard 5-TU Mantoux test is given and repeated or repeated with the 250-TU strength test to create a booster effect. If the older adult has a positive reaction, a complete history is necessary to determine any risk factors.
- Weight loss, night sweats, haemoptysis and fatigue are signs and symptoms that should alert the nurse to possible tuberculosis. Early morning sputum for acid-fast bacilli (AFB) and a chest X-ray are usually indicated.

BOX 35-8 Examples of priority problems associated with cardiopulmonary dysfunction

Activity intolerance
Difficulty in clearing airway
Anxiety
Ineffective breathing pattern
Decreased cardiac output
Fear
Impaired gas exchange
Infection, associated with
Knowledge deficit (specify)
Altered tissue perfusion (cardiopulmonary)
Inability to sustain spontaneous ventilation

BOX 35-9 Examples of clinical reasoning processes associated with cardiopulmonary dysfunction

Assessment activities	Defining characteristics	Problem identified
Observe patient while breathing.	Dyspnoea Tachypnoea Use of accessory muscles Nasal flaring Diaphoresis	Ineffective airway clearance related to thickened pulmonary secretions
Inspect patient's skin and mucous membranes.	Cyanotic nail beds Circumoral cyanosis Pale mucous membranes	
Auscultate lung fields.	Lower lobe crackles Inspiratory wheezes throughout fields	
Observe cough and inspect sputum.	Poor cough Patient tires trying to produce sputum Thick, yellow sputum	

origin (Box 35-8). Each diagnosis is based on specific defining characteristics and the related aetiology. Nurses use the information gathered in the nursing assessment to identify and cluster the defining characteristics. The clustered defining characteristics support the diagnostic process (Box 35-9).

• CRITICAL REFLECTION POINT

Mr Majid has recently migrated to Australia to join his family. He is at the medical centre to see a doctor because he has become increasingly tired, has had a persistent cough and has been losing weight. What questions would be important to ask when completing the health history interview?

SETTING PRIORITIES AND ESTABLISHING GOALS

Goals and outcomes

During planning, nurses will synthesise information from multiple resources (Figure 35-14). Critical thinking ensures that the patient's plan of care integrates all that nurses know about the individual, as well as key critical-thinking elements.

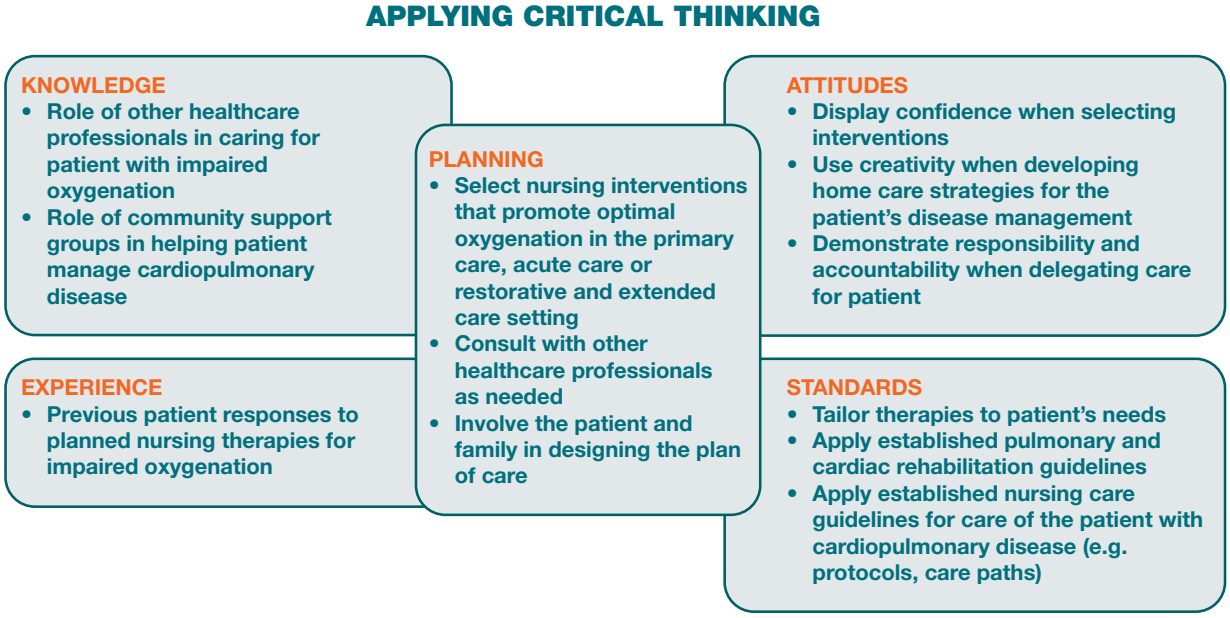


Figure 35-14 **Critical thinking associated with the planning phase for oxygenation.**

Professional standards are especially important, and often establish scientifically proven guidelines for selecting effective nursing interventions.

Depending on the patient's clinical condition, the care may be directed by an appropriate clinical pathway. A clinical pathway is a standardised management plan based on current evidence. Where the patient's clinical condition is complex, nurses develop an individualised plan of care to manage identified problems. Nurses and the patient set realistic expectations of care. Goals are to be individualised and realistic with measurable outcomes.

Patients with impaired oxygenation require a nursing care plan directed towards meeting the actual or potential oxygenation needs of the patient (see *Sample student nursing care plan*). Individual outcomes are derived from patient-centred needs. Nurses identify specific outcomes of nursing care and identify the appropriate interventions necessary to achieve the desired outcome. The plan includes one or more of the following patient-centred outcomes (Ackley & Ladwig 2011):

- The patient maintains a patent airway.
- The patient achieves and maintains adequate gas exchange and ventilation demonstrated by respiratory rate and pattern and pulse oximetry.
- The patient achieves and maintains adequate cardiac output demonstrated by blood pressure, heart rate and rhythm.
- The patient achieves and maintains adequate electrolyte and acid–base balance.
- The patient achieves maintenance and promotion of lung expansion.
- The patient demonstrates effective coughing and clear breath sounds.
- Tissue oxygenation is maintained or improved.
- The patient will be able to increase endurance for activities of daily living.

Setting priorities

Alterations in oxygenation are always among the most important problems and require immediate and continual work until the problem is overcome. The patient's level of health, age, lifestyle and environmental risks affect the level of tissue oxygenation. Patients with severe impairments in oxygenation often require nursing interventions in multiple areas.

A clinical pathway or clinical practice guideline can provide a multidisciplinary template for care.

Continuity of care

When the patient is discharged, care is assumed by the patient, a family member or a community healthcare professional. Patients who have chronic oxygenation problems can live comfortably in their own homes for many years with appropriate equipment and the support of their healthcare professionals.

PREPARING FOR AND TAKING ACTION

Nursing interventions for promoting and maintaining adequate oxygenation are included in the domains of provision and coordination of care and collaborative and therapeutic practice (Nursing and Midwifery Board of Australia 2016). These include independent nursing actions, such as health-promotion and prevention behaviours, positioning and coughing techniques and interdependent or dependent interventions such as oxygen therapy, lung inflation techniques, hydration, medications and chest physiotherapy.

SAMPLE STUDENT NURSING CARE PLAN

Gathering relevant information and data*

Mr Edwards, an older adult with a history of COPD, comes to the medical centre with complaints of coughing. He states that he has been **coughing for about a week**, and his ribs are getting sore. He denies sputum production and states that there is nothing to cough up. He notes that his mouth is dry, however, and he has had **increased fatigue** over the past week. He continues to **smoke 2–3 cigarettes a day**, an improvement from his previous 10–15 per day. His skin and mucous membranes are dry. Lung sounds reveal crackles in the upper lobes. The lower lobes are clear. He is **unable to produce a sputum sample** for evaluation.

** Important data to cluster in setting priorities in bold.*

Priority problem(s)

Difficulty clearing airway because of retained secretions.

Making appropriate judgements and decisions

Setting priorities and establishing goals	Expected outcomes
Mr Edwards will be able to effectively clear secretions.	Lung sounds will be normal in 48 hours.
Mr Edwards' oxygenation will be optimised.	Sputum will be thin, white and watery.
	Respiratory rate will be within 20–24 breaths per minute in 48 hours. Respiratory pattern will be normalised with no use of accessory muscles. SpO_2 will be > 92%.
	Mr Edwards will be able to clear airway by coughing.

Preparing for and taking action	Rationale
Airway management	
• Adjust fluid intake to ensure sputum remains liquid (Kauffman 2008).	Fluids help to liquefy secretions and promote ease of removal.
• Have Mr Edwards deep-breathe and cough every 2 hours 4–5 times (Kauffman 2008).	Retained secretions predispose patient to atelectasis and pneumonia.
• Consider chest physiotherapy (CPT) if there is evidence of infiltrates on chest X-ray and sputum production (Tang et al 2010).	Standards for CPT include sputum production greater than 25 mL/day or infiltrates on chest X-ray (American Association of Respiratory Care 2003).
• Humidification: humidified oxygen if oxygen delivery > 6 L/min.	Decreases insensible fluid loss and helps liquefy secretions.

† Intervention classification labels from Kaufman JS 2008 Nursing management: obstructive pulmonary disease. In Brown D, Edwards H (eds) Lewis's medical–surgical nursing, 2nd edn. Mosby, Sydney.

Evaluating impacts and outcomes

- Observe Mr Edwards' ability to deep-breathe and cough effectively.
- Auscultate for adventitious lung sounds.
- Assess Mr Edwards' respiratory rate, pattern and use of accessory muscles.
- SpO_2 > 92%.
- Assess patient's level of hydration.
- Observe appearance of sputum.

Health promotion

Maintaining the patient's optimal level of health is important in reducing the number and/or severity of respiratory symptoms. Prevention of respiratory infections is foremost in maintaining optimal health. Nurses provide cardiopulmonary-related health information to patients and their families (Boxes 35-10 and 35-11; see also *Working with diversity*).

BOX 35-10 Patient teaching for cardiovascular disease

Objectives

- Patient will be able to demonstrate knowledge of relevant modifiable cardiovascular risk factors and their management.
- Patient will have an awareness of behaviour modification required to minimise the impact of relevant risk factors.

Intervention

- Undertake patient assessment to identify relevant modifiable risk factors for the individual patient.
- Provide education about the above-identified risk factors and their management. This may include information regarding low-fat, low-salt and kilojoule-appropriate diets, including sample menus; strategies for stress reduction; benefits of exercising for 20–30 minutes 3–4 times per week to help reduce weight and help lower blood pressure.
- Provide education about the importance of regular blood pressure monitoring.
- Provide education about the importance of blood lipid monitoring.
- Provide education about the importance of taking medications as prescribed.
- Set realistic goals with the patient for achievement of behaviour modification to address relevant risk factors.
- Determine age-related, cultural, religious or economic issues that may interfere with patient's ability to complete the plan of care and identify strategies to address these issues.

Teaching strategies

- Include relevant family members/significant others wherever possible.
- Suitable interviewing and teaching techniques, e.g. professional behaviour, appropriate eye contact, open-ended questions, jargon-free language, clarifying statements, appropriately timed sessions.

continued

- Augment session with teaching materials, e.g. video, pamphlets, electronic resources.
- Consider group teaching for peer learning and support.

Evaluation

- Request patient paraphrase their understanding of the teaching session.
- Clarify any unclear issues.
- Patient returns for follow-up as scheduled.

Muma RD 2012 An approach to patient education. In Muma RD, Lyons, BA (eds), Patient education: a practical approach, 2nd edn. Jones & Bartlett Learning, Sudbury, MA; National Heart Foundation of Australia 2009 Guidelines for the assessment of absolute cardiovascular disease risk. Online. Available: http://heartfoundation.org.au/for-professionals/clinical-information/absolute-risk; accessed 1 April 2016.

BOX 35-11 Patient teaching for respiratory disease

Objectives

- Patient will be able to demonstrate knowledge of relevant modifiable respiratory risk factors and their management.
- Patient will have an awareness of behaviour modification required to minimise the impact of relevant risk factors.

Intervention

- Undertake patient assessment to identify relevant risk factors for the individual patient.
- Provide education about the above-identified risk factors and their management. This may include information regarding smoking and exposure to secondhand smoke, repeated respiratory infections, vaccination (pneumococcal and influenza), exposure to allergens, pollution level and 'bad air' days and secondary infections.
- Provide education about the importance of taking medications as prescribed.
- Provide education and have patient demonstrate proper technique and sequencing of metered-dose inhalers, including the use of spacers if relevant.
- Provide education for the patient with asthma about importance of monitoring the peak expiratory flow rate (PEFR).
- Provide education and have patient demonstrate proper use of the peak expiratory flow meter.
- Set realistic goals with the patient for achievement of behaviour modification to address relevant risk factors.
- Determine age-related, cultural, religious or economic issues that may interfere with patient's ability to complete the plan of care.

Teaching strategies

- Include relevant family members/significant others wherever possible.
- Suitable interviewing and teaching techniques, e.g. professional behaviour, appropriate eye contact, open-ended questions, jargon-free language, clarifying statements, appropriately timed sessions.
- Augment session with teaching materials, e.g. video, pamphlets, electronic resources.
- Consider group teaching for peer learning and support.

Evaluation

- Request patient paraphrase their understanding of the teaching session.
- Clarify any unclear issues.
- Request patient demonstrate proper coughing and sneezing techniques.
- Patient is able to demonstrate proper use of metered-dose inhalers and spacer use.
- Patient is able to demonstrate proper use of the peak expiratory flow meter.
- Patient returns for follow-up as scheduled.

Australian Lung Foundation (ALF) 2009 Pulmonary rehabilitation; Department of Health and Ageing (DoHA) 2009 2.3 Groups with special requirements; the Australian immunisation handbook, 9th edn. DoHA, Canberra; Muma RD 2012 An approach to patient education. In Muma RD, Lyons BA (eds) Patient education: a practical approach, 2nd edn. Jones & Bartlett Learning, Sudbury, MA.

WORKING WITH DIVERSITY

Focus on infants and children

Many Australian children spend part or most of their day in childcare. Acute respiratory illness is a problem in this context and causes discomfort to the child as well as extra costs to the parents as they stay home from work to look after the child. McCutcheon and Fitzgerald (2001) suggest that public health nurses become involved with this subpopulation to facilitate health promotion in childcare facilities. Education about respiratory hygiene practices, infectious diseases and how they can be prevented, assessment of mild, moderate and severe acute respiratory illness, support for childcare workers and information on nutrition, comfort and care of the ill child were suggested to improve care.

Reference

McCutcheon H, Fitzgerald, M 2001 The public health problem of acute respiratory illness in childcare. J ClinNurs 10:305–10.

Influenza and pneumococcal vaccine

Most healthy adults will recover from influenza within a few days without any complications; however, some people, especially those aged 65 years or more and people with certain medical conditions, can suffer complications. This can include pneumonia requiring hospitalisation, and can even result in death. Older people are by far the worst affected by influenza. In Australia, the free vaccination program for those aged over 65 years was implemented in 2000 and has resulted in a reduction in deaths in the older population. In 2009, deaths attributed to pneumonia and influenza as the single cause were reduced to 1796, although these respiratory infections are implicated frequently as a co-cause of death in those suffering concomitant diseases. Deaths attributed to Influenza A-H1N1 (swine flu) numbered 77 (Australian Bureau of Statistics 2011). A similar program has been implemented for Aboriginal and Torres Strait Islander people and in New Zealand; the free vaccinations are also available in both countries for pregnant women and those with chronic medical conditions who are most at risk of dangerous respiratory infections.

The Department of Health and Ageing (2009) recommends routine annual influenza vaccination for all people aged over 65 years, or over 50 for Aboriginal and Torres Strait Islander peoples. It also advises vaccination for those in the following groups: adults with chronic debilitating diseases, especially those with chronic cardiac, pulmonary, renal and metabolic disorders; children with cyanotic congenital heart disease; adults and children receiving immunosuppressive therapy; and residents of nursing homes and other extended-care facilities. Annual vaccination should also be considered for staff who care for immunocompromised patients and staff of nursing homes and other chronic-care facilities. It is recommended that vaccination take place in the autumn in anticipation of winter outbreaks.

People with a known sensitivity to eggs or with a current febrile illness should not be vaccinated. The vaccines are formulated annually based on worldwide surveillance data. The influenza virus mutates all the time, and the vaccine is changed to match the current circulating virus. The vaccine will provide about 70% protection against infection for about 1 year. Annual vaccination is necessary to provide continuing protection against the most recent influenza virus. Current influenza vaccines include coverage for swine flu (Department of Health and Ageing 2009).

Pneumococcal vaccine is recommended for patients at increased risk of developing pneumonia, especially for Indigenous minorities, residents of institutions, the elderly and the immunosuppressed (such as those receiving treatment for HIV/AIDS). Revaccination is recommended every 5 years. In all age groups, Indigenous rates of invasive pneumococcal infection are up to 75 times higher than in other groups (Department of Health and Ageing 2009).

The influenza vaccine can be used in pregnant women. Pneumococcal vaccine is contraindicated in pregnancy, unless there is an increased risk of invasive pneumococcal disease, for example, impaired immunity (Department of Health and Ageing 2009). However, in all cases it is important to consult the patient's obstetrician before administering either vaccine.

• CRITICAL REFLECTION POINT

Mrs Amanda Miller, age 45 years, has been admitted to hospital with community-acquired pneumonia. She has a productive cough, fever, chills, crackles and wheezes on auscultation of her chest, and a heart rate of 104 beats per minute. What problems can you identify for this patient?

Environmental pollutants

Avoiding exposure to secondhand smoke is essential to maintaining optimal cardiopulmonary function. All government buildings, businesses and restaurants in Australia and New Zealand now ban smoking. If people are exposed to secondhand smoke in their home environments, counselling and support may be necessary to help the smoker stop smoking or alter behaviour patterns, such as smoking outside.

Exposure to chemicals and pollutants in the work environment must also be considered. People such as farmers, painters and carpenters benefit from the use of particulate filter masks to reduce inhalation of particles.

Healthy lifestyle behaviour

Identification and elimination of risk factors for cardiopulmonary disease are important parts of primary care. Patients are encouraged to eat a healthy low-fat, high-fibre diet; monitor their cholesterol level, triglyceride level and HDL/LDL ratio; reduce stress; exercise; and maintain a bodyweight in proportion to their height. Elimination of cigarettes and other tobacco products, reduction of pollutants, monitoring of air quality and adequate hydration are additional healthy behaviours. Patients should be encouraged to examine their habits and make changes to achieve their goals.

Exercise is a key factor in promoting and maintaining a healthy heart and lungs. Patients should be encouraged to exercise 3–4 times a week for 20–30 minutes. Aerobic exercise is necessary to improve lung function, strengthen muscles and achieve the desired outcome. Walking is one of the most efficient ways to achieve a good aerobic workout.

Patients with cardiopulmonary alterations need to minimise their risk of infection, especially during the winter months. Following infection-control practices, patients should be counselled to avoid large, crowded places and keep their mouth and nose covered when sneezing or coughing to minimise the risk of transmission. This is especially important during the peak of the influenza season.

Patients with known cardiac disease and those with multiple risk factors should be cautioned to avoid exertion in cold weather. Diving into a cold swimming pool has been known to precipitate a cardiac event in many patients. Patients are advised to avoid alcohol, since it blunts the respiratory drive when used to excess and may contribute to exposure to the cold by making the patient feel warm when they are really not protected. Patients should also be taught to plan for the hot summer months. Activities should be limited to early in the day or late in the evening, when temperatures are lower. Care should be taken to maintain adequate hydration and sodium intake, especially in those patients who are taking diuretics. Caffeinated and alcoholic beverages should be limited or avoided completely, since they act as diuretics and can contribute to dehydration.

Acute care

Patients with acute pulmonary illnesses require nursing interventions directed towards halting the pathological process, as with a respiratory tract infection; shortening the duration and severity of the illness, such as hospitalisation with pneumonia; and preventing complications from the illness or treatments, such as healthcare-associated (nosocomial) infection resulting from invasive procedures.

Dyspnoea management

Dyspnoea is difficult to quantify and to treat. Treatment needs to be individualised for each patient, and usually more than one therapy is implemented. The underlying process that causes or worsens dyspnoea must be treated and stabilised initially, then four additional therapies – pharmacological measures, oxygen therapy, physical techniques and psychosocial techniques – are implemented. Pharmacological agents may include bronchodilators, steroids, mucolytics and low-dose anxiolytic medications. Oxygen therapy can reduce dyspnoea associated with exercise. Physical techniques, such as cardiopulmonary reconditioning, breathing techniques and cough control, can help to reduce dyspnoea. Relaxation techniques, biofeedback and meditation are physiological measures that can lessen the sensation of dyspnoea.

Airway maintenance

The airway is patent when the trachea, bronchi and large airways are free from obstructions. Airway maintenance requires adequate hydration to prevent thick, tenacious secretions; proper coughing techniques to remove secretions and keep the airway open; and a variety of interventions to help the patient with alterations in airway clearance, such as suctioning, chest physiotherapy and nebuliser therapy.

The ability of a patient to mobilise pulmonary secretions may make the difference between a short-term illness and a long recovery involving complications. Nursing interventions that promote mobilisation of pulmonary secretions help the patient achieve and maintain a clear airway and help promote lung expansion and gas exchange.

HYDRATION Maintenance of adequate systemic hydration keeps mucociliary clearance normal. In patients with adequate hydration, pulmonary secretions are thin, clear to white, watery and easily expectorated with minimal coughing. Excessive coughing to clear thick, tenacious secretions is tiring and energy-depleting. The best way to maintain thin secretions is to provide a fluid intake of 1500–2000 mL/day (or up to 3 L/day in tropical areas), unless contraindicated by cardiac status. The colour, consistency and ease of secretion expectoration can determine adequacy of hydration.

HUMIDIFICATION is the process of adding water to gas. Temperature is the most important factor affecting the amount of water vapour a gas can hold. The percentage of water in the gas in relation to its capacity for water at a specific temperature is the relative humidity. Air or oxygen with a high *relative humidity* keeps the airways moist and helps loosen and mobilise pulmonary secretions. **Humidification** is necessary for patients receiving oxygen therapy at greater than 4 L/min, to moisten the mucociliary system. When the thin layer of fluid that supports the mucous layer over the cilia is allowed to dry, the cilia are damaged and cannot adequately clear the airway. Bubbling oxygen through warm (37ºC) water can add humidity to the oxygen delivered to the upper airways, as with a nasal catheter, nasal cannula or face mask. The oxygen (humidity) tent is used for infants and children with illnesses such as croup and tracheitis to liquefy secretions and help reduce fever (Overend et al 2001). The nebuliser at the top of the humidity tent must remain filled with water to prevent non-humidified air or oxygen from entering the tent. Air in the humidity tent can become cool and fall below 20°C, causing the child to become hypothermic. Nurses monitor the child's body temperature as well as respiratory status. Children in humidity tents require frequent changes of clothing and bedclothes to remain warm and dry.

NEBULISATION is a process of adding moisture or medications to inspired air by mixing particles of varying sizes with the air. A nebuliser uses the aerosol principle to suspend a maximum number of water droplets or particles of the desired size in inspired air. The moisture added to the respiratory system through nebulisation improves clearance of pulmonary secretions. Nebulisation is often used for administration of bronchodilators and mucolytic agents. Humidification through nebulisation enhances mucociliary clearance, the body's natural mechanism for removing mucous and cellular debris from the respiratory tract.

The major types of nebulisers are the jet-aerosol nebuliser and the ultrasonic nebuliser. A jet-aerosol nebuliser uses gas under pressure, and the ultrasonic nebuliser uses high-frequency vibrations to break up the water or medication into fine drops or particles. When inspired with air or administered oxygen, the drops or particles are then deposited throughout the tracheobronchial tree.

COUGHING TECHNIQUES Coughing is effective for maintaining a patent airway. Coughing permits the patient to remove secretions from both the upper and the lower airways. The normal series of events in the cough mechanism are deep inhalation, closure of the glottis, active contraction of the expiratory muscles, and glottis opening. Deep inhalation increases the lung volume and airway diameter, allowing the air to bypass partially obstructing mucous plugs or other foreign matter. Contraction of the expiratory muscles against the closed glottis causes a high intrathoracic pressure to develop. When the glottis opens, a large flow of air is expelled at high speed, providing momentum for mucous to move to the upper airways where it can be expectorated or swallowed.

The effectiveness of coughing is evaluated by clearing of adventitious sounds by auscultation, sputum expectoration or the patient's report of swallowed sputum. Patients with chronic pulmonary diseases, upper respiratory tract infections and lower respiratory tract infections should be encouraged to deep-breathe and cough at least every 2 hours while awake. Patients with a large amount of sputum should be encouraged to cough every hour while awake and every 2–3 hours during sleep time until the acute phase of mucous production has ended. Coughing techniques include deep-breathing and coughing (for the postoperative patient), cascade, huff and quad coughing.

- *Deep-breathing and coughing* is taught preoperatively for use postoperatively. The patient simply inhales as deeply as possible, holds the breath for 2 or 3 seconds and coughs forcefully on exhalation to clear airways. To be effective, postoperative pain must be controlled.
- With the *cascade cough*, the patient takes a slow, deep breath and holds it for 2 seconds while contracting

expiratory muscles. Then the patient opens the mouth and performs a series of coughs throughout exhalation, thereby coughing at progressively lowered lung volumes. This technique promotes airway clearance and a patent airway in patients with large volumes of sputum.

- The *huff cough* stimulates a natural cough reflex and is generally effective only for clearing central airways. While exhaling, the patient opens the glottis by saying the word huff. With practice the patient inhales more air and may be able to progress to the cascade cough.
- The *quad cough* technique is used for patients without abdominal muscle control, such as those with spinal cord injuries. While the patient breathes out with a maximal expiratory effort, the patient or nurse pushes inwards and upwards on the abdominal muscles towards the diaphragm, causing the cough.

POSITIVE EXPIRATORY PRESSURE (PEP), although not a cough technique, also works to mobilise secretions. The patient inhales a larger than normal volume of air and exhales through a resistor. The resistance causes the patient's exhalation to be 3–4 times as long as the inhalation, and is thought to increase the volume of air distal to the secretions. After several breaths using this technique, the patient follows with huff coughing. There is some evidence that PEP increases sputum expectoration in patients with COPD (Tang et al 2010).

CHEST PHYSIOTHERAPY (CPT) is a group of therapies used in combination to mobilise pulmonary secretions (Box 35-12). These therapies include postural drainage, chest percussion and vibration. **Chest physiotherapy** should be followed by productive coughing and suctioning of the patient who has a decreased ability to cough. Chest physiotherapy is recommended for patients who produce greater than 25 cm^3 of sputum per day or have evidence of atelectasis by chest X-ray examination. There is insufficient evidence to demonstrate that the CPT techniques detailed below improve expectoration of secretions in patients with COPD or pneumonia (Tang et al 2010, Yang et al 2010). This procedure can be safely used with infants and young children; however, conditions and diseases unique to children may at times contraindicate this procedure.

Chest percussion involves striking the chest wall over the area being drained. The hand is positioned so that the fingers and thumb touch and the hand is cupped (Figure 35-15). Percussion on the surface of the chest wall sends waves of varying amplitude and frequency through the chest, changing the consistency and location of the sputum. Chest percussion is performed by alternating hand motion against the chest wall (Figure 35-16). Percussion is performed over a single layer of clothing, not over buttons, press-studs or zips. The single layer of clothing prevents slapping the patient's skin. Thicker or multiple layers of material dampen the vibrations.

Percussion is contraindicated in patients with bleeding disorders, osteoporosis or fractured ribs. Caution should be taken to percuss the lung fields and not the scapular regions, otherwise trauma may occur to the skin and underlying musculoskeletal structures.

Vibration is a fine, shaking pressure applied to the chest wall only during exhalation. This technique is thought to increase the velocity and turbulence of exhaled air, facilitating secretion removal. Vibration increases the exhalation of trapped air and may shake mucous loose and induce a cough.

BOX 35-12 Procedural guidelines for chest physiotherapy

Nursing care and selection of chest physiotherapy (CPT) skills are based on specific assessment findings. The following guidelines help nurses in physical assessment and subsequent decision-making.

- Know the patient's normal range of vital signs. Conditions such as atelectasis and pneumonia requiring CPT can affect vital signs. The degree of change is related to the level of hypoxia, overall cardiopulmonary status and tolerance to activity.
- Know the patient's medications. Certain medications, particularly diuretics and antihypertensives, cause fluid and haemodynamic changes. These may decrease the patient's tolerance to the positional changes of postural drainage. Steroid medications increase the patient's risk of pathological rib fractures and often contraindicate rib shaking.
- Know the patient's medical history. Certain conditions such as increased intracranial pressure, spinal cord injuries and abdominal aneurysm resection contraindicate the positional changes of postural drainage. Thoracic trauma or surgery may also contraindicate percussion, vibration and rib shaking.
- Know the patient's level of cognitive function. Participation in controlled coughing techniques requires the patient to follow instructions. Congenital or acquired cognitive limitations may alter the patient's ability to learn and participate in these techniques.
- Be aware of the patient's exercise tolerance. CPT manoeuvres are tiring. When the patient is not used to physical activity, initial tolerance to the manoeuvres may be decreased. However, with gradual increases in activity and planned CPT, patient tolerance for the procedure improves.

Postural drainage involves the use of positioning techniques that promote the movement of secretions from specific segments of the lungs and bronchi into the trachea. It improves mobilisation of secretions in patients with cystic fibrosis (McIlwaine et al 2010) and for those who have problems expectorating large volumes of sputum. However, it has limited benefit for the majority of patients (Fink 2002, Tang et al 2010, Yang et al 2010). Coughing or suctioning normally removes secretions from the trachea. The procedure for postural drainage can include most lung segments. Because patients may not require postural drainage of all lung segments, the procedure is based on clinical assessment findings. For example, patients with left lower lobe atelectasis may require postural drainage of only the affected region, whereas a child with cystic fibrosis may require postural drainage of all lung segments.

SUCTIONING TECHNIQUES When a patient is unable to clear respiratory tract secretions with coughing, nurses must use



Figure 35-15 Hand position for chest wall percussion during physiotherapy.

Potter PA, Perry AG 2004 Fundamentals of nursing, 6th edn. Mosby, St Louis.

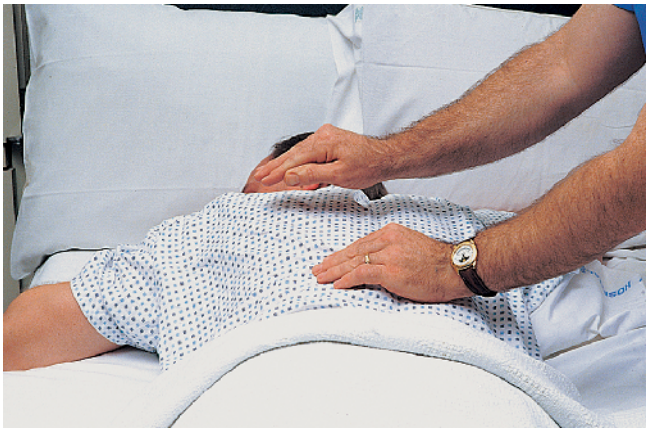


Figure 35-16 Chest wall percussion, alternating hand clapping against the patient's chest wall.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

suctioning to clear the airways. The suctioning techniques include oropharyngeal and nasopharyngeal suctioning, orotracheal and nasotracheal suctioning and suctioning an artificial airway.

These techniques are based on common principles. Because the oropharynx and trachea are considered sterile, sterile technique is used for suctioning. The mouth is considered clean, and therefore the suctioning of oral secretions should be performed after suctioning of the oropharynx and trachea. Each type of suctioning requires the use of a round-tipped catheter with a number of side holes at the distal end of the catheter. Frequency of suctioning is determined by patient assessment and need. If secretions are identified by inspection or auscultation techniques, suctioning is required. Sputum is not produced continuously or every 1–2 hours but occurs as a response to a pathological condition; therefore, there is no rationale for routine suctioning of all patients every 1–2 hours. In addition, suctioning reduces the amount of oxygen available in the dead space in the oropharynx and trachea, often resulting in significant desaturation of the patient. Nurses must be careful to monitor the patient to ensure adequate oxygenation. Too-frequent suctioning or increased length of time suctioning can put the patient at risk of developing hypoxaemia, hypotension or arrhythmias and possible trauma to the mucosa of the trachea.

OROPHARYNGEAL AND NASOPHARYNGEAL SUCTIONING

The oropharynx extends behind the mouth from the soft palate above the level of the hyoid bone and contains the tonsils. The nasopharynx is located behind the nose and extends to the level of the soft palate. Oropharyngeal or nasopharyngeal suctioning is used when the patient is able to cough effectively but is unable to clear secretions by expectorating or swallowing. The suction procedure is used after the patient has coughed (Skill 35-3). As the amount of pulmonary secretions is reduced and the patient is less fatigued, the patient may be able to expectorate or swallow the mucous and suctioning is no longer required.

OROTRACHEAL AND NASOTRACHEAL SUCTIONING

Orotracheal or nasotracheal suctioning is necessary when the patient with pulmonary secretions is unable to manage secretions by coughing and does not have an artificial airway present (see Skill 35-3). A catheter is passed through the mouth or nose into the trachea. The nose is the preferred route because stimulation of the gag reflex is minimal. The procedure is similar to nasopharyngeal suctioning, but the catheter tip is moved further into the patient's trachea. The risk of traumatic bleeding during nasopharyngeal suctioning is increased due to the sensitive nasal mucosa, which has an abundant blood supply. The entire procedure from catheter passage to its removal should be done quickly, lasting no longer than 15 seconds. Unless in respiratory distress, the patient should be allowed to rest between passes of the catheter. If the patient is using supplemental oxygen, the oxygen cannula or mask should be replaced during rest periods.

Tracheal suctioning is accomplished through an artificial airway such as an endotracheal tube or tracheostomy tube. The suction catheter should be no greater than half the size of the internal diameter of the artificial airway, so as not to cause an obstruction. Secretion removal should be as atraumatic as possible. To avoid trauma to the mucosa of the lung, suction pressure should never be applied while inserting the catheter, and suction pressure should be maintained between 100 and 150 mmHg. The suction catheter is inserted until a cough is initiated or until resistance is met. The catheter should be withdrawn by approximately 1 cm before applying suction, to prevent adherence to the trachea mucosa. Suction is applied intermittently as the catheter is withdrawn, to minimise the risk of adherence to the tracheal wall. Rotating the catheter will enhance removal of secretions that have adhered to the sides of the endotracheal or tracheostomy tube (Pierce 2007). Nurses should wear a mask and goggles and may need to wear a barrier gown to prevent splashes with body fluids.

ARTIFICIAL AIRWAYS An artificial airway is indicated for patients with decreased level of consciousness or with airway obstruction, and to aid in removal of tracheobronchial secretions.

Guedel airway A Guedel airway, the simplest type of artificial airway, prevents obstruction of the trachea caused by

SKILL 35-3

Suctioning

Delegation considerations

Suctioning requires the problem-solving and knowledge-application skills of professional nurses. Delegation is inappropriate.

Equipment

- Appropriate-size suction catheter (smallest diameter that will remove secretions effectively) or Yankauer catheter (oral suction)
- Small Y adapter (if catheter does not have a suction-control port)
- Two sterile gloves or one sterile and one non-sterile glove
- Sterile basin
- Sterile Normal saline solution or water (about 50 mL)
- Clean towel
- Portable or wall suction
- Connecting tube (1.5 metres)
- Nasal or oral airway (if indicated)
- Mask or face shield

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Assess signs and symptoms of upper and lower airway obstruction requiring nasotracheal or orotracheal suctioning, including respiratory rate or adventitious sounds, nasal secretions, drooling, gastric secretions or vomitus in mouth. • Assess signs and symptoms associated with hypoxia and hypercapnia: increased respiratory rate and/or increased pulse rate, decreased depth of breathing, low oxygen saturations, elevated blood pressure, pallor, cyanosis and dyspnoea, apprehension, anxiety, decreased ability to concentrate, lethargy, decreased level of consciousness (especially acute), increased fatigue, dizziness, behavioural changes (especially irritability).	Physical signs and symptoms result from decreased oxygen to tissues as well as pooling of secretions in upper and lower airways.
2. Determine factors that normally influence upper or lower airway functioning.	
a. Fluid status	Fluid overload may increase amount of secretions. Dehydration promotes thicker secretions.
b. Lack of humidity	The environment influences secretion formation and gas exchange, necessitating airway suctioning when patient cannot clear secretions effectively.

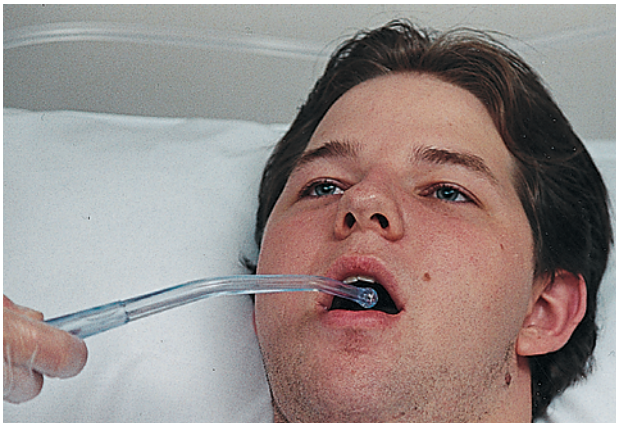
STEPS	RATIONALE
c. Infection	Patients with respiratory infections are prone to increased secretions that are thicker and sometimes more difficult to expectorate.
d. Anatomy	Abnormal anatomy can impair normal drainage of secretions. For example, nasal swelling, a deviated septum or facial fractures may impair nasal drainage. Tumours in or around the lower airway may impair secretion removal by occluding or externally compressing the lumen of the airway.
3. Assess patient's understanding of procedure.	Reveals need for patient instruction and encourages cooperation.
4. Obtain medical prescription if indicated by agency policy.	Some institutions require a medical prescription for tracheal suctioning.
5. Explain to patient how procedure will help clear airway and relieve breathing problems and that temporary coughing, sneezing, gagging or shortness of breath is normal. Encourage patient to cough out secretions. Practise coughing, if able. Splint surgical incisions, if necessary.	Encourages cooperation and minimises risks, anxiety and pain.
6. Help patient to assume position comfortable for nurse and patient (usually semi-Fowler's or sitting upright with head hyperextended, unless contraindicated).	Reduces stimulation of gag reflex, decreases patient discomfort, assists secretion drainage and prevents aspiration and nurse strain. Hyperextension facilitates insertion of catheter into trachea.
7. Place towel across patient's chest.	Reduces transmission of microorganisms by protecting gown from secretions.
8. Perform hand hygiene, and put on goggles and mask or face shield if available.	Reduces transmission of microorganisms.
9. Connect one end of connecting tubing to suction machine and place other end in convenient location near patient. Turn suction device on and set vacuum regulator to appropriate negative pressure (100–150 mmHg) (Pierce 2007).	Excessive negative pressure damages nasopharyngeal and tracheal mucosa and can induce greater hypoxia.
10. If indicated, increase supplemental oxygen therapy to 100% or as prescribed. Encourage patient's deep breathing.	These measures reduce suction-induced hypoxaemia.
11. Prepare suction catheter:	
a. Open suction kit or catheter with use of aseptic technique. If sterile drape is available, place it across patient's chest or on the overbed table. Do not allow the suction catheter to touch any non-sterile surfaces.	Maintains asepsis and reduces transmission of microorganisms.

STEPS	RATIONALE
b. Unwrap or open sterile basin and place on bedside table. Be careful not to touch inside of basin. Fill with about 50 mL of sterile Normal saline solution or water.	Saline or water is used to clean tubing after each suction pass.
12. Put sterile glove on each hand, or non-sterile glove on non-dominant hand and sterile glove on dominant hand.	Reduces transmission of microorganisms and allows nurse to maintain sterility of suction catheter.
13. Pick up Yankauer or suction catheter with dominant hand without touching non-sterile surfaces. Pick up connecting tubing with non-dominant hand. Secure catheter to tubing (see illustration).	Maintains catheter sterility. Connects catheter to suction.
14. Suction small amount of Normal saline solution from basin.	Ensures equipment function. Lubricates internal catheter and tubing.
15. Suction airway. **A. Oropharyngeal**	
(1) Insert catheter or Yankauer into mouth along gum line to pharynx. Move around mouth until secretions are cleared (see illustration). Encourage patient to cough. Replace oxygen mask.	Catheter provides continuous suction. Take care not to allow suction tip to invaginate oral mucosal surfaces. Coughing moves secretions from lower airway into mouth and upper airway.

■ **Critical decision point: Be careful not to dislodge any oral tubing or tubing in posterior pharynx, such as nasogastric tubes.**

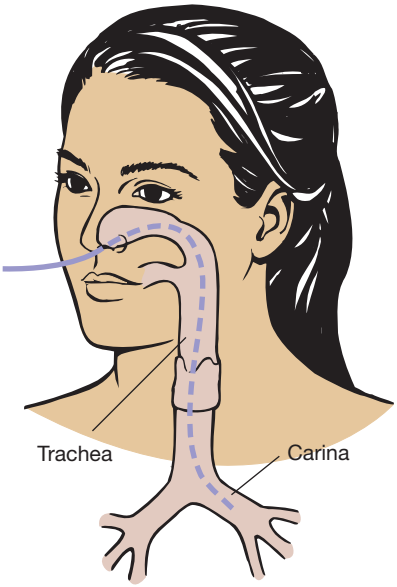


Step 13 Attaching catheter to suction.



Step 15A(1) Suctioning secretions from mouth.

(2) Rinse catheter with water in cup or basin until connecting tubing is cleared of secretions. Turn off suction. May need to wash face if secretions are present on client's skin.	Rinsing catheter reduces probability of transmission of microorganisms. Cleaning suction tubing enhances delivery of set suction pressure. Prevents skin breakdown.

STEPS	RATIONALE
B. Nasopharyngeal and nasotracheal	
(1) Remove oxygen delivery device, if applicable, with non-dominant hand. Without applying suction and using dominant thumb and forefinger, gently but quickly insert catheter into the nostril during inhalation with slight downward slant. Do not force through the nostril (see illustration).	 Step 15B(1) Distance of insertion of nasotracheal catheter.

■ **Critical decision point: Be sure to insert catheter during patient inspiration, especially if inserting catheter into trachea, because epiglottis is open. Do not insert during swallowing, or catheter will most likely enter oesophagus. NEVER APPLY SUCTION DURING INSERTION.**

(2) Prior to nasopharyngeal or nasotracheal suctioning, ask patient to take several slow deep breaths.	Increases oxygen saturation and inflates lungs with oxygen-rich air to partially compensate for volume lost during suction procedure.
(a) Nasopharyngeal suctioning: In adults, insert catheter about 16 cm; in older children, 8–12 cm; in infants and young children, 4–8 cm. Rule of thumb is to insert catheter distance from tip of nose (or mouth) to base of earlobe.	
(b) Nasotracheal suctioning: In adults, insert catheter about 20 cm; in older children, 14–20 cm; in young children and infants, 8–14 cm.	
(c) Positioning: In some instances turning patient's head to right helps nurse suction left mainstem bronchus; turning head to left helps nurse suction right mainstem bronchus.	Application of suction pressure while introducing catheter into trachea increases risk of damage to mucosa and increases risk of hypoxia because of removal of entrained oxygen present in airways. Epiglottis is open on inspiration and facilitates insertion into trachea. Patient should cough. If patient gags or becomes nauseated, catheter is most likely in oesophagus and must be removed.
(d) If resistance is felt after insertion of catheter for maximum recommended distance, catheter has probably hit carina. Pull catheter back 1 cm before applying suction.	

■ **Critical decision point: Use nasal approach and perform tracheal suctioning before pharyngeal suctioning whenever possible. The mouth and pharynx contain more bacteria than the trachea does. If copious oral secretions are present before beginning the procedure, suction mouth with Yankauer suction device.**

STEPS	RATIONALE
(3) Apply intermittent suction for up to 10–15 seconds by placing and releasing non-dominant thumb over vent of catheter and slowly withdrawing catheter while rotating it back and forth between dominant thumb and forefinger. Encourage patient to cough. Replace oxygen device, if applicable.	Intermittent suction and rotation of catheter prevent injury to mucosa. If catheter 'grabs' mucosa, remove thumb to release suction. Suctioning longer than 10 seconds can cause cardiopulmonary compromise, usually from hypoxaemia or vagal overload.
(4) Rinse catheter and connecting tubing with Normal saline or water until cleared.	Removes secretions from catheter. Secretions that remain in suction catheter or connecting tubing decrease suctioning efficiency.
(5) Assess for need to repeat suctioning procedure. Allow adequate time between suction passes for ventilation and oxygenation. Ask patient to deep-breathe and cough. Replace the oxygen delivery device.	Observe for alterations in cardiopulmonary status. Suctioning can induce hypoxaemia, arrhythmias, laryngospasm and bronchospasm. Deep-breathing reventilates and reoxygenates alveoli. Repeated passes clear the airway of excessive secretions but can also remove oxygen and may induce laryngospasm.
(6) When pharynx and trachea are sufficiently cleared of secretions, perform oropharyngeal suctioning to clear mouth of secretions. Do not suction nose again after suctioning mouth.	Removes upper airway secretions. More microorganisms are generally present in mouth.
C. Tracheostomy tube – permanent and longstanding	
(1) Hyperoxygenate patient before suctioning (approx. 30 seconds) (Pierce 2007) if patient is being administered supplemental oxygen.	Preoxygenation converts large proportion of resident lung gas to 100% oxygen to offset amount used in metabolic consumption while oxygenation is interrupted during suctioning.
(2) Open swivel adapter or if necessary remove oxygen or humidity delivery device with non-dominant hand. If a closed system suction device is in place, no disconnection is necessary. The catheter is inserted through the plastic sheath which protects the catheter.	Exposes artificial airway.
(3) Without applying suction, gently but quickly insert catheter using dominant thumb and forefinger into artificial airway (best to time catheter insertion with inspiration) until resistance is met or patient coughs; then pull back 1 cm.	Application of suction pressure while introducing catheter into trachea increases risk of damage to tracheal mucosa, as well as increased hypoxia related to removal of entrained oxygen present in airways. Pulling back stimulates cough and removes catheter from mucosal wall.

STEPS	RATIONALE
(4) Apply suction either intermittently or continuously. Continuous suction may retrieve more secretions but increases volume of gas suctioned. Intermittent suction can be applied by placing and releasing non-dominant thumb over vent of catheter. Intermittent suction is recommended if catheter is in contact with tracheal walls and not in lumen of the tracheostomy tube. Slowly withdraw catheter while rotating it back and forth between dominant thumb and forefinger (Pierce 2007). Encourage patient to cough. Watch for respiratory distress.	Rotation of catheter exposes inlet of catheter to an increased surface area to retrieve more secretions.

Critical decision point: If patient develops respiratory distress during the suction procedure, immediately withdraw catheter and supply additional oxygen and breaths as needed. Oxygen can be administered directly through the catheter in an emergency. Disconnect suction and attach oxygen at prescribed flow rate through the catheter.

(5) Close swivel adapter or replace oxygen delivery device. Encourage patient to deep-breathe, if able.	Re-oxygenates and re-expands alveoli. Suctioning can cause hypoxaemia and atelectasis.
(6) Rinse catheter and connecting tubing with Normal saline until clear. Use continuous suction.	Removes catheter secretions. Secretions left in tubing decrease suction and provide environment for microorganism growth. Secretions left in connecting tube decrease suctioning efficiency.
(7) Assess patient's cardiopulmonary status for secretion clearance and complications. Repeat Steps (1) to (6) once or twice more to clear secretions. If more than one suction pass is needed (and closed system suction is not in situ), use a new suction catheter for each pass. Allow adequate time (at least 1 full minute) between suction passes for ventilation and re-oxygenation. Replace oxygen delivery device during rest times.	Suctioning can induce arrhythmias, hypoxia and bronchospasm and impair cerebral circulation or adversely affect haemodynamics. Repeated passes with suction catheter clear airway of excessive secretions and promote improved oxygenation.
(8) Perform nasopharyngeal and oropharyngeal suctioning. After nasopharyngeal and oropharyngeal suctioning is performed, catheter is contaminated; do not reinsert into tracheostomy tube.	Removes upper airway secretions.
16. When suctioning is completed, roll catheter around fingers of dominant hand. Pull glove off inside out so that catheter remains coiled in glove. Pull off other glove over first glove in same way to seal in contaminants. Discard in contaminated waste receptacle. Turn off suction device.	Reduces transmission of microorganisms.

STEPS	RATIONALE
17. Remove towel, place in appropriate receptacle and reposition patient as indicated by patient's condition. Nurse may need to wear clean gloves for personal care.	Reduces transmission of microorganisms. Promotes comfort. Sims' position encourages drainage and reduces risk of aspiration.
18. If indicated, readjust oxygen to original level because patient's blood oxygen level should have returned to baseline.	Prevents absorption atelectasis and oxygen toxicity while allowing patient time to re-oxygenate blood.
19. Discard remainder of Normal saline into appropriate receptacle. If basin is disposable, place into appropriate receptacle. If basin is reusable, rinse and place in soiled utility room.	Reduces transmission of microorganisms.
20. Remove goggles and mask or face shield. Discard disposable items and perform hand hygiene.	
21. Place unopened suction kit on suction machine or at head of bed according to institution preference.	Provides immediate access to suction catheter.
22. Compare patient's respiratory assessments before and after suctioning.	Identifies physiological effects of suction procedure to restore airway patency.
23. Ask patient if breathing is easier and if congestion is decreased.	Provides subjective confirmation that airway obstruction is relieved with suctioning procedure.
24. Observe airway secretions.	Provides data to document presence or absence of respiratory tract infection.

RECORDING AND REPORTING

- Record amount, consistency, colour and odour of secretions and patient's response to procedure; document patient's presuctioning and postsuctioning respiratory status.

HOME CARE CONSIDERATIONS

- In an emergency, Normal saline can be made at home by adding 2 teaspoons of table salt to 1 litre of boiled water. This solution should be freshly made and not stored.

displacement of the tongue into the oropharynx (Figure 35-17). The Guedel airway extends from the teeth to the oropharynx, maintaining the tongue in the normal position. The correct-size airway must be used. Proper Guedel airway size is determined by measuring the distance from the corner of the mouth to the angle of the jaw just below the ear. The length is equal to the distance from the flange of the airway to the tip. If the airway is too small, the tongue is not held in the anterior portion of the mouth; if the airway is too large, it may force the tongue towards the epiglottis and obstruct the airway.

The airway is inserted by turning the curve of the airway towards the hard palate, placing it over the tongue and inserting until the soft palate is reached. The airway is then rotated so that the opening points downwards, following the curvature of the tongue. Correctly placed, the airway moves the tongue forwards away from the oropharynx; and the flange, the flat portion of the airway, rests against the patient's teeth. Incorrect

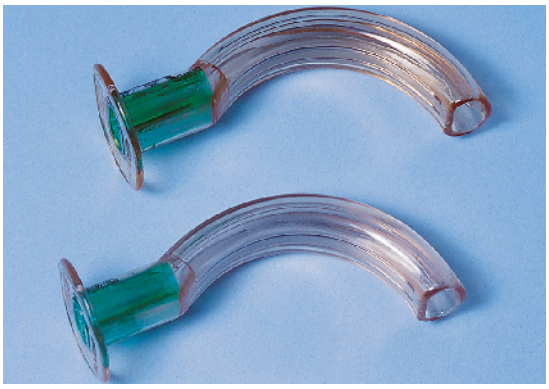


Figure 35-17 Guedel airways.

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insertion merely forces the tongue back into the oropharynx (Pierce 2007).

Nasopharyngeal airway This airway is a flexible tube that is inserted through one nostril and into the oropharynx. It is used when there is severe trauma to the mouth, or the mouth cannot be used for an oral airway (e.g. jaws wired, severe stomatitis). As for the Guedel airway, the correct-size airway must be used. Proper size is determined by measuring from the nostril to the angle of the jaw. A too-short airway will not maintain the airway, while a too-long airway risks entry into the oesophagus and inflation of the stomach, leading to vomiting and potential aspiration of gastric contents. This airway permits suctioning and a patent airway; it is never used in the patient with a suspected or actual fractured base of skull (Pierce 2007).

Tracheal airway Tracheal airways include endotracheal, nasotracheal and tracheostomy tubes. These allow easy access to the patient's trachea for deep tracheal suctioning. Because of the presence of the artificial airway, the patient no longer has normal humidification of the tracheal mucosa. Nurses should ensure that humidity is supplied to the airway through nebulisation or with the oxygen delivery system. This humidification is protective and helps reduce the risk of airway plugging.

The 'Mini Trach' is a narrow-bore tracheal access device to facilitate pulmonary hygiene in patients who are unable to cough and expectorate secretions from the lower airways. It remains capped between the requirements of pulmonary hygiene. It is inserted as for a tracheostomy tube but offers limited capacity for oxygen delivery.

Maintenance or promotion of lung expansion

Nursing interventions to maintain or promote lung expansion include non-invasive techniques. This includes positioning, procedures using equipment such as incentive spirometry and invasive procedures such as management of a chest tube.

POSITIONING In the healthy, completely mobile person, adequate ventilation and oxygenation are maintained by frequent position changes during daily activities. However, when a person's illness or injury restricts mobility, there is an increased risk of respiratory impairment. Frequent changes of position are simple and cost-effective methods for reducing the risks of stasis of pulmonary secretions and decreased chest wall expansion.

The most effective position for patients with cardiopulmonary diseases is the 45-degree semi-Fowler's position, using gravity to assist in lung expansion and reduce pressure from the abdomen on the diaphragm. Nurses need to ensure that the patient in this position does not slide down in bed, which could reduce lung expansion. A patient with unilateral lung disease, such as pneumothorax, atelectasis, pneumonia, thoracotomy and multiple trauma affecting one lung, should be positioned with the 'good lung down'. This promotes better perfusion of the healthy lung due to gravity, and gas is preferentially distributed to the better lung due to enhanced compliance. Hence, oxygenation is improved. In the presence of pulmonary abscess or haemorrhage, the patient should be placed with the affected lung down to prevent drainage towards the healthy lung (Pierce 2007).

INCENTIVE SPIROMETRY is a method of encouraging voluntary deep-breathing by providing visual feedback to patients about inspiratory volume. It is used to promote deep-breathing to prevent or treat atelectasis in the postoperative patient. Studies have, however, shown no respiratory benefit to postoperative incentive spirometry when compared with deep-breathing and early ambulation (Freitas et al 2007, Guimarães et al 2009).

- Flow-oriented incentive spirometers consist of one or more plastic chambers that contain freely moving coloured balls. The patient inhales slowly and with an even flow to elevate the balls and to keep them floating as long as possible, to ensure a maximally sustained inhalation.
- Volume-oriented incentive spirometry devices have a bellows that is raised to a predetermined volume by an inhaled breath (Figure 35-18). An achievement light or counter is used to provide feedback. Some devices are constructed so that the light will not turn on unless the bellows is held at a minimum desired volume for a specified period to enhance lung expansion.

Incentive spirometry encourages patients to breathe to their normal inspiratory capacities. A postoperative inspiratory capacity half to three-quarters of the preoperative volume is acceptable because of postoperative pain. Administration of pain medications before incentive spirometry will help the patient achieve deep-breathing by reducing pain and splinting (see Chapter 36).

CHEST TUBES Chest tubes, also termed intercostal catheters, are inserted to remove air and fluids from the pleural space to prevent air or fluid from re-entering the pleural space and to re-establish normal intrapleural and intrapulmonic pressures. A **chest tube** is a catheter inserted through the thorax to remove fluid or air. Chest tubes are used after chest surgery and chest trauma and for pneumothorax or haemothorax to promote lung re-expansion. They are sutured in place (Skill 35-4).

PNEUMOTHORAX A **pneumothorax** is a collection of air in the pleural space, between the visceral and parietal pleurae. The loss of negative intrapleural pressure causes the lung to



Figure 35-18 Volume-oriented spirometer.

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SKILL 35-4

Care of patients with chest tubes

Delegation considerations

This task requires the problem-solving and knowledge-application abilities of a professional nurse and should not be delegated. Nurse assistants may help with positioning.

- Instruct care provider in the proper positioning of a patient with chest tubes to facilitate drainage.
- Explain to care provider the appropriate set-up of drainage equipment for the type of system to be used.
- Instruct care provider to inform nurse of any changes in the vital signs, chest tube drainage or excessive bubbling (air loss) in water-seal chamber.

Equipment

- Chest drainage system (bottles or disposable system)
- Suction source and set-up (wall canister or portable)
- Non-sterile gloves
- Sterile irrigation saline or sterile water (500 mL bottle)
- Tape (5 cm width)
- Sterile gauze sponges
- Two artery forceps

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Assess patient for respiratory distress and chest pain, breath sounds over affected lung area and stable vital signs (see Chapter 24).	Signs and symptoms reflect improvement in respiratory distress and chest pain after insertion of chest tube.
2. Observe for increased respiratory distress.	Signs and symptoms of increased respiratory distress and/or chest pain, decrease in breath sounds over the affected and non-affected lungs, marked cyanosis, asymmetrical chest movements, presence of subcutaneous emphysema around tube insertion site or neck, hypotension and tachycardia. Notify medical staff immediately.
3. Observe:	
a. Chest tube dressing.	Ensures that tubing is patent.
b. Tubing for kinks, dependent loops or clots.	Maintains a patent, freely draining system, preventing fluid accumulation in chest cavity.
c. Chest drainage system, which should be upright and below level of tube insertion.	System must be in this position to function properly and prevent air or water flowing back into the pleural cavity.

STEPS	RATIONALE
4. Provide two artery forceps for each chest tube, attached to top of patient's bed with adhesive tape. Chest tubes are clamped only under specific circumstances. Double-clamp close to the patient's chest only in the following circumstances: a. To assess air leak. b. To quickly empty or change collection bottle or chamber; performed by nurse who has received training in procedure. c. To change disposable systems; have new system ready to be connected before clamping tube so that transfer can be rapid and drainage system re-established. d. To change a broken water-seal bottle in the event that no sterile solution container is available. e. To assess if patient is ready to have chest tube removed (which is done by medical order); the nurse must monitor patient for re-accumulation of pneumothorax.	Artery forceps have a covering to prevent forceps from perforating chest tube.
5. Position patient:	
a. Semi-Fowler's position to evacuate air (pneumothorax).	Permits optimal drainage of air. Air rises to highest point in chest. Pneumothorax tubes are usually placed on anterior aspect at mid clavicular line, second or third intercostal space.
b. High-Fowler's position to drain fluid (haemothorax).	Permits optimal drainage of fluid. Posterior tubes are placed on mid axillary line, eighth or ninth intercostal space.
6. Maintain tube connection between chest and drainage tubes intact and taped. Connections should be taped longitudinally not circumferentially.	Secures chest tube to drainage system and reduces risk of air leak causing breaks in airtight system. Inadvertent loosening of connections beneath the tape of circumferential taping may go unnoticed as tape covers the join completely.
a. Water-seal vent must be without occlusion.	Permits displaced air to pass into atmosphere.
b. Suction-control chamber vent must be without occlusion when suction is used.	Provides safety factor of releasing excess negative pressure into atmosphere.
7. Coil excess tubing on mattress next to patient. Secure with rubber band and safety pin or system's clamp.	Prevents excess tubing from hanging over edge of mattress in dependent loop. Drainage could collect in loop and occlude drainage system.
8. Adjust tubing to hang in straight line from top of mattress to drainage chamber. If chest tube is draining fluid, indicate time (e.g. 0900) that drainage was begun on drainage bottle's adhesive tape or on write-on surface of disposable commercial system.	Provides a baseline for continuous assessment of type and quality of drainage.

STEPS	RATIONALE
9. Passively drain any fluid in the tubing into the collection chamber. Strip or milk chest tube only if indicated: a. Postoperative mediastinal chest tubes are manipulated if nursing assessment indicates obstruction of drainage secondary to clots or debris in tubing. b. Postoperative assessment is done every 15 minutes for the first 2 hours. This assessment interval then changes based on patient's status.	Stripping is controversial and should be performed only if hospital policy permits it and there is a medical prescription. Stripping creates a high degree of negative pressure and has potential to pull lung tissue or pleura into drainage holes of chest tube (Pierce 2007).

■ **Critical decision point: Review agency policy before milking or stripping chest tubes. In almost all instances this is contraindicated and not undertaken.**

10. Perform hand hygiene.	Reduces transmission of infection.
11. Observe:	
a. Chest tube dressing, tubing and chest tube drainage system, which should be upright and below level of tube insertion.	Ensures that tube is patent, and notes any drainage. Maintains tubing free of kinks and dependent loops. Note presence of clots or debris in tubing.
b. Water seal for fluctuations with patient's inspiration and expiration.	Fluid should rise in water seal with inspiration and fall with expiration, indicating that system is functioning properly.
c. Bubbling (air loss) in water-seal bottle or chamber (see Table 35-9).	When system is initially connected to patient, bubbles are expected in the underwater seal chamber from air that was present in system and in patient's intrapleural space. After a short period, bubbling will stop. Fluid will continue to fluctuate in water seal on inspiration and expiration until lung is re-expanded or system becomes occluded. It is important that the correct chamber is visualised to record the bubbling of air loss, i.e. underwater seal chamber and NOT the suction control chamber.
d. Type and amount of fluid drainage. Nurse should note colour and amount of drainage, patient's vital signs and skin colour.	Sudden gush of drainage may be retained blood and not active bleeding. Increase in drainage can be result of patient position.
(1) Less than 50–300 mL/h immediately postoperative in mediastinal chest tube; approximately 500 mL in first 24 hours; dark-red drainage is expected early in postoperative period, turning serous with time.	Re-expansion of lungs forces drainage into tube. Coughing can also cause large gushes of drainage.
(2) Between 100 and 300 mL of fluid may drain in posterior chest tube during first 2 hours after insertion; rate will decrease after 2 hours; 500–1000 mL can be expected in first 24 hours; drainage will be grossly bloody during first several hours after surgery and then change to serous.	Excessive amounts and/or continued presence of frank, bloody drainage after first several hours of surgery should be reported to the senior nurse or medical staff, along with patient's vital signs and respiratory status.

STEPS	RATIONALE
e. Bubbling in the suction-control chamber (when suction is being used) (see Table 35-9).	Suction-control chamber has constant, gentle bubbling. Tubing to suction source should be free of obstruction, and suction source should be turned on to appropriate setting.

RECORDING AND REPORTING

- Record in nurses' notes patency of chest tubes, presence of drainage, presence of fluctuations, patient's vital signs, chest dressing status, type of suction and level of comfort.

HOME CARE CONSIDERATIONS

- If patient goes home with chest tube (i.e. empyema), teach patient and family to care for chest tube and drainage bottle.

collapse. There are a number of causes of pneumothorax. It may occur spontaneously or as a result of chest trauma, such as a stabbing or the chest striking the steering wheel in a car accident. A pneumothorax may result from the rupture of an emphysematous bleb on the surface of the lung (a large bulla resulting from the destruction caused by emphysema) or from an invasive procedure such as insertion of a subclavian central venous catheter (CVC) line.

A patient with a pneumothorax usually feels pain as atmospheric air irritates the parietal pleura. The pain may be sharp and pleuritic. Dyspnoea is common and worsens as the size of the pneumothorax increases.

HAEMOTHORAX A **haemothorax** is an accumulation of blood and fluid in the pleural cavity between the parietal and visceral pleurae, usually as a result of trauma. It produces a counter-pressure and prevents the lung from full expansion. A haemothorax can also be caused by rupture of small blood vessels from inflammatory processes, such as pneumonia or tuberculosis. As well as pain and dyspnoea, symptoms of shock can develop if blood loss is severe.

Chest tube drainage systems

- The *one-bottle system* is the simplest closed drainage system because the single bottle serves as a collector and a water seal (Figure 35-19A). During normal respiration the fluid should ascend with inspiration and descend with expiration. The one-bottle system is used for smaller amounts of drainage, such as an empyema, which is a collection of infected fluid or pus in the pleural space.
- A *two-bottle system* permits the liquid to flow into the collection bottle as air flows into the water-seal bottle (Figure 35-19B). Fluctuations in the water-seal tube are still expected. The two-bottle system allows for more-accurate measurement of chest drainage and is used when larger amounts of drainage are expected.
- A *three-bottle system* is used to evacuate any volume of air or fluid with controlled suction (Figure 35-17C). The suction-control bottle contains a long tube, submerged under water and vented to the atmosphere. There are two short tubes: one tube connects bottles 2 and 3, and the second tube is connected to an external suction source. The suction pressure causes gentle, continuous bubbling in bottle 3. Suction pressure is measured in centimetres of water, and is equated with the length of the long tube submerged in water in bottle 3 and not to the level of pressure on the suction gauge. Usually 15–20 cm of water is used for adults. This means that the long tube is submerged in 15–20 cm of water. Children require lesser amounts of pressure.

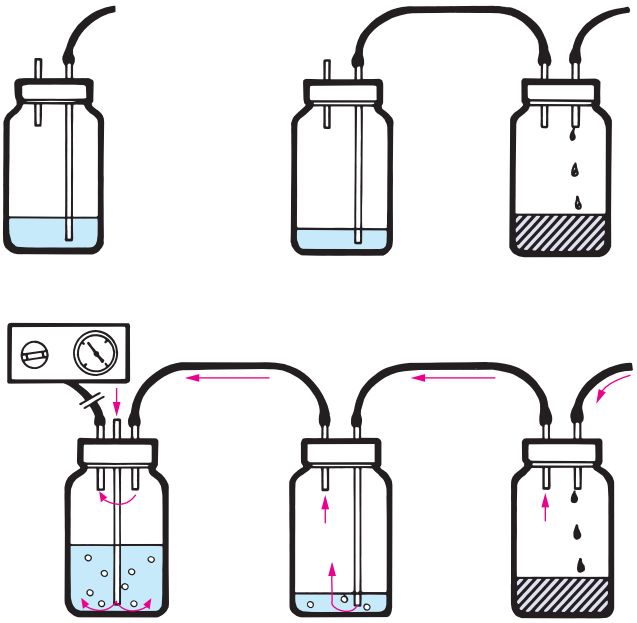

Figure 35-19 Chest tube drainage.

A, One-bottle system. B, Two-bottle system. C, Three-bottle system with suction.

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Disposable systems, such as the Thora Seal or Pleur-Evac chest drainage systems, are commercially available one-piece moulded plastic units that duplicate the three-bottle system (Figure 35-20). The disposable units appear to be the system of choice because they are cost-effective and some facilitate autotransfusion, a common practice in open-heart surgeries. Knowledge of the basics of chest tube management and

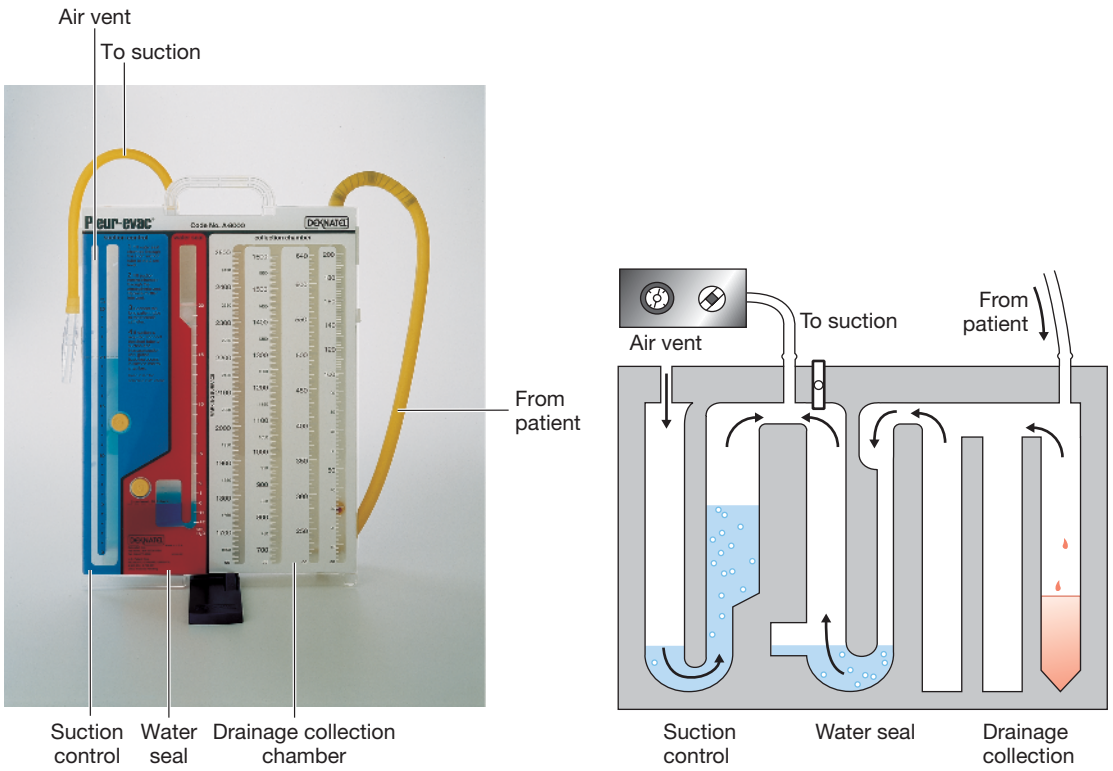

Figure 35-20 Chest drainage devices.

A, Commercial three-bottle chest drainage device. B, The inner workings of a drainage device.

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troubleshooting manoeuvres reduces the patient's risk of complications (Table 35-9).

SPECIAL CONSIDERATIONS Clamping chest tubes is contraindicated. Nurses should handle the chest drainage unit or bottles carefully and maintain the drainage device below the patient's chest. If the tubing disconnects from the unit or bottles, the nurse should instruct the patient to exhale as much as possible and to cough. This manoeuvre rids the pleural space of as much air as possible. The nurse needs to clean the tips of the tubing and reconnect them to the bottles quickly. If a glass bottle is used and the bottle breaks, the end of the tubing can be quickly submerged in a container of sterile water to re-establish the seal. Clamping the chest tube may result in a tension pneumothorax, which is life-threatening.

Removal of chest tubes requires patient preparation. Patients report sensations during chest tube removal, the most common of which include burning, pain and pulling.

Maintenance and promotion of oxygenation

Promotion of lung expansion, mobilisation of secretions and maintenance of a patent airway help the patient meet oxygenation needs. Some patients, however, also require oxygen therapy to keep a healthy level of tissue oxygenation.

GOALS OF OXYGEN THERAPY The goal of oxygen therapy is to prevent or relieve hypoxia. Any patient with impaired tissue oxygenation can benefit from controlled oxygen administration. Oxygen is not a substitute for other treatment, however, and should be used only when indicated. Oxygen should be treated as a drug – it has dangerous side effects. As with any drug, the dosage or concentration of oxygen should be continuously monitored. Oxygen can be initiated by nurses in emergency situations when a patient experiences desaturation or becomes acutely dyspnoeic. Oxygen should be administered to achieve an oxygen saturation level of 88–92% for the COPD patient (Austin et al 2010, Beasley et al 2011) and approximately 95% for most other patients (Pierce 2007). Follow-up with the medical or nurse practitioner should occur as soon as possible. Nurses should routinely check the prescription to verify that the patient is receiving the prescribed oxygen concentration. The seven rights of medication administration also pertain to oxygen administration (see Chapter 27).

SAFETY PRECAUTIONS WITH OXYGEN THERAPY Oxygen supports combustion, which means that although it will not spontaneously burn or cause an explosion, it can easily cause a fire in a patient's room if it contacts a spark from an open flame or electrical equipment. Oxygen in high concentrations has a great combustible potential and readily fuels fire. With increasing use of home oxygen therapy, patients and healthcare professionals must be aware of the dangers of combustion. The nurse should promote safety by using the following measures:

- No smoking in the environment is strictly monitored.
- Nurses determine that all electrical equipment in the room is functioning correctly and is properly grounded. An electrical spark in the presence of oxygen can result in a serious fire.
- Nurses should know the fire procedures and the location of the closest fire extinguisher.

TABLE 35-9 Problem-solving with chest tubes

Problem	Solution
Leaks	
Air leak is present	Locate leak
Continuous bubbling is seen in water-seal bottle/chamber, indicating that leak is between patient and water seal	Tighten loose connections between patient and water seal; loose connections cause air to enter system Leaks are corrected when constant bubbling stops
Bubbling continues, indicating that air leak has not been corrected	Cross-clamp chest tube close to patient's chest. If bubbling stops, air leak is inside patient's thorax or at chest tube insertion site. Unclamp tube and notify medical staff immediately. Reinforce chest dressing. Leaving chest tube clamped causes a tension pneumothorax and mediastinal shift
Bubbling continues, indicating that leak is not in patient's chest or at insertion site	Gradually move clamps down drainage tubing away from patient and towards suction-control chamber, moving one clamp at a time. When bubbling stops, leak is in section of tubing or connection distal to clamp. Replace tubing or secure connection and release clamp
Bubbling continues, indicating that leak is not in tubing	Leak is in drainage system. Change drainage system
Patient symptoms	
• Tension pneumothorax is present • Severe respiratory distress • Chest pain • Absence of breath sounds on affected side • Hyper resonance on affected side • Mediastinal shift to unaffected side • Tracheal shift to unaffected side • Hypotension • Tachycardia	Determine that chest tubes are not clamped, kinked or occluded. Obstructed chest tubes trap air in intrapleural space when air leak originates within patient. Notify medical staff immediately. Prepare immediately for another chest tube insertion; obtain a flutter (Heimlich) valve or large-gauge needle for short-term emergency release of air in intrapleural space; have emergency equipment (e.g. oxygen and resuscitation trolley) near patient
Other	
Dependent loops of drainage tubing have trapped fluid	Passively drain tubing contents into drainage bottle by gravity. Coil excess tubing on mattress and secure in place
Water seal is disconnected	Connect water seal and tape connection
Water-seal bottle is broken	Insert distal end of water-seal tube into sterile solution so that tip is 2 cm below surface and set up new water-seal bottle. If no sterile solution is available, double-clamp chest tube while preparing new bottle
Water-seal tube is no longer submerged in sterile fluid	Add sterile solution to water-seal bottle until distal tip is 2 cm under surface or set water-seal bottle upright so that tip is submerged

- Nurses should always check the oxygen level of portable cylinders before transporting to ensure that there is enough oxygen remaining in the cylinder.
- Oxygen cylinders should be stored in a purpose-designed holder to avoid being knocked over and breaking the valve, which can potentially release the oxygen under pressure.

SUPPLY OF OXYGEN Oxygen is supplied to the patient's bedside generally through a permanent wall-piped system, but in some instances by oxygen cylinders. Oxygen cylinders are transported on carriers that allow the cylinder to be placed upright at the bedside. Regulators are used to control the amount of oxygen delivered. One common type is an upright flow meter with a flow adjustment valve at the top. A second type is a cylinder indicator with a flow adjustment handle.

In the hospital or home, oxygen cylinders are delivered with the regulator in place. Home care vendors are usually responsible for connecting the oxygen cylinder to the regulator for home use.

METHODS OF OXYGEN DELIVERY Oxygen can be delivered to the patient by nasal cannula, nasal catheter, face mask or mechanical ventilator.

Nasal cannula A nasal cannula is a simple, comfortable device (Figure 35-21). The two cannulas, about 1.5 cm long, protrude from the centre of a disposable tube and are inserted into the nares (Skill 35-5). Oxygen is delivered via the cannulas with a flow rate of up to 6 L/min. Flow rates greater than 4 L/min are not often used because of the drying effect on the mucosa and the relatively little increase in delivered oxygen concentration. Nurses must know what flow rate produces a given percentage of inspired oxygen concentration (FiO_2). Room air has an FiO_2 of

21% (Table 35-10). Nurses must also be alert for skin breakdown over the ears and in the nares from too tight an application of the nasal cannula.

Nasal catheter Nasal catheters are used infrequently, but they are not obsolete. The procedure involves inserting an oxygen catheter into the nose to the nasopharynx. Because securing the catheter can cause pressure on the nostril, the catheter must be changed at least every 8 hours and inserted into the other nostril each time. For this reason, the nasal catheter is a less desirable method because the patient may have pain when the catheter is passed into the nasopharynx and because trauma can occur to the nasal mucosa.

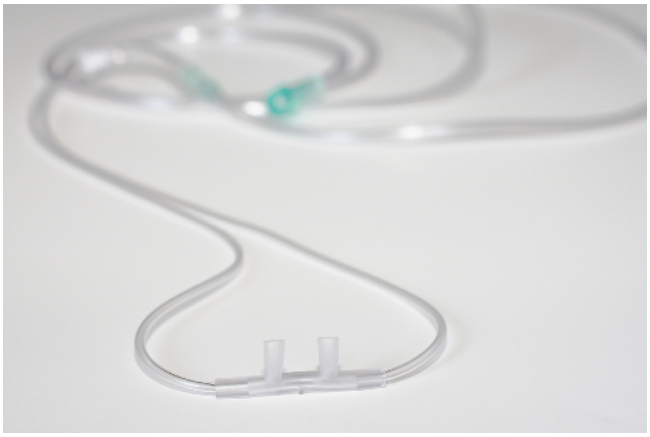


Figure 35-21 Nasal cannula.

Dreamstime/Susy56.

Oxygen masks An oxygen mask is a device used to administer oxygen, humidity or heated humidity. It is shaped to fit snugly over the mouth and nose and is secured in place with a strap. There are two main types of oxygen masks: those delivering

TABLE 35-10 Approximate fraction of inspired oxygen (FiO_2) with different delivery devices

Litre flow (L/min)	Approximate FiO_2 (%)	Delivery device
1	24	Nasal cannula
2	28	Nasal cannula
3	32	Nasal cannula
4	36	Nasal cannula
5–6	40	Simple face mask
6–7	50	Simple face mask
7	65	Partial rebreather mask
7–8	60	Simple face mask Partial rebreather mask
8–15	70–80	Partial rebreather mask
Set to prevent collapse of reservoir	85–100	Non-rebreather mask
As indicated on device	As indicated on device	Venturi mask

SKILL 35-5

Applying a nasal cannula or oxygen mask

Delegation considerations

This task can be delegated to appropriately trained nurse assistants. The nurse is responsible for assessing and checking the device set-up and the patient.

- Instruct care provider in the proper way to set up and apply the nasal cannula or oxygen mask.
- Instruct caregiver in unexpected outcomes associated with the oxygen delivery device and the need to inform the nurse if any occur.

Equipment

- Nasal cannula (see Figure 35-21) or oxygen mask
- Oxygen tubing
- Humidifier, if indicated
- Sterile water for humidification, if indicated
- Oxygen source
- Oxygen flow meter
- Appropriate room signs – oxygen in use, no smoking

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Inspect patient for signs and symptoms associated with hypoxia and presence of airway secretions.	Left untreated, hypoxia can produce cardiac arrhythmias and death. Presence of airway secretions decreases effectiveness of oxygen delivery.

■ **Critical decision point: Patients with sudden changes in their vital signs, level of consciousness or behaviour may be experiencing profound hypoxia. Patients who demonstrate subtle changes over time may have worsening of a chronic or existing condition or a new medical condition.**

2. Explain to patient and family what the procedure entails and the purpose of oxygen therapy.	Decreases patient's anxiety, which reduces oxygen consumption and increases patient cooperation.
3. Perform hand hygiene.	Reduces transmission of microorganisms.
4. Attach nasal cannula to oxygen tubing and attach to humidified oxygen source adjusted to prescribed flow rate.	Prevents drying of nasal and oral mucous membranes and airway secretions.
5. Place tips of cannula into patient's nares (see illustration) and adjust elastic headband or plastic slide until cannula fits snugly and comfortably (see illustration).	Directs flow of oxygen into patient's upper respiratory tract. Patient is more likely to keep cannula in place if it fits comfortably.



Step 5 Inserting cannula tips into patient's nares and adjusting plastic slide.

6. Maintain sufficient slack on oxygen tubing and secure to patient's clothes.	Allows patient to turn head without dislodging cannula and reduces pressure on tips of nares.
7. Check cannula every 8 hours and keep humidification jar filled at all times.	Ensures patency of cannula and oxygen flow. Prevents inhalation of dehumidified oxygen.
8. Observe patient's nares and superior surface of both ears for skin breakdown.	Oxygen therapy can cause drying of nasal mucosa. Pressure on ears from cannula tubing or elastic can cause skin irritation.

STEPS	RATIONALE
9. Check oxygen flow rate and prescriptions every 8 hours (see illustration).	Ensures delivery of prescribed oxygen flow rate and patency of cannula.
10. Wash hands.	Reduces transmission of microorganisms.
11. Inspect patient for relief of symptoms associated with hypoxia.	Indicates that hypoxia is corrected or reduced.

■ **Critical decision point: Note whether current oxygen therapy is meeting patient's oxygenation needs. Determine what factors have changed, resulting in new assessment findings.**



Step 9 Check oxygen flow rate.

RECORDING AND REPORTING

- Document oxygen delivery device and litre flow in medical record.
- Document patient and family education.
- Report oxygen delivery device, litre flow and response to changes in therapy to oncoming shift.

HOME CARE CONSIDERATIONS

- If patient is to have home oxygen therapy, teach patient and family how to use the oxygen equipment and properly apply the oxygen delivery device (see Skill 35-4).

low concentrations of oxygen, and those delivering high concentrations.

- The simple face mask (Figure 35-22) is used for short-term oxygen therapy. It fits loosely and delivers oxygen concentrations from 30% to 60%. The mask is contraindicated for patients with carbon dioxide retention because retention can be worsened.
- A plastic face mask with a reservoir bag (Figure 35-23) and a Venturi mask (Figure 35-24) are capable of delivering higher concentrations of oxygen.
  - When used as a non-rebreather, the plastic face mask with reservoir bag can deliver from 80% to 90% oxygen (70% when used as a rebreather) with a flow rate of at least 10 L/min. This oxygen mask maintains a high-concentration oxygen supply in the reservoir bag. The



Figure 35-22 Simple face mask.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

nurse should inspect the bag often to make sure it is inflated. If it is deflated, the patient may be breathing large amounts of exhaled carbon dioxide.

The Venturi mask can be used to deliver oxygen concentrations of 24% to 55% with oxygen flow rates of 2–14 L/min, depending on which flow-control meter is selected (Table 35-10).

HOME OXYGEN THERAPY Indications for home oxygen therapy include an arterial oxygen partial pressure (PaO_2) of 55 mmHg or less or an arterial oxygen saturation (SaO_2) of 88% or less on room air at rest, on exertion or with exercise. Patients with a PaO_2 of 56–59 mmHg may also receive oxygen if there is also evidence of corpulmonale, pulmonary hypertension, erythrocytosis, central nervous system dysfunction, impaired mental status or increasing hypoxaemia with exertion.

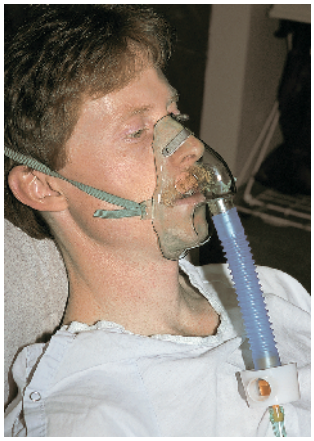
When home oxygen is required, it is usually delivered by nasal cannula. When a patient has a permanent tracheostomy, however, a T tube or tracheostomy collar is necessary. Three types of oxygen are used: compressed oxygen, liquid oxygen and oxygen concentrators. The advantages and disadvantages (Table 35-11) of each type are assessed, along with the patient's needs and community resources, before placing a delivery system in the home. In the home the major consideration is the oxygen delivery source.

Patients requiring home oxygen need extensive teaching to be able to continue oxygen therapy at home efficiently and safely (Skill 35-6). This includes oxygen safety, regulation of the amount of oxygen and how to use the prescribed home oxygen delivery system. Nurses coordinate the efforts of the patient



Figure 35-23 Plastic face mask with reservoir bag.

iStockphoto/IS_ImageSource.



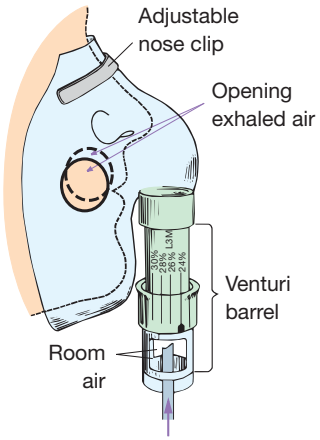


Figure 35-24 Venturi mask.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

TABLE 35-11 Home oxygen systems

System type	Primary use	Advantages	Disadvantages
Compressed gas cylinder	Intermittent therapy when oxygen is required only for short periods, such as for exercise or sleep only	100% oxygen, relatively inexpensive, no loss of gas during storage, relatively portable, delivery of high-volume flows of up to 15 L/min	Bulky, possibly unsightly, frequent refilling necessary with continuous use
Liquid oxygen system	High-volume flows and active patients	100% oxygen, conveniently portable, portable units refilled at home, delivery of up to 6 L/min; cost varies according to cylinder size; supply oxygen on inspiration only via nasal cannula – this increases life of cylinder by a factor of 5, depending on size of cylinder and flow rate during use	Usually weekly delivery necessary for refill, evaporates if not used, potential for frostbite at connections and if liquid is spilled
Concentrator	Moderate volume flows and patients with limited mobility inside or outside home	Delivers 96–98% oxygen; funding may be available to subsidise cost through various agencies – Veterans' Affairs, Palliative Care, Extended Aged Care at Home Packages; minimal interruption of household by supplier, no refills of 'main cylinder', most units with delivery of up to 4 or 5 L/min	Oxygen concentration decreases as litre flow increases (usually 85–90%), power supply necessary, second system for portability necessary (usually gas cylinders); can be noisy; tubing length for concentrators is recommended to be less than 13 m – this means concentrator needs to be placed in central area in most homes

SKILL 35-6

Using home liquid oxygen equipment

Delegation considerations

This task can be delegated to appropriately trained nurse assistants. The nurse is responsible for assessing and checking the device set-up and the patient.

- Instruct care provider in the proper way to set up and use home oxygen equipment.
- Instruct care provider in unexpected outcomes associated with use of home oxygen and the need to inform the nurse if any occur.

Equipment

- Nasal cannula equipment (see Skill 35-5)
- Primary and portable liquid oxygen source for mobility (see Figure 35-25)

STEPS	RATIONALE
1. Assess:	
a. Patient for need for home oxygen therapy.	Candidates for home oxygen have an arterial partial pressure of oxygen (PaO_2) of 55 mmHg or an oxygen saturation of 88% on room air, or a PaO_2 of 55–59 mmHg or an oxygen saturation of 86–89% with evidence of right heart failure, corpulmonale or polycythaemia.
b. Patient's or family's ability to use oxygen equipment properly, or for appropriate use of oxygen equipment in home setting.	Physical or cognitive impairments may require instructing family members or significant others on how to operate home oxygen equipment.
c. Patient's and family's ability to observe for signs and symptoms of hypoxia: apprehension, anxiety, decreased ability to concentrate, decreased level of consciousness, increased fatigue, dizziness, behavioural changes, increased pulse, increased respiratory rate, pallor or cyanosis of the mucous membranes.	Hypoxia can occur at home despite use of oxygen therapy. It can be caused by worsening of patient's physical condition or another underlying condition, such as a change in the respiratory status.
2. Explain procedure to patient and family.	Reinforces information given to patient and family; allows opportunity to ask questions.
3. Perform hand hygiene.	Reduces transmission of infection.
4. Demonstrate steps for preparation and completion of oxygen therapy.	Teaches psychomotor skill and enables patient to ask questions.
5. Prepare primary and portable oxygen.	
a. Place primary oxygen source in clutter-free environment.	Primary oxygen source replaces compressed oxygen cylinders.
b. Check oxygen levels of both sources by reading gauge on top (see illustrations).	Ensures adequate amount of oxygen available for use and timely refills of primary source.
c. Refill portable source by placing on top of primary source and pressing down firmly. Check oxygen gauge to determine fullness of portable source (see illustration).	Provides secure connection and prevents leakage of oxygen into room. If not seated securely, the cold liquid oxygen will leak out, creating a snow-like precipitate.

STEPS	RATIONALE
d. Select prescribed rate.	Ensures delivery of prescribed amount of oxygen.
e. Connect nasal cannula and oxygen tubing to oxygen source.	Connects oxygen source to delivery method.



Step 5 Check oxygen levels of both primary (left) and portable (right) oxygen sources.

6. Have patient and family perform each step with guidance from the nurse.	Allows nurse to correct for errors in technique and discuss their implications.

■ **Critical decision point: Discuss signs and symptoms of respiratory tract infection: fever; increased sputum production; change in colour, consistency or smell of sputum; difficulty clearing secretions; or shortness of breath.**

RECORDING AND REPORTING

- Record patient's and family's ability to safely use the home oxygen equipment.
- If multiple care providers are in the home, report the type of equipment, patient's and family's understanding and any concerns to the other care providers.

and family, community care nurse, home physiotherapist and home oxygen equipment vendor. During discharge planning, nurses usually help to arrange for the community care nurse and oxygen vendor. Nurses must help the patient and family learn about home oxygen and ensure their ability to maintain the oxygen delivery system.

Restoration of cardiopulmonary functioning

If a patient's hypoxia is severe and prolonged, cardiac arrest may result. A cardiac arrest is a sudden cessation of cardiac output and circulation. When this occurs, oxygen is not delivered to tissues, carbon dioxide is not transported from tissues, tissue metabolism becomes anaerobic and metabolic and respiratory

acidosis occurs. Permanent heart, brain and other tissue damage occurs within 4–6 minutes.

CARDIOPULMONARY RESUSCITATION Cardiac arrest is characterised by an absence of pulse and respiration. If nurses determine that the patient has cardiac arrest, cardiopulmonary resuscitation (CPR) must be initiated. CPR is a basic emergency procedure of expired air resuscitation (EAR) and manual external cardiac massage (Skill 35-7). Nursing students are required to have successfully completed a CPR course before their clinical experiences.

Cardiopulmonary resuscitation should follow the acronym 'DRSABCD' – check for *Danger*, then for *Responsiveness*, *Send for help*, open the *Airway*, check for *Breathing*, start *CPR* and finally attach a *Defibrillator* when available. If breathing is absent when checked (look, listen, feel), then chest compressions and rescue breathing are to be initiated in a ratio of 30 : 2, commencing with compressions. CPR no longer commences with three rescue breaths followed by checking for a pulse, as this has been shown to delay initiation of effective resuscitation (Australian Resuscitation Council 2010). It is paramount to circulate

SKILL 35-7

Cardiopulmonary resuscitation – basic life support

Delegation considerations

- Cardiopulmonary resuscitation (CPR) can be performed by trained staff.
- Review procedures for opening the airway if the patient has any risk of cervical neck trauma.
- Caution care provider regarding differences between infants, children and adults.

Equipment

- Ambu-bag, if available
- CPR pocket mask or barrier device, if available
- Chest compression board, if available and required. Hospital beds have a sufficiently firm base to perform compressions.
- Gloves, if available
- Resuscitation trolley, if available
- Face shield, if available

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. **Danger** Check for danger, e.g. potential electrical hazard.	Protects operator from potential injury.
2. **Responsiveness** Determine whether patient is unconscious by gently shaking patient and speaking loudly, giving simple commands such as 'Open your eyes, squeeze my hand'. If no response, grasp 2.5–5 cm of the trapezius muscle close to where the shoulder meets the neck. Squeeze and twist.	Confirms that patient is unconscious as opposed to intoxicated, sleeping or hearing-impaired.
3. **Send for help** Activate emergency medical services. Know telephone numbers for emergency services, both in the community and in the hospital.	The majority of adult victims are in ventricular fibrillation and need defibrillation and antiarrhythmic drugs as soon as possible.
4. **Suction oropharynx** or turn victim's head to one side, unless contraindicated.	Suction before opening airway minimises risk of aspiration of vomitus.

STEPS	RATIONALE
5. Open airway	
a. If no head or neck trauma, use head tilt/chin lift method (see illustration).	The tongue is the most common cause of airway obstruction in an unconscious patient. Airway obstruction from the tongue is relieved. If necessary, remove foreign body.
b. Jaw-thrust manoeuvre (see illustration) can be used by healthcare professionals but is not taught to the general public. Grasp angles of victim's lower jaw and lift with both hands, displacing mandible forwards while tilting head backwards.	When head and/or neck trauma is suspected, this manoeuvre opens the airway while maintaining proper head and neck alignment, thus reducing the risk of further damage to the neck.
c. If readily available, insert oral airway.	
d. Repeat suctioning procedure if necessary.	Secretions may have previously moved further down the airway.

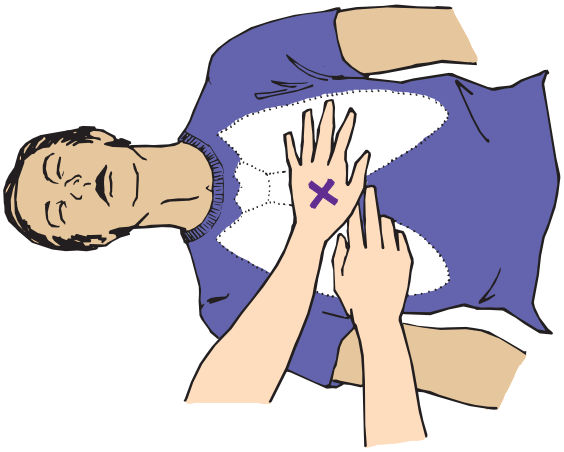


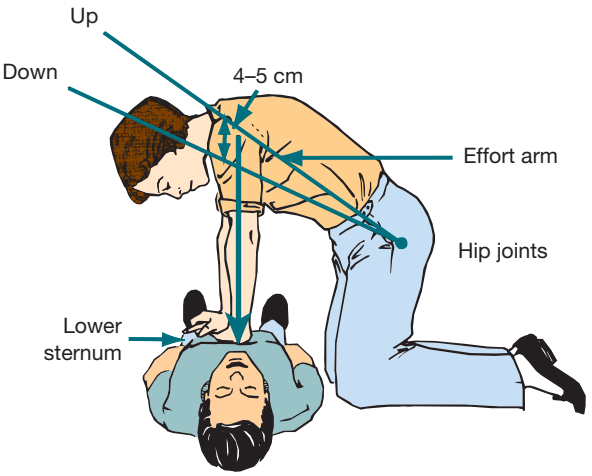
Step 5a Head tilt/chin lift method of opening airway.

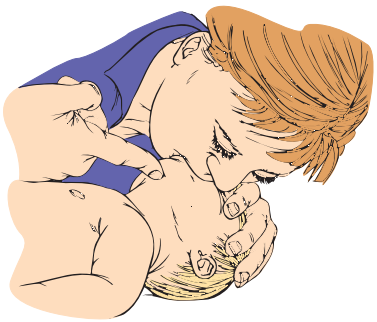
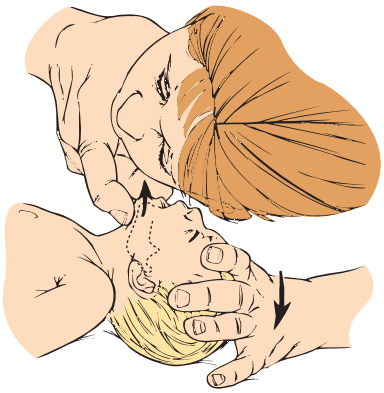


Step 5b Jaw-thrust manoeuvre.

6. Breathing Assess for breathing. Look and feel for movement of upper abdomen or chest. Listen for air leaving nose or mouth. If breathing absent, proceed straight to compressions.	
7. Cardiopulmonary resuscitation (CPR) Place victim on hard surface such as floor, ground or backboard. Victim must be flat. If necessary, logroll victim to flat, supine position using spine precautions. Initiate cardiopulmonary resuscitation in the ratio of 30 compressions followed by 2 breaths, commencing with compressions (as outlined below).	External compression of heart is facilitated. Heart is compressed between sternum and spinal vertebrae, which must be on a hard and firm surface. Ventilation is provided.
a. Assume correct and comfortable position.	Nurse may be administering CPR for extended period, particularly in community setting. Correct, comfortable position decreases skeletal muscle fatigue and promotes more effective compressions.
A. One-person rescue	
Position to face victim, on knees, parallel to victim's sternum.	Allows rescuer to quickly move back and forth from victim's mouth to sternum.

STEPS	RATIONALE
B. Two-person rescue	
One person faces victim, kneeling parallel to victim's head. Second person moves to opposite side and faces victim, kneeling parallel to victim's sternum.	Allows one rescuer to maintain breathing while other maintains circulation, without getting in each other's way.
b. If available, put on gloves and face shield.	Reduces transmission of microorganisms.
Critical decision point: It is important to avoid compressing below the lower limit of the sternum which may result in damage to the xiphoid process or internal organs and cause regurgitation of gastric contents.	
c. The appropriate site for chest compressions is the lower half of the sternum regardless of infant, child or adult.	Insufficient evidence exists for a specific site for chest compressions.
Adult (1) Place hands on the lower half of the sternum. Keep hands parallel to chest and fingers above chest. Interlocking fingers is helpful. Keep fingers off chest wall. Extend arms and lock elbows. Maintain arms straight and shoulders directly over victim's sternum.	 Step 7c(1) To keep hands off the xiphoid process, mark that area with two fingers of one hand and place the heel of the other hand next to them. The hand marking the xiphoid process can then be moved and placed on top of the other hand.
Child (2) Place heel of one hand on the lower half of the sternum (see illustration). Maintain head tilt with other hand, if possible, to maintain patent airway.	 Step 7c(2) Placement of hands for CPR of child.

STEPS	RATIONALE
Infant (3) Place two fingers on the lower half of the sternum (see illustration). Maintain head tilt with other hand, if possible, to maintain patent airway.	 Step 7c(3) Placement of fingers and hand for CPR of infant.
d. Compress sternum to one third of the depth of the chest and then release pressure, maintaining contact with skin to ensure ongoing proper placement of hands. Do not rock, but transmit weight vertically down. One third of the depth of the chest is approximately: (1) Adult: greater than 5 cm (see illustration). (2) Child: approx. 5 cm. (3) Infant: 4 cm.	Compression occurs only on sternum and is meant to squeeze the heart between the sternum and spine. Pressure necessary for external compression is created by nurse's upper arm muscle strength and upper body. When compression is released, the heart fills.  Step 7d(1) Compression for an adult.
e. Maintain proper rate of compression of 100/min regardless of age.	Proper number of compressions per minute should be delivered to ensure adequate cardiac output. Compression quality, particularly depth of compressions, deteriorates after a time.
f. Palpate for carotid or femoral pulse with chest compressions. If pulse is not palpable, compressions are not deep enough or hand position is incorrect.	Assessment of pulse validates that adequate stroke volume is achieved with each compression.

STEPS	RATIONALE
g. Mouth to mouth/mask is used for adults and older children (see illustration). Pinch the victim's nose with thumb and index fingers, and place the rescuer's mouth over the slightly open mouth of the victim or use CPR pocket mask. Maintain head tilt/chin lift while administering breaths so air enters lungs and not stomach. Each breath should last approximately 1 second and be of sufficient volume to raise the chest. Allow passive exhalation.	Provides adequate ventilation to excrete waste gas and supply adequate blood oxygen levels.  Step 7g Mouth-to-mouth position for an older child.
h. Mouth to nose is used for adult victims whose jaw remains clenched, or for infants and small children. Keep victim's head tilted with one hand on forehead. Use other hand to lift jaw and close mouth. Seal operator's lips around the victim's nose and blow. Allow passive exhalation.	
i. Ambu-bag; adult and child For ambu-bag resuscitation use proper size face mask and apply it under chin, up and over victim's mouth and nose.	Airtight seal is formed; as bag is compressed, oxygen enters patient.
j. For all forms of ventilation, observe for rise and fall of chest wall with each respiration (see illustration). Listen for air escaping during exhalation, and feel for flow of air. If lungs do not inflate, reposition head and neck and check for visible airway obstruction such as vomitus.	 Step 7j Listen and observe for respiration commencing independently.
8. Defibrillator Attach an automated external defibrillator (AED) as soon as one is available.	Time to defibrillation is the primary factor in patient survival.

STEPS	RATIONALE
a. Pads should be placed on bare skin of chest: one pad in anterior position, one pad in lateral position. Ensure good skin contact. This may require shaving chest hair. Adult pads are suitable for children over age 8 years. Paediatric pads should be used for children aged 1–8 years. Note that diagrams of appropriate placement are provided on pad packaging.	Appropriate pad placement ensures effective conduction and delivery of shock.
b. Switch AED on and follow the prompts.	
c. Do not touch the victim during delivery of the shock.	
d. Safety: avoid wet areas; remove oxygen from patient for delivery of shock.	

Australian Resuscitation Council (ARC) 2010 Guideline 4, Airway; Guideline 5, Breathing; Guideline 6, Compressions; Guideline 7, External automated defibrillation in basic life support; Guideline 8, Cardiopulmonary resuscitation. ARC, Melbourne. Online. Available: www.resus.org.au; accessed 1 April 2016.

RECORDING AND REPORTING

- Immediately report arrest, indicating exact location of victim. In hospital setting, follow hospital policy. In community setting, call emergency services.
- Record in medical record and appropriate code sheet onset of arrest, medication and other treatments given, procedures performed and victim's response.

HOME CARE CONSIDERATIONS

- Assess home environment to determine presence of a suitable backboard and patient's room to determine whether there is sufficient room to pull patient to the floor, if necessary, to perform CPR.
- A mouthpiece for CPR should be kept handy during all home health visits, and family should be advised to obtain mouthpieces when appropriate.
- If patient is at high risk of cardiopulmonary arrest, family or caregivers should be instructed and certified in CPR.
- Patient and family should keep emergency numbers taped to the phone. These numbers may include fire department, ambulance, hospital and doctor. Instruct patient and family on whom to call.

oxygenated blood to the brain to attempt to prevent permanent damage.

Restorative and extended care may emphasise cardiopulmonary reconditioning as a structured rehabilitation program. **Cardiopulmonary rehabilitation** is actively helping the patient to achieve and maintain the best possible level of health through controlled physical exercise; nutrition counselling; relaxation and stress management techniques; prescribed medications and oxygen; and adherence. As physical reconditioning occurs, the patient's complaints of dyspnoea, chest pain, fatigue and activity intolerance should decrease. The patient's anxiety, depression or somatic concerns also often decrease. The patient and the rehabilitation team together define goals of rehabilitation (Australian Lung Foundation 2009, National Heart Foundation of Australia 2004).

INSPIRATORY MUSCLE TRAINING improves muscle strength and endurance, resulting in improved activity tolerance. Inspiratory muscle training may prevent respiratory failure in patients with COPD (Australian Lung Foundation 2009).

One method of inspiratory muscle training is the **incentive spirometer resistive breathing device (ISRBD)**. Resistive breathing is achieved by placing a resistive breathing device into a volume-dependent incentive spirometer. Muscle training is achieved when the patient uses the ISRBD on a scheduled routine (e.g. twice a day for 15 minutes).

BREATHING EXERCISES include techniques to improve ventilation and oxygenation. The three basic techniques are deep-breathing and coughing exercises, pursed-lip breathing and diaphragmatic breathing. Deep-breathing and coughing exercises are routine interventions for postoperative patients (see Chapter 39).

Pursed-lip breathing involves deep inspiration and prolonged expiration through pursed lips to prevent alveolar collapse. While sitting up, the patient is instructed to take a deep breath

and to exhale slowly through pursed lips, as if blowing through a straw. The patient can also blow through a straw into a glass of water to learn the technique. Patients need to gain control of the exhalation phase so that it is longer than inhalation. The patient is usually able to perfect this technique by counting the inhalation time and gradually increasing the count during exhalation. In studies using pulse oximetry as a feedback tool, patients have been able to demonstrate an increase in their arterial oxygen saturation during pursed-lip breathing.

Diaphragmatic breathing is more difficult and requires the patient to relax the intercostals and accessory respiratory muscles while taking deep inspirations. The patient concentrates on expanding the diaphragm during controlled inspiration, and is taught to place one hand flat below the breastbone above the waist and the other hand 2–3 cm below the first hand. The patient inhales while the lower hand moves outwards during inspiration. The patient observes for inward movement as the diaphragm ascends. These exercises are initially taught with the patient in the supine position and then practised while the patient sits and stands. The exercise is often used with the pursed-lip breathing technique.

Diaphragmatic breathing is also useful for patients with pulmonary disease, for postoperative patients and for women in labour to promote relaxation and provide pain control. The exercise improves efficiency of breathing by decreasing air trapping and reducing the work of breathing.

EVALUATING IMPACTS AND OUTCOMES

Reflect on process and new learning

Nursing interventions and therapies are evaluated by comparing the patient's progress with the goals and expected outcomes of the nursing care plan. Patient care evaluates the actual care given to the patient by the healthcare team based on the expected outcomes (Figure 35-25). Patient expectations evaluate the care from the patient's perspective.

Patient care

Patients are the only ones who can evaluate their degree of breathlessness. They should be asked to rate their breathlessness using a validated dyspnoea assessment tool such as the MMRC Dyspnoea Scale or the Modified Borg Scale (Australian Lung Foundation 2009). Evaluation of arterial blood gases, pulmonary function tests, vital signs, ECG tracings and physical assessment data provide nurses with objective measurements of the success of therapies and treatments. Outcomes are compared with expected outcomes to determine a patient's health status. Continuous evaluation allows nurses to determine whether new or revised therapies are required and whether new problems have developed and require a new plan of care. When nursing measures directed to improve oxygenation are unsuccessful, the nurse must immediately modify the nursing care plan. Nurses should not hesitate to notify medical staff about a patient's deteriorating oxygenation status. Prompt notification can avoid an emergency situation or even the need for CPR. Continuous evaluation allows nurses to determine whether new or revised therapies are required and whether new problems have developed and require a new plan of care.

Patient expectations

If nurses have successfully developed a good relationship with a patient, the patient will be more willing to share their satisfaction. It is important for nurses to ask the patient if their expectations of care have been met. For example, the nurse can ask the patient 'Do you feel as though you will be able to

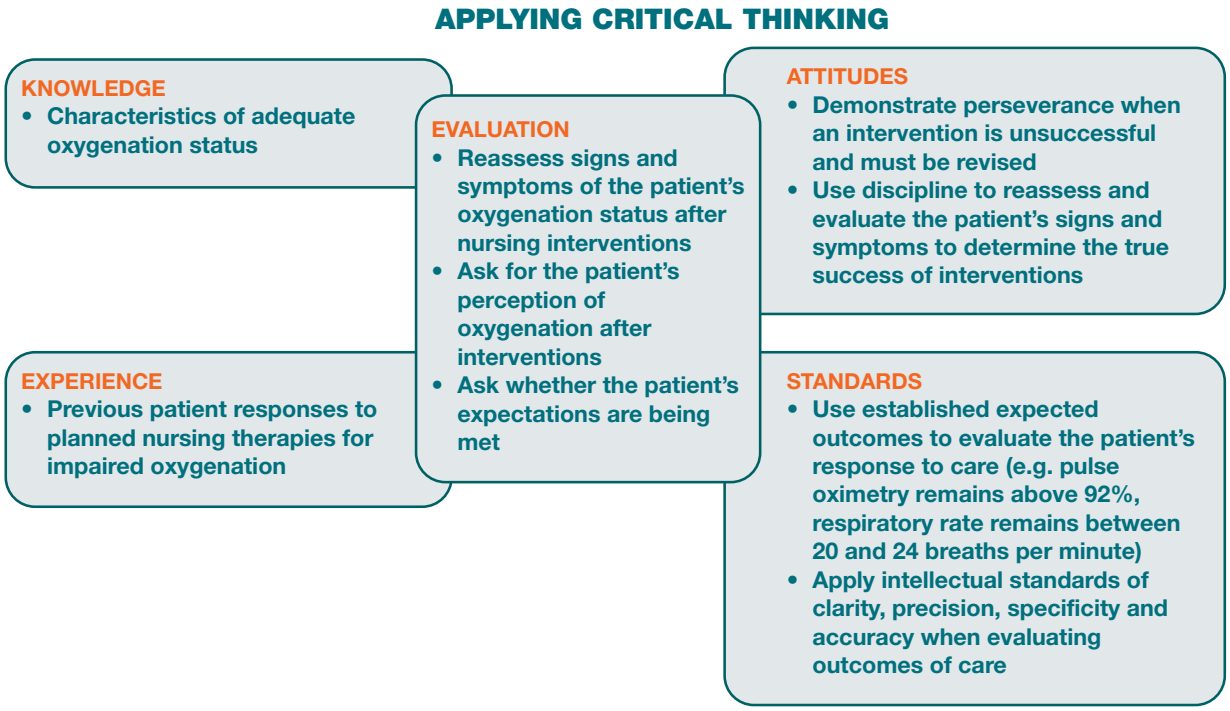


Figure 35-25 **Critical thinking associated with the evaluation phase for oxygenation.**

use the breathing techniques at home that we have practised?' If the patient says that this may not work at home, then the patient's expectations for care management have not been met. Nurses should ask the patient whether all questions and needs have been met. If not, nurses need to spend more time understanding what the patient wants and needs to meet the expectations. Working closely with the patient will enable nurses to redefine those patient expectations that can be realistically met within the limitations of the patient's condition and treatment.

• CRITICAL REFLECTION POINT

Mrs Arwae, a 55-year-old Torres Strait Islander, asks your advice on preventive strategies for reducing her husband's risk of contracting another chest infection this year. As a nurse at the family practice clinic, what advice could you offer Mrs Arwae?

Key concepts

- The main function of the heart is to deliver deoxygenated blood to the lungs for oxygenation and to deliver oxygen and nutrients to the tissues.
- Preload, afterload, contractility and heart rate alter cardiac output.
- Cardiac arrhythmias are classified by site of impulse origin and mechanism of the cardiac response.
- The main function of the lungs is to transfer oxygen from the atmosphere into the alveoli and to transfer carbon dioxide out of the body as a waste product.
- Ventilation is the process of providing adequate oxygenation from the alveoli to the blood.
- Compliance, or the ability of the lungs to expand and contract, depends on the function of musculoskeletal and neurological systems and on other physiological factors.
- The process of inspiration (active process) and expiration (passive process) is caused by changes in intrapleural and intra-alveolar pressures and lung volumes.
- Respiration is controlled by the central nervous system and by chemicals within the blood.
- Decreased haemoglobin levels alter the patient's ability to transport oxygen.
- Impaired chest wall movement reduces the level of tissue oxygenation.
- The nursing assessment includes information about the patient's cough, dyspnoea, fatigue, wheezing, chest pain, environmental exposures, respiratory infection, cardiopulmonary risk factors, use of medications and physical functioning.
- Diagnostic and laboratory tests may be needed to complete the database for a patient with decreased oxygenation and/or perfusion.
- Coughing and suctioning techniques are used to maintain a patent airway.
- Oxygen therapy is used to improve levels of tissue oxygenation and is delivered by a nasal cannula, nasal catheter or oxygen mask.
- Cardiac arrest requires the use of cardiopulmonary resuscitation.

Online resources

Australian Resuscitation Council, www.resus.org.au

Heart Foundation of Australia, www.heartfoundation.org.au

The COPD-X Plan; Australian and New Zealand guidelines for the management of chronic obstructive pulmonary disease, www.copdx.org.au

References

Ackley BJ, Ladwig GB (eds) 2011 Nursing diagnosis handbook: a guide to planning care, 9th edn. Mosby, St Louis.

American Association of Respiratory Care (AARC) 2003 Bronchopulmonary hygiene protocol. Online. Available: www.aarc.org/resources/protocol_resources/documents/broncho_hygiene_algorithm.pdf; accessed 17 July 2016.

Austin MA, Wills KE, Blizzard L et al 2010 Effect of high flow oxygen on mortality in chronic obstructive pulmonary disease patients in prehospital setting: randomized controlled trial. Br Med J 341:c5462. DOI:10.1136/bmj.c5462.

Australian Bureau of Statistics (ABS) 2011 Causes of death, Australia 2009; diseases of the respiratory system (J00–J99). Cat. no. 3303.0. ABS, Canberra. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/Products/4FCC60392960B1AECA25788400127B9D?opendocument; accessed 1 April 2016.

Australian Lung Foundation 2009 The Australian Lung Foundation pulmonary rehabilitation toolkit. Online. Available: www.pulmonaryrehab.com.au/welcome.asp; accessed 1 April 2016.

Australian Resuscitation Council (ARC) 2010 Guideline 8, cardiopulmonary resuscitation. ARC, Melbourne. Online. Available: www.resus.org.au; accessed 1 April 2016.

Beasley R, Patel M, Perrin K et al 2011 High-concentration oxygen therapy in COPD. Lancet 378(9795):969–70.

Brashers VL 2010 Structure and function of the pulmonary system. In McCance KL, Huether SE (eds), Pathophysiology: the biologic basis of disease in adults and children, 6th edn. Mosby, St Louis.

Cancer Council New South Wales 2012 Understanding lung cancer (booklet). Online. Available: www.cancercouncil.com.au/17105/cc-publications/understanding-cancer-series/understanding-lung-cancer/understanding-lung-cancer/?pp=17105; accessed 1 April 2016.

Chew DPB, Aroney CN, Aylward P et al 2011 Addendum to the National Heart Foundation of Australia/Cardiac Society of Australia and New Zealand guidelines for the management of acute coronary syndromes (ACS) 2006. Heart Lung Circ 20(8):487–502. DOI: 10.1016/j.hlc.2011.03.008.

Department of Health and Ageing (DoHA) 2009 2.3 Groups with special vaccination requirements, The Australian immunisation handbook, 9th edn. DoHA, Canberra.

Ebersole P, Hess P, Touhy TA et al (eds) 2008 Toward healthy aging: human needs and nursing response, 6th edn. Mosby, St Louis.

Fink JB 2002 Positioning versus postural drainage. Respir Sci 47(7):769–77.

Freitas ERFS, Soares B, Cardoso JR et al 2007 Incentive spirometry for preventing pulmonary complications after coronary artery bypass graft. Cochrane Database Syst Rev (3):CD004466. DOI: 10.1002/14651858.CD004466.pub2.

Grap MJ 2002 Pulse oximetry: update 2002. Crit Care Nurse 22:8.

Guimarães MMF, El Dib RP, Smith AF et al 2009 Incentive spirometry for prevention of postoperative pulmonary complications in upper abdominal surgery. Cochrane Database Syst Rev (3):CD006058. DOI: 10.1002/14651858.CD006058.pub2.

Hockenberry MJ, Wilson D, Winkelstein ML 2009 Wong's essentials of pediatric nursing, 8th edn. Elsevier, St Louis.

Jacobson C 2010a Electrocardiography. In Woods SL, Froelicher ESS, Motzer SU et al (eds), Cardiac nursing, 6th edn. Lippincott Williams & Wilkins, Philadelphia.

Jacobson C 2010b Arrhythmias and conduction disturbances. In Woods SL, Froelicher ESS, Motzer SU et al (eds), Cardiac nursing, 6th edn. Lippincott Williams & Wilkins, Philadelphia.

Jet K 2008 Physiological changes with aging. In Ebersole P, Hess P, Touhy TA et al (eds). Toward healthy aging: human needs and nursing response, 6th edn. Mosby, St Louis.

Kaufman JS 2008 Nursing management: obstructive pulmonary disease. In Brown D, Edwards H (eds) Lewis's medical–surgical nursing, 2nd edn. Mosby, Sydney.

Kendrick T, Morrison A 2007 Paediatric considerations in critical care. In Elliott D, Aitken L, Chaboyer W, ACCCN's critical care nursing. Mosby, Sydney.

Levett-Jones T, Dempsey J, Yeun-Sim Jeong S et al 2010 The 'five rights' of clinical reasoning: an educational model to enhance nursing students' ability to identify and manage clinically 'at risk' patients. Nurse Education Today 30:515–20.

McIlwaine M, Wong LT, Chilvers M et al 2010 Long-term comparative trial of two different physiotherapy techniques; postural drainage with percussion and autogenic drainage, in the treatment of cystic fibrosis. Pediatr Pulmonol 45:1064–9.

Miracle VA 2010 Coronary artery disease in women. Dimens Crit Care Nurs 29(5):215–21.

National Heart Foundation of Australia 2004 Recommended framework for cardiac rehabilitation. Online. Available: http://heartfoundation.org.au/images/uploads/publications/Recommended-framework.pdf; accessed 1 April 2016.

National Heart Foundation of Australia 2009 Guidelines for the assessment of absolute cardiovascular disease risk. Online. Available: http://heartfoundation.org.au/for-professionals/clinical-information/absolute-risk; accessed 1 April 2016.

National Heart Foundation of Australia 2006a Position statement: the relationships between dietary electrolytes and cardiovascular disease. Online. Available: http://heartfoundation.org.au/images/uploads/publications/Dietary-Electrolytes-CVD-Position-Statement.pdf; accessed 1 April 2016.

National Heart Foundation of Australia 2006b National Heart Foundation of Australia physical activity recommendations for people with cardiovascular disease.

National Heart Foundation of Australia and the Cardiac Society of Australia and New Zealand 2005 Position statement: lipid management. Online. Available: http://heartfoundation.org.au/for-professionals/clinical-information/lipid-management; accessed 5 April 2016.

Nursing and Midwifery Board of Australia (NMBA) 2016 Registered nurse standards for practice. NMBA, Melbourne. Online. Available: www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards.aspx; accessed 14 June 2016.

Overend TJ, Anderson CM, Lucy SD et al 2011 The effect of incentive spirometry on postoperative pulmonary complications: a systematic review. Chest 120(3):971.

Pierce LNB 2007 Management of the mechanically ventilated patient, 2nd edn. Elsevier, St Louis.

Simmons P, Simmons M 2004 Informed nursing practice: the administration of oxygen to patients with COPD. Medsurg Nurs 13(2):82–6.

Steven D 2011 Cardiovascular function. In McCance KL, Huether SE (eds), Pathophysiology: the biologic basis for disease in adults and children, 6th edn. Mosby, St Louis.

Talati R, White CM 2011 Dabigatran: a new orally available anticoagulant for prevention of strokes and thrombosis in patients with atrial fibrillation. Formulary 46(2):44–53.

Tang CY, Taylor, NF, Blackstock FC 2010 Chest physiotherapy for patients admitted to hospital with an acute exacerbation of chronic obstructive pulmonary disease (COPD): a systematic review. Physiother 96(1):1–13.

Van Gelder IC, Hagens VE, Bosker HA et al 2002 A comparison of rate control and rhythm control in patients with recurrent persistent atrial fibrillation. New Engl J Med 347(23):1834–40.

Wheeler B 2009 Health promotion of the newborn and family. In Hockenberry MJ, Wilson D, Winkelstein ML (eds), Wong's essentials of pediatric nursing, 8th edn. Elsevier, St Louis.

Whitehead L 2009 The measurement of fatigue in chronic illness: a systematic review of unidimensional and multidimensional fatigue measures. J Pain Sympt Manage 37(1):107–28.

Wilson D 2009 The child with respiratory dysfunction. In Hockenberry MJ, Wilson D, Winkelstein ML (eds), Wong's Essentials of pediatric nursing, 8th edn. Elsevier, St Louis.

Wyse DG, Waldo AL, DiMarco JP et al 2002 A comparison of rate control and rhythm control in patients with atrial fibrillation. New Engl J Med 347(23):1825–33.

Yang M, Yan Y, Yin X et al 2010 Chest physiotherapy for pneumonia in adults. Cochrane Database Syst Rev (2):CD006338. DOI: 10.1002/14651858.CD006338.pub2.

CHAPTER

36

Managing pain

Anthony Schoenwald and Clint Douglas

KEY TERMS

Acute pain, p. 1321
Adjuvants, p. 1337
Analgesic pain ladder, p. 1344
Biopsychosocial model of pain, p. 1324
Chronic pain, p. 1322
Epidural analgesia, p. 1348
Gate control theory of pain, p. 1323
Local anaesthetic, p. 1353
Modulation, p. 1327
Multimodal analgesia, p. 1344
Neuropathic pain, p. 1322
Nociception, p. 1324
Nociceptive pain, p. 1322
Opioids, p. 1346
Patient-controlled analgesia, p. 1348
Perception, p. 1327
Transduction, p. 1327
Transmission, p. 1327

Learning outcomes

Mastery of content will enable you to:

- demonstrate a comprehensive understanding of the concepts related to pain
- explain influential models of pain, including the gate control theory
- identify the importance of providing person-centred care by adopting a biopsychosocial approach when caring for patients with pain
- perform a comprehensive pain assessment and advocate for appropriate care by accepting and acting on the patient's report of pain
- explain the pharmacology of the three analgesic groups in pain management and the concept of multimodal analgesia
- develop nurse-initiated and collaborative interventions for preventing and treating opioid-related side effects
- describe the role of the nurse in providing safe and effective pain management for patients receiving patient-controlled analgesia, epidural or intrathecal analgesia, or peripheral nerve blocks
- describe commonly used non-drug interventions for acute pain
- engage in the clinical reasoning process for pain management, following a cycle of assessment, intervention and reassessment.

Introduction

Pain is a key consideration in all patient-care situations and nurses play a critical role in pain management. This chapter aims to provide an introduction to some key concepts in pain management and to encourage you to reflect on some of your assumptions about pain. It presents evidence-based information to help you assess and manage pain successfully in collaboration with other healthcare providers.

Nurses are uniquely positioned to improve patient outcomes through effective pain assessment and management, and yet there is ample evidence, gathered over several decades, of poor pain assessment and undertreatment of patients in pain (Pasero & McCaffery 2011). Despite the rapidly evolving scientific knowledge base for pain management, the evidence suggests that patients are at risk of inadequate pain control (e.g. Gerbershagen et al 2013). Why might this be so? Read the following *Clinical example* and identify barriers to adequate acute pain control in this situation. What knowledge and skills did the RN use to advocate for appropriate pain relief?

CLINICAL EXAMPLE

'A real pain' by Paola Scamperle, RN

As a neurosurgical nurse I've got plenty to do, including helping patients with some of the things some doctors don't do well – one of which is effectively managing patients' pain. Let me give you an example. I recently took care of a patient whose surgeon insisted that he didn't need much nursing care. The patient had been operated on for a herniated disc and had only been out of surgery for 1 day. Interestingly, the patient himself was a senior doctor, a gastroenterologist who'd come to our hospital and unit because of the spine surgeon's reputation.

As soon as I began to take care of him, the patient–doctor asked me to tell him about the normal course of postoperative recovery for this kind of operation. I told him we usually discharged patients 2 days after their surgery and that we gave them a prescription for pain medication. He was very concerned about pain meds because he'd been in unbearable pain before his surgery and took pain pills daily. After the operation he continued to take these pills, but was still complaining about his pain. Plus, he had a lot of pain that we hadn't expected from the wound site.

When his well-respected surgeon came in to do a quick exam, the patient told him that he was in pain. Although this surgeon is very competent and self-confident, pain management is not one of his strengths. He just doesn't understand that pain is an exquisitely personal experience and that each patient experiences it differently.

So what was the doctor's response to this particular patient? He insisted the patient was somehow 'imagining' his pain, not really having it. The surgeon told the patient that he'd checked on his surgery, all was well, and he should no longer be in pain. So even though I spoke with him about the patient's pain, he didn't come up with a different pain management strategy.

Not surprisingly, when it came time for his discharge 2 days later, the patient was still in so much pain that he couldn't leave the hospital. When the surgeon and a medical student made their rounds that day, the patient again asked them about his pain. Once again, they insisted that the patient's pain could not be as severe as he said it was.

By now, I'd been with the patient over several days. I watched how he walked and knew how uncomfortable he was. I knew I had to do something to manage his pain and recognised that ordinary painkillers just wouldn't work.

The first thing I did was talk to the patient. In a careful tone, I said: 'Look, Dr X, your surgeon is very knowledgeable and competent. Most of the time patients don't have a lot of pain. But I know from experience that the kind of inflammatory pain you're having doesn't resolve within the first day or two. What you need is some cortisone prescribed in a single dose in the morning for a few days. I have seen this work in other cases with worse pain than yours.'

The patient–doctor thought about this. He thanked me for the suggestion and asked me to talk to the surgeon and suggest that he order the medication. I waited until the surgeon was out of the operating room and talked with him. He'd become so frustrated with the patient that he quickly agreed. He ordered the medication, and I gave the cortisone to the patient. Pretty soon the patient was comfortable and appeared not only relaxed but serene.

He approached me in the hall and said, 'I want to thank you so much for your patience, your availability and, most of all, your competence and professional attitude you showed me these past days. If it hadn't been for you, I would still be in pain. I would have been suffering the same pain that made my life intolerable and led me to have this surgery in the first place. I want to thank you for dealing with this and all the needs I've had since I came to the hospital.'

Nurses do these kinds of things every day. Isn't it about time we advertised them?

Reprinted from Paoloa Scamperle, 'A Real Pain'. In Gordon S (ed) When chicken soup isn't enough: stories of nurses standing up for themselves, their patients, and their profession. © 2010 Paoloa Scamperle. Used by permission of the publisher, Cornell University Press, New York.

Defining pain

Pain is often defined according to the International Association for the Study of Pain (IASP) as:

> **An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.**

This definition underscores the subjectivity of pain and acknowledges the importance of emotional as well as sensory factors in the pain experience. It also highlights

that although pain is usually considered a warning signal of actual or potential tissue damage, pain can occur in the absence of tissue damage, even though the experience may be described as if the damage has occurred.

The most widely accepted and clinically useful definition of pain, however, was developed by a leading nursing expert on pain, Margo McCaffery (1968:95):

> **Pain is whatever the experiencing person says it is, existing whenever he or she says it does.**

This definition reflects an understanding that the patient is the authority on their pain and the only one who can describe the experience. Nurses who approach pain from this perspective (like the neurosurgical nurse in the *Clinical example* above) can help the patient achieve effective management by advocating for proper control. If the patient cannot provide a self-report, a variety of other methods, such as observation of behavioural indicators, are used to assess the pain.

• CRITICAL REFLECTION POINT

Take a minute to think about McCaffery's clinical definition of pain. Do you agree with this definition? Who is the authority on the patient's pain? Whose pain is it?

Acute pain

In evolutionary terms, **acute pain** can be understood as an important biological protective mechanism to warn the body of injury or disease. Acute pain directs immediate attention to the situation, promotes reflexive withdrawal and fosters other actions that prevent further damage and enhance healing. Acute pain usually stops long before healing has occurred, which may take days or a few weeks.

Clinically, poorly controlled acute pain can lead to serious adverse outcomes for patients and their families. Acute postoperative pain delays healing and leads to systemic complications (see Table 36-1). Rehabilitation may be delayed and hospitalisation prolonged if acute pain is not controlled. Uncontrolled acute pain can also lead to the development of chronic pain problems.

• CRITICAL REFLECTION POINT

You are caring for a patient admitted to a surgical ward after a fall that has resulted in multiple rib fractures. He has an intercostal catheter to correct a pneumothorax. His respirations are shallow and he cannot cough effectively due to pain. His body temperature is 39°C. What complications could poorly controlled acute pain cause in this situation?

TABLE 36-1 The harmful effects of unrelieved pain

Domains affected	Specific responses to pain
Endocrine	↑ Adrenocorticotrophic hormone (ACTH), ↑ cortisol, ↑ antidiuretic hormone (ADH), ↑ adrenaline, ↑ noradrenaline, ↑ growth hormone (GH), ↑ catecholamines, ↑ renin, ↑ angiotensin II, ↑ aldosterone, ↑ glucagon, ↑ interleukin-1, ↓ insulin, ↓ testosterone
Metabolic	Gluconeogenesis, hepatic glycogenolysis, hyperglycaemia, glucose intolerance, insulin resistance, muscle protein catabolism, ↑ lipolysis
Cardiovascular	↑ Heart rate, ↑ cardiac workload, ↑ peripheral vascular resistance, hypertension, ↑ myocardial oxygen consumption, deep-vein thrombosis
Respiratory	↓ Lung volumes, atelectasis, hypoxaemia, ↓ cough, sputum retention, infection
Genitourinary	↓ Urinary retention
Gastrointestinal	↓ Gastric and bowel motility
Musculoskeletal	Muscle spasm, impaired muscle function, fatigue, immobility
Cognitive	Reduction in cognitive function, mental confusion
Immune	Depression of immune response
Developmental	↑ Behavioural and physiological responses to pain, altered temperaments, higher somatisation, infant distress behaviour; possible altered development of the pain system, ↑ vulnerability to stress disorders, addictive behaviour and anxiety states
Future pain	Debilitating chronic pain syndromes: chronic post-surgical pain, neuropathic pain
Psychological	Sleeplessness, anxiety, fear, helplessness, ↑ thoughts of suicide

↓ = decreased; ↑ = increased.

Pasero C, McCaffery M 2011 Pain assessment and pharmacologic management. Mosby, St Louis, p. 11. Data from Cousins M 1994 Acute postoperative pain. In Wall PD, Melzack R (eds), Textbook of pain, 3rd edn. Churchill Livingstone, New York; Kehlet H 1998 Modification of responses to surgery by neural blockade. In Cousins MJ, Bridenbaugh PO (eds), Neural blockade. Lippincott-Raven, Philadelphia; Macintyre P, Schug S 2015 Acute pain management: a practical guide, 4th edn. CRC Press, Boca Raton.

Chronic pain

In contrast to acute pain, **chronic pain** persists constantly or intermittently past the normal time of healing and serves no biological purpose. Chronic pain is clearly not a warning to prevent injury or disease – it is a disease in its own right (Siddall & Cousins 2004). Chronic pain can occur after injury or surgery, with chronic disease and disability, and sometimes the exact cause of persistent pain is unknown. While this chapter focuses on acute pain management, Douglas (2014) provides a discussion of chronic pain management from a nursing perspective. Table 36-2 compares some important clinical aspects of acute and chronic pain.

Nociceptive pain

Another common way to categorise pain problems is by their underlying clinical mechanisms. **Nociceptive (physiological) pain** is sustained by activation of the sensory systems that process noxious stimuli. It is the result of damage to somatic or visceral tissues sufficient to activate the normal pain transmission system. Examples include pain associated with trauma, surgery, burns and tumour growth.

Neuropathic pain

Neuropathic (pathophysiological) pain is sustained by injury or dysfunction of the peripheral and/or central nervous system (CNS). In contrast to nociceptive pain, which is caused by activation of essentially normal neural systems, neuropathic pain is caused by the abnormal processing of stimuli. Neuropathic pain problems are common in diseases affecting the nervous system, such as diabetes mellitus, herpes zoster and multiple sclerosis. It may also result from surgery and/or trauma to nervous tissue.

TABLE 36-2 Comparison of acute and chronic pain

Acute pain	Chronic pain
Short duration and resolves with healing	Persists for months beyond the time of healing
Responds to reasonable doses of analgesics	Poor response to conventional analgesics
Rapid rehabilitation and return to normal social roles	Disability, diminished social roles and poor quality of life
Poor management and emotional distress may lead to chronic pain	Anxiety and depression are common features
Mostly nociceptive in origin	Associated with features of neuropathic pain
Usually located to the area of trauma or disease	Radicular components away from the original site of injury or disease
Simple management plan with multimodal approach	Management plan is complex and involves adjunctive drugs and a multidisciplinary approach

Evolution of pain theories

Early pain theories

Historically, acute pain has been understood using a biomedical model. The basic ideas of this view of pain are most often attributed to the work of 17th-century philosopher René Descartes (1596–1650). Descartes attempted to explain pain in purely mechanistic terms using the analogy of a foot coming into contact with fire (Figure 36-1). This conception of pain was a straight-through channel from the skin to the brain. It assumed a direct and one-to-one relationship between the amount of tissue damage and perceived pain.

While there were key developments in scientific thinking about pain over the 19th and early 20th centuries, the *biomedical model of pain* was widely accepted and often taught as fact rather than theory. Following this model, medical assessment and treatment of pain were concerned only with the underlying tissue damage or injury. Psychological and social factors were thought to play a secondary role and were viewed as simply responses to pain itself (Keefe 2009).



Figure 36-1 Descartes' model of pain.

• CRITICAL REFLECTION POINT

It is easy to assume that pain severity is closely tied to the amount of tissue damage based on our personal experiences of pain, but can you think of exceptions to this idea? Can you identify any examples of injury without pain, or vice versa? What factors might explain the highly individual and variable responses to pain after surgery?

Gate control theory of pain

Although the biomedical model has been very influential in understanding and treating acute pain, its failure to explain why pain is not always proportional to the amount of tissue damage or injury spurred interest in alternative theories of pain. One of the most influential of these theories was Melzack and Wall's (1965) **gate control theory of pain**. The main hypothesis of the gate control theory is that there is a neural gating system in the dorsal horn of the spinal cord which modulates the transmission of noxious signals from the periphery to the brain based on the peripheral input (i.e. relative balance of large diameter and small diameter fibre input), as well as the dynamic action of brain processes (Figure 36-2).

The gate control theory proposes that under certain circumstances (e.g. exposure to danger, use of adaptive coping skills, or high levels of social support) higher brain centres are activated to 'close the gate' in the spinal cord and inhibit transmission of noxious signals to the brain. Under other circumstances (e.g. when preoccupied with pain, depressed, or exposed to interpersonal stress), neural processes in the brain are activated in a way that 'opens the gate' and facilitates transmission of noxious signals to the brain. It was this radical shift in thinking about the role of psychological factors in pain perception that is perhaps the most important contribution of the gate control theory. The theory underscores that, through its influence on spinal gating mechanisms, the brain plays a crucial role in pain inhibition and facilitation (Keefe 2009). Some non-pharmacological therapies can be explained using the gate control theory. For example, it is thought that massage or cutaneous stimulation can activate large fibre impulses (touch) that close the pain gate.

• CRITICAL REFLECTION POINT

Use the gate control theory to explain why rubbing an injury helps to reduce pain or how a sportsperson can continue a game after serious injury yet report no pain?

Shortly after it was introduced, Melzack and Casey (1968) expanded the gate control theory to describe the neural systems beyond the gate in the spinal cord. Three brain systems were hypothesised to interact to create the subjective experience of pain. According to Melzack, the sensory–discriminative dimension of pain refers to the sensory processing of location, intensity and quality of pain. The motivational–affective dimension is the emotional response to pain. The cognitive–evaluative dimension involves the appraisal of pain in terms of attention, meaning and past experience.

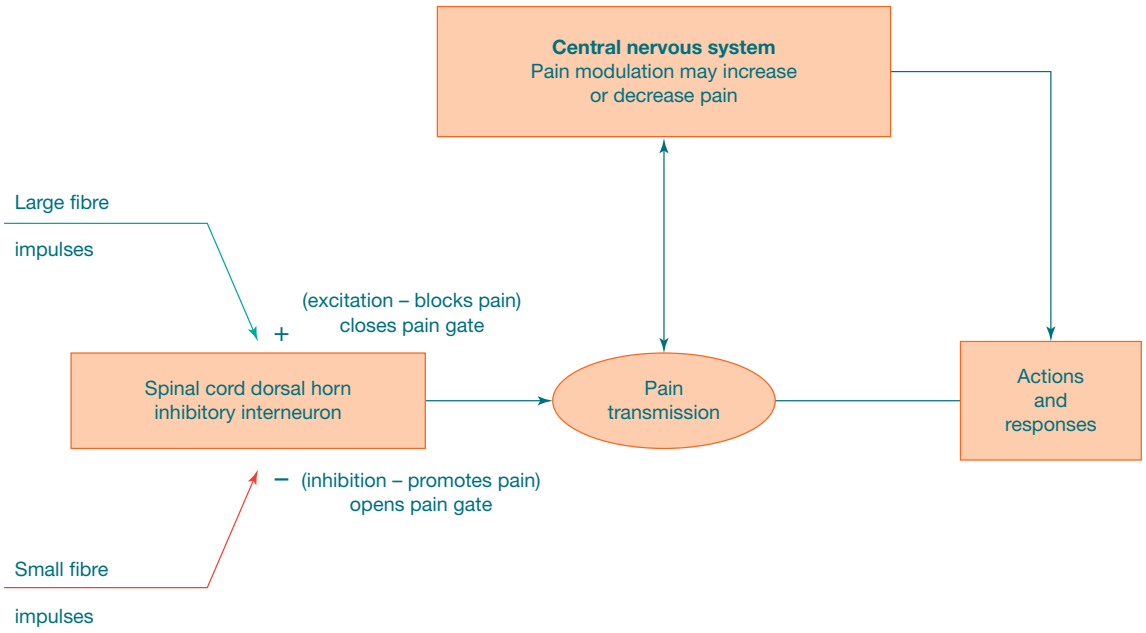


Figure 36-2 **Gate control theory of pain.**

SE Huether, KL McCance 2008 Understanding pathophysiology, 4th edn, Mosby, St Louis.

Post-gate control theories

The gate control theory stimulated a great amount of laboratory and clinical pain research in the decades that followed. In contrast to the biomedical model, the gate control theory did not view psychosocial factors as simply responses to pain, but rather as an integral component of pain processing (Keefe 2009). Although the theory made an important contribution to our understanding of pain, Melzack (1999) points out that the gate control theory still fails to explain certain pain problems, such as phantom limb pain. Melzack's most recent work has been to shift the focus of pain theory from the peripheries and spinal mechanisms to understand how the brain creates the experience of pain in the proposed *neuromatrix theory of pain*.

Person-centred care: working from a biopsychosocial perspective

Biopsychosocial model of pain

The most useful contemporary model for nursing practice which brings together much of what we know about pain is the **biopsychosocial model of pain** (Gatchel et al 2007). The biopsychosocial model highlights the multidimensional nature of pain, and builds on the gate control theory by emphasising the role of psychosocial factors (Douglas 2014). The conceptual view of the biopsychosocial model of pain is presented in Figure 36-3. In this onion skin model we see that biomedical factors may initiate and maintain nociceptive input, psychological factors influence the appraisal and perception of pain, and social factors shape the person's behavioural responses. All of these factors interact to shape an individual's response to pain (Douglas 2014).

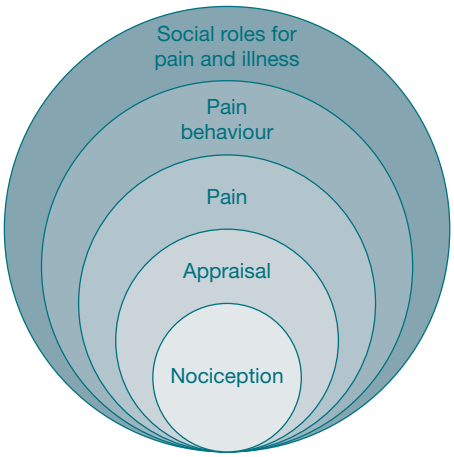


Figure 36-3 Biopsychosocial model of pain.

Turk DC, Burwinkle TM 2006 Coping with chronic pain. In Carr A, McNulty M (eds), The handbook of adult clinical psychology: an evidence-based practice approach. Reproduced with permission of Taylor & Franics Books UK.

The biopsychosocial model makes clear the important distinction between nociception and pain (Gatchel et al 2007). **Nociception** is a physiologic process which involves activation of nerves by tissue damage or inflammation that convey information to the brain. In contrast, pain is the subjective perception that always involves conscious awareness, emotional and cognitive appraisals (Gatchel et al 2007). Pain is a private and personal experience.

Pain behaviours are overt manifestations of pain and suffering, such as grimacing, moaning or protecting a body part. In acute pain, 'fight-or-flight' responses may occur, such as increased vital signs, sweating and dilated pupils. However, the response to pain is highly individual, is shaped by social and cultural factors, and humans quickly adapt physiologically and behaviourally to pain. Be careful not to expect certain responses when assessing any type of pain. The absence of pain behaviours does not mean the absence of pain.

Working from a biopsychosocial perspective challenges nurses and other clinicians to accept that it is the *person* in pain, rather than the underlying disease process, that is the focus of assessment and management. The person in pain is the expert and most accurate source of information about their pain. The person in pain is also the expert on the effectiveness of pain therapies and interventions. This means taking the time to understand the physical, psychological and social dimensions of pain from the patient's perspective and tailoring treatment based on their individual needs and priorities.

Although administering analgesics may be the cornerstone of acute pain management, there are very practical applications of a biopsychosocial approach to pain using fundamental nursing skills. Using skilled communication to determine the patient's needs may uncover other physical factors contributing to discomfort, such as uncomfortable position, thirst, or the need to urinate (Wells, Pasero & McCaffery 2008). Psychosocial factors contributing to pain can be elicited by building trust and listening to the patient's concerns or fears, seeking the patient's understanding of their condition and their need to be informed, and respecting and safely involving the patient and significant others in their care. Addressing these needs will improve patient comfort and communicate your desire to promote comfort. McCaffery (2002) argues that a short time spent with the patient to communicate concern and caring may go a long way to providing patient comfort. The content of this 5-minute conversation may include the following:

- Listening to patient concerns.
- Communicating the desire to help the patient become more comfortable.
- Determining strategies that might achieve more comfort.

Consistent with the Fundamentals of Care Framework discussed in Chapter 2, a biopsychosocial way of thinking about pain puts the person at the centre of their care. The large variation in patient reports of pain and responses to treatment becomes more understandable if we accept that pain is a subjective, individual experience that is shaped by a range of biological, psychological and social factors. Following this model, we will first discuss the physiologic basis of pain and then important psychosocial contributors to the pain experience.

Physiology of pain

The sensory experience of acute pain is mediated by a specialised system, called the *nociceptive system*. Between the stimulus of tissue injury and the subjective experience of pain is a series of complex electrical and chemical events. To understand this, it is useful to conceptualise four key physiological processes involved: transduction, transmission, perception and modulation (Figure 36-4).

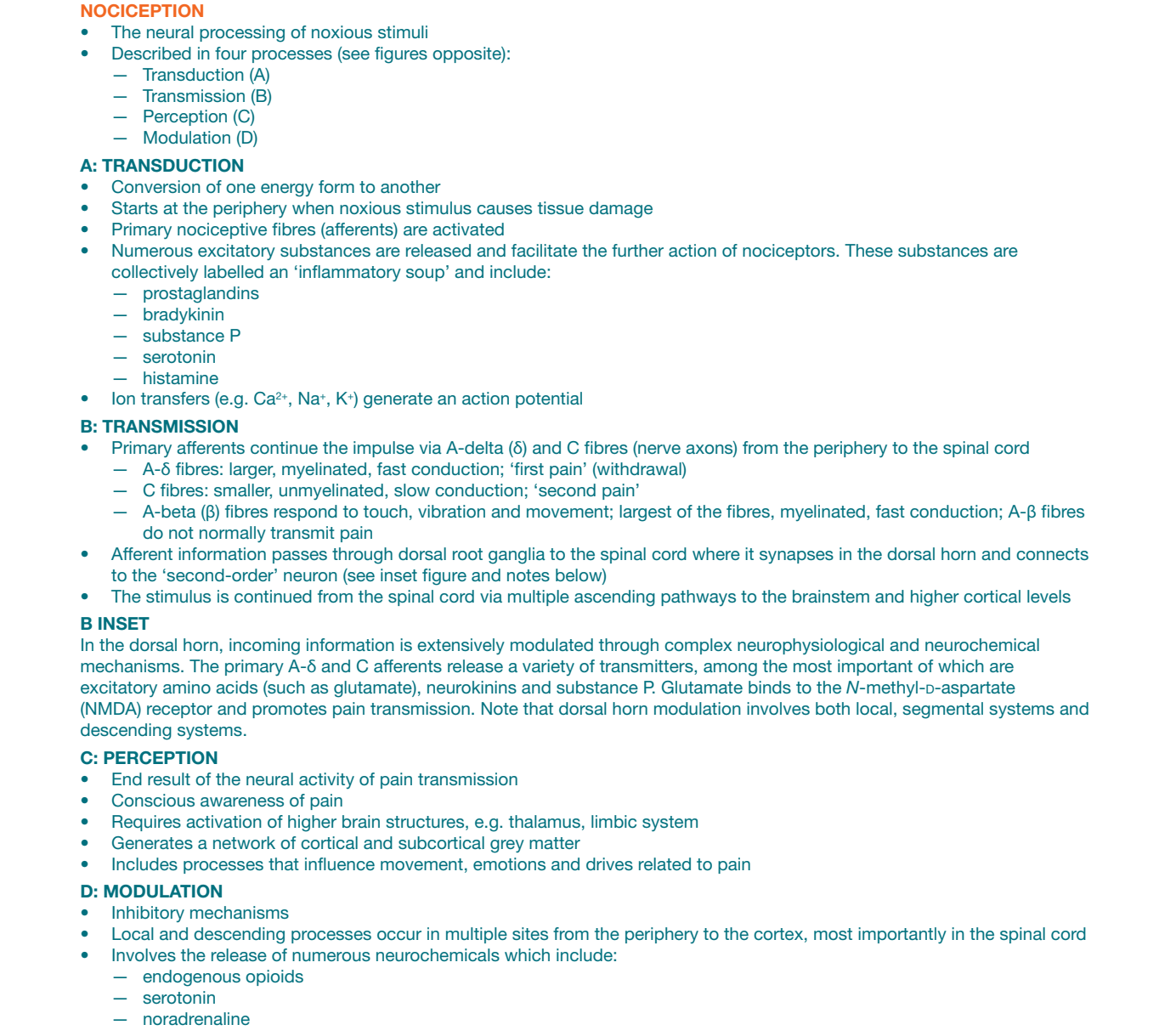


Figure 36-4 Nociception: 'normal' pain transmission.

Pasero C, McCaffery M (eds) 2011 Pain assessment and pharmacologic management. Mosby, St. Louis.

continued

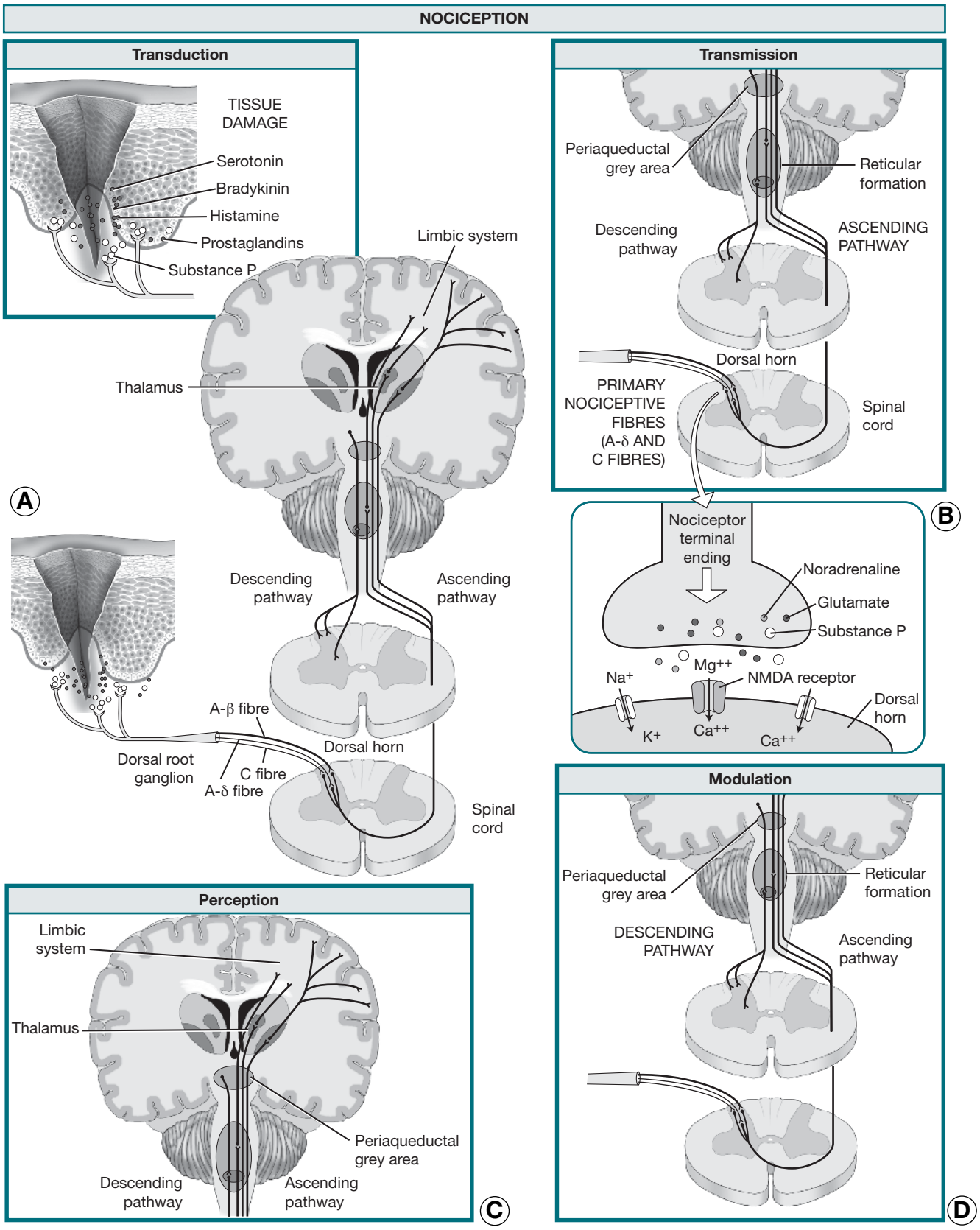


Figure 36-4 ***continued***

Transduction

Transduction refers to the processes by which noxious stimuli activate nociceptors, which are primary afferent neurons that exist throughout the body (skin, subcutaneous tissue and visceral or somatic structures). Nociceptors have free nerve endings which respond selectively to mechanical (e.g. incision, tumour growth), thermal (e.g. burn, frostbite) or chemical (e.g. toxins, chemotherapy) stimuli, which are then converted into a neuronal action potential.

Tissue damage and inflammation also cause the release of chemical mediators from injured cells, inflammatory cells (e.g. mast cells, lymphocytes) and primary afferent neurons which lower the excitability threshold of nociceptors and sensitise them to further sensory input. A partial list of these chemicals includes bradykinin, prostaglandins, serotonin, histamine and substance P, known collectively as the 'inflammatory soup'. These chemicals stimulate or sensitise the nociceptors to send impulses to the spinal cord.

Transmission

Transmission of action potentials generated from effective transduction occurs along two types of nociceptor fibres towards the CNS. *A-delta fibres* are thinly myelinated, large-diameter, fast-conducting fibres (5–30 metres/second), which transmit well-localised sensations of sharp pain. *C fibres* are unmyelinated, small-diameter, slow-conducting fibres (0.5–2 metres/second), which transmit pain that is poorly localised, dull and aching. Other types of sensory fibres, such as *A-beta fibres*, do not usually transmit nociceptive information, but respond to touch, movement and vibration.

For example, after spraining an ankle a person initially feels a sharp, localised pain, related to A-delta fibre transmission. Within a few seconds, the pain becomes more diffuse and widespread, until the whole foot aches, which is related to C-fibre activation. The C fibres remain exposed to the chemicals released when cells are damaged.

Transmission continues along the primary afferent fibres until they synapse in the dorsal horn of the spinal cord. Within the dorsal horn, neurotransmitters (such as glutamate, neurokinins and substance P) are released, causing a synaptic transmission from the primary afferent neurons to second-order neurons in the spinal cord which project to the brainstem and thalamus via multiple ascending pathways. Of these pathways, the spinothalamic and spinoreticular tracts are particularly important. These second-order fibres cross the midline and ascend in the anterolateral quadrant of the spinal cord.

Perception

Perception is the point at which a person is consciously aware of pain. It requires the activation of higher brain structures, including the thalamus and cortex. It involves both awareness and related cognitions and the occurrence of emotions and drives associated with pain (Pasero & Portenoy 2011). From the thalamus, third-order neurons transmit impulses to various areas of the brain. Figure 36-5 identifies the major cortical structures involved in pain perception.

Modulation

Modulation (inhibition or facilitation) of afferent input can also occur anywhere along nociceptive pathways, particularly in the spinal cord, as suggested by the gate control theory discussed earlier. When activated, descending efferent pathways originating in the brain release a number of chemicals capable of altering the processing of nociceptive input. Of the descending inhibition systems, the periaqueductal grey (PAG) region is particularly important; this projects to the dorsal horn of the spinal cord.

These descending pathways release substances such as endogenous opioids (endorphins and encephalin), serotonin and noradrenaline, which can inhibit the transmission of noxious stimuli and produce analgesia. For example, when released in the spinal dorsal horn these substances can bind to receptors to prevent the release of neurotransmitters from primary afferent nociceptors such as substance P to second-order neurons, thus blocking transmission of the impulse. Activation of these descending pathways by drug therapy or positive thoughts can produce analgesia (Voscopoulos & Lema 2010).

• CRITICAL REFLECTION POINT

The discussion so far has been about the normal physiological processes involved in nociceptive pain. But what mechanisms can explain the development of pathophysiological pain problems such as chronic inflammatory and neuropathic pain? A key development in our understanding of pain mechanisms is the concept of *neuroplasticity* of the nervous system, which refers to the ability of neurons throughout the peripheral and central nervous systems to change their structure and function because of nociceptive input. Explore what the terms *peripheral sensitisation* and *central sensitisation* mean and how they might contribute to the pathophysiology of acute and chronic pain problems.

Psychosocial factors influencing pain

Psychological and social factors play a central role in the experience of acute pain (Keefe 2009). Together they shape the way an individual makes sense of and gives

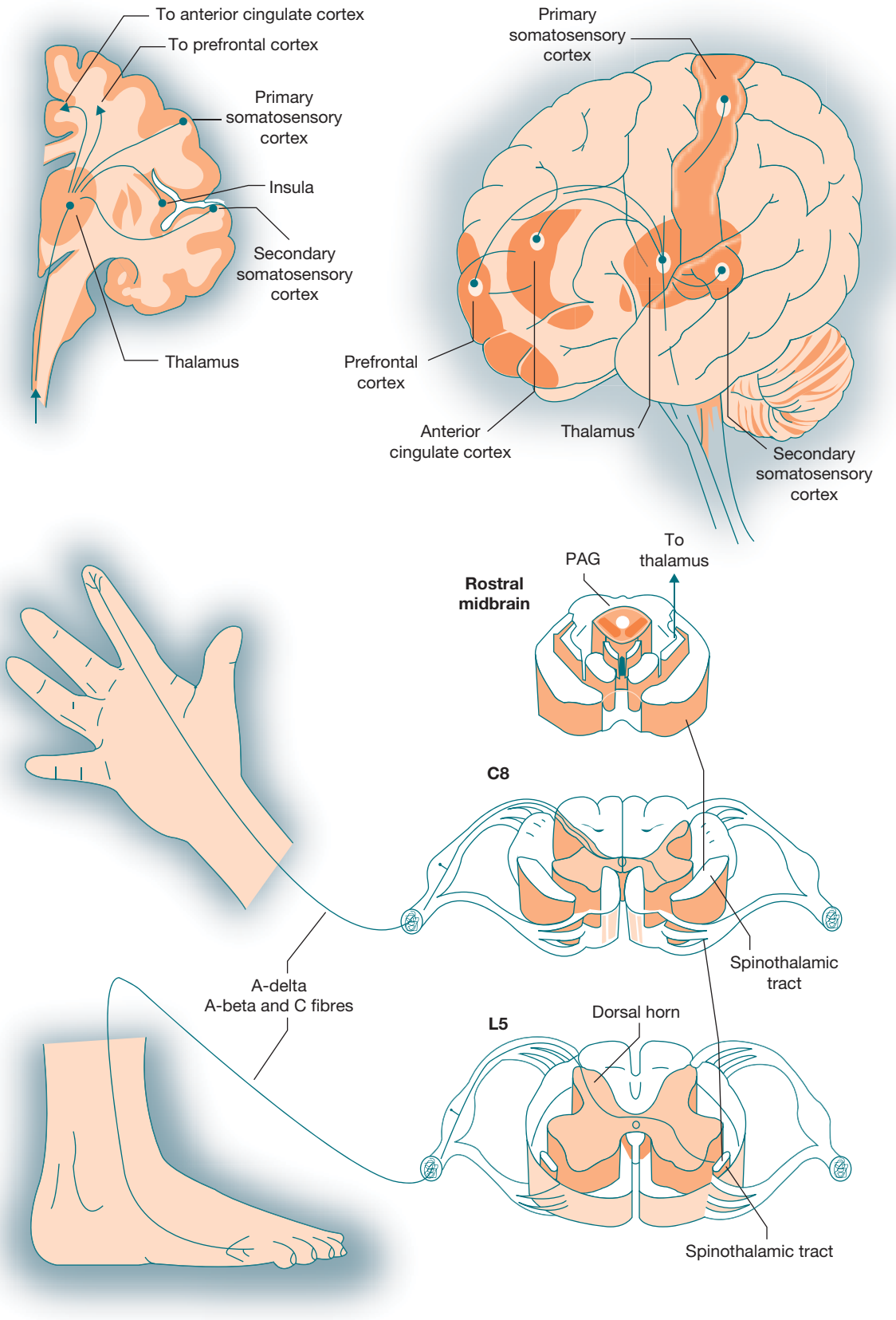


Figure 36-5 Structures involved in pain perception.

Jensen MP 2010 A neuropsychological model of pain: research and clinical implications. The Journal of Pain 11(1):3.

meaning to pain. They also influence the way in which the individual will cope with pain and the extent to which it will interfere with recovery.

• CRITICAL REFLECTION POINT

'Here is perhaps the most difficult thought to accept about pain. We experience pain only and entirely as we interpret it. It seizes us as if with an unseen hand, sometimes stopping us in mid-sentence or mid-motion, but we too capture and reshape it' (Morris 1991:29).

Anxiety and depression

The relationship between pain and psychological disturbance is complex. Anxiety and depression often increase the perception of pain, but pain may also cause feelings of anxiety and may even lead to depression (Keefe 2009). It is important that patients are screened for these feelings, especially prior to hospital admission. In this way, patients at risk of having poor pain control can be identified and pre-emptive strategies undertaken.

Perceived control

People develop underlying beliefs and attitudes to make sense of their pain. These include beliefs about the cause, meaning and appropriate treatment of pain, as well as perceptions of control over pain and personal coping efficacy (Thorn 2004). A greater sense of control over the pain management plan leads to better analgesia and patient outcomes. Offering patients more information and discussing choices regarding their admission and pain management are useful strategies. Taking a person-centred approach means respecting patient preferences, values and beliefs regarding pain and its management.

Catastrophising

Pain catastrophising has been defined as the tendency to ruminate on and magnify pain and to feel helpless when confronted with pain (Sullivan 2009). It has been found to be one of the most important psychosocial predictors of pain and adjustment to pain (Keefe 2009). In the early postoperative period, anxiety, depression and catastrophising are linked to higher pain severity and/or opioid requirements, and greater risk for developing chronic pain after surgery. The relationship between pain catastrophising, anxiety and depression and their effects in the postoperative context is presented in Figure 36-6.

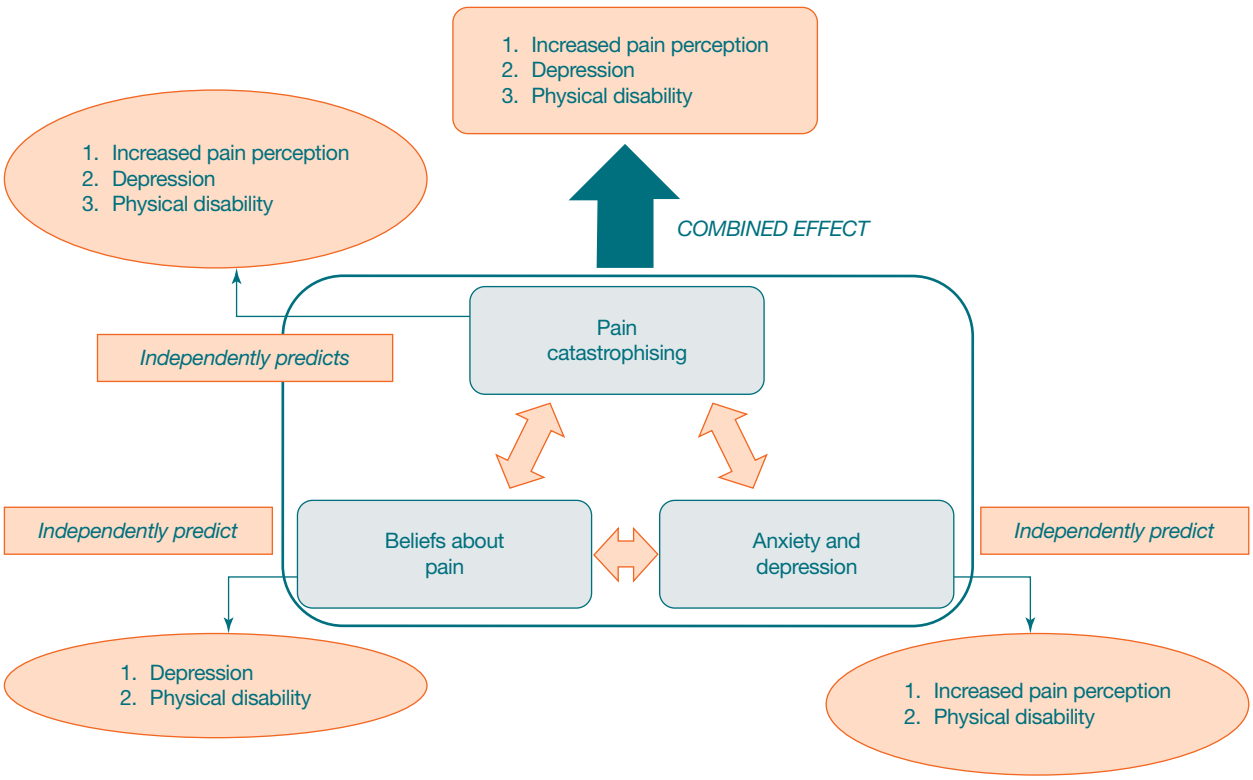


Figure 36-6 Association of catastrophising with other psychological factors and their effects on acute pain.

Khan RS et al 2011 Catastrophizing: a predictive factor for postoperative pain. The American Journal of Surgery 201(1):123.

Age

Children and older adults are at risk for inadequate pain management because of common misconceptions about pain perception, appropriate pain assessment and effective and safe use of analgesics (see Table 36-3).

Young children may have difficulty describing and expressing pain to parents or caregivers. Developmentally, toddlers and preschoolers are unable to recall explanations about pain, or associate pain with experiences that can occur in various situations. With these considerations in mind, you should adapt approaches for assessing a child's pain (including what to ask and the behaviours to observe for) and how to prepare a child for a painful procedure.

When older people have pain, there can be serious impairment of functional status. Mobility, activities of daily living, social activities outside the home and activity tolerance can all be reduced. The presence of pain in the older adult requires aggressive assessment, diagnosis and careful management that is safe and effective.

Chronic pain is a problem for many elderly people presenting to hospital with other illnesses or living in both community and residential aged care facilities. When they are admitted to hospital they often have acute pain superimposed on chronic pain problems. There are also many myths about pain in older adults that need to be corrected in order to provide effective nursing care (see Table 36-4).

WORKING WITH DIVERSITY

The multicultural nature of the Australian and New Zealand population means that you will encounter a variety of responses to pain. It is important to note that observed cultural differences are more likely to concern the way in which pain is regarded and the extent to which a person is permitted to express pain and under what conditions. These differences in pain behaviour are not evidence of differences in pain threshold and tolerance. They signify differences in the way people from different cultures have learned to behave when they are in pain.

Implications for practice

While it is important that you are aware of cultural differences in response to pain, you should be careful not to stereotype patients based on their ethnicity. Although an individual may identify with a cultural group, there is also diversity within each culture.

Providing culturally safe care means being aware of your own cultural values and beliefs about pain and reflecting on how this might influence practice (see Chapter 14).

The nurse, patient and family must work together to facilitate communication about assessment and management of pain. Finding a common assessment tool and communicating that tool to other healthcare providers is important.

TABLE 36-3 Pain in infants

Misconception	Correction
Infants are incapable of feeling pain	Infants have developed the anatomy and physiology for pain processing by mid to late gestation
Infants are less sensitive to pain than older children and adults	Full-term neonates are as sensitive to pain as older infants and children Preterm neonates may be more sensitive to pain than full-term neonates or older infants
Infants are incapable of expressing pain	Although infants cannot verbalise pain, they demonstrate it with observable cues, both behavioural and physiological
Infants must learn about pain from previous painful experiences	Pain requires no prior experience; it need not be learned from earlier painful experience. Pain is present from the first injury
Pain cannot be accurately assessed in infants	Behavioural cues (i.e. facial expressions, crying, body movements) and physiological indicators of pain can be reliably and validly assessed either alone (univariate approach) or in combination (multivariate approach). The most valid univariate approach is facial expression. The most valid multivariate approach is through the use of a composite pain measure
Infants are incapable of remembering pain	Studies have shown that infants who are exposed to painful stimuli at an early age respond more vigorously to subsequent painful stimuli
Analgesics and anaesthetics cannot be safely given to infants and neonates because of their immature capacity to metabolise and eliminate drugs and their sensitivity to opioid-induced respiratory depression	Infants older than 1 month of age metabolise drugs in the same manner as older infants and children. Careful selection of the agent, dosage, administration route and time, frequent monitoring for desired and undesired effects and drug titration and weaning can minimise the adverse effects of opioids and non-opioids for pain management in neonates

Adapted from McCaffery M, Pasero C 1999 Pain: clinical manual, 2nd edn. Mosby, St Louis.

TABLE 36-4 Pain in older adults

Misconception	Correction
Pain is a natural outcome of growing old	Although older adults are at greater risk of developing painful conditions, pain is not an inevitable result of ageing
Pain perception, or sensitivity, decreases with age	This assumption is unsafe. Although older adults often demonstrate less emotional suffering with pain, there is no evidence that they perceive it any differently from younger people
If the elderly patient does not report pain, he or she does not have pain	Elderly patients commonly under-report pain. Reasons include expecting to have pain with increasing age; not wanting to alarm loved ones; being fearful of losing their independence; not wanting to distract, anger or bother caregivers; and believing caregivers know they have pain and are doing all that can be done to relieve it The absence of a report of pain does not mean the absence of pain
If the elderly patient appears to be occupied, asleep or otherwise distracted from pain, he or she does not have pain	Assumptions about the presence or absence of pain cannot be made solely on the basis of a patient's behaviour. They may be using pain-related coping strategies such as distraction. Sleep may also indicate exhaustion, not pain relief
The potential side effects of opioids make them too dangerous to use to relieve pain in the elderly	Opioids may be used safely in the elderly. Although the opioid-naïve elderly may be more sensitive to opioids, this does not justify withholding them in the management of pain in this population The key to the use of opioids in the elderly is to 'start low and go slow'. Potentially dangerous opioid-related side effects can be prevented with slow titration; regular, frequent monitoring and assessment of the patient's response; and adjustment of dose and interval between doses when side effects are detected
Patients with dementia or cognitive impairment do not feel pain, and their reports of pain are most likely invalid	No evidence exists that the cognitively impaired elderly experience less pain or that their reports of pain are less valid than those of individuals with intact cognitive function Assessment of pain in these patients is challenging but possible. The best approach is to accept the patient's report of pain and treat the pain as it would be treated in an individual with intact cognitive function

Adapted from McCaffery M, Pasero C 1999 Pain: clinical manual, 2nd edn. Mosby, St Louis.

The ability of older patients to interpret pain can be complicated by the presence of multiple diseases with vague symptoms that may affect similar parts of the body. It is important to take enough time to complete a thorough assessment of pain and pain-related concerns.

• CRITICAL REFLECTION POINT

Smithy is a 55-year-old Indigenous Australian who has a fractured femur resulting from the impact of a cow in the cattle yards. He is a long way from home and family members. As his female RN, you are having difficulty assessing his pain and he avoids eye contact with you. What issues might you consider in terms of ensuring cultural safety and a positive nurse–patient relationship?

Family and social support

Perceived social support is another critical factor influencing pain perception. People in pain often depend on family members or close friends for support, assistance or protection. Although pain still exists, the presence of a loved one can minimise loneliness and fear. An absence of family or friends can often make the pain experience more stressful. The presence of parents is especially important for children experiencing pain and parents can contribute to pain assessment and treatment. Partners and caregivers are often interested in helping their loved one manage acute pain but uncertain what role they can play.

CLINICAL REASONING PROCESS

Making sound clinical judgements requires you to anticipate what assessment data is needed, critically analyse the data and make appropriate decisions regarding patient care (see Chapter 4). In the case of pain management, a scientific knowledge base of pain and evidence-based approaches to assessment and management allow you to safely and effectively intervene. Previous experience in caring for patients with pain will also sharpen your assessment skills and ability to choose effective therapies.

This clinical knowledge and judgement that underpins nursing practice is not always obvious to others – in fact, it is often invisible – and so others often attribute this work to the medical practitioner instead. Consider the typical scenario described by Buresh and Gordon (2006:26) in the *Clinical example* overleaf.

Buresh and Gordon (2006) argue that telling the patient that the medical practitioner 'ordered' her morphine would conceal the nurse's contribution. She couldn't tell the patient that she had fought with the medical officer to get the morphine, but she could have negotiated the dilemma by saying: 'I've

CLINICAL EXAMPLE

A nurse working on the oncology floor at a major teaching hospital spends hours trying to get a medical intern to write an order for an opioid for a patient suffering from pancreatic cancer. The nurse has informed the intern that the patient is in excruciating pain. Far more familiar with cancer patients and their pain management than the intern, she recommends a course of intravenous (IV) morphine.

The intern refuses to order the opioid. He simply will not listen to the nurse. Over a period of several hours, she repeatedly engages with him, trying, to no avail, to teach him about cancer pain management. Finally, she corners a more senior resident who agrees with her and directs the intern to write the order. In the patient's chart – the contemporary and historical record of the case – the nurse's struggle with the young doctor is absent. Reading the chart, one would never know that the nurse was responsible for easing the patient's pain and that the intern resisted her attempts to provide appropriate care. In this chart the new doctor is 'credited' with taking the action that reduced the patient's suffering.

Not surprisingly, the patient and her family believe the doctor was her saviour. Several days later, the patient writes letters thanking her caregivers. She expresses her heartfelt gratitude to her attending doctor who, during her hospitalisation, rarely saw her when she was awake. She specifically thanked the intern whom she thought brought her relief. She did not thank her primary and associate nurses by name. She included only a general thank you to 'the nurses'.

consulted with the medical practitioner, and she agreed with my recommendation to give you IV morphine. I will make sure it's effective.'

The same process can occur as a student nurse – what may have seemed like a brief interaction between the RN and patient before giving a dose of IV morphine was in fact a complex assessment of the patient, including their pain rating, level of sedation, vital signs and other assessment cues. This can be an invisible process to the student unless they take an active part in learning.

Making the most of clinical placements by seeking opportunities to develop pain assessment and management skills is important in the transition from student nurse to beginning practitioner. Use every opportunity on clinical placement to ask RNs how they make clinical judgements about pain management. What assessments did they perform to make decisions about patient care? What was the reasoning behind their decision?

GATHERING RELEVANT INFORMATION AND DATA

Before reading on, work through the clinical scenarios about pain assessment in Box 36-1 opposite.

The foundation of pain assessment: accepting the patient's report of pain

Probably the most challenging aspect of caring for the patient with pain is to accept that pain is completely subjective. No objective measures of pain exist. Pain cannot be proved or disproved. While nurses sometimes may not believe what the patient says about their pain, they have an ethical and professional responsibility to accept and act on it (Pasero & McCaffery 2011). All reports of pain should be taken seriously. Yet, nurses and other healthcare professionals often have trouble accepting the patient's report of pain.

A patient's self-report of pain is the single most reliable indicator of the existence and intensity of pain (Schug et al 2015). Thus, the gold standard for assessing the existence and intensity of pain is the person's self-report, not the nurse's opinion. No other source of information has ever been shown to be more accurate or reliable than what the patient says. Behaviours and vital signs, the opinions of staff delivering care and the family's estimates are not as reliable as the patient's report of pain.

The 'Andrew–Robert' scenario presented in Box 36-1 has been developed to demonstrate the necessity of accepting reports of pain as the standard for assessment. Everything about the patients in the vignettes is the same except for their behaviour. If we accept that the patient is the expert on their pain, then the correct answer is to record a pain rating of 8 for both patients in their charts. Also, given the information that the previous dose of morphine 2 mg IV was safe but ineffective, the correct answer is to administer morphine 3 mg IV for both patients. What we find when this survey is administered to students and RNs reflects the reality of clinical practice – nurses' pain assessment and management decisions are often based on their personal opinions and biases rather than the patient's self-report.

A summary of findings of the 'Andrew–Robert' vignette administered to RNs between 1990 and 2006 have been published by the developers of the survey (McCaffery et al 2007). These data show that while there has been a significant improvement over time, some nurses have not been taught or have not accepted that only the patient's own pain rating should be recorded when a self-report pain scale is used (see Table 36-5). Unfortunately, this trend towards improved pain assessment has not translated into providing an appropriate analgesic dose to patients with severe pain, and suggests that nurses may still base their choices about opioid dose on the assumption that patients in pain should look like they are in pain. In the 2006 survey, approximately half of the nurses would allow a smiling patient to remain in severe pain by failing to increase the dose and about a third of nurses would under-treat a grimacing patient.

• CRITICAL REFLECTION POINT

You are caring for 17-year-old Mark Lang, who has had surgery for incision and drainage of an arm abscess and requires a dressing change. When you attempt to change the dressing, he screams in pain and refuses to allow you to proceed. You call the resident medical officer to organise analgesia, who cites the patient's history of intravenous drug use and simply suggests paracetamol. Other nursing staff avoid the patient or attempt to control his expressions of pain with statements such as 'Try to take control of yourself', or 'You're going to have to learn to handle this yourself.' How would you respond to this situation?

BOX 36-1 Survey – assessment and use of analgesics: 'Andrew – Robert'

Andrew is 25 years old, and this is his first day after abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80, HR = 80, RR = 18 and on a scale of 0–10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

1. On the patient's hospital chart you must record his pain intensity on the scale below. Circle the number that you will record:

   0 1 2 3 4 5 6 7 8 9 10

   No pain Worst pain

2. Your assessment, above, is made 2 hours after he received morphine 2 mg IV. Half-hourly pain ratings following the injection ranged from 6–8, and he had no clinically significant respiratory depression, sedation or other untoward side effects. He has identified 2 or less as an acceptable level of pain relief. His doctor's order for analgesia is 'morphine IV 1–3 mg q1h prn pain relief'. Mark the action you will take at this time:

   ____No morphine now____1 mg IV now

   ____2 mg IV now____3 mg IV now

Robert is 25 years old, and this is his first day after abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80, HR = 80, RR = 18 and on a scale of 0–10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

1. On the patient's hospital chart you must record his pain intensity on the scale below. Circle the number that you will record:

   0 1 2 3 4 5 6 7 8 9 10

   No pain Worst pain

2. Your assessment, above, is made 2 hours after he received morphine 2 mg IV. Half-hourly pain ratings following the injection ranged from 6–8, and he had no clinically significant respiratory depression, sedation or other untoward side effects. He has identified 2 or less as an acceptable level of pain relief. His doctor's order for analgesia is 'morphine IV 1–3 mg q1h prn pain relief'. Mark the action you will take at this time:

   ____No morphine now____1 mg IV now

   ____2 mg IV now____3 mg IV now

BP = blood pressure (mmHg), HR = heart rate (beats per minute), IV = intravenous, q1h prn = every hour as needed; RR = respiratory rate (breaths per minute).

McCaffery M, Pasero C 1999 Pain: clinical manual, 2nd edn, Mosby, St Louis.

TABLE 36-5 'Andrew–Robert': comparison of RNs' responses from 1990 through 2006*

	Andrew – smiling				Robert – grimacing			
	1990	1995	1998	2006	1990	1995	1998	2006
Nurses recorded same as patient's pain rating (%)	40.7	73.8	85.8	86	71.6	87.1	90	94.6
Nurses increased opioid dose (%)	32.8	51.5	47.3	50.6	54	71.3	62.5	64.3

* In the first two surveys, meperidine (pethidine) IM was used instead of morphine IV because at that time many nurses were not familiar with the dosing of morphine. 1990: n = 465; 1995: n = 450; 1998: n = 615; 2006: n = 615.

McCaffery M, Pasero C, Ferrell BR 2007 Nurses' decisions about opioid dose. Am J Nurs 107(12):35–9. © Margo McCaffery, Betty Farrell, Chris Pasero.

Accepting and acting upon the patient's report of pain is difficult if you doubt their credibility, which may happen on occasion. Since pain cannot be proven, healthcare professionals are vulnerable to being fooled by patients who lie about pain. Yet, as Pasero and McCaffery (2011) cogently argue, although accepting and responding to the patient's report of pain will occasionally result in analgesics being given to some patients who are addicted or malingering, it ensures that everyone who has pain receives the best possible pain management. Healthcare professionals do not have the right to deprive a patient of appropriate assessment and treatment simply because they believe the patient is lying.

You are required to accept the patient's report of pain, convey this acceptance to the patient and take the appropriate action. Doubts and opinions may persist, but they cannot be allowed to interfere with appropriate care. Pasero and McCaffery (2011) offer some excellent strategies, listed in Box 36-2, that you could use when difficulties arise with accepting the patient's self-report of pain.

Even when the patient's report of pain is sought by nurses, this process can be undermined by misconceptions that hamper the assessment and subsequent treatment of pain. Take the time to carefully review these common misconceptions in Table 36-6 and reflect on whether you hold any of these beliefs about pain.

Performing a pain assessment

The key to effective pain management is adequate pain assessment. Just as it is necessary to regularly monitor patients'

BOX 36-2 Strategies when the patient's report of pain is not accepted

What do we do if the healthcare team does not respond positively to the patient's report of pain?

1. Acknowledge that everyone is entitled to a personal opinion, but personal opinion does not form the basis for professional practice.
2. Clarify that pain is subjective and cannot be proved or disproved.
3. Quote recommendations from clinical practice guidelines and research.
4. Ask: 'Why is it so difficult to believe that this person hurts?'

Pasero C, McCaffery M 2011 Pain assessment and pharmacologic management. Mosby, St Louis.

vital signs, pain should be considered a core assessment skill, along with others such as temperature, pulse, respirations and blood pressure. In some institutions, initiatives to treat pain as the fifth vital sign were developed to encourage routine pain assessment.

A pain problem should prompt a focused pain assessment (see Skill 36-1, p. 1341) as well as the need to assess its potential impact on the patient's physical and psychosocial functioning. In doing so, you should incorporate standardised and evidence-based assessment tools to obtain complete and reliable information.

The frequency of pain assessment and amount of information collected is determined by the patient's situation. For example, on admission to the post-anaesthesia care unit (PACU) a patient may only be able to tell you that their pain is 'severe' and further assessment may not be possible until they are more awake and pain has begun to be controlled with IV analgesia.

New-onset or increasing pain should always indicate the need for a focused physical assessment of the region or body systems

TABLE 36-6 Misconceptions: barriers to the assessment and treatment of pain

Misconception	Correction
The best judges of the existence and severity of patients' pain are the doctors and nurses caring for the patients	Patients are the authorities on their pain. Patients' self-reports are the most reliable indicators of the existence and intensity of pain
Clinicians should use their personal opinions and beliefs about the truthfulness of patients to determine patients' true pain status	Allowing each clinician to act on personal beliefs presents the potential for different pain assessments by different clinicians, leading to different interventions by each clinician. This results in inconsistent and often inadequate pain management. It is essential to establish the patients' self-reports of pain as the standard for pain assessment
Clinicians must believe what patients say about pain	Clinicians need not believe the patients' reports of pain, but clinicians must accept and respect patients' reports of pain and proceed with appropriate assessment and treatment. Clinicians are always entitled to their personal opinions, but those opinions cannot be allowed to guide professional practice
Comparable noxious stimuli produce comparable pain in different people. The pain threshold is uniform	Findings from numerous studies have failed to support the notion of a uniform pain threshold. Comparable stimuli do not result in the same pain in different people. After similar injuries, one person may suffer moderate pain and the other severe pain
There is no reason for patients to hurt when no physical cause for pain can be found	Pain is a new and inexact science, and it would be foolish of us to think that we will be able to determine the cause of all the pains that patients report
Patients should not receive analgesics until the cause of pain is diagnosed	Pain is no longer the primary diagnostic tool of clinicians. Symptomatic relief of pain should be provided while the investigation of cause proceeds. Early use of analgesics is now advocated for patients with acute abdominal pain
Visible signs, either physiological or behavioural, accompany pain and can be used to verify its existence and severity	Even with severe pain, periods of physiological and behavioural adaptation occur, leading to periods of minimal or no signs of pain. Lack of pain expression does not necessarily mean lack of pain
When it is time to reassess patients' pain following an analgesic and the patients are sleeping, it is not necessary to awaken them	Sleep does not mean the absence of pain, and not all patients who appear to be sleeping are actually sleeping. Until patients' responses to analgesics are established as being effective and safe, patients should be awakened to obtain a pain rating. This should be explained to patients However, if the same analgesic dose has been administered before and has produced effective pain relief, and patients are not aroused by simple stimuli such as calling their names in a normal tone of voice, patients with acceptable respiratory status may be allowed to sleep If patients' pain is relatively constant and the analgesic effect is known to wear off after a certain time, e.g. 4 hours, consider awakening patients for the next dose before pain awakens the patients. Discuss this option with the patients

continued

TABLE 36-6 ***continued***

Misconception	Correction
Anxiety makes pain worse	Anxiety is often associated with pain, but the cause-and-effect relationship has not been established. Pain often causes anxiety, but it is not clear that anxiety necessarily makes pain more intense
Patients who are knowledgeable about opioid analgesics and who make regular efforts to obtain them are drug-seeking (addicted)	Patients with pain should be knowledgeable about their medications; use of opioids for pain relief is not addiction. When patients are accused of drug-seeking, it may be helpful to ask, 'What else could this behaviour mean? Might these patients be in pain?'
When patients report pain relief after a placebo, it means that the patients are malingerers or that the pain is psychogenic	About one-third of patients who have obvious physical stimuli for pain (e.g. surgery) report pain relief after a placebo injection. Therefore, placebos cannot be used to diagnose malingering, psychogenic pain, or any psychological problem. Sometimes placebos relieve pain, but why this happens remains unclear
The pain-rating scale preferred for use in daily clinical practice is the Visual Analogue Scale (VAS)	For patients who are verbal and can count from 0 to 10, the Numerical Rating Scale (NRS) is preferred for adult patients. It is easy to explain, measure and record, and it provides numbers for setting pain-management goals. The VAS is a straight line with anchors at each end and no numbers or adjectives in between
Cognitively impaired older patients are unable to use pain-rating scales	When an appropriate pain-rating scale (e.g. 0 to 5) is used and patients are given sufficient time to process information and respond, many cognitively impaired elderly people can use a pain-rating scale
Cognitively impaired patients, especially those who are unable to self-report, do not experience as much pain as those who are cognitively intact	Recent studies examining mechanisms and differences in pain transmission and perception in older adults with dementia document that the pain transmission process is unaltered, but these adults may respond with behaviours that are different from those of cognitively intact adults. In other words, cognitive impairment may result in less pain being reported, but there is no evidence that cognitive impairment reduces the ability to feel painful stimuli
Critically ill patients, especially those who appear to be unconscious or have received a neuromuscular blocking agent, do not feel pain and do not recall painful episodes in intensive care units (ICUs)	Levels of consciousness are difficult to determine, and patients who are thought to be unconsciousness in the ICU often recall moderate to severe pain. Patients under the influence of neuromuscular blocking agents may still be fairly alert and able to feel pain. Patients with endotracheal tubes are unable to self-report verbally but may be able to provide self-reports if attempts are made, such as establishing head nod, pointing or eye blink in response to questions about pain
Persons with intellectual disabilities (IDs) or mental retardation are either insensitive to pain or have greater tolerance for it	This perception appears to be based on observations that behaviour following a potentially painful event is delayed or unconventional. These observations are often valid but do not necessarily indicate insensitivity to pain or indifference to it. Measurements of sensitivity to pain using heat-pain thresholds indicated greater sensitivity to pain than is experienced by normal controls. Behavioural responses to pain may not occur in some individuals with IDs because of physical disabilities such as cerebral palsy
Schizophrenic patients' reports of pain are commonly expressions of the mental illness	For some time, decreased reactivity to pain in some patients with schizophrenia has caused clinicians to believe they were experiencing insensitivity to pain. Some patients with schizophrenia fail to report pain until it becomes severe. As a result, these patients seek medical care at a later stage of the physical disease and may suffer complications as a consequence. Postoperative pain is a risk factor for postoperative confusion and should be treated with analgesics The appearance of insensitivity to pain by schizophrenic patients is poorly understood, but may be the result of abnormal processing of sensory input. In one study of experimental pain, it was noted that individuals with schizophrenia had difficulty focusing on their pain. Furthermore, pain is rarely a hallucination. Recently, studies have suggested that absence of pain reactivity does not mean absence of pain sensitivity
Patients with post-traumatic stress disorder (PTSD) show low sensitivity to acute pain and rarely have chronic pain	Although a few studies have shown that patients with PTSD are less sensitive to very brief painful stimuli, chronic pain is commonly present in patients with PTSD and, conversely, patients with chronic pain often have PTSD, although both of these co-occurrences are underdiagnosed

Pasero C, McCaffery M 2011 Pain assessment and pharmacologic management. Mosby, St. Louis.

BOX 36-3 Mnemonic for pain assessment: PQRSTU

- **P** *Provoking/Palliative factors* – What makes the pain better or worse?
- **Q** *Quality* – Describe what the pain feels like in your own words.
- **R** *Region and radiation* – Where is it? Does it radiate? Does it occur anywhere else? Have the patient point to the body area that is painful.
- **S** *Severity* – Have the patient rate their pain intensity using a pain-rating scale. How much pain do you have at rest? How much pain do you have with movement/coughing?
- **T** *Time of onset/duration* – When did the pain begin? How long does the pain last?
- **U** *Patient's understanding* – What is the patient's understanding of the cause of pain? What treatments have they tried to relieve it?

involved. For example, surgical or other complications need to be ruled out for a postoperative patient with severe pain despite analgesia. Review by an acute pain service should also be considered.

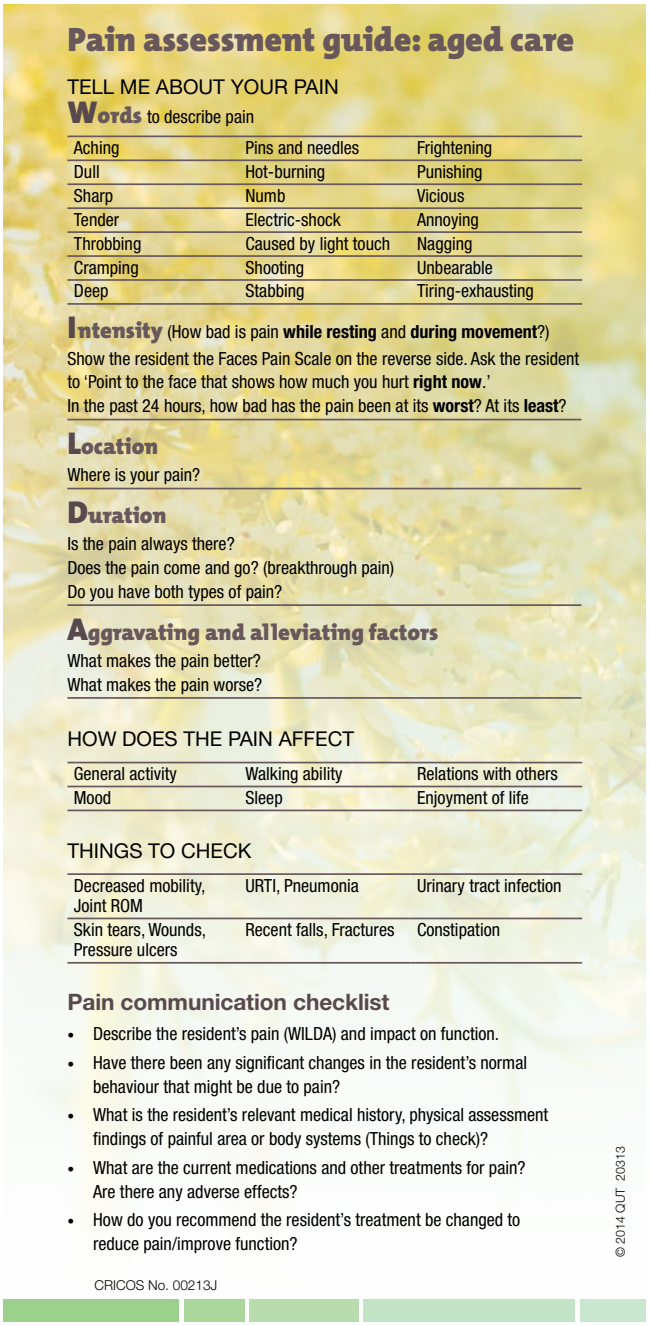
It is helpful to use a mnemonic to remember the key components of a basic pain assessment, such as the PQRSTU approach described in Box 36-3 or the WILDA example in Figure 36-7. More-comprehensive assessment of the person in pain is required for chronic and complex pain problems, which is beyond the scope of this chapter (see Douglas 2014).

Intensity

Pain intensity – a quantitative estimate of the severity or magnitude of perceived pain – is without a doubt the most salient dimension of pain, and a variety of pain-rating scales have been developed to measure it. Most of these tools are highly correlated with each other and therefore they can be used in most situations (Jensen & Karoly 2011). What is important is that you select the tool based on the patient's individual needs (e.g. developmental, cognitive, language and cultural factors) with consideration of the particular strengths and weaknesses of each tool. Where possible, the same tool should be used throughout the admission.

Although acute postoperative pain is often assessed when patients are resting, the effectiveness of analgesia is better determined by assessment of pain during functional activity required for recovery. *For the acute care patient, this means you should record pain intensity ratings for both static (e.g. pain at rest) and dynamic (e.g. pain on coughing, deep breathing or movement) pain* (Schug et al 2015).

The numerical rating scale (NRS) is the most widely used measure of pain intensity in clinical practice (see Figure 36-7). An NRS asks the patient to rate their pain from 0 to 10 (an 11-point scale) or 0 to 100 (a 101-point scale), with the understanding that the 0 represents one end of the pain intensity continuum ('no pain') and the 10 or 100 represents the other extreme of pain intensity ('pain as bad as it can be'). Patients simply state or circle the number on written versions of the scale that best represents their pain intensity by answering the question: 'On a scale of 0 to 10, with 0 being no pain and 10 being the worst possible pain you could imagine, where would you rate the pain you are experiencing right now?' The reliability and validity of the NRS is well established (Jensen & Karoly 2011) and is easily administered.



Pain assessment guide: aged care

TELL ME ABOUT YOUR PAIN

Words to describe pain

Aching	Pins and needles	Frightening
Dull	Hot-burning	Punishing
Sharp	Numb	Vicious
Tender	Electric-shock	Annoying
Throbbing	Caused by light touch	Nagging
Cramping	Shooting	Unbearable
Deep	Stabbing	Tiring-exhausting

Intensity (How bad is pain **while resting** and **during movement**?)

Show the resident the Faces Pain Scale on the reverse side. Ask the resident to 'Point to the face that shows how much you hurt **right now**.'

In the past 24 hours, how bad has the pain been at its **worst**? At its **least**?

Location

Where is your pain?

Duration

Is the pain always there?

Does the pain come and go? (breakthrough pain)

Do you have both types of pain?

Aggravating and alleviating factors

What makes the pain better?

What makes the pain worse?

HOW DOES THE PAIN AFFECT

General activity	Walking ability	Relations with others
Mood	Sleep	Enjoyment of life

THINGS TO CHECK

Decreased mobility, Joint ROM	URTI, Pneumonia	Urinary tract infection
Skin tears, Wounds, Pressure ulcers	Recent falls, Fractures	Constipation

Pain communication checklist

- Describe the resident's pain (WILDA) and impact on function.
- Have there been any significant changes in the resident's normal behaviour that might be due to pain?
- What is the resident's relevant medical history, physical assessment findings of painful area or body systems (Things to check)?
- What are the current medications and other treatments for pain? Are there any adverse effects?
- How do you recommend the resident's treatment be changed to reduce pain/improve function?

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CRICOS No. 00213J

Figure 36-7 An example of the WILDA pain assessment tool for aged care staff.

Queensland University of Technology, Faculty of Health, School of Nursing http://eprints.qut.edu.au/86745/12/86745(e).pdf

A *verbal descriptor scale (VDS)* simply consists of a list of adjectives describing different levels of pain intensity. Patients are asked to read over the list of descriptors and choose the word that best describes their pain intensity on the scale. A simple and clinically useful example is 'no pain', 'mild pain', 'moderate pain' and 'severe pain' (scored numerically from 0 to 3).

The *visual analogue scale (VAS)* consists of a 10 cm horizontal line representing a continuum of pain intensity, with verbal descriptors at each end (e.g. 'no pain' to 'pain as bad as it can be' or 'worst possible pain'). The patient is asked to indicate which point along the line best represents their pain intensity. The distance measured from the 'no pain' end to the mark made by the patient is the pain intensity score. The VAS is commonly used in research as a measure of pain intensity.

The *faces pain scale* is another tool that was originally developed for children but has been found to be useful and popular among adults, especially those with cognitive or communication difficulties. Faces pain scales include cartoon faces (e.g. Wong-Baker FACES Pain Rating Scale; Wong & Baker 1988), hand-drawn realistic depictions (e.g. The Faces Pain Scale – Revised; Hicks et al 2001) and photographs of actual children in distress (e.g. Oucher Scale; Beyer et al 1992). The *Wong-Baker FACES pain rating scale*, for example, contains six cartoon faces and is recommended for persons aged 3 years and older (see Figure 36-8). Instructions are read to the patient and they are asked to choose the face that best describes their pain intensity.

• CRITICAL REFLECTION POINT

How would you assess pain intensity in non-verbal patients who are unable to use a pain-rating scale?

Whenever possible, the existence and intensity of pain is measured by the patient's self-report. Unfortunately, some patients cannot provide a self-report of pain verbally, in writing or by other means such as blinking their eyes to answer 'yes' or 'no' questions. These groups can include older adults with advanced dementia, infants and pre-verbal toddlers and intubated and/or unconscious patients. In such cases a suggested hierarchy of importance of basic measures of pain intensity is recommended (see Box 36-4; see also Herr et al 2011).

Use of a *behavioural pain assessment tool* may assist in recognition of pain in these challenging populations (see *Research highlight*). For example, the FLACC (Face, Legs, Activity, Cry and Consolability) scale was developed to assess acute (postoperative) pain in young children (see www0.health.nsw.gov.au/policies/gl/2016/pdf/GL2016_009.pdf). A comprehensive review and copies of existing pain assessment tools for non-verbal older adults are available at http://prc.coh.org/PAIN-NOA.htm.

Quality

Unidimensional measures of pain intensity alone do not capture the other qualitative aspects of pain. Asking the patient to describe the *quality* of their pain using their own words is important. Providing a list of possible descriptors can sometimes be helpful if patients find it difficult to do this. You may also gain valuable information about the underlying pain mechanisms from the types of words chosen. For example, neuropathic pain is characterised by descriptors, such as 'burning', 'cold', 'numb', 'electric' or 'shooting' pain. Features of neuropathic pain may not respond to conventional analgesics like opioids. Often, **adjuvant** analgesics are required, such as anticonvulsants (pregabalin) or tricyclic antidepressants (amitriptyline). Registered nurses are in

BOX 36-4 Hierarchy of pain assessment techniques

1. Attempt first to elicit a self-report of pain from patient. If patient is unable to give a self-report, explain why and proceed with the following steps.
2. Identify pathological conditions and common problems or procedures that may cause pain.
3. Observe for behaviours recognised as pain-related. A behavioural assessment tool may be used.
4. Solicit information about possible indicators of pain from caregivers and others knowledgeable about the patient.
5. Attempt an analgesic trial and observe changes in the patient's behaviour.

Adapted from Pasero C, McCaffery M 2011 Pain assessment and pharmacologic management. Mosby, St Louis, p. 123.



Figure 36-8 Wong-Baker FACES scale.

Explain to the person that each face is for a person who has no pain (hurt) or some, or a lot of pain. Face 0 doesn't hurt at all. Face 2 hurts just a little bit. Face 4 hurts a little bit more. Face 6 hurts even more. Face 8 hurts a whole lot. Face 10 hurts as much as you can imagine, although you don't have to be crying to have this worst pain.

Wong-Baker FACES Foundation (2016). Wong-Baker FACES® Pain Rating Scale. Retrieved May 2016 with permission from http://www.WongBakerFACES.org.

RESEARCH HIGHLIGHT

Research focus

Practical strategies are needed to improve pain awareness among aged care staff and promote a systematic approach to pain identification using evidence-based tools. The purpose of this study was to evaluate a pain identification tool for use by nursing and non-professional staff in residential aged care facilities (RACFs).

Research abstract

Intervention

The research team developed the 'Identify Pain: Ask, Observe, Report' tool based on current best practice guidelines. This was supported by a range of practical implementation strategies such as a pain education booklet, plastic lanyard cards, pocket-sized pain assessment guides, A3- and A4-sized posters and pain communication checklists as clinical reminders and practice prompts. Pain workshops were also conducted over a 3-month period to improve knowledge, skills and confidence for pain assessment among all staff.

Methods

To evaluate the effectiveness of the intervention, it was implemented with staff in five nursing homes at one RACF, with four nursing homes at a second RACF serving as the control group. Participants under control conditions received usual staff development activities and provided standard care to residents. Before and after the intervention period, the primary outcomes of staff knowledge, skills and confidence were measured by survey. The secondary outcomes of frequency of pain assessments and use of pain interventions were also examined with chart audits. Residents' perceptions of the quality of their pain management were measured by self-report survey among cognitively intact residents.

Research findings

The intervention group showed significant improvement in routine pain assessment and use of non-drug pain interventions. Among homes allocated to the intervention, the proportion of residents with a documented routine pain review increased from below half (48.4%) at baseline to approximately three-quarters (73.8%) at 3-month follow-up. Overall, staff believed the intervention was clinically useful and fostered a team approach to pain assessment.

Evidence-based practice

- The introduction of simple pain identification resources with implementation strategies to support frontline staff created a more responsive and team-based approach to treating pain among residents.
- Translating evidence into practice to improve pain care deserves much greater attention in aged care settings.
- You can freely access the pain assessment resources used in this study at: http://eprints.qut.edu.au/86745/

Reference

Douglas C, Haydon D, Wollin J 2016 Supporting staff to identify residents in pain: a controlled pretest-posttest study in residential aged care. Pain Management Nursing 17(1):25–37.

a prime position to detect neuropathic pain and collaborate to provide the correct treatment for the patient.

Onset and duration

You should ask questions to determine the onset, duration and pattern of pain. When did the pain begin? How long has it lasted? Does it occur at the same time each day? How often does it recur? Is it intermittent or constant?

Location

To assess pain location, ask the patient to describe or point to all areas of discomfort. Pain sites can be documented on a body diagram (see Figure 36-9). A pain drawing consists of outline drawings of the human body, front and back, on which the participant indicates the location of pain by shading the painful area. When describing pain location, use anatomical landmarks and descriptive terminology (e.g. 'abdominal pain localised to the right upper quadrant'). Pain, classified by location, may be *superficial* or *cutaneous*, *deep* or *visceral*, or *referred* or *radiating* (see Box 36-5).

Precipitating factors

It helps to assess specific events or conditions that precipitate or aggravate pain. Ask the patient to describe activities that cause pain, such as physical movement or position, certain activities or environmental factors. For example, with a herniated intervertebral disc, the low back pain and radiation down the leg is usually aggravated by bending over or lifting objects. Swallowing and talking often aggravate the pain of pharyngitis. When precipitating or aggravating factors are identified, it is easier to plan interventions to prevent pain from occurring or worsening.

Alleviating factors

It is useful to know whether the patient has found effective ways of relieving pain, including drug and non-drug pain management techniques. These strategies can be incorporated into the plan of care if appropriate.

Associated symptoms

Associated symptoms are those that often occur with pain (e.g. nausea, dizziness). Certain types of pain have predictable accompanying symptoms. For example, severe rectal pain often results in constipation. The pain of an inflamed gallbladder or a kidney stone often causes nausea and vomiting.

Impact of pain on functioning

The ability of patients to function is a key outcome of effective acute pain therapy. The Victorian Quality Council (2007) recommends that all patients are to have a *Functional Activity*

Brief Pain Inventory

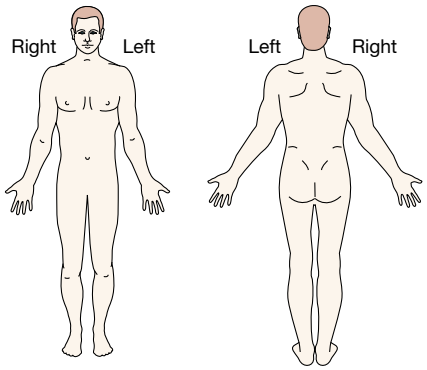
Date: _____ / _____ / _____ Time: _____

Name: _____ _____ _____
Last First Middle Initial

1) Throughout our lives, most of us have had pain from time to time (such as minor headaches, sprains and toothaches). Have you had pain other than these everyday kinds of pain today?

1. Yes 2. No

2) On the diagram, shade in the areas where you feel pain. Put an X on the area that hurts the most.



3) Please rate your pain by circling the one number that best describes your pain at its **worst** in the past 24 hours.

0 1 2 3 4 5 6 7 8 9 10
No pain — Pain as bad as you can imagine

4) Please rate your pain by circling the one number that best describes your pain at its **least** in the past 24 hours.

0 1 2 3 4 5 6 7 8 9 10
No pain — Pain as bad as you can imagine

5) Please rate your pain by circling the one number that best describes your pain on the **average**.

0 1 2 3 4 5 6 7 8 9 10
No pain — Pain as bad as you can imagine

6) Please rate your pain by circling the one number that tells how much pain you have **right now**.

0 1 2 3 4 5 6 7 8 9 10
No pain — Pain as bad as you can imagine

7) What treatments or medications are you receiving for your pain?

_____

_____

8) In the past 24 hours, how much **relief** have pain treatments or medications provided? Please circle the percentage that most shows how much relief you have received.

0% 10 20 30 40 50 60 70 80 90 100
No relief — Complete relief

9) Circle the one number that describes how, during the past 24 hours, pain has **intefered** with your:

A. General activity

0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely interferes

B. Mood

0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely interferes

C. Walking ability

0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely interferes

D. Normal work (includes both outside the home and housework)

0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely interferes

E. Relations with other people

0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely interferes

F. Sleep

0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely interferes

G. Enjoyment of life

0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely interferes

Figure 36-9 Brief Pain Inventory.

Pasero C, McCaffery M (eds) 2011 Pain assessment and pharmacologic management. Mosby, St Louis, p. 53.

Score in addition to pain ratings. This is an activity-related score. The patient is asked to perform a task appropriate to their painful injury or rehabilitation requirements and is rated on how pain affects their ability to perform this task (i.e. no, mild or severe limitation). For example, asking the patient to deep-breathe and cough after abdominal surgery, or move the affected leg for lower limb pain. You should observe the patient during the activity and note the level of limitation because of pain (see Table 36-7). Severe limitation should trigger a review of the patient by the acute pain team. Assess the impact of acute pain on the patient's functional ability.

Other simple tools such as the *Brief Pain Inventory (BPI)* scale assess the extent to which pain interferes with mood, walking, general activity, relationships with other people, sleep, and enjoyment of life (see Figure 36-9). The tool can be adapted to measure pain interference on coughing, breathing and mobilising for acute pain management. Using evidence-based, brief screening tools such as the BPI is useful for identifying problems which can then be more comprehensively assessed by nursing and/or referred for specialist assessment and management.

BOX 36-5 Understanding referred pain

Referred pain occurs when a patient locates a painful region that does not correspond to the area of injury or surgery. For example, a patient may experience pain in the shoulder after abdominal surgery or locate pain from gallstones at the tip of the right shoulder blade or scapula.

The physiological basis for this lies in the dorsal horn of the spinal cord where wide dynamic range (WDR) neurons receive input from skin, muscle and viscera. Referred pain may occur because the area shares the same spinal cord branches as the area of injury. For example, trapped air from surgery may irritate the diaphragm, which shares the same cervical nerve branch as the shoulder tip (Hughes 2008).

Hughes J 2008 Pain management: from basics to clinical practice. Elsevier, London.

TABLE 36-7 Functional activity scale

A No limitation	The patient is able to undertake the activity without limitation due to pain
B Mild limitation	The patient is able to undertake the activity but experiences moderate to severe pain
C Significant limitation	The patient is unable to complete the activity due to pain, or pain treatment-related side effects, independent of pain intensity scores.

Victorian Quality Council 2007 Guidelines, acute pain management toolkit. Victorian Government Department of Human Services, Melbourne.

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

After assessing pain you need to make sense of the data and make a clinical judgement about the person's needs, concerns, or health problems (see Chapter 5). For example, severe acute postoperative pain might be identified as a priority problem, but it might also indicate a surgical complication that needs immediate action. By systematically collecting data you can make safe and appropriate clinical decisions about the nature and possible causes of the person's pain problem.

Common clinical problems in acute pain management

Acute pain management is not only about the patient's pain! This chapter so far has highlighted the benefits of adequate analgesia and the important link between pain management and rehabilitation from injury, disease or trauma. Therefore, the assessment of pain needs to take into account a whole range of physical, psychological and social variables that contribute to the patient's outcome. Table 36-8 (p. 1343) describes some examples of the complex decisions RNs make in the acute pain management setting.

SETTING PRIORITIES AND ESTABLISHING GOALS

Priorities of care

When developing a plan of care, you need to establish priorities based on the patient's level of pain and its effect on their condition. For acute, severe pain, it is important to provide relief as soon as possible. Analgesics can provide relatively rapid relief and lessen the chance of pain worsening. After a patient gains some relief from the pain, you can plan other interventions such as relaxation or the application of non-pharmacological interventions to enhance the effect of analgesics.

Goals and outcomes

In an acute care setting, setting a *comfort-function goal* with the patient can be useful. This consists of the pain rating identified by the individual patient above which the patient experiences interference with function and quality of life, that is, activities that the patient needs or wishes to perform (Pasero & McCaffery 2004). For example, you might ask a patient having cardiac surgery: 'What pain rating would make it easy for you to use your incentive spirometer frequently?' The patient might answer that a 3 (on a 0–10 numeric pain scale) would be manageable. This sets a goal for treatment, and pain ratings above this goal should then trigger additional interventions.

Plan to collect evaluation data that is specific and relevant to the patient. Following the example of the patient having cardiac surgery, relevant evaluation criteria for pain management may include:

- Patient verbalises pain intensity at rest, while coughing or deep breathing, and with movement as ≤ 3 on a 0–10 numerical pain-rating scale.
- Vital signs within normal limits including heart rate, blood pressure, oxygen saturation, rate and quality of respiration.
- Patient reports no pain interference with sleep, mood and overall functioning.
- Advises nursing staff if analgesic side effects are experienced.

PREPARING FOR AND TAKING ACTION

Nurses are usually the most important member of the healthcare team in initiating and providing pain-relief interventions. You are an important member of the multidisciplinary pain management team. You provide input into the assessment and reassessment of pain (Skill 36-1). You help in planning and implementing treatments, including education, advocacy, and support of the patient and family. Because patients in any care setting can experience pain, you must be knowledgeable about current therapies and flexible in trying new approaches to pain management.

Together with the patient, develop a pain treatment plan that describes the patient's comfort-function goal and how pain will be assessed and controlled. The plan should ensure that pain will be treated based on the patient's perception and report of pain. The success of these actions depends on your ability to establish a trusting relationship with the patient and caregiver and to address their concerns regarding pain and its treatment. Pain interventions require an individualised approach. The nurse, patient and often the family must be partners in pain management.

SKILL 36-1

Focused pain assessment

Delegation and other considerations

Initial pain assessment is the basis for the development of the nursing care plan and therefore should not be delegated by the registered nurse.

Ongoing pain assessment may be delegated to an enrolled nurse who should report any abnormal findings.

Equipment

- Pain assessment tools (e.g. Numerical Rating Scale, Wong-Baker Faces Scale, FLACC tool for children < 7 years)

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
Critical decision point: The essential message about pain assessment is simple: 'Ask patients about their pain; accept and respect what they say; intervene to relieve their pain according to their pain management goals; and, once intervention has been implemented, ask them again about their pain to evaluate the intervention. It is a circle of assessment, intervention, and reassessment' (Pasero & McCaffery 2011:161).	
1. Routinely ask about the presence of pain or discomfort on admission and with all regularly scheduled nursing assessments.	Regular assessment of pain leads to improved acute pain management (Schug et al 2015). Treat pain intensity as the fifth vital sign, as it may also indicate clinical deterioration.
2. Use a validated pain assessment tool such as the Initial Pain Assessment Tool (Pasero & McCaffery 2011) or the Brief Pain Inventory (see Figure 36-9) to organise the pain interview. Ensure that the selection of the assessment tool is developmentally and clinically appropriate.	The pain measurement tool chosen should be appropriate to the individual patient: developmental, cognitive, emotional, language and cultural factors should be considered (Schug et al 2015). Age and cognitive impairment may present significant barriers to effective pain assessment.
3. Conduct a pain history assessing each of the key characteristics of pain using the PQRSTU mnemonic.	The gold standard for assessing the existence and intensity of pain is the patient's self-report. Self-reporting of pain should be used whenever possible (Schug et al 2015).
a. Provoking/Palliative factors – ask: What makes the pain better or worse?	Helpful to determine the cause of pain and inform the management plan. Known triggers can be avoided or additional analgesia given at those times. The patient may also know which medications and doses are helpful and may have found some non-drug methods helpful. If appropriate, these methods should be part of the care plan.

STEPS	RATIONALE
b. Quality – ask the patient to describe what the pain feels like in their own words. (1) If the patient has difficulty describing pain, ask about the appropriateness of possible descriptors (e.g. throbbing, shooting, sharp, cramping, aching, tender, pricking, burning). (2) If necessary, ask: What could you do to me to make me feel the pain you have?	This information is helpful in diagnosing the underlying pain mechanism (e.g. nociceptive or neuropathic) and may have direct implications for the type of pain treatment chosen.
c. Region and radiation – ask: Where is it? Does it radiate? Does it occur anywhere else? (1) Ask the patient to mark the location on a pain drawing or have them point to the body area that is painful.	The location(s) and sensory distribution of pain are also helpful in determining the pain mechanism.
(2) If there is more than one site of pain, letters (A, B, C, etc) may be used to distinguish the various sites.	
d. Severity – have the patient rate their pain intensity using a pain-rating scale. Ask: How much pain do you have at rest? How much pain do you have with movement/coughing?	Pain-rating scales are used to identify the intensity of pain over time for the purpose of evaluating the effectiveness of interventions to relieve pain.
(1) Pain intensity can be scored for present pain, worst and least pain felt, and comfort–function goals (pain ratings that will not interfere with necessary or desired functioning, such as ambulation or decreased anxiety). (2) If the patient has more than one pain site, ask them to report the pain intensity for each site and record using the letter system above.	Scoring should incorporate different components of pain, including the functional capacity of the patient. In the postoperative patient this should include static (rest) and dynamic (e.g. pain on sitting, coughing) pain (Schug et al 2015).

■ **Critical decision point: Always assess pain on movement and/or coughing, as well as at rest.**

e. Time of onset, duration and pattern – ask: When did the pain begin? How long does the pain last? Is the pain constant? If not, how often does it occur?	This information has diagnostic importance and may also alert to a new or worsening problem.
(1) To detect variations and rhythms, ask the patient: Is the pain better or worse at certain times, certain hours of the day or night or certain times of the month?	These questions help screen for the presence of breakthrough pain.
f. Patient's understanding – ask about the patient's understanding of the cause of pain. What treatments have they tried to relieve it?	Determines the success of other pain interventions.

STEPS	RATIONALE
4. Assess the impact of pain. a. Determine the impact on physical functioning and recovery. Assessment tools are available such as the Functional Activity Score (FAS). b. Assess for important psychosocial factors related to pain (e.g. culture, previous pain events, beliefs, mood and ability to cope). c. Assess for pain interference with daily activities and impact on quality of life.	Information about the impact of pain should inform the pain management plan and trigger referral to specialist advice and treatment if needed.
5. Conduct a focused physical examination of the relevant body region or systems (e.g. neurological or musculoskeletal exam).	Assess for potential causes of pain using a structured approach. Uncontrolled or unexpected pain requires a reassessment of the diagnosis and consideration of alternative causes for the pain (e.g. new surgical/medical diagnosis, neuropathic pain) (Schug et al 2015).

RECORDING AND REPORTING

- Always accept and record what the patient says about their pain.
- Record assessment findings in patient's healthcare record following local hospital policy and protocols.
- Report any abnormal data following comprehensive assessment to the senior nurse, acute pain service or another appropriate medical officer.

HOME CARE CONSIDERATIONS

- Has a discharge pain management plan been created?
- Has the patient received information about the ongoing plan and follow-up arrangements?
- Do the family or significant others have concerns or need information to help with the plan?

TABLE 36-8 Example clinical situations and decision-making relating to pain

Clinical setting	Situation	Nursing judgement and decision-making
Post-anaesthesia care unit	The patient reports severe pain but appears sedated and comfortable based on observations	The PACU nurse carries out a thorough physical assessment. There is a wound haemorrhage and the surgical team is engaged to return to the operating suite
Post-delivery ward	A woman has delivered her baby by caesarean and requests some ibuprofen for her pain	The nurse discovers that the woman has preeclampsia and collaborates to cease the drug as it may affect kidney function
Medical ward	A patient admitted for respiratory distress complains of nausea, insomnia, abdominal cramping and sweating	The nurse undertakes a health history. The patient is withdrawing from opioids because the usual oral oxycodone dose for cancer pain has not been prescribed since admission 4 days ago
Surgical ward	The patient's pain score is 7/10 at rest after a total abdominal hysterectomy. She is prescribed PRN oxycodone 5 mg and it has been administered	A decision is made that the pain management plan is inadequate. The RN calls the acute pain service and the nurse practitioner orders patient-controlled analgesia

Pain resources for registered nurses

Many hospitals have acute pain teams that contribute to improved management and outcomes for hospitalised patients. Acute pain services are a source of advice and support for RNs caring for patients with pain problems. These services are led by advanced practice nurses who also provide education on pain management as part of their roles. For example, a nurse practitioner (NP) specialising in acute pain management has expertise regarding pharmacological and non-pharmacological interventions that are most effective for acute pain, whereas a palliative care NP may be more appropriate for cancer pain management. Some hospitals also have specialist staff to give

advice on the management of chronic pain, although acute pain services are usually the only resource available.

There are many external organisations that support the management of patients with pain. For example, the International Association for the Study of Pain has clinical resources that are freely available (see *Online resources* at the end of the chapter).

Acute pain management

Acute pain management requires thorough patient assessment and a logical plan that will prevent the complications of inadequate pain relief, ensure patient safety and promote wellbeing. Analgesics are usually administered using a step-wise approach in line with the severity of the pain. Non-drug interventions (discussed later) and paracetamol are the foundation layers of any acute pain management plan alongside non-steroidal anti-inflammatory agents if appropriate. The **analgesic pain ladder** in Figure 36-10 portrays this approach to acute pain management. Opioids are higher up the ladder if pain is still poorly controlled on the foundation interventions.

Multimodal analgesia

Multimodal analgesia is a key principle for effective pain management that involves using two or more classes of analgesics to target different pain mechanisms in the nervous system (Pasero & Portenoy 2011). A multimodal approach can maximise pain relief and prevent analgesic gaps while using lower doses of each drug. This can achieve better pain control and lessen the potential for side effects that may occur if only one type of analgesic is used in higher doses to achieve a desired effect (Pasero & Portenoy 2011). For example, paracetamol provides analgesia centrally and non-steroidal anti-inflammatory drugs reduce inflammatory mediators at peripheral nociceptors. Both classes of drugs may be administered at the same time without adverse consequences because they work differently. Figure 36-11 shows that specific analgesics work at different sites along the nociceptive pathways to reduce pain perception.

In clinical practice, analgesics may be divided into three groups: non-opioids, opioids and adjuvant analgesics. We provide only an introduction to these three analgesic groups and we encourage you to consult other excellent resources (Macintyre & Schug 2015, Pasero & McCaffery 2011) for a comprehensive review of pharmacologic pain management.

• CRITICAL REFLECTION POINT

Mrs Egbert is an 89-year-old woman awaiting surgery to repair a fractured neck of femur. She has dementia and pain assessment is difficult, although she is groaning and grimacing. Over the last 2 days she has received 3 doses of oral paracetamol as required and 10 mg of subcutaneous morphine. What would be your response to this situation? Can you suggest an alternative pain management plan?

Pharmacology of analgesics

The experience of pain is always part of a broader health context and it is important to consider the risks

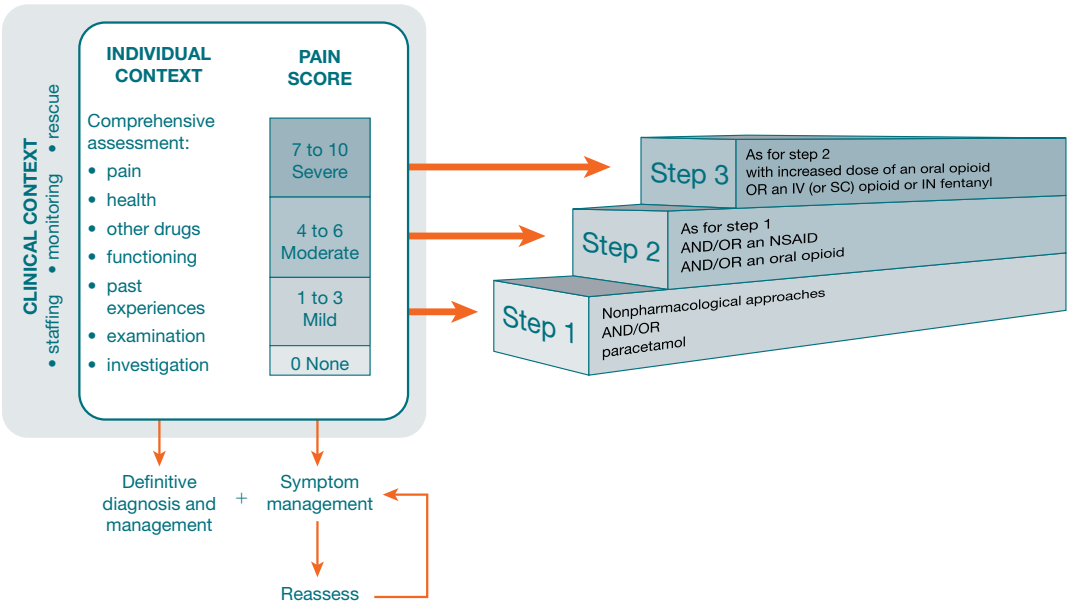


Figure 36-10 Analgesic ladder for acute pain management.

Therapeutic guidelines: Analgesic 2012 Deciding where to start when prescribing analgesics for new-onset acute pain, version 6. Therapeutic Guidelines Limited.

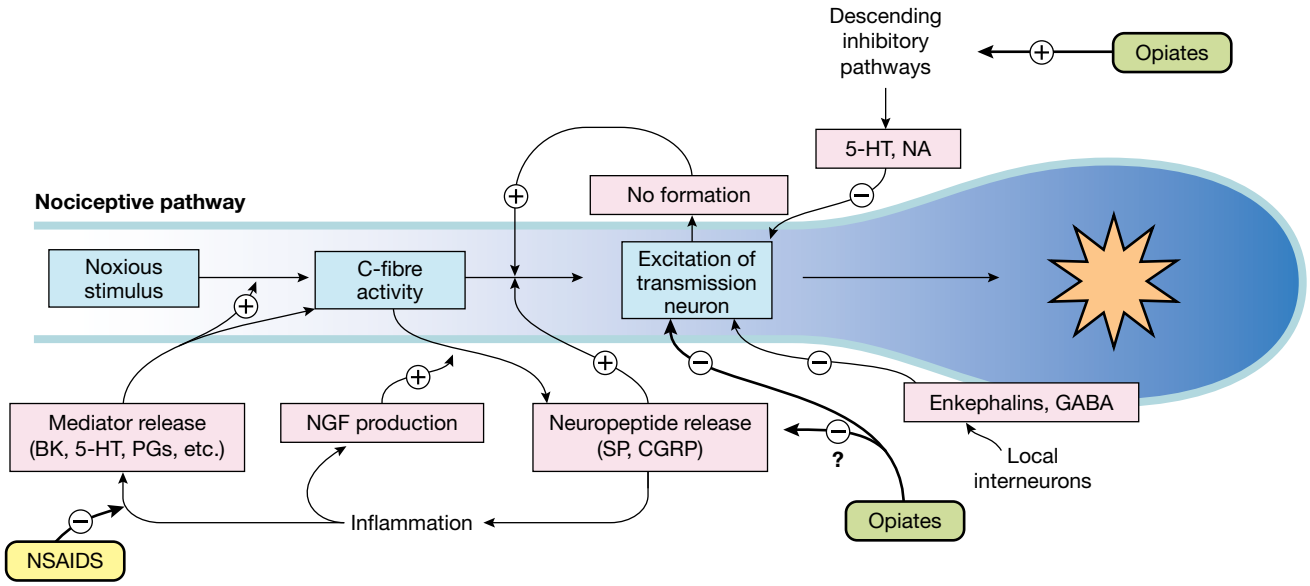


Figure 36-11 Summary of modulatory mechanisms in the nociceptive pathway.

5-HT = 5-hydroxytryptamine; BK = bradykinin; CGRP = calcitonin gene-related peptide; NA = noradrenaline; NGF = normal growth factor; NO = nitric oxide; NSAID = non-steroidal anti-inflammatory drug; PG = prostaglandin; SP = substance P.

Redrawn from Rang HP, Dale MM, Ritter JM et al 2007 Rang and Dale's Pharmacology, 3rd edn. Elsevier, London.

that analgesics might pose for patients (Boxes 36-6 and 36-7). Box 36-7 identifies some of the common situations encountered in clinical practice. Although most nurses do not prescribe analgesics, it is essential to apply principles of pharmacology to safely and effectively administer and evaluate patient responses to treatment (see

BOX 36-6 Principles for administering analgesics

Know the patient's previous response to analgesics

- Determine whether relief was obtained from various analgesics.
- Identify previous and current use of analgesics.
- Determine whether the patient has allergies or has experienced adverse effects from specific analgesics.

Administer medications as appropriate based on clinical reasoning

- Use regular doses of paracetamol as a foundation analgesic layer that limits the need for opioid drugs.
- Consider a non-steroidal anti-inflammatory drug (NSAID) if appropriate to further limit the need for opioids and improve pain relief.
- Avoid multiple opioid analgesics.
- Know that intravenous medications act more quickly and can relieve severe, acute pain within 10–20 minutes and that oral medication may take as long as 1 hour to relieve pain.
- Patients who are opioid-tolerant may require increased doses.
- Always assess response to treatment by documenting pain and sedation scores with all other observations.
- Increasing sedation is the primary indicator of impending respiratory depression.
- Always consider non-pharmacological interventions such as ice, transcutaneous electrical nerve stimulation (TENS), relaxation and distraction.
- For chronic pain, administer the patient's usual regimen, including opioids, and add acute analgesics for acute pain situations.

Know the accurate dosage

- For adults, opioid doses are calculated based on age and not weight.
- Adjust doses, as appropriate, for children (weight) and older patients at a reduced dose for opioids.

Assess the right time and interval for administration

- Prevent pain where possible. Administer analgesics as soon as pain occurs and before it increases in severity.
- Give analgesics before pain-producing procedures or activities.
- Know the average duration of action for a drug and the time of administration so that the peak effect occurs when the pain is most intense.

BOX 36-7 Risk associated with the administration of various analgesics

- Adverse drug reactions
- Potential drug interactions (e.g. tramadol and antidepressants)
- Renal impairment or poor urine output leading to increased drug concentrations
- Pregnancy and lactation
- Liver impairment and impaired drug metabolism
- Opioid tolerance
- Obstructive sleep apnoea and opioid risks
- Broncospasm in some asthmatic patients with non-steroidal anti-inflammatory drugs (NSAIDs)
- Elderly and paediatric patients
- Haemodynamic instability and additive effects of opioids.

Chapter 27). For example, controlled-release oxycodone will take almost 3 hours to reach peak effect, whereas an immediate-release dose of the same drug has a time to maximum concentration of about 1 hour. Sedation and other opioid effects, such as nausea and respiratory depression, are related to the *pharmacodynamic* effects of the drug. Key terms are defined in Table 36-9; the basic pharmacology of some common analgesics is summarised in Table 36-10.

Non-opioid analgesics

Paracetamol

Paracetamol has a central analgesic action that may be associated with an anti-inflammatory action on central cyclooxygenase. An intravenous preparation is available and allows for around-the-clock dosing when oral administration is not possible. It is important to note that paracetamol remains the foundation starting point for an analgesic plan and should continue around the clock when other drugs are added to the plan. Regular dosing with paracetamol results in a 20% decrease in the patient's requirement for opioid analgesics (opioid sparing effect) that may reduce adverse effects such as sedation, nausea and constipation (Therapeutic Guidelines 2012). Paracetamol administration should not be taken lightly, especially in acute care situations. In normal doses administered over several days, toxicity can occur and liver damage may be the result. It is recommended that the patient's liver function be reviewed in hospital.

Non-steroidal anti-inflammatory drugs (NSAIDs)

The analgesic effects of NSAIDs (e.g. ibuprofen, diclofenac, ketorolac, parecoxib, celecoxib) are the result of decreased synthesis of cyclooxygenase at the peripheral and central nervous systems, producing an opioid-sparing effect of 20–40% (Macintyre & Schug 2015). These drugs are noted for having a high efficacy in terms of analgesic effects (see *Research highlight*). However, the adverse effects of NSAIDs are well known and include upper gastrointestinal ulceration, postoperative bleeding, asthma in susceptible patients and renal failure in patients at risk such as the elderly and those on some antihypertensive medications. Pasero and McCaffery (2011) suggested that patients should be placed on gastroprotective therapy, such as ranitidine or omeprazole, while receiving regular doses of NSAIDs.

Opioids

All drugs that act like morphine are called **opioids** (e.g. morphine, fentanyl, oxycodone, codeine, tramadol, hydromorphone). They produce their effects by acting on opioid receptors (namely, mu (μ), delta (d) and kappa (k) receptors) in the peripheral and central nervous systems, and may produce analgesia, sedation, respiratory depression, nausea and constipation (Macintyre & Schug 2015). Common oral opioids include oxycodone

TABLE 36-9 Definitions and application of key pharmacological terms

Term	Definition	Example applications
Pharmacodynamics	'What the drug does to the body' and events caused by the interaction of a drug with a receptor	Opioids may cause respiratory depression, sedation, nausea, pruritus and constipation
Pharmacokinetics	'What the body does to the drug' and concerns relating to drug absorption, metabolism, distribution and elimination	An intravenous injection of morphine peaks in 15–20 minutes in plasma. This is the time to maximum concentration or t_{max}
Half-life	The time it takes for plasma concentration of a drug to decrease by 50%	The half-life or $t_{½}$ of morphine is 2–3 hours

Rang HP et al 2007 Rang and Dale's pharmacology, 3rd edn. Elsevier, London.

TABLE 36-10 Pharmacodynamic and pharmacokinetic aspects of common analgesics expressed as t_{max} (time to maximum concentration) and $t_{½}$ (half-life)

Drug	Action (pharmacodynamics)	t_{max}	Half-life	Comments
Celecoxib (Celebrex)	COX-2 selective NSAID	2–3 hours	4–15 hours	Claimed to be less risk of GIT bleeding
Codeine	Pro-drug of morphine	1–2 hours	2–4 hours	Some patients lack the liver enzyme that converts codeine to morphine Not recommended for lactating mothers
Diclofenac (Voltaren, Fenac)	Non-selective NSAID Acts on both COX-1 and COX-2 enzymes to decrease prostaglandin synthesis	2 hours 30–40 minutes for suppository	1–2 hours	More selective for COX-2
Fentanyl (Sublimaze)	Opioid agonist on opioid receptors	7 minutes	3–5 hours	No active metabolites
Ibuprofen (Brufen, Nurofen, Rafen)	Non-selective NSAID Acts on both COX-1 and COX-2 enzymes to decrease prostaglandin synthesis	1–3 hours	2 hours	20–40% opioid-sparing May be administered without food temporarily for acute pain episodes Proton-pump inhibitor drugs may be co-administered to prevent gastrointestinal side effects
Ketorolac (Toradol)	Intramuscular NSAID	50 minutes	5–6 hours	Increased risk of serious GIT bleeding Not recommended in elderly patients
Morphine sulfate	Opioid agonist on opioid receptors	20 minutes (intravenous) 30–90 minutes (subcutaneous)	2–3 hours	Active metabolite M-6-G and not recommended in renal impairment
Oxycodone IR (Endone, Oxynorm)	Opioid agonist	Less than 1 hour	2–3 hours	Most popular oral opioid used for acute pain
Paracetamol (Panadol, Panamax, Perfalgan IV)	Possible anti-inflammatory effects within the central nervous system	Less than 1 hour if given orally 15 minutes for intravenous dose	1–3 hours	20% opioid-sparing Reduce dose in liver disease or poor nutritional status
Parecoxib (Dynastat)	COX-2 selective NSAID given intravenously	30 minutes	8 hours	Used extensively for perioperative patients Oral NSAID may be commenced at least 12 hours after the dose of parecoxib
Tramadol IR (Tramal, Zydol)	Opioid plus enhanced serotonin and noradrenaline	2 hours	5–7 hours	Claimed as safer with obstructive sleep apnoea Many drug interactions
Tapentadol	Opioid agonist plus noradrenaline reuptake inhibition	3–6 hours	4 hours	New drug for chronic pain
Transdermal buprenorphine (Norspan)	Partial opioid agonist	17 hours	12 hours after patch removal	Not recommended for acute pain management
Transdermal fentanyl (Durogesic)	Opioid agonist on opioid receptors	24–72 hours	22–25 hours after patch removal	Not recommended for acute pain management
Buprenorphine (Temgesic)	Opioid agonist at smaller doses 200–400 micrograms sublingual administration	2–4 hours	5 hours	Not in conjunction with benzodiazepines

GIT = gastrointestinal tract, IR = immediate-release, IV = intravenous, NSAID = non-steroidal anti-inflammatory drug.

Adapted from MIMS Online; Analgesic Expert Group 2007 Therapeutic guidelines: analgesics, Version 5. Therapeutic Guidelines Ltd, Melbourne; Macintyre P, Schug S 2015 Acute pain management: a practical guide, 4th edn. CRC Press, Boca Raton.

RESEARCH HIGHLIGHT

Research focus

A Cochrane systematic review examined the effectiveness of single-dose oral analgesics for relief of acute postoperative pain in terms of the number needed to treat (NNT) for a single or combination analgesic dose. For example, for every 2.5 people receiving 400 mg of oral ibuprofen, at least one of these patients will experience at least 50% pain relief. The NNT value for ibuprofen is 2.5 for postsurgical pain relief. The NNT for other common analgesics include: paracetamol 1000 mg (NNT = 3.6), paracetamol 1000 mg + codeine 60 mg (NNT = 2.2), paracetamol 1000 mg + oxycodone 10 mg (NNT = 1.8).

The full range of reliable NNTs can be located at: http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD008659.pub2/abstract

Reference

Moore RA, Derry S, McQuay HJ et al 2011 Single dose oral analgesics for acute postoperative pain in adults. Cochrane Database Syst Rev (9):CD008659.

(e.g. Endone, Oxynorm), codeine and tramadol. Morphine is the intravenous opioid of choice due to its long history of clinical experience, although it is not recommended in renal impairment due to the accumulation of its metabolite morphine-6-glucuronide. This metabolite is active and may cause respiratory depression, and so fentanyl is recommended in susceptible patients (Rang et al 2007). All other opioids may be compared with 10 mg of morphine in terms of their equianalgesic dose, as shown in Table 36-11. Pethidine is no longer recommended as a systemic opioid due to its potential for seizures, especially in neonates. However, it is sometimes used in patient-controlled **epidural analgesia** in the obstetric environment.

Patient-controlled analgesia

Intravenous **patient-controlled analgesia (PCA)** involves the administration of intravenous drugs to treat acute pain. The patient controls the administration of drug by pressing a button attached to a pain-management pump. PCA is more likely to maintain a constant blood concentration of the drug and to overcome the wide inter-patient variation in opioid requirements (Macintyre & Schug 2015). This may be represented by the *analgesic corridor* concept in Figure 36-12, which shows the pharmacokinetics of PCA in terms of blood plasma concentration over time.

Check the IV line and ensure that a one-way valve exists above the point where opioids enter the maintenance fluid line. The insertion site and PCA program must also be regularly checked to ensure patient safety and that effective analgesia is obtained. Document the cumulative opioid dose, pain score and sedation score with all other routine observations at intervals stated on specific organisational policy documents (see Figure 36-13). It is recommended that standardisation of local hospital protocols occurs

TABLE 36-11 Equianalgesic doses and half-lives of some commonly used opioids

Opioid	Intramuscular or intravenous dose (mg)	Oral dose (mg)	Half-life (hours)
Morphine	10	30	2–3
Alfentanil	0.75–1.5	–	1–2
Buprenorphine	0.4	0.8 (sublingual)	3–5
Codeine	130	200	2–4
Fentanyl	0.15–0.2	–	3–5
Hydromorphone	1.5–2	6–7	3–4
Methadone	10	10–20	8–60
Oxycodone	10	20	2–3
Pethidine	75–100	300	3–4
Tramadol	100	150	5–7
Tapentadol	–	100	4

Adapted from Macintyre P, Schug S 2015 Acute pain management: a practical guide, 4th edn. CRC Press, Boca Raton, p. 32.

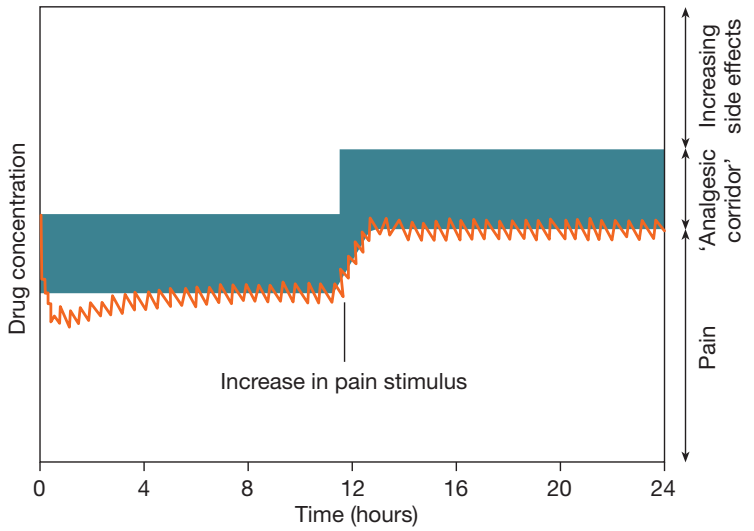


Figure 36-12 **PCA is more likely to keep blood concentrations of opioid within the 'analgesic corridor' and allows rapid titration if an increase in pain requires higher opioid levels to maintain analgesia.**

Macintyre P, Schug S 2007 Acute pain management: a practical guide, 4th edn. CRC Press, Boca Raton.

in order to prevent error with PCA. These should cover standard infusion concentrations, equipment used, PCA doses, lockout times, monitoring and documentation. Examples of standard PCA programs are shown in Table 36-12.

• CRITICAL REFLECTION POINT

Dawn Osborne is a 62-year-old woman who returned to the unit 3 hours ago after bowel resection for colorectal cancer. She reports 7/10 pain on movement and 4/10 pain 'if I lie completely still'. She has an intravenous morphine PCA and her cumulative dose is 2 mg (order: 1 mg morphine, lockout 5 minutes). On questioning, she says, 'I do not want to become addicted' and 'I might need to use more if the pain gets worse.' How would you respond to this situation?

Your role in patient education across the patient journey from pre-admission to discharge from hospital is critical for safe and effective use of PCA (Box 36-8 and Figure 36-14). Patients must be able to understand the use of the equipment and be physically able to locate and press the button to deliver the dose. Key points to include are:

- Reassurance that addiction is extremely unlikely
- The lockout function on the pump protects from overdose
- Nurses are monitoring patients' pain ratings and use of the PCA
- Explanation of analgesics used and side effects
- Rationale for other analgesics such as paracetamol used to improve analgesia (multimodal approach)
- Importance of pain management for effective postoperative recovery (e.g. respiration and mobility)
- Likely treatment duration and plan after PCA is ceased.

Prevention and management of opioid-induced adverse effects

Common side effects of opioids include constipation, nausea and vomiting, sedation and itching (pruritus). Most adverse effects are dose dependent, which is why an effective and practical approach to treatment of these is to administer the lowest effective opioid dose. With continued use, many side effects diminish; the exception is constipation.

Postoperative nausea and vomiting remains a significant clinical problem that distresses patients and prolongs recovery from surgery and anaesthesia. The serotonin (5HT-3) antagonist drugs are the most effective antiemetics, and these include ondansetron. Dexamethasone, droperidol and promethazine are effective. Opioid-induced itching (pruritus) may also be treated with ondansetron, but antihistamines or naloxone may be more effective.

Stimulation of the P6 acupuncture point may be also used by nurses as a complementary intervention in a multimodal approach. The P6 (neiguan) point can be found three finger-breadths above the skin fold of the wrist joint (Schultz et al 2003). The direct-pressure digital stimulation technique can be maintained by applying pressure for at least 6 seconds at a time (Ming et al 2002, Shin et al 2007).

Figure 36-13 Intravenous PCA order for an adult.

INTRAVENOUS PATIENT CONTROLLED ANALGESIA (PCA) ORDER – ADULT

Facility/Service: ..... Year: 20 .....
Ward/Unit: .....

(Affix patient identification label here)

URN:

Family name:

Given names:

Date of birth: Sex: ❑ M ❑ F

First Prescriber to Print Patient Name and Check Label Correct
Weight (kg):. ..... Height (cm): .....

ADMINISTRATION RECORD

Pump no.:	Time PCA infusion started:	Commenced by:	Checked by:

PCA Solution Preparation and Discard

	Date	Time	Diluent	Drug 1, Amount	Drug 2, Amount	Drug 3, Amount	Final volume	Prepared by	Checked by
Solution Preparation							mL		
							mL		
							mL		
							mL		
							mL		
							mL		
							mL		
							mL		

Solution Discard	Date / Time								
	Volume discarded	mL	mL	mL	mL	mL	mL	mL	mL
	Discarded by / Witnessed by								

Record of Clinician Delivered Doses *(e.g. nurse controlled analgesia)*

Date	Time	Dose given	Given by	Checked by	Date	Time	Dose given	Given by	Checked by

Record of Setting Changes

Date	Time	Details of program change (e.g. bolus dose increased)	Changed by	Checked by

All administration lines must include one-way **anti-reflux valves** and an **antisyphon valve** in-line between patient and infusion device

DO NOT WRITE IN THIS BINDING MARGIN

DO NOT WRITE IN THIS BINDING MARGIN

Recommended Minimum Monitoring Requirements for PCA

As per hospital policy for routine post operative observations AND/OR PCA specific observations:

HOURLY for 8 hours then 2 HOURLY for 16 hours then 4 HOURLY thereafter.

A Program and Connection/Line Check must be performed:

- At the commencement of each shift
- Upon return from another ward/department
- At each bag/syringe change

Refer to Intravenous PCA and Epidural/Regional Analgesia Monitoring form for details

Observations are to be recorded on the *PCA and Epidural/Regional Analgesia MONITORING form*. Any observations listed in the ASSESSMENT/INTERVENTION GUIDELINES (page 1 of monitoring form) must be reported to the contact person and required interventions completed.

Naloxone Protocol

If sedation score = 2 and respiratory rate less than 8/minute OR if sedation score = 3 a Registered Nurse/Midwife is hereby authorised to:

1) Dilute naloxone 400 mcg (1 ampoule) to 4 mL with normal saline (100 mcg/mL)
2) Give naloxone 100 mcg (1 mL) every minute until sedation score less than 2 or a maximum dose of 400 mcg has been given
3) Ensure contact person has been notified. Continue monitoring every 10 minutes for a further half an hour, then every hour for a further 2 hours. If sedation score returns to greater than or equal to 2, follow recommended intervention (as on monitoring form) and repeat steps 1-3.

Any administered doses must be recorded on the front page of the patient's Medication Chart under Nurse Initiated Medicines

Oxygen Prescription *(medical officer to tick appropriate option)* **If not completed, use option (A) as default**

Give oxygen: ❑ **(A) *overnight*** at a *minimum* of 2 L/min via nasal prongs or 6 L/min via Hudson Mask (*ensure oxygen saturation is equal to or greater than 93%*). Notify contact person if the *required* flow rate exceeds 6 L/min via Hudson Mask OR oxygen saturation falls below 93% for more than 1 minute.

❑ **(B) *at all times*** to maintain a *minimum* oxygen saturation of 93%
Notify contact person if oxygen flow rate exceeds ..... L/min via Hudson Mask

❑ **(C) *at all times*** to maintain a range of ..... to ..... %
Notify contact person if oxygen flow rate exceeds ..... L/min via Hudson Mask

Prescriber signature:. ..... Prescriber name (print): .....

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INTRAVENOUS PCA ORDER - ADULT

continued

Figure 36-13 *continued*

Operation/Procedure .....

Relevant Medical History *(tick boxes below)*

Opioid tolerant? ❑ Yes ❑ No If Yes, tolerance to which drug(s)? .....

Contraindication to paracetamol? ❑ Yes ❑ No

Contraindication to NSAIDs? ❑ Yes ❑ No

Other contraindication (specify) .....

.....

Renal impairment (eGFR below 60 mL/min/1.75 m)? ❑ Yes ❑ No

Obstructive sleep apnoea? ❑ Yes ❑ No

Asthma/COAD? ❑ Yes ❑ No

Initial neuraxial opioid given? ❑ Yes ❑ No Opioid given ..... Time of dose: .....

Contact Person – *In Hours*	**Contact Person – *In Hours***
❑ Acute Pain Service (APS).....	❑ Acute Pain Service (APS) .....
❑ Other *(specify)*:.....	❑ Other *(specify)*:.....
Contact No.:.....	Contact No.:.....

Daily Clinical Review

Authorised person to sign to indicate daily review and continuation of order for further day.
Notify contact person (as above) if not reviewed by 4 pm.

Date	Time	Comments	Clinician signature	Print name
Order ceased: ...../ ...../ ..... at				

ONCE ONLY Intravenous Bolus Dose Orders for PCA *(i.e. 'Top up' doses)*

Date prescribed	Time prescribed	Medication	Dose	Prescriber Signature	Prescriber Print name	Given by? Checked by	Time given

DO NOT WRITE IN THIS BINDING MARGIN

DO NOT WRITE IN THIS BINDING MARGIN

INTRAVENOUS PATIENT CONTROLLED ANALGESIA (PCA) ORDER – ADULT

Facility/Service: ..... Year: 20 .....

Ward/Unit: .....

(Affix patient identification label here)

URN:

Family name:

Given names:

Date of birth: Sex: ❑ M ❑ F

Attach ADR Sticker ❑ NKDA ❑ Unknown

(See Medication chart for details)

First Prescriber to Print Patient Name and Check Label Correct

Weight (kg):. ..... Height (cm): .....

PCA Prescription *(cross out invalid order(s). All sections must be complete for prescription to be valid)*

		Orders		Patient Specific Orders	
Opioid		***Morphine sulphate***	***Fentanyl citrate***		
Amount					
Diluent		0.9% Sodium chloride	0.9% Sodium chloride		
Final volume (mL)		mL	mL	mL	mL
Final opioid concentration		1 mg/mL	10 mcg/mL		
Additional drug(s)	Amount(s)				
Bolus dose* (volume)		1 mg (1mL)	20 mcg (2 mL)		
Infusion rate (..... /hour)		Zero	Zero	..... /hr	..... /hr
Lockout time (minutes)		5 min	5 min	min	min
Prescriber signature					
Print name					
Contact details					
Date	Time	/ / :	/ / :	/ / :	/ / :
Clinical pharmacist review					

**Opioid doses correlate more to age than weight, INCREASING AGE requires LOWER DOSES*



Figure 36-14 **Example of PCA infusion pump.**

© Hospira.

TABLE 36-12 **Typical patient-controlled analgesia (PCA) settings for adults and children**

Drug	Bolus dose	Lockout time (minutes)
Adults		
Fentanyl	20–30 microg	5
Morphine	1–2 mg	5–8
Tramadol	10–20 mg	5
Oxycodone	1–2 mg	5
Children < 50 kg		
Fentanyl	0.3 microg/kg	5
Hydromorphone	2–4 microg/kg	5
Morphine	20 microg/kg	5

Adapted from: Macintyre PE, Schug SA 2015 Acute pain management: a practical guide. CRC Press, Boca Raton; The Royal Children's Hospital Melbourne 2011 Patient controlled analgesia (PCA). Online. Available: www.rch.org.au/anaes/pain/index.cfm?doc_id=845#Prescription_and_program_of_PCA; accessed 9 March 2016.

Constipation may be prevented by adequate mobility, fluid intake and diet, but additional measures may be required when on opioid therapy. Pasero and McCaffery (2011) suggested regular dosing with docusate and senna, or with an osmotic laxative available if this is not adequate. They also recommended that chewing gum may be beneficial. For cancer patients, an opioid antagonist (methylnaltrexone) is available for treating opioid-induced constipation. It increases bowel movements without decreasing analgesia (National Prescribing Service 2010).

BOX 36-8 **Patient teaching and preparation for patient-controlled analgesia (PCA)**

Objectives

- Patient will be able to explain purpose of PCA in managing pain.
- Patient will use the PCA device correctly.
- Patient achieves pain control and desired functional outcome.

Teaching strategies

- Teach the use of PCA before any procedure so that patients can understand how to use it after waking from anaesthesia or sedation. Reinforce as needed.
- Teach patient about the purpose of PCA, emphasising that the patient controls medication delivery.
- Explain that the pump prevents the risk of overdose.
- Tell family members or friends that they should not operate the PCA device for the patient.
- Have the patient demonstrate use of the PCA delivery button.

Evaluation

- Ask patient to tell you the purpose of the PCA device.
- Observe the patient administering a dose.
- Evaluate the severity of the patient's pain 15–20 minutes after use of the PCA device and with all other routine observations.

Respiratory depression is the most feared, yet an uncommon side effect of opioid treatment (Dahan et al 2010). You should routinely monitor sedation score (SS) and respiratory rate during patient assessment for indications of respiratory depression. Monitoring sedation levels using a sedation scale is the most effective way to prevent opioid-induced respiratory depression. The Victorian Quality Council (2007) recommends that a sedation score (Table 36-13) of ≥ 2 and a respiratory rate of < 10 breaths per minute should be reported immediately and further intervention considered. If the patient is difficult to rouse (SS = 3) and respiratory rate is less than 8 breaths per minute, most organisations have a standard order to administer intravenous naloxone to reverse the effects of the opioid.

Adjuvants

An adjuvant is a drug that is not primarily indicated for pain but has analgesic benefits for some conditions and situations. Certain agents such as ketamine or antidepressant drugs may be helpful in acute, chronic and cancer pain problems (Pasero & McCaffery 2011).

TABLE 36-13 Sedation score scale

Sedation score	Level of sedation (Wake patient to assess sedation score)
0	Awake
1	Mild; occasionally drowsy, easy to rouse
2	Moderate; rousable but unable to remain awake (e.g. falls asleep during conversation)
3	Severe; difficult to rouse or unrousable

Adapted from Victorian Quality Council 2007 Acute pain management measurement toolkit. Victorian Quality Council, Melbourne. Online. Available: www.health.vic.gov.au/qualitycouncil/downloads/apmm_toolkit.pdf; accessed 9 March 2016.

Ketamine

The main action of ketamine is to block the N-methyl-d-aspartate (NMDA) receptor that is involved with central sensitisation. Ketamine has been very useful for acute pain states where opioids have failed (Kapur 2008). In this context, it has been used most effectively as an intravenous infusion at sub-anaesthetic doses so as to avoid its well-known psychotropic effects such as hallucinations. It is usually administered as a separate intravenous infusion in conjunction with PCA with an opioid.

Clonidine

Clonidine is an alpha-2 adrenergic agonist that seems to work synergistically with morphine to produce analgesia (Kapur 2008). It has been added to intravenous PCA in the acute pain setting to improve analgesia and decrease opioid requirements, although it may contribute to hypotension (Macintyre & Schug 2015).

Antidepressants

Antidepressants (e.g. amitriptyline, venlafaxine, duloxetine, mirtazapine) have been used in a variety of chronic pain problems including neuropathic pain. They have multiple receptor actions and so have many side effects and potential drug interactions (Macintyre & Schug 2015, Pasero & McCaffery 2011). Because of their ability to enhance central serotonin levels, antidepressants should be avoided in patients receiving tramadol.

Anticonvulsants

Anticonvulsants (e.g. gabapentin, pregabalin) decrease the firing rate of neurons and mimic the inhibitory neurotransmitter gamma-aminobutyric acid (GABA) (Kapur 2008). These agents may be beneficial in the perioperative setting and should always be considered as first-line therapy for neuropathic pain if an antidepressant is contraindicated or ineffective (Pasero & McCaffery 2011).

Local anaesthesia and peripheral nerve blocks

Local anaesthetic agents may be used while suturing a wound and performing simple surgery (see Table 36-14). They can be applied topically on skin and mucous membranes, injected to anaesthetise a body part or infused to provide postoperative analgesia. The drugs produce temporary loss of sensation by inhibiting sodium channels to prevent transmission of impulses. They may also block motor and autonomic functions when administered as nerve blocks. Smaller sensory nerve fibres are more sensitive to local anaesthetics than are large motor fibres. As a result, the patient loses sensation before losing motor function and, conversely, motor activity returns before sensation.

TABLE 36-14 Local anaesthesia techniques

Type	Area of injection	Area affected	Indications for use
Epidural	Epidural space	Dermatomes related to level of injection	Obstetrics and major surgery
Infiltration	In superficial area under skin or mucous membranes	Small peripheral nerves to area infiltrated	Small incisions of skin, insertion of sutures to close cuts or wounds, minor dental repairs
Peripheral nerve block (e.g. femoral, sciatic, interscalene)	In area surrounding large peripheral nerve at point above bifurcation of nerve	Wider area than with infiltration, numbing entire body part (e.g. hand, upper gums, foot)	Major dental repairs, manipulation or reduction of extremity fractures, minor hand and foot surgery
Spinal nerve block	Subarachnoid space surrounding spinal cord	Lower trunk and extremities	Major surgery to lower trunk and extremities, patients at risk with general anaesthesia

After administration of a local anaesthetic, protect the patient from injury until full sensory and motor function return. Until a local anaesthetic is absorbed and metabolised, the patient must be careful with using an affected body part. Patients can easily injure themselves without knowing it. For example, after an injection around a nerve that supplies a limb, warn the patient to avoid using the limb until function returns. For patients with local regional anaesthesia, avoid applying heat or cold to numb areas. After spinal anaesthesia the patient stays in bed until sensory and motor function return. Assist the patient to *slowly* get out of bed during the first time to reduce the risk of falling.

Epidural and intrathecal analgesia

Neuraxial analgesia may be described as the administration of agents into the epidural or subarachnoid space (spinal) to provide pain relief. The potential benefits for patients include better pain relief than parenteral opioid administration; increased oxygen levels; decreased incidence of pulmonary infections and complications when compared with systemic opioid drugs; improved bowel recovery after abdominal surgery; and reduced incidence of postoperative myocardial infarction (Schug et al 2015).

The anatomical difference between spinal and epidural drug administration can be seen in Figure 36-15, which provides a sagittal-section view of the spinal cord and associated structures that shows the target drug areas of the epidural and subarachnoid space.

Standard equipment for epidural insertion includes an epidural needle with a catheter that can be passed through it into the epidural space (see Figure 36-16). A filter is attached after insertion and this is designed to prevent infection of the infusion and patient. A spinal needle is visible on the right, and this is used for a single-shot spinal injection into the subarachnoid space, usually for surgery on the lower abdomen or limbs.

The medical practitioner inserts a blunt-tip needle into the level of the vertebral interspace nearest to the area requiring analgesia. When the needle reaches the space, drugs may be freely injected and small catheters may be passed into it. Once a catheter is advanced into the epidural space and the needle is removed, the remainder of the catheter is secured with a dressing and taped up the back of the patient.

Once the catheter is connected to a bacterial–viral filter, it is connected to an epidural giving set and is secured along the spine and over the patient's shoulder. The end of the catheter can then be placed on the patient's chest for the nurse's access. The catheter is connected to a continuous epidural infusion pump, a port or reservoir, or is capped off for bolus injections. To reduce the risk of accidental epidural injection of drugs intended for IV use, the catheter should be clearly labelled 'epidural catheter'. Continuous infusions must be administered through electronic infusion devices for accurate control.

Most labour and postoperative epidural regimens include a background local anaesthetic and opioid infusion rate. The most common opioid used is fentanyl

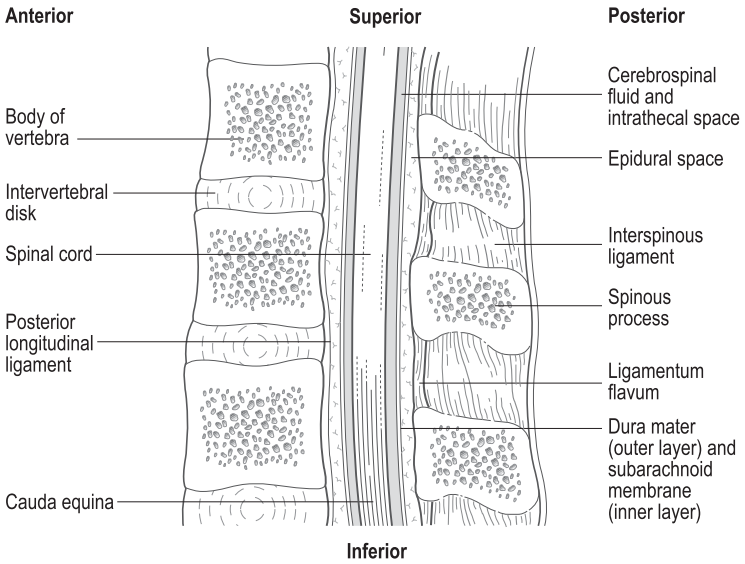


Figure 36-15 Anatomy of the spinal cord.

Macintyre P, Schug S 2007 Acute pain management: a practical guide, 4th edn. CRC Press, Boca Raton.

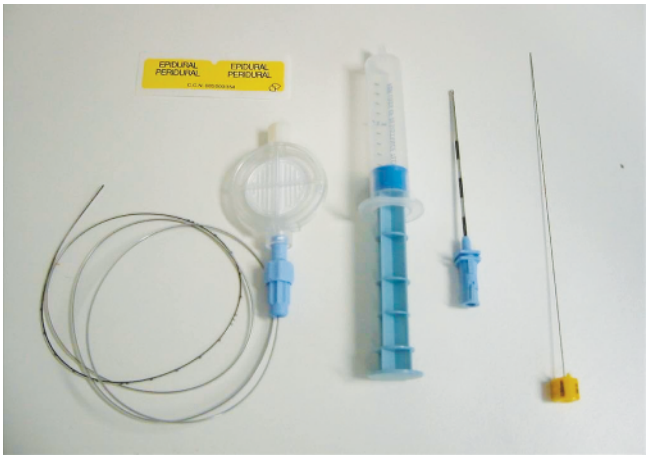


Figure 36-16 **Epidural needle, syringe, catheter and filter with a spinal needle on the right.**

at 2–5 micrograms/mL and a local anaesthetic concentration of 0.125%. Available infusions include bupivacaine (e.g. Marcain), levo-bupivacaine (e.g. Chirocaine) and ropivacaine 0.2% (e.g. Naropin). A patient-controlled epidural bolus (PCEA) may also be programmed. In some settings, newer techniques like patient intermittent epidural bolus (PIEB) automatically infuse larger volumes of local anaesthetic at programmed intervals to maintain adequate spread of the infusion in the epidural space. It can also be used with PCEA which combines the benefits of better analgesia with patient control.

Nursing care of epidural analgesia

Because of the risk of epidural abscess and spinal cord compression, strict surgical asepsis is needed to prevent a serious and potentially fatal infection. Thorough nursing care is needed during hygiene procedures to keep the catheter system clean and dry. The responsible clinicians are notified immediately of any signs or symptoms of infection or pain at the insertion site. Peripheral sensory and motor dysfunction may also occur and denote a medical emergency. A summary of nursing care for epidural analgesia is provided in Table 36-15.

Assessment of motor and sensory blockade is a requirement for standard monitoring of patients receiving neuraxial analgesia (Victorian Quality Council 2007). The Bromage Score must be documented in the patient's record; this ascertains the degree of motor blockade in the lower extremities as a score ranging from 0 to 3 (Figure 36-17).

TABLE 36-15 Nursing care for patients with epidural infusions

Goal	Actions
Identify neurological disturbance	Assess dermatome levels for the anaesthetic block to ensure adequate analgesia or blocks that are too high Perform motor block assessment (Bromage Score) and report any motor block with epidural therapy
Prevent epidural catheter displacement	Secure catheter (if not connected to implanted reservoir) carefully to skin and warn patient of movements that may dislodge the catheter from its original position and render analgesia ineffective
Maintain epidural catheter function	Use transparent adhesive dressing to aid inspection Inspect catheter for breaks or kinks
Prevent infection and its neurological complications	Inspect insertion site every 4–8 hours and report signs of infection Record body temperature with observations Use strict aseptic technique when caring for an epidural catheter (see Chapter 25) Do not routinely change dressing over site Change infusion tubing every 24 hours Immediately report increasing pain at the site, fever, unresolved headaches, motor/sensory dysfunction that is unexpected, bladder or bowel dysfunction
Monitor for respiratory depression	Monitor vital signs and oxygen saturation Document respirations and sedation score as per policy
Prevent adverse drug reactions	Monitor for signs of local anaesthetic toxicity Monitor for hypotension and be aware of organisational protocols for treatment Assess for pruritus (itching) and nausea and vomiting Administer antiemetics as required
Maintain urinary and bowel function	Monitor intake and output Assess for bladder and bowel distension Assess for discomfort, frequency and urgency

INTRAVENOUS PATIENT CONTROLLED ANALGESIA (PCA) AND EPIDURAL/REGIONAL ANALGESIA MONITORING

(Affix patient identification label here)

URN:

Family name:

Given names:

Date of birth: Sex: ❑ M ❑ F

Recommended Minimum Monitoring Requirements

PCA	Epidural/Regional	Epidural: Obstetric Labour Epidural Patients
As per hospital policy for routine post-operative observations and/or monitoring HOURLY for 8 hours then 2 HOURLY for 16 hours then 4 HOURLY thereafter.	1. As per hospital policy for routine post-operative observations and/or monitoring HOURLY for 8 hours then 2 HOURLY for 16 hours then 4 HOURLY thereafter. 2. Monitor Bromage (motor block check) 4 HOURLY and continue for 24 hours after removal of epidural/regional catheter. 3. Dermatome check 4 HOURLY (if hospital policy). 4. After a clinician dose monitor every 5 minutes for the first 20 minutes. Then continue as per routine epidural/regional observations.	1. After a clinician dose monitor every 5 minutes for the first 20 minutes, then every 10 minutes for 20 minutes then HALF HOURLY thereafter. 2. Monitor Bromage (motor block check) 4 HOURLY and continue for 24 hours after removal of epidural/regional catheter. 3. Dermatome check 4 HOURLY (if hospital policy).

The following must also be checked for ALL patients:

1. At the commencement of each shift 2. Upon return from another ward/department 3. At each bag/syringe change

Program Check:
(Check that the following are within parameters of current prescription)
- Medication being administered
- Infusion rate
- Bolus dose
- Lockout time

Connection/Line Check:
- Between pump and line
- Between line and infusion bag/syringe
- Between line and patient
- Line not kinked
- Correct line type
- Catheter site/dressing (Epidural/Regional)
- Clamp(s) open
- Identification via yellow labels/lines (Epidural/Regional)

Assessment/Intervention Guidelines

Any observations as below must be reported to the **CONTACT PERSON** (as specified on **PCA** or **EPIDURAL/REGIONAL ANALGESIA order form**

	Observation	Assessment	Intervention
	Sedation Score (SS)	• Sedation score 2	Stop infusion/removal patient bolus button. Assess respiratory rate. Ensure patient receives oxygen and monitor oxygen saturation. Return to hourly observation for 2 hours.
		• Sedation score 3	Stop infusion/remove patient bolus button. Notify contact person immediately. Ensure patient receives oxygen and monitor oxygen saturation. Give **naloxone** as per protocol (see PCA or Epidural/Regional Analgesia Order form).
	Respiratory Rate (RR)	• Respiratory rate less than 8/min	Ensure patient receives oxygen and monitor oxygen saturation. Give **naloxone** as per protocol if sedation score is greater than 1 (see PCA or Epidural/Regional Analgesia Order form). Notify contact person.
	Oxygen Saturation (SpO_2)	• Less than 93% for more than 1 min	Administer **oxygen** as per prescription (see PCA or Epidural/Regional Analgesia Order form).
Pain	Pain Score 0–10 / Functional Activity Score (FAS)	• A pain score at rest of greater than 4/10 or • A FAS of C (severe irritation)	Encourage patient bolus/increase infusion rate (if ordered/give clinician dose (if ordered) Notify contact person if no improvement.
EPIDURAL/REGIONAL ANALGESIA ONLY	**Hypotension** (BP)	• Systolic blood pressure less than 90 mm Hg or equal to or greater than 40 mm Hg drop from baseline	Manage as per **fluid bolus** protocol (see Epidural/Regional Analgesia Order form).
	Motor Deficit	• Initial Bromage score of 2 or 3 that does not decrease to less than 1 in FOUR hours following spinal anaesthetic or • Bromage score of greater than zero at any other time	Stop infusion/remove patient bolus button. Notify contact person immediately.
	High Blockade	• Tingling/numbness in fingers or • Weakness in arms or • Respiratory difficulties	Stop infusion/remove patient bolus button. Notify contact person immediately.
	Back Pain	• Unexpected or new pain or • Tingling, numbness or weakness in limb(s) or • New urinary or faecal incontinence	Notify contact person immediately—**THIS COULD BE A MEDICAL EMERGENCY**.
		• Breakdown of dressing cover site or • Temperature greater than 38.5°C or • Pain, inflammation or swelling at epidural/regional catheter insertion site	Reinforce cover site. Notify contact person.
	Local Anaesthetic Toxicity	• CNS: agitation, anxiety, tingling around mouth, drowsiness, convulsions or • CVS: hypotension, cardiac arrythmia	Stop infusion/remove patient bolus button. Administer oxygen and provide basic life support. Notify contact person immediately.
	Post Operative Nausea and Vomiting (PONV)	• PONV score 2 or 3	Administer prescribed antiemetics. Notify contact person *if no improvement.*
	Pruritus	• If patient requests treatment	Notify contact person.

NB: No other sedating medications should be given to patients (e.g. antihistamines such as promethazine, benzodiazepines such as temazepam, other opiates) without contact persons review.

INTRAVENOUS PCA AND EPIDURAL/REGIONAL ANALGESIA MONITORING

Keys

Sedation Score (SS)

S = Normal sleep
0 = Awake
1 = Mild (occasionally drowsy)
2 = Moderate (rousable but not able to stay awake)
3 = Severe (difficult to rouse or unrousable)

Pain Score

R = Rest
M = Movement
0 = No pain
10 = Worst pain

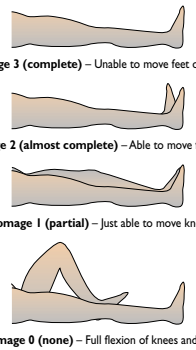
Functional Activity Score (FAS)

A = Activity unlimited by pain
B = Activity mild to moderately limited by pain
C = Activity severely limited by pain

Post Operative Nausea and Vomiting (PONV) Score

0 = No nausea or vomiting
1 = Mild nausea or vomiting
2 = Moderate nausea or vomiting
3 = Severe/persistent nausea or vomiting

Bromage



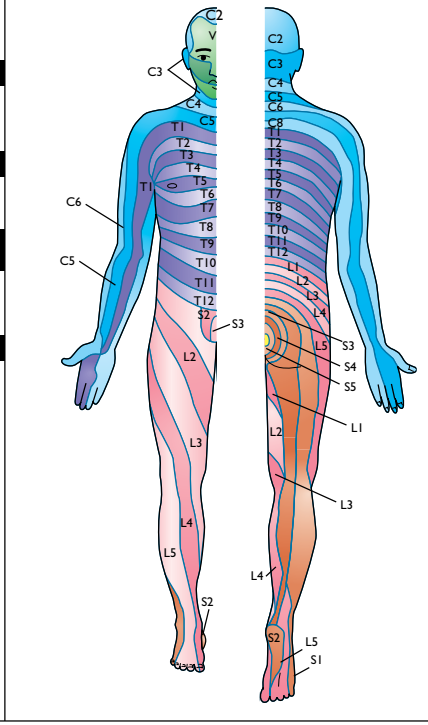
Bromage 3 (complete) – Unable to move feet or knees

Bromage 2 (almost complete) – Able to move feet only

Bromage 1 (partial) – Just able to move knees

Bromage 0 (none) – Full flexion of knees and feet

Dermatomes



Other Observations for Post-Operative Patients *(if required)*

Neurovascular Circulation

Score	*Colour (C)*	*Warmth (W)*	*Movement (M)*	*Sensation (S)*	*Capillary (CR)*
1	Usual colour	Warm	Flexion/Extension	No numbness/Tingling	Brisk ≤ 2 secs
2	Dusky	Cool	Restricted	Slight numbness/Tingling	Sluggish ≥ 3 secs
3	Mottled	Cold	Nil	Numb	Poor ≥ 4 secs

Date	Time	Additional Comments from Observations	Signature

DO NOT WRITE IN THIS BINDING MARGIN

Figure 36-17 Intravenous PCA and epidural/regional analgesia monitoring form.

continued

Figure 36-17 *continued*

INTRAVENOUS PATIENT CONTROLLED ANALGESIA (PCA) AND EPIDURAL/REGIONAL ANALGESIA MONITORING

Facility/Service: ..... Year: 20 .....

Ward/Unit: .....

(Affix patient identification label here)

URN:

Family name:

Given names:

Address:

Date of birth: Sex: ❑ M ❑ F

Refer to** Recommended Minimum Monitoring Requirements **and** Assessment I Intervention Guidelines **on front page for information as to when to monitor, when to intervene and what to do

Other observations (*may be used for any other observations required*)

A ..... D .....

B ..... E .....

C .....

Date	Time	Temp °C	BP	HR	Fetal HR	RR	SS	SpO_2 %	O_2 L/min	Pain score R	Pain score M	FAS	PONV score	Infusion rate	Total dose (cumulative) PCA	Total dose (cumulative) Epidural/ regional	Demand / Delivery	Program check OK?	Connection check OK?	Pruritus	Epidural/Regional analgesia only: Catheter site OK and dressing intact?	Epidural/Regional analgesia only: Bromage score	Epidural/Regional analgesia only: Dermatomes L	Epidural/Regional analgesia only: Dermatomes R	Bowels (BO or BNO)	Other observations (see key above) A	Other observations (see key above) B	Other observations (see key above) C	Other observations (see key above) D	Comments *See back page for additional comments from observations*	Initials
																		❑Y ❑N	❑Y ❑N	❑Y ❑N	❑Y ❑N										
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																		❑Y ❑N	❑Y ❑N	❑Y ❑N	❑Y ❑N										
																		❑Y ❑N	❑Y ❑N	❑Y ❑N	❑Y ❑N										

See keys on back page for explanation of** SS, Pain score, FAS, PONV score, Bromage, Dermatomes **and other observations

The goal of analgesia is a score of zero, which represents the absence of motor blockade. Any changes from this level must be reported immediately.

Evaluating the level of sensory block in a patient with an epidural infusion is standard procedure every 4 hours (Figure 36-16). The skin covering the entire body is supplied by peripheral spinal nerves. These segments are known as *dermatomes* – areas of skin supplied by afferent nerves that come together to form a dorsal nerve root. Loss of temperature sensation occurs in those dermatomes affected by the local anaesthetic agent. Applying ice to the skin, or an alcohol swab, can help ascertain the extent of sensory fibre blockade. A bilateral assessment is made to determine the extent of local anaesthetic blockade at the surgical incision. A normal block distribution would be 2–3 dermatomes above and below the epidural catheter level of insertion. Numbness around the incision dermatomes is normal. Numbness or weakness in the legs or arms must be reported.

Removal of epidural catheters is often performed by registered nurses and midwives and is a simple process, although there are risks such as catheter breakage and epidural haematoma. The risk of haematoma is increased if the patient has been administered anticoagulant medication such as heparin, enoxaparin (e.g. Clexane) or rivaroxaban. The use of epidural analgesia in conjunction with the oral anti-coagulant rivaroxaban is not recommended at present, but there are recommendations made for removal of epidural catheters with the subcutaneous anticoagulant drugs (Schug et al 2015). In general, catheters can be removed 6 hours after prophylactic doses of heparin and at least 12 hours after enoxaparin. Another dose of either drug should not be administered for at least 2 hours after the removal of the epidural catheter.

A prescription to remove the catheter must be documented in the patient record with an exact date and time for removal. The authority for removal only exists with the individual or team specialising in epidural analgesia. Check that the tip of the catheter is present after removal and that the procedure is accurately recorded in the patient record. The epidural site should be inspected after removal, and Bromage Score needs to be documented for at least another 24 hours in order to assess for haematoma or abscess development.

Despite the benefits of neuraxial analgesia, there are many risks and the suggested responses to these are summarised in Table 36-16.

Part of your role is to provide patient education about epidural analgesia in terms of the action of the medication and its advantages and disadvantages. Patients should know about the potential for side effects and should be instructed to notify a healthcare provider if signs of complications develop.

Non-drug pain management interventions

Non-pharmacological interventions should always be considered when formulating a pain management plan for patients. There are two main categories of non-pharmacological interventions for pain management: physical and cognitive–behavioural interventions. There is a variety of evidenced-based opinions on the effectiveness of non-drug therapies for pain management (see Schug et al 2015), but if something works well for a patient and/or they express a preference, an intervention may be appropriate.

Physical interventions

Massage

Cutaneous stimulation is the stimulation of the skin to relieve pain. A massage, warm bath or ice bag are simple ways to reduce pain perception. The gate control theory suggests that cutaneous stimulation works by activating larger, faster-transmitting A-beta sensory fibres. This decreases nociceptive transmission through small-diameter A-delta and C fibres by 'closing the gate' and blocking the transmission of nociceptive impulses at the spinal cord.

An advantage of cutaneous stimulation is that the measures can be used in the home, giving patients and families some control over pain and treatment. The proper use of cutaneous stimulation can reduce pain perception and help to reduce muscle tension that might otherwise increase pain.

When using cutaneous stimulation methods, it is useful to eliminate sources of environmental noise, help the patient to assume a comfortable position and explain the purpose of the therapy. Cutaneous stimulation should not be used directly on damaged skin areas (e.g. burns, bruises, skin rashes, inflammation and underlying bone fractures).

Cold and heat

Cold and heat applications may also relieve pain and promote healing. The selection of heat versus cold interventions varies with each patient's condition. For example, moist heat can help relieve the pain from a tension headache and cold applications can reduce acute pain from inflamed joints. When using any form of heat or cold application, teach the patient to avoid injury to the skin by checking the temperature and avoiding direct application of the cold or hot surface to the skin. Patients especially at risk include those with spinal cord or other neurological injury, older adults and confused patients.

TABLE 36-16 Potential complications associated with epidural analgesia and management

Complication	Description	Nursing actions
Local anaesthetic toxicity	Light-headedness, numbness of mouth and tongue, tinnitus/visual disturbances, muscular twitching, drowsiness, convulsions, coma, respiratory and cardiac arrest	Contact medical officer Turn off infusion Prepare for emergency intubation and other interventions
Hypotension	Decrease in blood pressure (BP) caused by sympathetic blockade Sustained BP < 90 mmHg (systolic)	Cease epidural infusion Contact medical officer Increase monitoring Consider fluid bolus Don't position head down
Urinary retention	Inability to pass urine	Ideal to have indwelling urinary catheter (IDC)
Post-dural-puncture headache	Epidural has punctured the dura mater causing leaking of cerebrospinal fluid (CSF) Headache better when supine	Notify medical officer Medical treatment may be a blood patch for headache
Haematoma	Increasing back pain, sensory/motor changes in lower extremities Medical emergency	Contact medical officer Medical treatment is magnetic resonance imaging (MRI) scan and decompression
Infection/abscess	Meningitis or epidural abscess Increasing back pain, sensory/motor changes May have local swelling at epidural site Medical emergency	Contact medical officer Commence neurological observations Medical treatment antibiotics and surgical decompression
Respiratory depression	Peak time for epidural morphine is 8–10 hours after the initial dose Sedation score ≥ 2 Respiratory rate < 10	Notify medical officer Prepare naloxone 400 micrograms in 4 mL Normal saline Give 100 micrograms every 2–3 minutes until respiratory rate is > 10
Epidural catheter migration	Rarely, catheter may migrate into subarachnoid space and large doses of local anaesthetics may be delivered into the CSF	Call medical officer and emergency Support vital signs Turn off infusion Monitor Give oxygen
Motor weakness	Loss of power in lower extremities May be caused by local anaesthetic concentration or serious side effects, such as abscess or haematoma	Call medical officer for any neurological deficit Increase frequency of patient monitoring
Inadequate analgesia	Pain is unrelieved	Increase infusion rate Call medical officer if problem persists
High block	Respiratory distress Upper/lower limb weakness Hypotension Sensory block at or above T4 after ice test	Contact medical officer Cease infusion Administer oxygen Intravenous fluid order Increase frequency of observations Sit patient up if appropriate
Epidural catheter disconnection	May accidentally occur due to physical tension on the catheter May be prevented by a secure catheter and filter dressing	Call medical officer

Ice massage and application of cold packs are two types of cold therapy that are particularly effective for pain relief. Ice massage involves the use of a large ice cube or a small paper cup filled with water and frozen (the water rises out of the cup as it freezes to create a smooth surface of ice for massage). The massage is simple. You or the patient can apply the ice with firm pressure to the skin, followed by a slow, steady, circular massage over the area. It takes 5–10 minutes to apply cold and each patient responds differently to the site of application that is most effective. Application near the actual site of pain tends to work best. A patient feels cold, burning and aching sensations and numbness. When numbness occurs, the ice should be removed. Cold is particularly effective for tooth or mouth pain when ice is placed on the web of the hand between the thumb and index finger. This point on the hand is an acupuncture point that apparently influences nerve pathways to the face and head. Cold applications are also effective before invasive needle punctures.

Cognitive–behavioural interventions

Relaxation and guided imagery

Patients can alter affective–motivational and cognitive–evaluative dimensions of pain perception through relaxation and guided imagery. *Relaxation* is mental and physical freedom from tension or stress. Relaxation techniques provide individuals with self-control when discomfort or pain occurs, reversing the physical and emotional stress of pain. Relaxation techniques can be used at any phase of health or illness.

Patients who use relaxation techniques successfully experience several physiological and behavioural changes (Box 36-9). Relaxation techniques include meditation, yoga, Zen, guided imagery and progressive relaxation exercises.

For effective relaxation, the individual's participation and cooperation are needed. Relaxation techniques are taught only when the patient is not in acute discomfort, because the inability to concentrate during severe pain makes the learning exercise ineffective. Explain the technique in detail and describe common sensations the patient may experience (e.g. a decrease in temperature or numbness of a body part). The patient should use these sensations as feedback.

Act as a coach, guiding the patient slowly through steps of the exercise. The environment should be free of noise or other irritating stimuli. The patient may sit in a comfortable chair or lie in bed (Box 36-10). The patient may use guided imagery and relaxation exercises together or separately.

In *guided imagery* the patient creates an image in the mind, concentrates on that image and gradually becomes less aware of pain. Coach the patient in forming the image and concentrating on the sensory experience. Initially ask the patient to think of a pleasant scene or experience that promotes the use of all the senses. Use specific information given by the patient and keep to the patient's image. The following is an example of a portion of a guided imagery exercise:

> **Imagine yourself lying on cool grass with the sound of rushing water from a nearby stream. It's a beautiful day. You turn to see a patch of yellow wildflowers in bloom and can smell their fragrance.**

Sit close enough to the patient to be heard, without being intrusive. Using a calm, soft voice helps the patient focus more completely on the suggested image. While relaxing, the patient focuses on the image, and it becomes unnecessary to speak continuously. If the patient shows signs of agitation, restlessness or discomfort, stop the exercise and begin later when the patient is more at ease. Progressive relaxation of the entire body takes about 15 minutes. The patient pays attention to the body, noting areas of tension. Tense areas are replaced with warmth

BOX 36-9 Effects of relaxation

Decreased pulse, blood pressure and respirations
Decreased oxygen consumption
Decreased muscle tension
Lowered metabolic rate
Heightened global awareness
Lack of attention to environmental stimuli
No voluntary change of position
Sense of peace and wellbeing
Deep, wakeful, restful period of alertness

BOX 36-10 Body positions for relaxation

Sitting

- Sit with entire back resting against back of chair.
- Place feet flat on floor.
- Keep legs separated.
- Hang arms at the side or rest on chair arms.
- Keep head aligned with spine.

Lying

- Keep legs separated with toes pointed slightly outwards.
- Rest arms at sides without touching sides of body.
- Keep head aligned with spine.
- Use thin, small pillow under head.

and relaxation. Some patients relax better with their eyes closed. Soft background music can help.

Progressive relaxation exercise involves a combination of controlled breathing exercises and a series of contractions and relaxation of muscle groups. The patient begins by breathing slowly and diaphragmatically, allowing the abdomen to rise slowly and the chest to expand fully. When the patient establishes a regular breathing pattern, coach the patient to locate any area of muscular tension, to think about how it feels, to tense muscles fully and then to completely relax them. This creates the sensation of removing all discomfort and stress. Gradually the patient can relax the muscles without first tensing them. When full relaxation is achieved, pain perception is lowered and anxiety about the pain experience becomes minimal. The following is an example of how you might coach a patient to use this technique:

> **Let's begin by finding as comfortable a position as possible. Arms at your side, legs uncrossed. Move until you feel at ease. Take a deep breath. Feel your stomach and chest slowly rise. Relax. Now breathe out slowly … slowly … and relax.**
>
> **Count to 4, inhaling on 1 and 2, exhaling on 3 and 4. Continue to breathe slowly. Your body is beginning to relax. Think 'relax' … feel the parts of your body. Notice any tension in your muscles. Continue to breathe slowly … and relax.**
>
> **Concentrate on your face … your jaws … your neck. Notice any tightness. Breathe in warmth and relaxation.**
>
> **Concentrate on any tension in your hands. Notice how it feels. Now make a fist, a tight fist. As you begin to exhale, relax your fist. Notice how your hand feels. Think 'relax'. Your hand feels warm … heavy or light. Just relax more … and more.**
>
> **Now focus on your forearms. Notice any tension. Relax your arms. Feel your body relaxing. Let the feelings of relaxation spread from your fingers and hands through to the muscles of your arms.**

If the patient seems to have difficulty relaxing any part of the body, slow the progression of the exercise and concentrate on the tensed body part. Let the patient know at the beginning that the exercise can be stopped at any time. With practice the patient can soon perform relaxation exercises independently.

Distraction

With meaningful sensory stimuli, a person can ignore or become unaware of pain. Pleasurable stimuli cause the release of endorphins. People who are bored or in isolation have only their pain to think about and thus perceive it more acutely. *Distraction* directs a patient's attention to something else and thus can reduce the awareness of pain and even increase tolerance. Distraction may work best for short, intense pain lasting a few minutes, such as during an invasive procedure or while waiting for an analgesic to work.

Identify activities enjoyed by the patient that may act as distractions. These might include listening to music and playing games. Most distractions can be used in a hospital, home or residential aged care facility.

One effective distraction is *music*, which decreases pain, stress and anxiety by diverting the person's attention and creating a relaxation response. You can use music creatively in many clinical situations. Music that initially matches a person's mood is usually best. Classical, popular and non-traditional music (music with no vocals, periods of silence) is used in music therapy. Popular music does not usually produce a deep level of relaxation because it is short with a steady beat and words. In an acute care setting, listening to music has been shown to provide a small reduction in postoperative pain and opioid requirement (Schug et al 2015). Some considerations when using music for pain relief are presented in Box 36-11.

EVALUATING IMPACTS AND OUTCOMES

The essential message about pain assessment and management is easy to summarise: Ask patients about their pain; accept and respect what they say; take action to relieve pain according to their pain management goals; and, after actions have been put in place, ask them again about their pain to determine the outcomes of care. It is a circle of assessment, intervention and reassessment (McCaffery et al 2011).

The patient is the best judge of whether a pain intervention is effective. Therefore, communicating with the patient is the most effective way to determine the outcomes of care. Evaluation criteria are formulated based on the type of pain, the intervention, the timing of the interventions, the nature of the injury or disease and the patient's previous responses. If a patient continues to have discomfort after an intervention, it may be necessary to try a different approach. For example, if an

BOX 36-11 Using music to control pain

- Match musical selections to the patient's taste. Consider age and background.
- Use earphones to avoid annoying other patients or staff and help patient to concentrate on music.
- Have family members bring music from home.
- If pain is acute, increase the volume of the music. As pain decreases, reduce the volume.
- If background music is provided, select general types suited to the patient's preferences.
- Have the patient concentrate on the music and emphasise rhythm by tapping fingers or patting the thigh.
- Avoid interruptions by dimming lights and closing the curtains or door.
- Leave patients alone as they listen to the music.

analgesic provides only partial relief, you might add relaxation exercises or guided-imagery exercises. It may be useful to consult with the medical or nurse practitioner about increasing the dosage, decreasing the interval between doses or trying different analgesics or adjuvant drugs. Communicating with the patient is the most effective form of evaluation. The patient's perceptions of the effectiveness of interventions should guide their use. The patient may help decide the best times to attempt a treatment. In essence, the patient is the best judge of whether an intervention works.

Effective communication of a patient's assessment of pain and their response to intervention is facilitated by accurate and thorough documentation. This information must be communicated from nurse to nurse, shift to shift and from nurses to other healthcare providers. It is your professional responsibility to report what has been effective for managing a patient's pain.

Key concepts

- Pain is whatever the experiencing person says it is, existing whenever he or she says it does.
- Working from a biopsychosocial, patient-centred perspective means taking the time to understand the physical, psychological and social dimensions of pain from the patient's perspective and tailoring treatment based on their individual needs and priorities.
- Normal pain processing involves four key processes: (1) transduction, the conversion of noxious stimuli into nerve impulses; (2) transmission, the conduction of nerve impulses from the periphery to the spinal cord and then to the brain; (3) perception, the process by which pain becomes a conscious experience; and (4) modulation, the process by which the brain dampens or facilitates ascending pain impulses.
- Key psychosocial factors shaping the acute pain experience include fear, anxiety and depression, perceived control over pain, pain catastrophising, and perceived social support.
- While nurses sometimes may not *believe* what the patient says about their pain, they have an ethical and professional responsibility to *accept* and act on it.
- Routinely perform and document pain assessment including pain intensity, quality, onset and duration, location, aggravating and relieving factors, associated symptoms, and the impact of pain on functioning.
- Assess acute postoperative pain intensity both *at rest* and *on movement* (e.g. sitting, coughing, moving the affected part) to determine whether pain control is adequate for recovery.
- Analgesia is the cornerstone of acute pain management, so RNs need to develop a working knowledge of the pharmacology of the three major groups of analgesics: (1) non-opioids, (2) opioids, and (3) adjuvants.
- Multimodal analgesia is the recommended approach for successfully managing all types of pain. Multimodal analgesia combines different drugs with different underlying mechanisms of action to produce more effective pain relief with fewer adverse effects.
- The nursing role is critical for patient safety including assessing pain, administering treatment, monitoring for side effects, and teaching patients and caregivers.
- You can initiate and support patients to use appropriate non-drug therapies in conjunction with analgesia to increase the overall effectiveness of therapy and enhance patient coping and perceived control over pain.

Online resources

Acute Pain Management: Scientific Evidence. This fourth edition guideline summarises the best available evidence on acute pain management by the Australian and New Zealand College of Anaesthetists and its Faculty of Pain Medicine, www.anzca.edu.au/resources/college-publications

Emergency care acute pain management manual: a practical resource designed to support emergency clinicians to identify evidence-based quality pain management options, endorsed by the Australasian College for Emergency Medicine, the College of Emergency Nurses Australasia and the Australian College of Emergency Nursing, www.nhmrc.gov.au/guidelines/publications/cp135

FLACC (Face, Legs, Activity, Cry and Consolability) pain assessment tool is used to assess acute pain in young children. An example can be found at: http://www0.health.nsw.gov.au/policies/gl/2016/pdf/GL2016_009.pdf

International Association for the Study of Pain (IASP): an international association and publisher of the PAIN journal. The association produces guidelines and clinical update resources online, www.iasp-pain.org

Oxford University Pain Site: the Bandolier site is available for individuals and professionals interested in evidence-based pain management for acute and chronic pain, www.medicine.ox.ac.uk/bandolier/booth/painpag/Index.html

State of the art review of tools for assessment of pain in nonverbal older adults; a comprehensive review and copies of existing pain assessment tools for this population, http://prc.coh.org/PAIN-NOA.htm

References

Beyer JE et al 1992 The creation, validation, and continuing development of the Oucher: a measure of pain intensity in children. J PediatrNurs 7(5):335.

Buresh B, Gordon S 2006 From silence to voice: what nurses know and must communicate to the public. ILR Press, New York.

Dahan A, Aarts A, Smith TW 2010 Incidence, reversal, and prevention of opioid-induced respiratory depression. Anesthesiol 112(1):226–38.

Douglas C 2014 Management of chronic pain. In Chang E, Johnson A (eds), Chronic illness and disability: principles for nursing practice, 2nd edn. Elsevier Australia, Chatswood, NSW, pp. 153–82.

Douglas C, Haydon D, Wollin J 2016 Supporting staff to identify residents in pain: a controlled pretest-posttest study in residential aged care. Pain Management Nursing 17(1):25–37.

Gerbershagen HJ et al 2013 Pain intensity on the first day after surgery: a prospective cohort study comparing 179 surgical procedures. Anesthesiology118:934–44.

Herr K, Coyne PJ, McCaffery M et al 2011 Pain assessment in the patient unable to self-report: position statement with clinical practice recommendations. Pain Manage Nurs 12(4):230–50.

Hicks CL, von Baeyer CL, Spafford PA et al 2001 The face pain scale – revised: toward a common metric in pediatric pain measurement. Pain 93(2):173–83.

Jensen M 2010 A neuropsychological model of pain: research and clinical implications. The Journal of Pain 11(1):2–12.

Jensen MP, Karoly P 2011 Self-report scales and procedures for assessing pain in adults. In Turk DC, Melzack R (eds), Handbook of pain assessment, 3rd edn. Guilford Press, New York.

Kapur D 2008 Adjuvant and miscellaneous drugs used in pain management. In Hughes J (ed), Pain management – from basics to clinical practice. Elsevier, London.

Keefe FJ 2009 Acute pain: a psychosocial perspective. In Sinatra RS, de Leon-Cassasola OA (eds), Acute pain management. Cambridge University Press, New York.

Khan R et al 2011 Catastrophizing a predictive factor for postoperative pain. American Journal of Surgery 201:122–31.

Macintyre P, Schug S 2015 Acute pain management: a practical guide, 4th edn. CRC Press, Boca Raton.

McCaffery M 1968 Nursing practice theories related to cognition, bodily pain, and man–environment interactions. University of California Students' Store, Los Angeles.

McCaffery M, Pasero C, Ferrell BR 2007 Nurses' decisions about opioid dose. Aust J Nurs107(12):35–9.

Melzack R 1999 From the gate to the neuromatrix. Pain (Suppl. 6):S121–26.

Melzack R, Casey KL 1968 Sensory, motivational, and central control determinants of pain: a new conceptual model. In Kenshalo D (ed), The skin senses. Charles C Thomas, Springfield, pp. 423–43.

Melzack R, Wall PD 1965 Pain mechanisms: a new theory. Science 150:971–9.

Ming J, Kuo B, Lin J et al 2002 The efficacy of acupressure to prevent nausea and vomiting in postoperative patients. J Adv Nurs 39(4):343–51.

Morris DB 1991 The culture of pain. University of California Press, Berkeley.

National Prescribing Service 2010 Methylnaltrexone injection for opioid-induced constipation in palliative care. NPS Radar Apr.

Pasero C, McCaffery M (eds) 2011 Pain assessment and pharmacologic management. Mosby, St Louis. Form available: www.partnersagainstpain.com/printouts/A7012AF4.pdf; accessed 24 Sep 2012.

Pasero C, McCaffery M 2004 Comfort–function goals: a way to establish accountability for pain relief. Am J Nurs 104(9):77–81.

Pasero C, Portenoy RK 2011 Neurophysiology of pain and analgesia and the pathophysiology of neuropathic pain. In Pasero C, McCaffery M (eds), Pain assessment and pharmacologic management. Mosby, St Louis.

Rang HP, Dale MM, Ritter JM et al 2007 Rang and Dale's pharmacology, 3rd edn. Elsevier, London.

Schug SA, Palmer GM, Scott DA et al 2015 Acute pain management: scientific evidence, 4th edn. ANZCA & FPM, Melbourne.

Schultz A, Andrews A, Goran S et al 2003 Comparison of acupressure bands and droperidol for reducing PONV in gynaecologic surgery patients. Appl Nurs Res 16(4):256–65.

Shin H, Song Y, Seo S 2007 Effect of neiguan point (P6) acupressure on ketonuria levels, nausea and vomiting in women with hyperemesis gravidarum. J Adv Nurs 59(5): 510–19.

Sullivan MJ, Bishop SR, Pivik J 1995 The pain catastrophizing scale: development and validation. Psychological assessment 7(4):524–32.

Therapeutic Guidelines 2012 Analgesics, version 6. Therapeutic Guidelines Ltd, Melbourne.

Thorn BE 2004 Cognitive therapy for chronic pain. Guilford Press, New York.

Victorian Quality Council 2007 Guidelines, acute pain management toolkit. Victorian Government Department of Human Services, Melbourne.

Voscopoulos C, Lema M 2010 When does acute pain become chronic? British Journal of Anaesthesia 105(51):69–85.

Wong DL, Baker CM 1988 Pain in children: comparison of assessment scales. Pediatr Nurs 14(1):9–17.

CHAPTER

37

Managing stress and adaptation

Patricia Barkway

Learning outcomes

Mastery of content will enable you to:

- discuss the limitations of homeostatic control
- compare four models of stress as they relate to nursing practice
- describe how adaptation occurs in each of the six dimensions of a person's functioning
- describe two forms of physiological adaptation
- describe the three phases of the general adaptation syndrome
- list and discuss behaviours that are responses to stress
- list and discuss the most common ego-defence mechanisms that are responses to stress
- discuss the effects of prolonged stress on each of the six dimensions of a person's functioning
- describe stress-management techniques that nurses can use and help clients to use
- discuss techniques of crisis intervention.

KEY TERMS

Adaptation, p. 1365
Burnout, p. 1384
Crisis, p. 1382
Crisis intervention, p. 1382
Developmental crisis, p. 1382
Ego-defence mechanisms, p. 1372
External stressors, p. 1365
Fight-or-flight response, p. 1366
General adaptation syndrome (GAS), p. 1365
Hardiness, p. 1372
Homeostasis, p. 1365
Internal stressors, p. 1365
Job stress, p. 1384
Local adaptation syndrome (LAS), p. 1369
Medulla oblongata, p. 1366
Mild stress situations, p. 1374
Moderate stress situations, p. 1375
Physiological adaptation, p. 1365
Pituitary gland, p. 1366
Reticular formation, p. 1366
Severe stress situations, p. 1375
Situational crisis, p. 1382
Stress, p. 1365
Stressors, p. 1365
Task-oriented behaviours, p. 1372

Every person experiences some stress throughout life. Stress can provide the stimulus for change and growth. Some stress is positive and even necessary (Moskowitz et al 2012). However, too much stress can result in poor judgement, physical illness and inability to cope (Folkman 2008). Several studies have proposed a relationship between stressful life events and a wide variety of physical and psychiatric disorders (Koutentaki et al 2014, Papadiamantopoulou et al 2010).

Claude Bernard, in 1867, was one of the first physiologists to recognise the consequences of stress. He proposed that changes in the internal and external environments disrupted the functioning of an organism and that it was essential for an organism to adapt to a stressor to survive. In 1920, Walter Cannon studied physiological responses to emotional arousal and emphasised the adaptive functions of the 'fight-or-flight' reaction. Cannon also noted that these responses were the result of the influence of the emotional state on the body and that the subsequent responses were adaptive and physiological (Cannon 1932).

Hans Selye (1946) developed a biochemical model of stress known as the **general adaptation syndrome (GAS)**, which described physiological events during a stress response. Selye also introduced the concept of stressors, which are internal or external stimuli that cause stress (Selye 1976a, 1976b). Selye's classic research into stress and stressors has contributed important knowledge for healthcare professionals, and current research in many disciplines focuses on a variety of stress and stress-related concepts.

Subsequently, research in this area has not only focused on identifying and understanding stress and stressors, but also on how individuals cope with and adapt to stress. Lazarus and Folkman (1984) described stress as a transaction between the individual and the environment, in which the individual makes a cognitive assessment as to whether an event is stressful or not, and whether or not they have the resources to manage or cope with the stressor. Unlike earlier stress research which focused on negative emotions and outcomes, Folkman emphasises the co-occurrence of positive and negative emotions and experiences during stressful times (Folkman 2008, Moskowitz et al 2012).

Stress and stressors

Everyone experiences stress from time to time and normally a person is able to adapt to long-term stress, or cope with short-term stress until it passes. Nevertheless, stress can place heavy demands on a person and if the person is unable to adapt, illness can result.

Stress is any situation in which a non-specific demand requires an individual to respond or take action (Selye 1976b). Stress involves both physiological and psychological responses and can lead to negative thoughts, feelings and behaviours that may threaten emotional and physical wellbeing. Stress can threaten the way a person normally perceives reality, solves problems and thinks in general. Stress can threaten a person's relationships and sense of belonging and lead to coping or maladaptive behaviour. Stress can also threaten a person's general outlook on life and health status.

A person's perception or experience of a major change may initiate the stress response. The stimuli preceding or precipitating the change are called stressors. **Stressors** represent an unmet need and may be physiological, psychological, social, environmental, developmental, spiritual or cultural. Stressors can be classified as internal or external. **Internal stressors** originate inside a person (e.g. having a fever, living with a chronic illness, experiencing an emotion such as guilt). **External stressors** originate outside a person (e.g. a marked change in environmental temperature, a change in family or social role, peer pressure, loss).

Physiological adaptation

Physiological adaptation to stress is the body's ability to maintain a state of relative balance. This adaptive ability is a dynamic form of equilibrium in the body's internal environment. The internal environment constantly changes, and the body's adaptive mechanisms continually function to adjust to these changes and maintain equilibrium, or homeostasis.

Homeostasis is maintained by physiological mechanisms that control body functions and monitor body organs. For the most part, these mechanisms are controlled by the nervous and endocrine systems and do not involve conscious behaviour. The body makes adjustments in heart rate, respiratory rate, blood pressure, temperature, fluid and electrolyte balances, hormone secretions and level of consciousness – all directed at maintaining **adaptation**.

Mechanisms of physiological adaptation

When a person becomes aware of an unmet physiological need, such as hunger or cold, deliberate actions (such as eating or putting on more clothes) can meet the need. For the most part, however, adaptation involves adjustments that the body makes automatically to maintain equilibrium. These homeostatic mechanisms are self-regulatory; in other words, they are automatic. In a person with an

illness or injury, however, the mechanisms may not be able to maintain and sustain homeostasis.

Physiological mechanisms of adaptation function through *negative feedback*, a process by which the controlling mechanism senses an abnormal state, such as lowered body temperature, and makes an adaptive response, such as initiating shivering to generate body heat. Three of the major control mechanisms used in adapting to a stressor are the medulla oblongata, the reticular formation and the pituitary gland.

Medulla oblongata

The **medulla oblongata** controls vital functions necessary for survival, including heart rate, blood pressure and respiration. Impulses travelling to and from the medulla oblongata can increase or decrease these vital functions. For example, regulation of the heartbeat is the result of sympathetic or parasympathetic nervous system impulses travelling from the medulla oblongata to the heart. The heart rate increases in response to impulses from sympathetic fibres and decreases with impulses from parasympathetic fibres.

Reticular formation

The **reticular formation** is a small cluster of neurons in the brainstem and spinal cord. In addition to adapting to stress, the reticular formation also controls vital functions and continuously monitors the physiological status of the body through connections with sensory and motor tracts. For example, certain cells within the reticular formation can cause a sleeping person to regain consciousness or increase the level of consciousness when a need arises.

Pituitary gland

The **pituitary gland**, a small gland attached to the hypothalamus, supplies hormones that control vital functions. It produces hormones necessary for adaptation to stress, and regulates the secretion of thyroid, gonadal and parathyroid hormones. Hormone secretion, like other homeostatic mechanisms, is normally regulated by a feedback mechanism that continuously monitors hormone levels in the blood. When hormone levels drop, the pituitary gland receives a message to increase hormone secretion. When hormone levels rise, the pituitary gland decreases hormone production.

Limitations of physiological mechanisms of adaptation

Physiological mechanisms of adaptation work together through complex relationships in the nervous, endocrine and other body systems to maintain a relative constancy within the body (homeostasis). In a healthy person, these mechanisms affect physiological balance and the body's day-to-day needs are met. However, physiological mechanisms of adaptation can provide only short-term control over the body's equilibrium. They cannot adapt to long-term changes in hormone secretion or vital functions. Therefore illness, injury or prolonged stress can decrease the body's adaptive capacity. Decreased functioning can result in continued but inadequate homeostatic control, or breakdown of the feedback mechanism that allows control. Either form of decreased function can result in further illness or death.

In severe stress situations, for example, the pituitary gland supplies the body with the necessary hormones for adaptation. However, these hormones may be insufficient in quantity to provide the physiological requirements necessary for coping. In such a case, the person's condition deteriorates and functioning declines.

Models of stress

The origins and effects of stress can be examined in terms of biomedical and cognitive-behavioural theoretical models. Stress models are used to identify the stressors for a particular individual and to predict that person's responses to them. Each model emphasises a different aspect of stress. Understanding stress models will enable you as a nurse to assist clients to cope with excessive stressors and to recognise and manage their possible unhealthy or non-productive responses to stressors. Stress models can therefore inform the delivery of individualised and person-centred nursing care.

Response-based model

The response-based model is concerned with specifying the particular response or pattern of responses to a stressor. Walter Cannon was a physiologist and an early stress researcher who first described the **fight-or-flight response** (a primitive inborn protective mechanism to defend the organism against harm). This is a physical reaction by an organism (including humans) to a perceived threat (Cannon 1932). Cannon observed that the organism's endocrine and sympathetic nervous systems were aroused when threatened – leading to the release of catecholamines by the adrenal gland (particularly adrenaline and noradrenaline). Hormones (aldosterone and cortisol) and neurotransmitters (dopamine and seratonin) also influence the organism's response (Figure 37.1). This prepares the organism to respond to the anticipated danger by either reacting with aggression (*fight*) or by escaping (*flight*).

The fight-or-flight response is adaptive when arousal enables the individual to take immediate action – to either

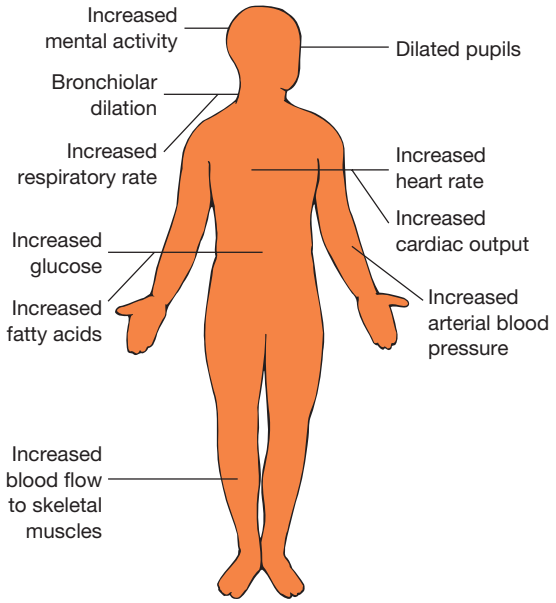


Figure 37-1 **Fight-or-flight response.**

confront or escape the threat (see Figure 37-1). However, prolonged, unrelenting arousal, for which adaptation does not occur, is potentially harmful and can lead to long-term health consequences. For example, for the client who lives in a domestic violence situation, neither fight nor flight is an adaptive response because a longer-term solution is required.

Selye's (1976a) model defines stress as a non-specific response of the body to any demand made upon it. Stress is demonstrated by a specific physiological reaction of the whole body, involving the autonomic nervous system and the endocrine system. The response of a person to stress is therefore considered purely physiological by this model, and not influenced by cognitive processes (Selye 1976a).

A limitation of the response-based model is that it does not consider individual differences in response patterns. For instance, one individual may see the same stressor, such as starting a new job, as a welcome challenge while another may perceive it as a threat (Barkway 2013).

Adaptation model

The adaptation model is based on the understanding that people experience anxiety and increased stress when they are unprepared to cope with stressful situations.

The adaptation model proposes that four factors determine whether a situation is stressful (McAlpine & Mechanic 2010, Mechanic 1962). The ability to cope with stress, the first factor, usually depends on the person's experience with similar stressors, support network and overall perception of the stressor. The second factor deals with the practices and norms of the person's peer group. If the peer group considers it normal to talk about a particular stressor, the client may respond by complaining about it or discussing it. This response may help with adaptation to the stress, or the client may respond in this way simply to conform to peer group behaviour. The third factor is the impact of the social environment in helping a person to adapt to a stressor. For example, a homeless woman may seek assistance by attending an emergency department for an acute pelvic infection. The woman may be assessed and antibiotic therapy instituted. The ED and the healthcare professionals involved are resources for the client to reduce the severity of a stressor. The last factor involves the resources that can be used to deal with the stressor. In this case, the client needs transport to the hospital and financial arrangements that will provide for her care. Both these factors will influence how she can access the resources within the hospital to help her cope with the physiological stressor.

Stimulus-based model

The stimulus-based model focuses on disturbing or disruptive events within the environment. The seminal research of Holmes and Rahe (1967) identified stress as a stimulus and resulted in the eventual development of the Social Readjustment Rating Scale, which measures the effects of major life events on illness. Alternatively, the stimulus may be an accumulation of minor life events or hassles, as described by Kanner and colleagues (1981) in a study that compared the stress from daily hassles and 'uplifts', with stress produced by major life events. In another study of 110 Swiss couples, Falconier and collegues (2014) found that the stress from daily hassles had a negative impact on the individual's psychological and physical health as well as the couple's relationship. However, as with the response-based model, the stimulus-based model does not allow for individual differences in perception and response to stressors.

Transaction-based model

The transaction-based (process) model was first proposed by Lazarus and Folkman (1984). This model views the person and environment as being in a dynamic, reciprocal, interactive relationship. The person's reaction to a stressor is viewed as an individual perceptual response (cognitive appraisal) rooted in psychological and cognitive processes. Distress is experienced when the person perceives an imbalance between demands and resources. The individual's appraisal is influenced by personal factors such as beliefs, perception of control and uncertainty.

This model focuses on stress-related processes, such as cognitive appraisal and coping (Folkman 2008, Moskowitz

et al 2012). Stress originates from the relationship between the person and the environment. Distress is experienced when the person perceives that the stressor exceeds the resources available to respond to the stressor. Alternatively, coping occurs when the person perceives that their resources are sufficient to deal with the stressor.

Factors influencing response to stressors

The response to any stressor depends on physiological functioning, personality and behavioural characteristics, as well as the nature of the stressor (Box 37-1). Each factor influences the response to a stressor. A person may perceive the intensity or magnitude of a stressor as *minimal*, *moderate* or *severe* – the greater the magnitude of the stressor, the greater the stress response. Similarly, the scope of a stressor can be described as *limited*, *medium* or *extensive* – the greater the scope of a stressor, the greater the response of the client to it (Lazarus & Folkman 1984).

Adaptation to stressors

Adaptation is the process by which the physiological or psychosocial dimensions change in response to stress. There are many forms of adaptation. Physiological adaptations make physiological homeostasis possible. A similar process of adaptation, however, may occur in the psychosocial and other dimensions. For example, health promotion activities can focus on a person, a family or a community's adaptation to stress.

Adaptation is an attempt to maintain optimal functioning. Adaptation involves *reflexes*, automatic body mechanisms for protection, and coping mechanisms. Ideally, adaptation can lead to adjustment or mastery of a situation (Selye 1976a). A stressor that stimulates adaptation may be short term, such as a fever, or long term, such as paralysis of a limb. To function optimally, a person must be able to respond to such stressors and adapt to the required demands or changes. Adaptation requires an active response from the whole person.

Similar to an individual's response, a whole family or group may need to adapt to a stressor. *Family adaptation* is the process by which a family maintains balance so that it can fulfil its purposes and tasks, deal with stress and promote the growth of individual members. In a study investigating the functioning of families in which one partner was employed in the fly-in fly-out (FIFO) workforce (where workers are flown into an often remote employment site for a number of days before returning to their family for a rest period), effective communication skills, cohesive relationships and an ability to be flexible with change and access to community resources were found to be predictive of family coping (Taylor & Simmonds 2009).

BOX 37-1 Factors influencing response to stressors

Aspects of a stressor that influence the stress response

Intensity
Scope
Duration
Number and nature of other stressors
Predictability

Characteristics of the individual that influence the stress response

Level of personal control
Availability of social supports
Feelings of competence
Cognitive appraisal

• CRITICAL REFLECTION POINT

Sarah Jenkins, who is 10 weeks pregnant, presented with vaginal bleeding and abdominal pain to emergency department of the hospital where you work. Her partner Neil accompanied her. Their baby was conceived following three unsuccessful in-vitro fertilisation treatments.

1. **Identify potential stressors for Sarah.**
2. **Identify potential stressors for Neil.**

Dimensions of adaptation

Stress can affect the physical, psychological/emotional, developmental, intellectual, social and spiritual dimensions of a person. Adaptive resources exist in each of these dimensions. Therefore, when assessing a client's adaptation to stress, it is important to consider the whole person. Table 37-1 highlights adaptive resources found in each dimension and gives examples of positive and negative outcomes of stressors.

Response to stress

The whole person is involved in responding and adapting to stress. However, most research into stress responses focuses on single psychological, emotional or physiological responses. In reality, these dimensions not only overlap but also interact with other dimensions.

When stress occurs, a person uses physiological and psychological energy to respond and adapt. The amount of energy required and the effectiveness of the attempt to adapt depends on the intensity, scope and duration of the stressor and the number of other stressors occurring at the same time. The stress response is adaptive and protective,

TABLE 37-1 Dimensions of adaptation

Dimension	Adaptive resources	Example of stressor	Example of unsuccessful outcome	Example of successful outcome
Developmental	Successful coping in past development task/stages Successful adaptation to past stressors	Retirement	Depression	Role functions altered to other meaningful activities
Emotional	Psychological defence mechanisms Individual personality strengths	Rape	Irrational fear of men	Integration of traumatic memory Serves as advocate for others at rape crisis centre
Intellectual	Formal education Ability to problem-solve Communication skills Realistic perception of stressor Conscious mobilisation of past positive coping strategies	Diagnosis of cancer	Denies presence of cancer and forgoes any treatment	Uses an active problem-solving approach to make decisions about care
Physical	Local adaptation syndrome General adaptation syndrome	Fever	Death	Infection resolved
Social	Social network that provides support Others who may direct person to needed resources	Family member using heroin	Person with the drug problem withdrawing from family and other social contacts	Active participation of all family members in Narcotics Anonymous support groups
Spiritual	Prayer groups; support from spiritual adviser	Ill family member feeling abandoned by God	Withdraws from attending church, won't talk with church members or minister	Begins to seek out friends in the church, volunteers for church-related activities

and the characteristics of this response are the result of integrated neuroendocrine responses (Box 37-2).

As a nurse you are constantly challenged by a variety of stress responses when providing care to clients and in managing your own stress responses. In delivering care, the physiological underpinnings, psychological issues, developmental and intellectual factors and the person's social and spiritual world need to be considered.

Physiological response

In his seminal research, Selye (1946, 1976a, 1976b) identified two physiological responses to stress: the **local adaptation syndrome (LAS)** and the general adaptation syndrome (GAS). The LAS is the response of a body tissue, organ or part to the stress of trauma, illness or other physiological change. The GAS is a defence response of the whole body to stress.

Local adaptation syndrome

The body produces many localised responses to stress. These include blood clotting, wound healing, accommoda-

BOX 37-2 Characteristics of the stress response

- Stress response is natural, protective and adaptive.
- There are normal responses to stressors; stressors encountered in everyday circumstances increase catecholamine excretion, which causes an increase in heart rate and blood pressure.
- Physical and emotional stressors trigger similar responses; magnitude and patterns may differ.
- There are limits in ability to compensate.
- Magnitude and duration of stressors may be so great that homeostatic mechanisms for adjustment fail, leading to health problems and in extreme cases death.
- Repeated exposure to stimuli results in adaptive changes; that is, tissue levels of the enzyme tyrosine hydrolase increase, which increases capacity for the body to produce adrenaline and noradrenaline.
- There are individual differences in response to same stressors.

Modified from Carrieri-Kohlman V, Lindsey AM, West CM 2003 Pathophysiological phenomena in nursing: human response to illness, 3rd edn. Saunders, St Louis.

tion of the eye to light, and response to pressure. All forms of the LAS share the following characteristics:

- the response is *localised*; it does not involve entire body systems
- the response is *adaptive*, meaning that a stressor is necessary to stimulate it
- the response is *short term*; it does not persist indefinitely
- the response is *restorative*, meaning that the LAS helps restore homeostasis to the body region or part.

Two localised responses, the reflex pain response and the inflammatory response, are described here as examples of the LAS. As a nurse you will encounter these responses frequently.

Reflex pain response

The reflex pain response is a localised response of the central nervous system to pain (see Chapter 36). This is an adaptive response to protecting tissue from further damage. The reflex pain response involves a sensory receptor, a sensory nerve to the spinal cord, a connector neuron within the spinal cord, a motor nerve from the spinal cord and an effector muscle. Examples of reflex pain responses are the unconscious, reflex removal of the hand from a hot surface, and a muscle cramp.

Inflammatory response

The inflammatory response is stimulated by trauma or infection. This response localises the inflammation, thereby preventing its spread, and promotes healing. The inflammatory response may produce localised pain, swelling, heat, redness and changes in functioning. The inflammatory response occurs in three phases:

1. The first phase involves changes in cells and the circulatory system. Initially, narrowing of blood vessels occurs at the injury to control bleeding. Then histamine is released at the injury, increasing blood flow to the area and increasing the number of white blood cells to combat infection. Almost simultaneously, kinins are released to increase capillary permeability to permit the flow of proteins, fluid and leucocytes to the injury. At this point the localised blood flow decreases, keeping leucocytes in the area to fight infection.
2. The second phase is characterised by release of exudate from the wound. Exudate is a combination of fluid, cells and other substances produced in the area of injury, which may be a cut, laceration or surgical incision. The type and amount of exudate vary from injury to injury and from person to person.
3. The last phase is repair of tissue by regeneration or scar formation. Regeneration replaces damaged cells with identical or similar cells. Scar formation replaces original tissue that is not functional.

The inflammatory response indicates that the body is adapting to a local injury. During adaptation, the inflammatory response protects the body from infection and promotes healing.

General adaptation syndrome

The GAS is a physiological response of the whole body to stress. It involves several body systems, mainly the autonomic nervous system and the endocrine system. Some texts refer to the GAS as the *neuroendocrine response*. The GAS consists of the alarm reaction, the resistance stage and the exhaustion stage (Figure 37-2).

Alarm reaction

The alarm reaction involves the mobilisation of the defence mechanisms of the body to cope with the stressor. Hormone levels rise to increase blood volume and thereby prepare the person to act. Cortisol is released to increase blood glucose levels to make energy available for adaptation. Increased levels of other hormones – adrenaline and noradrenaline – result in an increased heart rate, increased blood flow to muscles, increased oxygen intake and greater mental alertness.

This extensive hormonal activity prepares the person for the fight-or-flight response. Cardiac output, oxygen intake and respiratory rate increase; the pupils of the eyes dilate to produce a greater visual field; and the heart rate increases for more energy. Other changes occur to prepare the person to act (Figure 37-1). With this increased mental energy and alertness, the person is prepared to fight or flee the stressor.

During the alarm reaction, the person is faced with a specific stressor. The person's physiological response is extensive, involving major systems of the body, and may last from a minute to many hours. If the stressor is extreme or remains for a long time, there may be a threat to life. If the stressor is still present after the initial alarm reaction, the person progresses to the second (resistance) phase of the GAS.

Resistance stage

In the resistance stage the body stabilises and hormone levels, heart rate, blood pressure and cardiac output return to normal – the person is attempting to adapt to the stressor. If the stress can be resolved, the body repairs any damage that may have occurred and homeostasis is regained. However, if the stressor remains present, as in

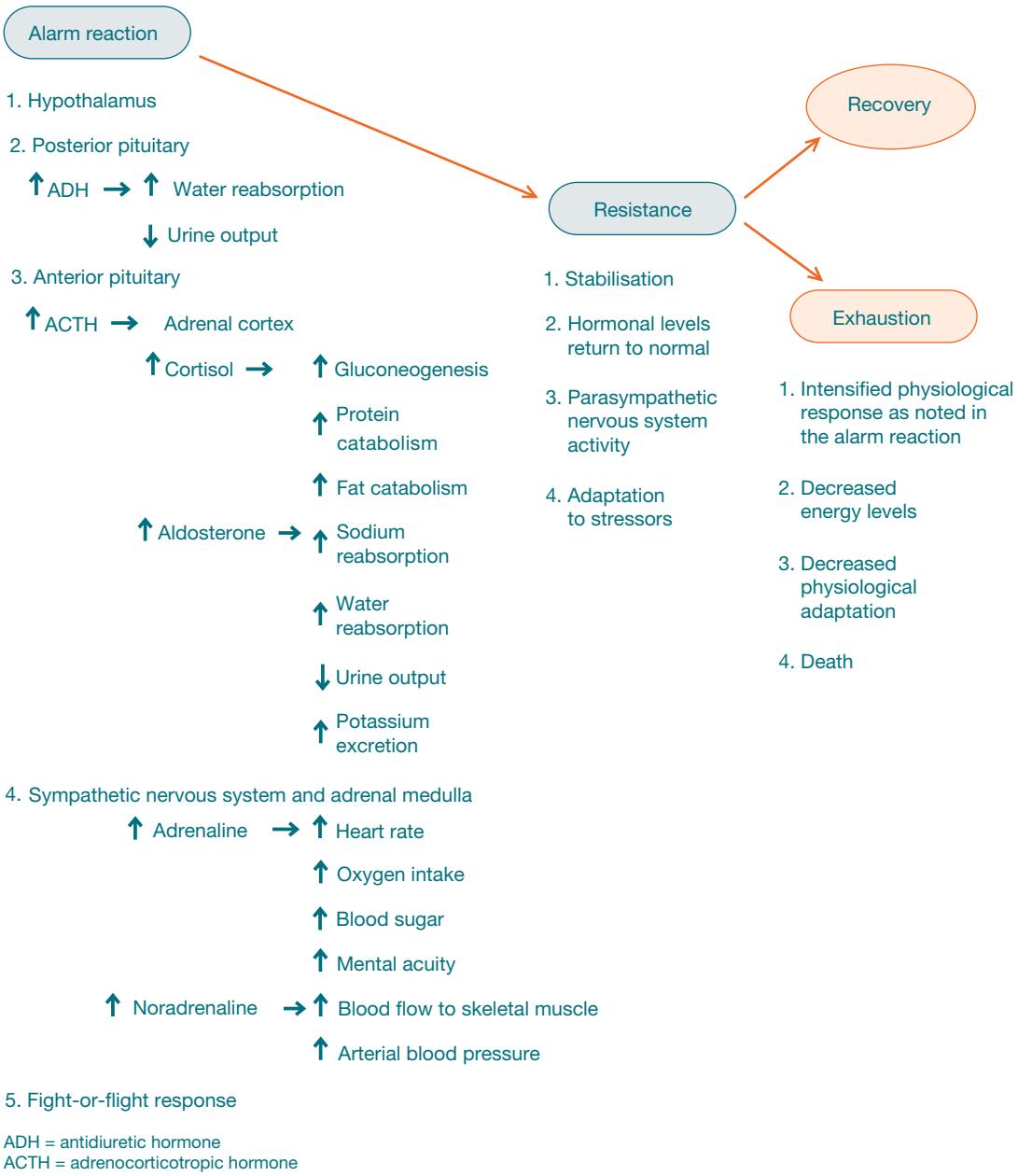


Figure 37-2 **General adaptation syndrome.**

examples of continued blood loss, debilitating disease, or ongoing severe mental illness, adaptation fails and the person enters the third (exhaustion) phase of the GAS.

Exhaustion stage

The exhaustion stage occurs when the body can no longer resist stress and when the energy necessary to maintain adaptation is depleted. The physiological response is intensified, but the person's energy level is compromised and adaptation to the stressor diminishes. The body is unable to defend itself against the impact of the stressor, physiological regulation diminishes and, if the stress continues, illness or even death may result.

• CRITICAL REFLECTION POINT

John Morgan, aged 52 years, who has no family history of heart disease, had a myocardial infarction 3 days ago, and has just been transferred from the coronary care unit to the medical ward where you work.

1. **What risk assessments do you undertake?**
2. **What questions will you ask John to identify his stressors?**
3. **What lifestyle issues need to be assessed?**

Psychological response

Psychological adaptive behaviours influence how a person copes with stress. These behaviours are directed at stress management and are acquired through learning and experience as a person identifies acceptable and successful behaviours throughout the life span.

Psychological adaptive behaviours can be constructive or harmful. *Constructive behaviours* help a person accept the challenge to resolve conflict. Even anxiety can be constructive; it can signal that a threat is present so that a person can take measures to reduce the impact of the threat, for example, the person who is worried about frequent headaches and consults his or her GP to have the headaches investigated. *Harmful behaviours*, on the other hand, do not help a person cope with a stressor. Harmful behaviours affect reality orientation, problem-solving abilities, personality and, in severe circumstances, the ability to function. The use of alcohol or drugs, for example, may alleviate immediate distress, but in the longer term hamper a person's ability to deal with stress.

Psychological adaptive behaviours are also referred to as *coping mechanisms*. Such mechanisms can be problem-focused, involving the use of direct problem-solving techniques to cope with threats; or emotion-focused, involving the use of strategies to manage one's emotional response to the stressor.

Problem-focused coping behaviours involve using cognitive abilities to reduce stress, solve problems and resolve conflicts. **Task-oriented behaviours** enable a person to cope realistically with the demands of a stressor. The three general types of task-oriented behaviour are attack behaviour, withdrawal behaviour and compromise (Box 37-3).

Emotion-focused coping behaviours can be intentional, for example, seeking support from friends; or they may involve the use of unconscious processes like ego-defence mechanisms – the purpose of which is to regulate emotional distress and give a person protection from anxiety and stress. **Ego-defence mechanisms**, first described by Sigmund Freud and later elaborated on by his daughter Anna (Freud 1966), are unconscious behaviours that offer psychological protection from a stressful event. They are used by everyone and help protect against feelings of distress and anxiety. Occasionally, a defence mechanism can become distorted and is no longer able to help the person adapt to a stressor. There are many ego-defence mechanisms (Box 37-3). They are often activated by short-term stressors and do not usually result in psychiatric disorders.

BOX 37-3 Psychological adaptive behaviours

Task-oriented behaviours (problem-focused)

- *Taking action* to remove or overcome a stressor or to satisfy a need.
- *Withdrawal behaviour* is removing the self physically or emotionally from the stressor.
- *Compromise behaviour* is changing the usual method of operating, substituting goals or omitting the satisfaction of needs to meet other needs or to avoid stress.

Examples of ego-defence mechanisms (emotion-focused)

- *Compensation* is making up for a deficiency in one aspect of self-image by strongly emphasising a feature considered an asset.
- *Conversion* is unconsciously repressing an anxiety-producing emotional conflict and transforming it into physical symptoms.
- *Denial* is avoiding emotional conflicts by refusing to consciously acknowledge anything that might cause intolerable emotional pain.
- *Displacement* is transferring emotions, ideas or wishes from a stressful situation to a less-anxiety-producing substitute.
- *Identification* is patterning behaviour after that of another person and assuming that person's qualities, characteristics and actions.
- *Regression* is coping with a stressor through actions and behaviours associated with an earlier developmental period.

Psychological/emotional reactions

Individual personality involves a complex relationship between many factors. The emotional reaction to prolonged stress is determined by examining the person's current lifestyle and stressors, previous experience with stressors, past successful coping mechanisms, role functions, self-concept and hardiness. **Hardiness** is a combination of three personality characteristics thought to militate against stress – sense of control over life events, commitment to meaningful activities, and anticipation of challenge as an opportunity for growth. Hardy individuals adapt more readily to stress because of the more positive ways they appraise stressful situations and utilise more effective coping responses (Cash & Gardner 2011).

Developmental factors

Prolonged stress can affect a person's ability to complete developmental tasks. In any developmental stage, a person normally encounters tasks and engages in

behaviours characteristic of the stage (Santrock 2014) (see Chapters 16–18). In extreme forms, repeated stress can lead to maturational crisis. For example, if parents or the environment prevent a young child from developing a sense of autonomy (see Chapter 16), the child may experience stress, which is indicated by excessive dependence on others or passive inactive behaviour (Erikson 1963).

Intellectual factors

Studies have shown that repeated stress can have consequences for brain function, including learning and memory processes (Schwabe et al 2012). A person's ability to acquire new knowledge or skills may also be impaired by stress. This is especially important information for nurses who are involved daily in the delivery of nursing care, and are partners in health decisions and health education. The person may not be able to learn new skills about an illness process, or its management, until prolonged stressors have been resolved or alternative forms of coping have been found. It may be necessary to provide information to the person on repeated occasions and in writing so that they can refer to it later if necessary.

Social determinants

The social determinants of health include the physical environment, family, lifestyle, and cultural and political issues. The word 'family' means different things to different people (see Chapter 15) and family is not necessarily static. In Western cultures, single parent families, same gender parent families, blended families and families with alternative patterns of relationships now exist alongside the nuclear family model that predominated during the 1950s. In non-Western cultures, family is viewed as extending beyond the parent/child dyad to also include grandparents, aunts, uncles and cousins.

Each individual has their own perception of the role and importance of family. Western cultures have an individualistic perspective, and attribute the responsibility of health, for example, to the individual. Collective cultures, on the other hand, emphasise the role that family and community play in the health of group members (Sawrikar & Katz 2008). New Zealand Māori, for example, believe that health is influenced by four domains: mind, spirit, family (extended) and the physical world (Ministry of Health 2015). It is therefore important to be cautious when applying theories about stress and health which are derived from Western cultures to people from collectivist societies, such as Australian Aboriginal or Torres Strait Islander people, New Zealand Māori and immigrants and refugees from collectivist cultures.

The family unit itself can be a cause of stress. Single parents can face the burden of caring for children on their own while working and running a home. Teenage parents, single parents and same-sex couples with children may face the added stress of discrimination. Economic concerns, homelessness, violence and illness are all factors that can increase stress within a family. Poor communication habits and maladaptive behaviours among family members can create crises within a family structure and limit capacity for adaptation (World Health Organization 2008).

Lifestyle decisions can also be important factors that influence stress. A father may know that smoking can lead to cardiovascular disease or cancer. However, he may continue to smoke because it helps him cope with an unsatisfactory job situation. His children may then ask him to stop smoking. If he is unable or unwilling to quit, he may feel like a failure, thereby precipitating more stress. If he is successful at quitting smoking, he may then feel positive about himself and replace smoking with a daily exercise regimen. His children may also feel affirmed because their father listened to their concerns.

Each social and cultural group has its own views regarding stress. Education, poverty, spirituality, support systems and accepted coping mechanisms all influence these beliefs. Social instability can also play a role in stress and adaptation. For example, the impact of colonisation on Indigenous populations (see Chapter 14) has imposed considerable stress resulting in significantly poorer health outcomes, both physically and mentally (Central Australian Aboriginal Congress 2011, Ministry of Health 2011).

Spiritual considerations

Spirituality begins early in life and is influenced by culture, beliefs and life experiences (see Chapters 14 and 22). Just as the concept of family is unique to each person, spirituality is also highly individual. While the concepts of religion and spirituality are often used interchangeably, they are not the same. Religion is a system of organised beliefs, emotions and worship (Cochran 2014). Spirituality is a human experience, which demonstrates a unique capacity for love, joy, caring, compassion and for finding meaning in life's difficult experiences (Emmons 2005).

During times of stress, some clients may rely on their faith, whereas others may abandon their religious practices out of disillusionment and anger. Although spirituality can be a difficult subject for nurses to approach, it is an essential part of the person's health and wellbeing.

CLINICAL REASONING PROCESS

Successful clinical reasoning and critical reflection requires a synthesis of professional knowledge and experience, information and data gathered from clients and their family, and professional standards for practice informing decisions.



Clinical judgements require you to anticipate or access the required information, analyse the data and make decisions regarding care. During assessment of a patient or client (Figure 37-3) you will consider all elements that build towards making a relevant assessment in order to prioritise, plan and evaluate appropriate nursing care.

In the case of stress and adaptation, it is important to integrate the knowledge and research of many disciplines, the client's previous experiences, and information gathered from clients, to understand stress and its impact on the person and their family or community. In addition, the use of critical thinking and perseverance are needed to form a plan of care to provide appropriate stress management. To fully understand how stress has affected the client, complete and accurate data collection is required. Physical, emotional, social, cultural and developmental state information are all part of the assessment, using a broad knowledge base to ensure that the person's needs are accurately identified.

GATHERING RELEVANT INFORMATION AND DATA

Nurses care for individuals in various settings and are able to assess reactions to stress. The nursing assessment is directed towards gathering relevant information and data on indicators of stress (and coping) in all dimensions of adaptation, and facilitating the synthesis of that information (Figure 37-3). Your knowledge, experience and attitudes are especially important during the assessment phase as each individual has their own unique perceptions and responses to stress. This presents a complex picture influenced by beliefs and norms, life experiences and patterns, environmental factors, family structure and function, developmental stage, past experiences with stress, and coping mechanisms. Because nurses spend a great deal of time with clients and their families or friends, they are well positioned to critically analyse coping responses and to recommend professional counselling when indicated. The identification of stress-response behaviours, both verbal and non-verbal, is part of nursing assessment.

Physiological indicators

Physiological indicators of stress are objective and are therefore more readily identifiable, observable and measurable (Box 37-4). However, physiological indicators are not always present in all people experiencing stress, and can vary among individuals. Vital signs (pulse, respirations, blood pressure) are usually elevated during stress, and the person may appear restless and unable to concentrate. These indicators can appear at any stage of the stress response.

The duration and intensity of stress symptoms are directly related to the perceived duration and intensity of the stressor. Physiological indicators arise from a variety of systems; therefore, the assessment of stress involves collecting data from all of these systems. The link between psychological stress and disease is often called the *mind–body interaction*. Research has shown that psychosocial stress in children can adversely affect their rates of infection and immune function (Shonkoff & Garmer 2012).

During any stage of the stress reaction there may be physical symptoms such as nausea, vomiting, diarrhoea or headache. Physical appearance can be changed, posture may be slumped, hygiene and grooming may deteriorate and style of dress may differ. Prolonged stress has been linked with cardiovascular and gastrointestinal diseases. Some cancers and immunological disorders, migraine headaches, infertility, burnout and irritability are associated with prolonged, unresolved stressors. In addition, stress is known to exacerbate neurological conditions such as Parkinson's disease (Fitzpatrick et al 2010).

Mild stress situations are a type of stressor that everyone encounters regularly, such as oversleeping, traffic jams, a flat tyre, or criticism from a supervisor. Mild stress situations do not usually produce chronic physiological damage. Such situations usually last from a few minutes to a few hours. By

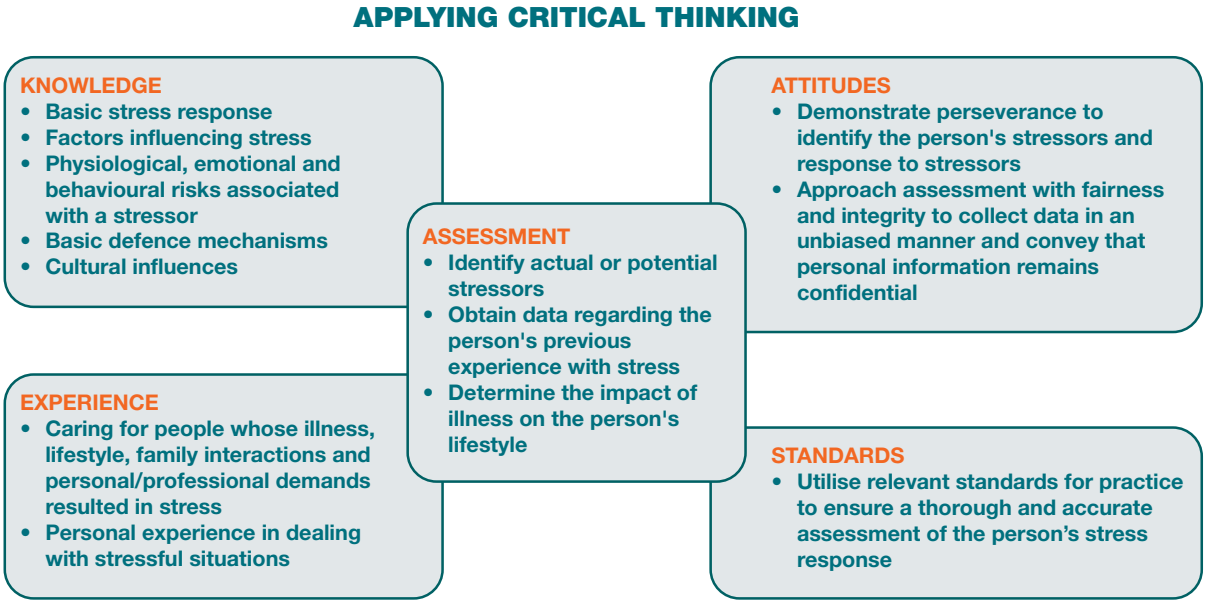


Figure 37-3 **Critical thinking associated with the assessment phase for managing stress and adaptation.**

BOX 37-4 Physiological indicators of stress

Elevated blood pressure
Increased muscle tension in neck, shoulders, back
Elevated pulse and increased respiration
Sweaty palms
Cold hands and feet
Slumped posture
Fatigue
Tension headache
Upset stomach
Higher-pitched voice
Nausea, vomiting, diarrhoea
Change in appetite
Change in weight
Change in urinary frequency
Abnormal laboratory findings: elevated adrenocorticotropic hormone, cortisol and catecholamine levels, and hyperglycaemia
Restlessness: difficulty falling asleep or frequent awakening
Dilated pupils

themselves, these stressors are not significant risks of symptom development. However, multiple mild stressors over a short time can increase the risk of illness. The stimulus may be an accumulation of minor life events as described by Kanner and colleagues in a study referred to earlier, which compared the stress from everyday hassles and 'uplifts' with the stress produced by major life events (Kanner et al 1981).

Moderate stress situations last longer, from several hours to days. These may be, for example, an unresolved disagreement with a co-worker, caring for a sick child or the prolonged absence of a family member. Moderate stress situations may create an increased risk of illness or the worsening of an existing chronic illness.

Severe stress situations are chronic situations that may last several weeks to several years, such as continual relationship problems, prolonged financial difficulties or long-term physical illness. The more frequent and longer duration of the stress situation, the higher the health risk (Shonkoff & Garmer 2012, Holmes & Rahe 1967).

The development of stress-related disease can be examined in terms of the health–illness continuum (Figure 37-4). As a person's stress increases, stress behaviours gradually increase. This decreases energy and adaptive responses. Identifying the mind–body interaction is crucial for predicting the risk of stress-related illness. A critical assessment of the person's perception of stressors is important. What may seem a trivial or mild stress situation to you may be extremely disturbing to another individual.

Major life events

The theory that major life events are a stimulus for stress emerged from the research of Holmes and Rahe in the 1960s, who hypothesised that major or frequent changes in one's life predispose the individual to illness due to the cumulative effect of life stressors. These researchers observed that tuberculosis (TB) infection commonly followed a major life crisis or multiple life crises and they subsequently developed a tool to measure the impact of life changes on health and to predict individual vulnerability to illness – the Social Readjustment Rating Scale (SRRS) (Holmes & Rahe 1967, Rahe et al 2000).

The SRRS consists of 43 items, of which 17 are rated as *desirable* (e.g. going on vacation) and 18 are rated as *undesirable* (e.g. death of a close friend). The remaining 8 are classified as *neutral*, for example, 'major change in responsibilities at work'. Such a change might be the consequence of a promotion, which is desirable; but it could also be the result of a restructuring and reduction of staff at a person's workplace, which would be undesirable as there would be fewer people to undertake the workload.

Items in the SRRS are given a weighting to reflect the magnitude of the stressful stimulus. For example, the death of a spouse

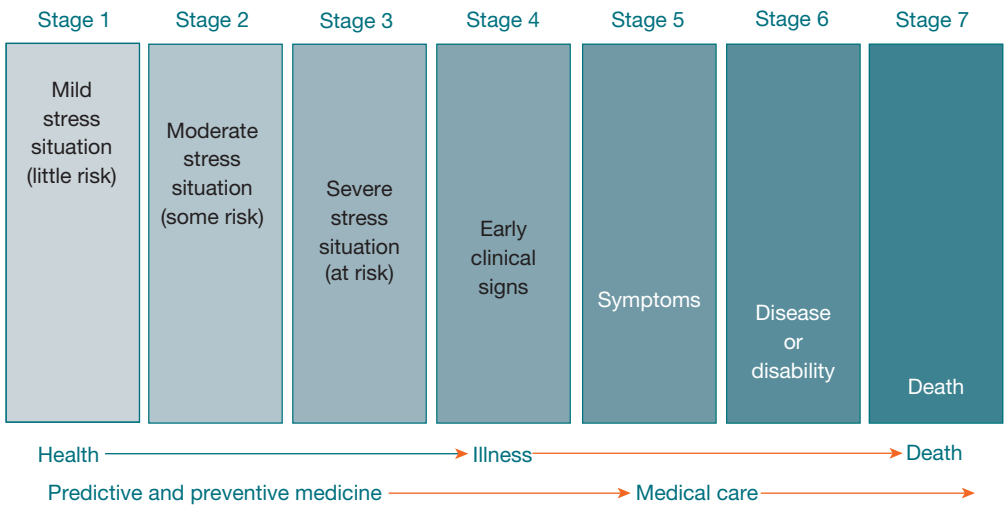


Figure 37-4 Stages of illness development in stress-related diseases.

was found to be the most stressful life event. This is given a score of 100. Using the SRRS, a total score of 150–299 for events occurring over the preceding year places the individual at 'moderate risk' for illness, whereas a total score of 300 in the preceding 6 months (or more than 500 in the preceding year) places the individual at 'high risk' of developing a stress-related illness.

Since its development 50 years ago, the Holmes–Rahe SRRS continues to be one of the most widely used and cited measurement tools in stress research. Scully and colleagues re-examined the usefulness of the tool as an indicator of health risk in the 1990s and found that the relative weightings and rank order of the selected life events remained valid. They concluded that the SRRS continues to be 'a robust instrument for identifying the potential for the occurrences of stress-related outcomes' (Scully et al 2000:875).

Psychological indicators

Exposure to a stressor results in physiological and psychological adaptive responses. As stated earlier, psychological adaptive behaviours increase a person's ability to cope with stressors. When conducting a health assessment, observe the person for maladaptive behaviours that do not facilitate coping with a stressor. Conversion, denial and displacement are examples of maladaptive ego-defence mechanisms. An example of denial is a person addicted to cocaine who says he or she could quit taking drugs whenever he or she chooses. To some, the abuse of alcohol or other drugs may seem to be an adaptive behaviour. In reality, it increases rather than decreases stress.

Developmental indicators

Erikson's psychosocial theory describes the developmental stages that occur through the life span (see Chapters 16 and 17). At each stage the individual attempts to resolve a conflict, for example, trust versus mistrust in infancy (Erikson 1963). Failure to achieve the developmental task of a particular stage in the life span hinders psychological growth and produces stress.

Infants or young children encounter stressors within their home or in out-of-home care situations. When nurtured in responsive, empathetic environments, they are able to develop healthy self-esteem and self-identity (see Chapter 20) and ultimately learn healthy adaptive coping responses. However, the absence of parents or caring figures, or their failure to provide the security needed to develop a sense of trust, can be stressors. In later life there may be chronic distrust, resulting in withdrawal and dysfunctional interpersonal relationships (Santrock 2014).

School-age children normally develop a sense of adequacy. They begin to realise that accumulation of knowledge and mastery of skills can help them accomplish goals. Self-esteem develops through friendships and sharing with peers. At this stage of development, an indicator of stress may be the inability or unwillingness to develop friendships.

Adolescents normally develop a strong sense of identity, but at the same time need to be accepted by peers. Adolescents with strong social support systems report an increased ability to adjust to stressors, but adolescents without social support systems often report increased psychosocial problems. In a study conducted by Rueger and colleagues (2010), adolescents with poor parental and peer support were found to have more depressive symptoms, anxiety, self-esteem and academic adjustment problems than young people who reported strong family and social support. There are many stressors in this age group, including conflicts involving sexual drive and expected standards of behaviour (see Chapters 16 and 17). Prolonged conflict may present as indecision and confusion, rebellion, depression or anxiety.

Young adults are in transition from youthful experiences to adult responsibilities. They must prepare for careers, living alone, forming intimate relationships and, perhaps, starting families. Conflicts between work, study, relationships and family responsibilities may be a source of stress during this developmental period (see Chapter 17).

Middle-aged adults are usually involved in family building, creating stable careers and perhaps caring for older parents. They are generally able to control desires, and in some cases, place the needs of partners, children or parents ahead of their own. Stress can result, however, if they feel that too many responsibilities have been placed on them. Several studies have looked at the impact of stressors on the family carer's role. Middle-aged adults have been called the 'sandwich generation' (see Chapter 17) because they are often responsible for ageing parents while raising their own families. Because of the stressors involved, carers have reported increases in fatigue, minor illnesses (e.g. colds and influenza), depression and dissatisfaction with family interaction (Gallagher-Thompson & Coon 2007).

Older adults are commonly faced with adapting to changes in family structure and perhaps to the death of partners or long-time friends (see Chapter 18). Older adults must also adjust to changes in physical appearance and physiological functioning (see *Working with diversity*). Major life changes, such as retirement, can also be stressful. A small number of older adults will also need to adjust to relocation, or to some form of institutionalised living. Moving to a nursing home or assisted accommodation can be made less stressful for an older person if social support is provided by family, staff and other residents during the transition from home (Lee 2010).

Emotional behavioural indicators

Emotions are sometimes assessed directly or indirectly by observing the person's behaviour. Stress affects emotional wellbeing in many ways (Box 37-5). Because stress affects each person differently, it is important to establish rapport with the person before assessing their emotional status. The person may or may not be aware of their behavioural responses. Non-verbal cues such as anger or a sad affect are extremely important. Include open-ended questions in your assessment that address the person's sense of self, their support network, current lifestyle, and current and previous experience with stressors.

Cognitive indicators

Prolonged stress can manifest itself in the cognitive dimension and have observable indicators. A person's ability to acquire new knowledge or skills may be impaired. A person's cognitive appraisal of a situation may also be inaccurate and frequently negative. Stress can impede communication between the person and others. A shortened attention span, inability to think clearly and the tendency to focus narrowly may render the person unable to solve problems and resolve conflicts. There may be increased dependence on others, as the person feels unable to cope with everyday life.

WORKING WITH DIVERSITY

Focus on older adults

- Ageing is often associated with declines in functional abilities due to the normal ageing process. Although this may be true, evidence suggests that coping and adaptation functions are surprisingly well preserved throughout the entire life span (Young et al 2009).
- Health problems are common among the elderly and can be a cause of stress.
- Since many older adults are on a fixed income, the cost of medical care can be a huge stressor. Other disciplines such as social workers may need to be involved to help the individual to access services.
- Loneliness and isolation can be a major stressor for the elderly. Studies have suggested that older people's perceptions of stress are less likely to lead to depression if high social resources are present (Schwarzbach et al 2014).
- Older adults effectively use religious coping in response to medical illness and disasters (Levin & Chatters 2008).
- Before scheduling a doctor's appointment or a needed test, explore the transport needs of the older person. Dependency can be a significant stressor for an older person, and necessary steps should be taken to avoid this issue.

References

Levin J, Chatters M 2008 Religion, aging, and health: historical perspectives. Current trends and future directions. J Relig Spirituality Aging 20(1/2):153–72.

Schwarzbach M, Luppa M, Forstmeier S et al 2014, Social relations and depression in later life – A systematic review, International Journal of Geriatric Psychiatry 29(1):1–21.

Young Y, Frich K, Phelan E 2009 Can successful aging and chronic illness coexist in the same individual? A multidimensional concept of successful aging, Journal of American Medical Directors Association, 10(2):87-92.

Social determinants

The social determinants approach to understanding health argues that the biomedical model is insufficient to explain health and illness. This approach proposes that the attributes of a society, such as inequalities or injustices, and government policies dealing with these inequalities, are important indicators of the health of populations (Parry & Willis 2013).

Family

It is important to recognise that nursing interventions planned for an individual can affect the entire family. For this reason, assessment of the whole family and knowledge of the role of its members is essential. Culture, structure and concepts within the family are also important to understand when assessing how a family will cope with stress. Major life events should be explored. Job instability, death or illness of a family member and housing relocation are examples of significant family stressors. Stressors on the family may create dysfunction that affects the individual and the family as a whole (Sawrikar & Katz 2008). Relevant information and data may also include the person's perception as to whether or not effective emotional support is provided by their family.

BOX 37-5 Behavioural and emotional indicators of stress

Anxiety
Depression
Burnout
Increased use of chemical substances
Change in eating habits, sleep and activity pattern
Mental exhaustion
Feelings of inadequacy
Loss of self-esteem
Increased irritability
Loss of motivation
Emotional outbursts and crying
Decreased productivity and quality of job performance
Tendency to make mistakes (i.e. poor judgement)
Forgetfulness and blocking
Diminished attention to detail
Preoccupation (i.e. daydreaming or 'spacing out')
Inability to concentrate on tasks
Increased absenteeism and illness
Lethargy
Loss of interest
Prone to accidents

Lifestyle

Up until the mid-20th century, infectious diseases were the leading causes of death in Western countries. Since then, antibiotics and public health initiatives, such as improved living conditions, access to nutritious food and better sanitation, have lowered the death rate from infection. Now, the leading causes of death are diseases involving lifestyle stressors such as cardiovascular disease (AIHW 2014). There are a variety of lifestyle choices that can create physical and/or psychological stress in an individual and a health assessment examines both positive and negative factors related to stress. Smoking, overeating, insufficient physical activity, alcohol or drug abuse and chronic sleep deprivation are examples. Other examples include lifestyle choices such as unprotected sex with multiple partners posing a stressor in the form of exposure to sexually transmitted diseases (STDs). Regular exercise, adequate rest and a nutritious diet are positive lifestyle options that can reduce stress. Exercising regularly also facilitates both physical and mental health.

Sociocultural factors

Assessing stressors and coping resources in the social dimension involves exploring with the person the amount, type and quality of social interactions present in their life. Cultural differences in health beliefs or family stress responses may influence the individual's health behaviours and coping mechanisms. For example, Asian–Australian clients may prefer to seek social support from family members rather than from healthcare professionals (Sawrikar & Katz 2008). Further, it is known that South Asian immigrants in Western countries have continually

lower screening rates for cancer and other conditions than the wider population (Crawford et al 2015) (see *Working with diversity*).

Spiritual indicators

Spirituality refers to how the individual understands their place in the world (society and the environment). This includes their relationship with family, friends and others, the meaning they ascribe to their life, and their beliefs regarding an after-life. People use spiritual resources to adapt to stress in many ways, but stress can also manifest itself in the spiritual dimension. Severe stress may result in anger at a supreme being, or the person may view the stressor as punishment for a perceived wrongdoing. Stressors, such as acute illness or the death of a loved one, may threaten a person's meaning of life and can lead to depression. When providing care, it is important for the nurse to seek an understanding of the meaning of the spiritual experience from the person's perspective.

Client expectations

It is important to remember that every person perceives and reacts differently to stress. Culture, life experiences and family belief systems all play a part. Pang and Suen (2008) found that nurses rated experiences in the intensive care unit (ICU) to be more stressful than the patients did, and nurses tended to over-emphasise the stressful nature of the ICU environment. Complete and accurate assessment of the patient and their support networks is essential in tailoring care to the individual's needs. Asking the patient what is stressful for them, and how they suggest stressors could be reduced, assists in the setting of achievable goals and the identification of interventions. The very best quit-smoking program will achieve nothing if the person does not recognise their smoking as a problem. Therefore, planning care requires an awareness of your own value systems, as well as those of the person for whom you are planning care, and a critical synthesis of all available information in order to make appropriate judgements and decisions.

• CRITICAL REFLECTION POINT

You are a nurse working at a community health expo. A man stops by your health assessment booth and tells you he has been feeling apathetic and lethargic since he lost his job 2 months ago. He tells you he has been drinking heavily (more than 10 standard drinks) every evening, and his wife is constantly angry with him.

1. **What additional areas will you assess?**
2. **What questions will you ask?**
3. **What information will you seek?**
4. **What resources and social supports would be available in your community for him?**

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

Stress can be observed in multiple ways: physical (e.g. elevated blood pressure), emotional (e.g. sad mood), cognitive (e.g. forgetfulness), social (e.g. feelings of isolation), behavioural (e.g. use of illicit drugs) and spiritual (e.g. feelings of despair). Using a critical reflection framework, the nurse synthesises all available information from the above domains (physiological, psychological, cognitive, behavioural, sociocultural and spiritual) to make decisions and plan appropriate person-centred nursing care for individuals experiencing stress or stress-related issues. The nursing assessment of these domains is supported with objective measures and/or subjective descriptors of stress and its consequences. For example, the person appears anxious, as evidenced by constant hand wringing during the interview.

WORKING WITH DIVERSITY

Focus on cultural care

The contrast between Chinese or other traditional medicines and Western approaches to health may be a source of stress for immigrants to Western countries. Western medicine is very technical and has a strong biological base. Chinese culture, including Chinese medicine, is strongly linked to religious and social beliefs. Therefore newly migrated and first-generation Chinese–Australians/New Zealanders may experience conflict and stress in seeking health support from Western medicine. Recently migrated Chinese have been shown to prefer the treatment of minor or chronic illness with Chinese medical services (herbal remedies, acupuncture, massage therapy and skin scraping) and will seek Western medical services only for acute or serious problems (Jette & Vertinsky 2010). Hence, some Chinese immigrants may be acutely ill when they first seek medical attention.

Cultural factors can also influence how individuals engage in health care. Crawford and colleagues (2105) undertook a literature review of 70 articles published between 1994 and 2014 which investigated the cancer screening behaviour of South Asian immigrants in the UK, USA and Canada. The researchers found that this population had lower screening rates for breast, cervical and colo-rectal cancer than the wider population in these countries. Four contributing factors for the low cancer screening rates were identified: 1) beliefs and attitudes about health and family (the central role of family and the primary source of health information); 2) lack of knowledge regarding cancer causes and screening; 3) personal and structural barriers to accessing services; and 4) there were gender differences in screening uptake (more men than women sought screening for colo-rectal cancer). The authors concluded that the findings identify areas that need to be addressed to increase cancer screening uptake in this immigrant population.

References

Crawford J, Ahmad F, Beaton D, Bierman A 2015 Cancer screening behaviours among South Asian immigrants in the UK, US and Canada: a scoping study. Health and Social Care in the Community. Wiley Online Library DOI: 10.1111/hsc.12208. Available: http://onlinelibrary.wiley.com/doi/10.1111/hsc.12208/full; accessed 27 May 2015.

Jette S, Vertinsky P 2010 Exercise is medicine: understanding the exercise beliefs and practices of older Chinese women immigrants in British Columbia, Canada. J Aging Stud 25(3):272–84.

Kwok C, Sullivan G 2006 Influence of traditional Chinese beliefs on cancer screening behaviour among Chinese-Australian women. J Adv Nurs 54(6):691–9.

The review and interpretation of assessment information and data will enable you to identify potential or actual stressors and observe the person's response to these. Using your nursing knowledge and experience leads to the identification of problems, and the making of appropriate judgements and decisions; for example, changes in appetite, sleeping patterns and an increased number of headaches are frequently observed in individuals experiencing stress.

CLINICAL EXAMPLE: LU CHEN

Lu Chen is a 25-year-old Chinese-born woman who is hospitalised following a car accident. Lu immigrated to New Zealand 6 months ago and does not speak English. Her husband Feng, who has lived and worked in New Zealand for 10 years, accompanies her. Feng speaks English and is Lu's only relative in New Zealand. He is acting as her translator. Lu's provisional diagnosis is a possible concussion and a broken arm. Feng reports that Lu is very concerned about her arm because she has recently been working on a farm picking vegetables. Lu does not want to lose this job because she has made friends with other migrant workers, and they need the money that she earns to pay the mortgage on the house that she and Feng recently purchased.

• CRITICAL REFLECTION POINT

1. **What cultural factors might increase Lu's stress?**
2. **What can you, as the nurse, do to help alleviate some of that stress?**

SETTING PRIORITIES AND ESTABLISHING GOALS

Planning nursing care by using critical reflection, clinical reasoning and incorporating a research evidence base ensures that the person's care is appropriate to achieve the set goals. During planning, information from relevant multiple sources (Figure 37-5) is synthesised to set relevant priorities and goals for the individual and their family,

Goals should be individualised and realistic with measurable outcomes. Sensitivity to specific cultural issues and expressions of adaptation will also promote a sense in the person of feeling well cared for. It is important to focus on coping strategies that are both realistic and appropriate to the individual's needs. Goal planning should also involve the person and their family, if possible, to ensure that all views are considered. Research has shown that the perceptions of the client, family and nurse are not always the same (Wåhlin et al 2009) (see *Research highlight*).

Stress-management techniques are designed to match the client's actual and potential stressors. The general goals for clients who require stress management include:

- reduction in frequency of stress-inducing situations
- decreased physiological response to stress
- improved behavioural responses to stress
- improved psychological (cognitive and affective) responses to stress
- increased knowledge about the cause of stress and coping with stress.

PREPARING FOR AND TAKING ACTION

Stress management may be seen as a health promoting activity or an intervention that modifies a response to illness. The focus depends on the purpose of the nursing interventions, and is based on the individual's needs.

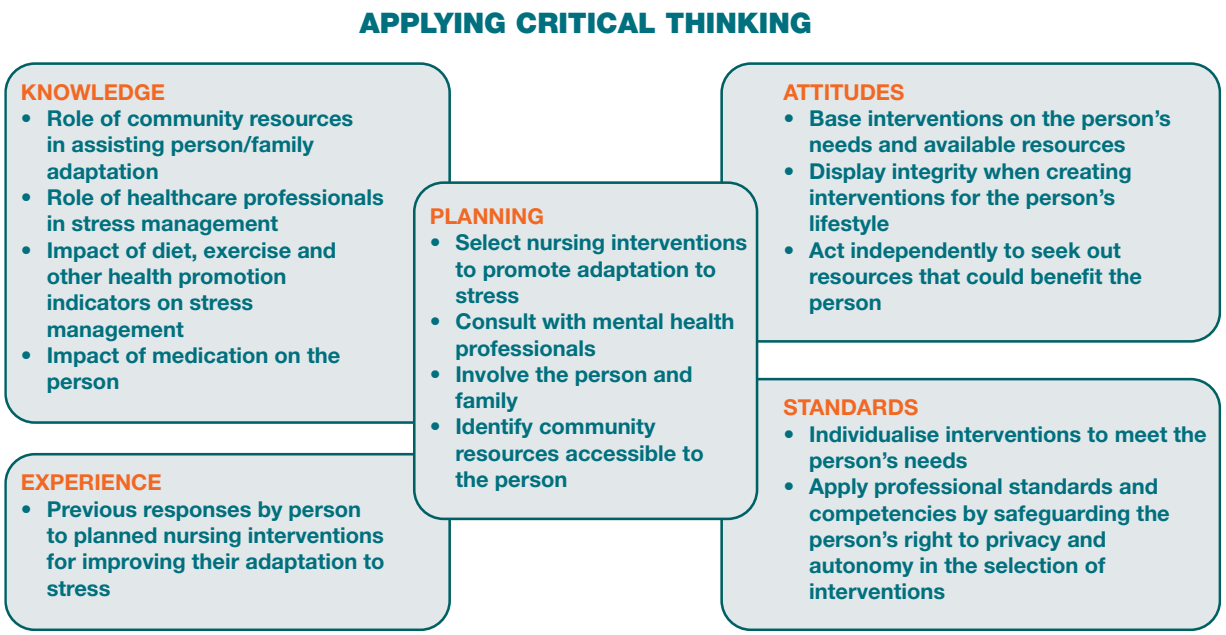


Figure 37-5 **Critical thinking associated with the planning phase for managing stress and adaptation.**

SAMPLE STUDENT NURSING CARE PLAN

Gathering relevant information and data*

When Janet Rich, RN, first visits Carl at his home she finds it in slight disarray. The lawn is overgrown, there are dirty dishes in the sink, and an empty soup can is sitting on the kitchen bench. Carl is standing in the living room folding laundry, while Evelyn, his wife, is sitting in a chair watching TV. Evelyn has recently been diagnosed with Alzheimer's dementia. Carl appears very **tired** and **depressed**. He continues to fold clothes during the visit, stating, 'There's so much to do that I don't even know where to begin.' Carl states that he has lost **9 kilograms in the past 6 months** and that his **appetite has been poor**. Until recently, Evelyn cooked all of their meals. Carl describes being awakened three to four times a night to find Evelyn wandering around the house. He states that he no longer has any activities outside the home because he is fearful of leaving Evelyn by herself. Their children live interstate. Carl does have a couple of close friends who live nearby, but he is unaware of any community resources.

** important data to cluster in setting priorities in bold.*

Priority problem(s)

Strain associated with being primary caregiver for partner with dementia

Making appropriate judgements and decisions

Setting priorities and establishing goals	Expected outcomes
Carl will: • appear more rested • maintain a stable weight • state that he has resumed one outside activity	Carl will: • report waking up less frequently during the night • state approaches used to involve others in his wife's caregiving activities. • re-establish normal eating patterns • report a balanced routine that incorporates time for his own rest or relaxation
Preparing for and taking action	**Rationale**
Carer's support • Help Carl establish a consistent care routine for his wife. • Discuss ways to simplify care routine, such as hiring a lawn mowing service, having groceries delivered, engaging a house cleaning service. • Identify sources of informal respite care by encouraging Carl to identify friends who can help with caregiving. • Explore formal community resources, such as home healthcare, adult day care and meals on wheels with Carl.	Routines can help tasks be simplified and more time-efficient. Creates free time for the client and may help decrease feelings of being overwhelmed. Supporting the carer of a person with dementia may delay or prevent the admission of the person to a nursing home (Brown & Abdelhafiz 2011, Podgorski & King 2009). Feelings of burden have been found to be lower among caregivers with informal and formal supports (Podgorski & King 2009).
Client support • Teach Carl stress-management techniques. • Set up monthly health checks for Carl that include vital sign and weight checks.	Stress and anxiety can precipitate physical illness (Lutgendorf & Anderson 2015).

Evaluating impacts and outcomes

- Observe for signs of fatigue.
- Review new care routines. Ask Carl what other modifications may need to be made.
- Ask Carl about how community and additional family support is helping to relieve stress.
- Ask Carl to compare past and present energy levels.
- Weigh Carl regularly.
- Ask Carl about recent food intake.

RESEARCH HIGHLIGHT

Research focus

Experiences of critically ill patients are an important aspect of the quality of care in intensive care units (ICUs). If next-of-kin and staff try to empower the patient, this is probably performed in accordance with their beliefs about what patients experience as empowering. As ICU patients often have difficulties communicating, staff and next-of-kin need to interpret their wishes, but there is limited knowledge about how correct a picture next-of-kin and staff have of the intensive care patient's experiences.

Research abstract

The aim of this study was to compare ICU patients' experiences of empowerment with next-of-kin and staff beliefs. Interviews with 11 ICU patients, 12 next-of-kin and 12 staff were conducted and analysed using a content analysis method.

Research findings

The findings showed that the main content is quite similar between patient experiences, next-of-kin beliefs and staff beliefs, but a number of important differences were identified. Some of these differences related to how joy of life and the will to fight were generated, the character of relationships, teamwork, humour, hope and spiritual experiences. Staff and next-of-kin seemed to regard the patient as more unconscious than the patient did.

Reference

Wåhlin I, Ek A, Idvall E 2009 Empowerment in intensive care: patient experiences compared to next of kin and staff beliefs. Intensive Crit Care Nurs 25(6):332–40.

Promoting health and wellness

Lifestyle decisions can have a dramatic impact on the stress experienced in everyday life. Regular exercise, good nutrition, adequate rest, effective time management, interactions with positive support systems and humour are all examples of habits that can positively affect physical and mental health. Nurses are in an excellent position to work with clients and their families towards health promoting strategies for reducing stress. Attempting to eliminate all stressors is unrealistic, but helping individuals and families to understand their particular stress response, and its probable causes, can be a significant step forward in stress reduction. However, there are some stressors that can be reduced and thereby provide the person with a greater sense of control. Several methods that may help in stress reduction are outlined below.

Time management

People who use time efficiently generally experience less stress because they feel more in control of their lives. Helping clients set priorities if they are feeling overwhelmed or are immobilised, and attempting to control or at least minimise the demands of others, is essential for effective time management. Few people are able to meet all requests made by others. It is important to learn to recognise which requests can be realistically met, which need to be negotiated or delegated, and which can be assertively declined. Defining a period of time in which to meet specific goals also reduces a sense of urgency and increases feelings of control.

Regular exercise

A regular exercise program improves muscle tone and posture, controls weight, reduces tension and promotes relaxation. In addition, exercise reduces the risk of cardiovascular disease and improves cardiopulmonary functioning. In general, for a fitness program to have positive physical effects, a person should exercise at least three times a week for 30–40 minutes. However, there is also evidence that exercise can be equally useful in smaller slices, for example, in periods of 10 minutes at a time, with a goal of accumulating 30–40 minutes each day (Gingerich 2007, Kahn 2007).

Everyone should use warm-up exercises before vigorous exercise such as jogging, aerobic dancing or tennis. Warm-up exercises stimulate blood flow to the muscles and increase flexibility. They reduce the risk of damage to the musculoskeletal system during exercise. Similarly, after vigorous exercise, people should do cool-down exercises rather than stopping abruptly. For example, after jogging or aerobic dancing, people should walk around at a moderate pace, gradually slowing and stopping. Cool-down exercises allow the cardiovascular, pulmonary, musculoskeletal and metabolic systems to gradually return to their resting states.

Exercise programs are effective in decreasing the severity of stress-related conditions such as hypertension, obesity, tension headaches, fatigue, mental exhaustion, irritability and depression (Smith & Blumenthal 2015). Exercise also promotes release of endogenous opioids that create a feeling of wellbeing (Boecker & Dishman 2015). Persons with a history of chronic illness, or those at risk of developing an illness, should consult their doctor or health professional to ensure that appropriate physical exercise programs are commenced.

Nutrition and diet

Nutrition and exercise are closely related. Food provides the fuel for activity and exercise, which improves the circulation and delivery of nutrients to body tissues. Everyone is encouraged to maintain their weight according to standard ranges for gender, age and body type. In addition to avoiding over-eating or under-eating, people should be aware of the nutritional quality of foods. Too much fat, caffeine, salt or sugar can upset the body's metabolic functioning; deficiencies in vitamins, minerals and nutrients can also cause metabolic problems. Poor dietary habits can worsen a stress response and make a person irritable, hyperactive and anxious, impairing their ability to meet personal, family and role responsibilities. Nursing strategies for helping a client meet nutritional needs are detailed in Chapter 31.

Rest

An established and regular pattern of sufficient rest and sleep is also important. People experiencing stress should be encouraged to allow ample time for rest and sleep. Sleep not only refreshes the body, but also helps a person become mentally relaxed. A client may need specific help in learning relaxation techniques to fall asleep.

Support networks

A support network of family, friends and colleagues who will listen and offer emotional support and advice is beneficial to a person experiencing stress (Barkway 2013). Therapeutic communication is a nursing tool that you can use to assist individuals to identify the social resources and support networks available to them. Or, if stress is the result of social isolation or exclusion, nursing interventions will be aimed at helping the person to develop new social networks.

Crisis intervention

Crisis intervention is a therapeutic technique for helping a client to resolve a particular, immediate stress-related problem. Crisis intervention does not involve an in-depth analysis of a situation, but tackles the immediate, urgent need for stress reduction. The goal of crisis intervention is to restore the person to the pre-crisis level of functioning as quickly as possible. A **crisis** occurs when people encounter problems or stress situations with which they are unable to cope in usual ways. A crisis does not necessarily denote the occurrence of a traumatic event. However, even if this happens, the event can be an opportunity for personal growth and development if the crisis is successfully mastered (Findler et al 2014).

Clients and nurses are at risk of two types of crises: situational and developmental. A **situational crisis** arises suddenly in response to an external event or conflict involving a specific circumstance. Symptoms associated with situational crises are transient, and the episode is usually brief. Situational crises include giving birth; major role changes; acute physical illness; physical or sexual assault; family changes such as remarriage or the death of a family member; and unexpected unemployment. A **developmental crisis** occurs when a person is unable to complete the developmental tasks of a psychosocial stage (Erikson 1963) and is therefore unable to continue developing. For example, an adolescent who develops anorexia nervosa may be unable to complete some of the developmental tasks associated with this phase in the life span, such as identity development. A developmental crisis can occur at any point in life, and wherever the circumstances prevent a person from meeting the challenge of a particular stage.

If nursing assessment determines that the individual is experiencing a crisis, you can plan and implement specific measures to immediately assist the person to resolve it, and refer the person to professional counselling if indicated. Aguilera (1998) has developed an approach that can be used as an intervention in both situational and developmental crises (Figure 37-6). This approach provides an understanding of how a stressful event has led to a state of crisis. Resolution of the crisis depends on the person's realistic perception of the stressful event, use of adequate coping mechanisms and the availability of social support. If the crisis has arisen because perception of the event is distorted, you can assist the person to perceive the stressful event more realistically. If the crisis has arisen because of a lack of situational support or coping mechanisms, the person can be referred to suitable community resources and support. This is followed by an evaluation of the effectiveness of the interventions to assess whether the personal crisis has been resolved.

Restorative care

There are many ways to encourage clients to make lifestyle choices that are healthy and stress-reducing. Appropriate use of humour, spirituality and stress-management techniques are examples of these options. Although the following are presented with respect to restorative care, these techniques can be used in many healthcare settings.

Humour

Using humour or laughter as therapy was first popularised in the lay literature by Norman Cousins (1979). The ability to perceive fun and to laugh, alleviates stress. The physiological hypothesis is that laughter releases endorphins into the circulation and feelings of stress are relieved. Laughter has been shown to increase immune and cardiac system functioning (Bennett & Lengacher 2008), lower blood pressure, neutralise adrenaline and increase energy and fertility (Hull-Rodgers 2007). Nurses can initiate therapeutic activities by encouraging clients to relate past humorous anecdotes or to develop a 'humour scrapbook' (Figure 37-7). It is important, though, to critically examine the client's receptivity to humour first, to ensure it is not demeaning or ill-timed in relation to the stressful event.

Enhancing self-esteem and self-efficacy

Improvement in a client's self-esteem is a positive stress-reduction strategy. When clients identify their positive characteristics, it helps them see what resources they can draw upon to cope with the stressor.

Self-efficacy is the personal belief that one is capable of achieving desired or required outcomes. According to Bandura (Bandura 2001, 2008), the thoughts and beliefs (self-talk) that the person has about a particular circumstance or event are predictive of the outcome. Positive self-talk enables the person to rehearse a positive outcome, while negative self-talk produces stress and may become a self-fulfilling prophecy – that is, the anticipated negative outcome will result. For example, the student who believes they are capable of passing an exam is more likely to engage in helpful behaviours, such as studying, than the student who does not view themselves as capable of passing. The latter student is less likely to study and, therefore, more likely to fail.

Cognitive restructuring is a cognitive-based intervention that can modify stress responses. This is a technique in which the nurse and client analyse the person's appraisals of a stressor. If these are unrealistic or focus only on negative outcomes, the person is helped to restructure their thinking to more realistic, positive patterns (Seligman 2002, 2011). This may be accomplished by encouraging the person to consider how realistic their thinking is, and challenging perceptions that are negative. For example, consider a person who is about to sit an exam whose self-talk is 'If I fail this exam I will let my parents down'. It is likely that the person will be highly anxious, which in turn will reduce their performance. Restructuring the person's self-talk to 'I have prepared for the exam and will do my best' is a more realistic and less stress-producing thought. As a nurse you can assist clients to restructure their negative cognitions by asking questions such

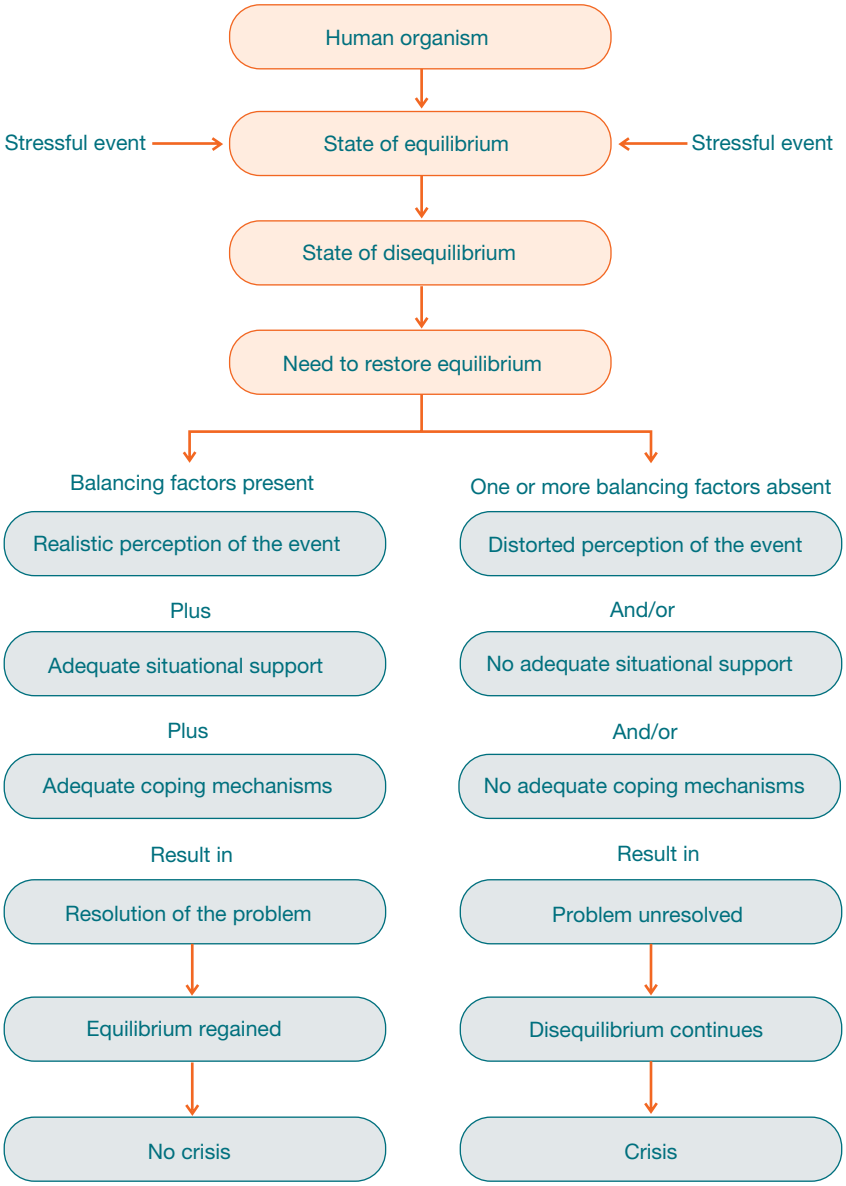


Figure 37-6 Crisis intervention model.

Redrawn from Aguilera DC 1998 Crisis intervention: theory and methodology, 8th edn. Mosby, St Louis.



Figure 37-7 Sharing a joke or laughing with clients can help reduce stress and support a therapeutic relationship.

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis.

as: 'How likely is the negative outcome?', 'What else might happen?' or 'If the worst does happen, what personal or other resources do you have available to respond to the challenge?'

Another useful cognitive strategy is the use of *mindfulness*, whereby the individual focuses on the present through conscious awareness of their current experience, utilising openness and acceptance. Mindfulness is a Western psychological therapy which has its origins in Eastern philosophies including Taoism, Buddhism and yoga (Harris 2009). Najvani et al (2015) found that Acceptance and Commitment Therapy, which included mindfulness, was an effective treatment for depression in women with breast cancer.

Relaxation techniques

Progressive relaxation with and without muscle tension and imagery techniques reduces the physiological and emotional

BOX 37-6 Changes resulting from practising relaxation techniques

Lowered blood pressure (baseline)
Lowered heart rate (baseline)
Decreased cardiac dysrhythmias
Decreased oxygen demands and oxygen consumption
Decreased muscle tension
Lowered metabolic rate
Increased alpha brain waves, which occur when the client is awake, non-attentive and relaxed
Increased restfulness
Improved concentration
Improved ability to cope with stressors

components of stress. Relaxation techniques are learned behaviours and require training and practice sessions. When a person is skilled in these techniques, tension is reduced and physiological parameters are changed (Box 37-6).

Examples of relaxation techniques are guided imagery and visualisation, progressive muscle relaxation, meditation and biofeedback. In clinical practice, two or more of these techniques will often be used concurrently. Cutshall and colleagues (2011) found that biofeedback and meditation was effective in helping hospital nurses to reduce stress and anxiety levels. It is important to note that relaxation techniques such as biofeedback and hypnosis should only be implemented by those health professionals who are trained and experienced to provide these services.

Spirituality

Spiritual activities can also have a positive effect on decreasing stress. Practices such as prayer, meditation or reading religious material may have a meaningful impact on some clients. According to Levin and Chatters (2008), religious constructs are determinants of numerous psychosocial, health and wellbeing outcomes in older adults, who use religious coping in response to medical illness and disasters.

CLINICAL EXAMPLE: DANNY

You are a nurse working in the children's ward of a major metropolitan hospital. Danny Parker is a 7-year-old Indigenous boy from a remote community who is admitted to your ward with the diagnosis of type 1 diabetes mellitus, following recent weight loss and feeling unwell for several weeks. His blood sugar level on arrival was 25 and he appeared to be slightly dehydrated. This is the first time Danny has ever left his community, which is 500 km away. His mother, Penny, has accompanied him. Penny expresses concern for her son. She and several of their relatives have diabetes mellitus type 2, and she is well aware of the potential problems, such as kidney disease and vision problems. Danny appears bewildered and clings to his mother during your assessment.

CRITICAL REFLECTION POINT

1. **Identify potential stressors for Danny.**
2. **Identify potential stressors for Danny's mother.**
3. **Suggest ways in which these stressors might be alleviated.**

Stress management in the workplace

Workplace or **job stress** is a major contributor to work being identified as an emerging occupational hazard. According to the World Health Organization Commission Report on the Social Determinants of Health, stress at work is associated with a 50% increased risk of coronary heart disease. Furthermore, high job demand, low control, and effort–reward imbalance were found to be risk factors for mental and physical health problems in workers (WHO 2008).

Most nurses experience stress in their work environments. Specific stressors can include heavy workload, shift work, bullying, institutional policies, conflict with co-workers, dealing with death or dying and loss, conflict within the multidisciplinary team and inadequate preparation for dealing with the emotional needs of clients and families. For example, research conducted by Laschinger and Nosko (2015) found that nurses who were exposed to frequent workplace bullying were at risk of developing symptoms of post-traumatic stress disorder.

Reaction to a job-related stressor depends on the nurse's personality, health status, previous experiences with stress, personal support systems and coping mechanisms. Nevertheless, while excessive stress can be harmful, Landa and colleagues' (2008) study of 180 Spanish nurses found that having high levels of *emotional intelligence* (a personal perception of one's ability to identify, assess and manage one's own emotions and those of others) was protective against stress. The researchers concluded that stress effects could be moderated if healthcare professionals were given suitable training and development.

Extreme job stress may result in a condition called **burnout**, which is characterised by emotional exhaustion, cynicism and a sense of professional ineffectiveness (Leiter & Maslach 2009). Burnout may result from prolonged chronic workplace stress which is unresolved (Maslach 2003). The job or profession no longer has positive rewards for the person, who may experience anger or apathy. Pan and colleagues' (2010) study of Chinese nurses working in an emergency department (ED) found that nurses who were exposed to violence in the ED experienced increased levels of psychological distress and were more vulnerable to burnout.

According to Maslach (2003), anyone who works with people in need of care is potentially at risk of burnout. Hence, nurses and other healthcare workers may benefit from using the same stress-management techniques that they teach to clients. It is important to identify specific stressors at work and strive to eliminate or reduce them. It is also helpful to gain social support from other nurses to maintain a caring attitude towards clients, their families or communities (Hurley 2007).

Clinical supervision is a professional development activity designed to enable reflection on practice with the support of an experienced clinician who has received specialist training in this

technique. The outcomes of clinical supervision include reduced stress and burnout (Hyrkäs 2005, Hyrkäs et al 2006).

EVALUATING IMPACTS AND OUTCOMES

Because clients' perceptions of stress differ, so do their perceptions of the effectiveness of stress reduction. Therefore, evaluation of nursing interventions directed at stress management must consider whether the person's perception is that the stress has reduced, whether the person is able to control factors that contribute to the stress and whether the person is able to independently develop and maintain stress-reduction strategies into the future (Figure 37-8).

To evaluate interventions directed at stress management, it is important to objectively measure the reduced frequency of stressful situations, decreased physiological responses to stress and improved behavioural and emotional responses to stress. Reports from the individual and their family, as well as nursing observations, are important indicators.

It is important to refer the person to appropriate resources for continuity of care. Lifestyle changes and developing new patterns of coping with stress can be difficult and may take some time to adopt. It is also very easy for individuals to fall back into old stress-producing habits if adequate, continued support is not provided.

Client expectations

Clients who experience prolonged stress often have a loss of self-esteem and a reduced sense of control over their lives. These feelings can be reduced by maintaining an open line of communication and working in partnership with the individual and their family. Provided the client has consented, family members should be given opportunities to be involved in all aspects of the person's care. Open communication between clients and healthcare professionals will facilitate an environment in which the person feels comfortable providing relevant information about whether interventions are successful or not, and will enable the person to become more involved in the self-management of their health condition. Open communication is essential to empowering individuals to become engaged, informed, collaborative, committed and tolerant of uncertainty as they navigate an increasingly complicated and demanding healthcare system (Johnson 2011). Importantly, open communication can avoid the situation in which the person may conform to the 'good patient' role – that is, does not disagree or complain for fear of being perceived as a complainer (Hart 2010).

The evaluation process should be ongoing to ensure that the person has an appropriate care plan and that the plan is frequently reviewed. Collaboration between the individual, family, nurse and the interdisciplinary team involved in providing care is essential to meeting client expectations.

Conclusion

Stress and stressors are a part of everyday life. However, excessive or prolonged stress can lead to physical and psychological health consequences, exacerbate an existing illness or delay recovery. An understanding of the causes and consequences of stress ensures that stress prevention and management strategies can be incorporated into the planning of care with clients and their families to provide holistic care.

Key concepts

- Physiological adaptive mechanisms are controlled by the medulla oblongata, reticular formation and pituitary gland.
- Stress is physiological or psychological tension that can affect a person in any or all human dimensions.

APPLYING CRITICAL THINKING

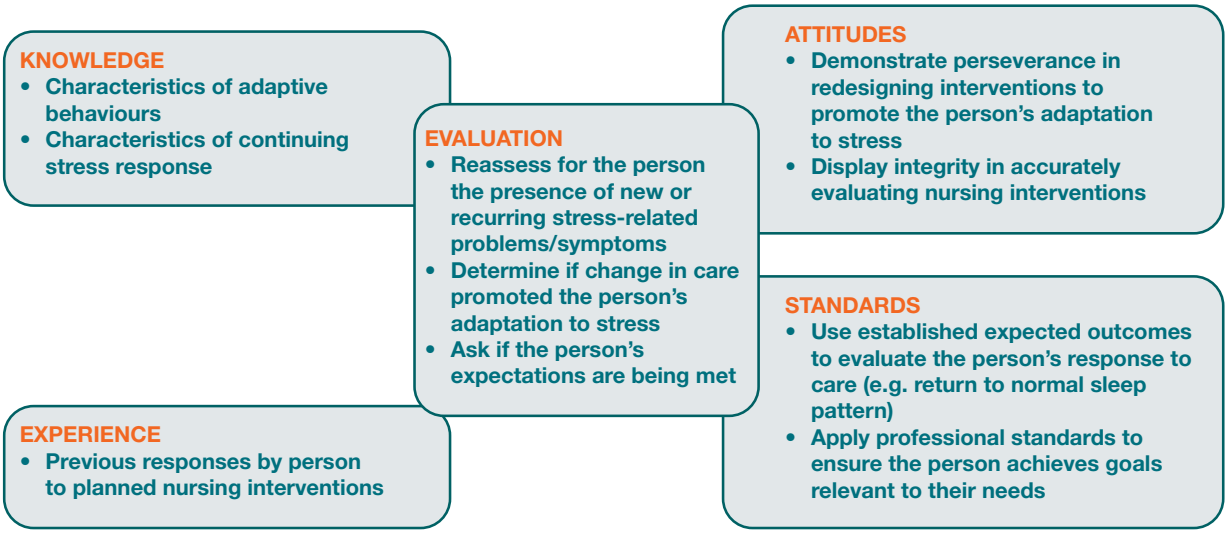


Figure 37-8 **Critical thinking associated with the evaluation phase for managing stress and adaptation.**

- Stressors necessitate change or adaptation so that a state of equilibrium can be maintained.
- A person's response to stress is influenced by the intensity, duration and scope of the stressor, by the number of stressors present at one time, predictability, level of personal control, feelings of competence, cognitive appraisal and availability of social supports.
- A person adapts to stress by using resources in the physical, psychological/emotional, developmental, intellectual, social and spiritual dimensions.
- The local adaptation syndrome involves several specific responses to stress, including the reflex pain response and the inflammatory response.
- The general adaptation syndrome (fight/flight) involves a multisystem physiological response to stress.
- Psychological responses to stress include problem-focused (task-oriented) and emotion-focused behaviours, and the use of ego-defence mechanisms.
- Stress has an impact on the onset, course and outcome of illness.
- Prolonged stress decreases the ability to adapt to the stress and affects the person in all six dimensions of health (physical, social, mental, emotional, spiritual and environmental).
- Stress-management techniques include health-enhancing habits, crisis intervention and methods of reducing situational stress, for example, job stress.

Online resources

Australian Psychological Society (APS): Stress and well-being in Australia survey. In 2011 the APS undertook a survey of stress and wellbeing in Australia. This website presents the findings of the survey as well as resources to assist individuals and communities to manage stress and enhance their wellbeing in everyday life, www.psychology.org.au/NPW/survey/

Health Navigator New Zealand, Stress; provides an overview of stress, including how to recognise and manage it, www.healthnavigator.org.nz/health-a-z/s/stress/

Helpguide.org: Stress Management; provides resources to help understand, reduce, prevent and cope with stress, www.helpguide.org/mental/stress_management_relief_coping.htm

The American Psychological Association: Stress; includes tips on stress management and links to publications and research, www.apa.org/topics/stress/index.aspx

University of Pennsylvania: Positive Psychology Centre; this centre conducts research to identify the strengths and virtues that enable individuals and communities to thrive. Findings are disseminated through training and education, www.ppc.sas.upenn.edu/

References

Aguilera D 1998 Crisis intervention: theory and methodology, 8th edn. Mosby, St Louis.

Australian Institute of Health and Welfare (AIHW) 2014 Australia's health 2014, Cat. no. AUS 178. AIHW, Canberra. Online. Available: www.aihw.gov.au/publication-detail/?id=60129547205; accessed 13 May 2015.

Bandura A 2008 An agentic perspective on positive psychology. In Lopez S (ed), Positive psychology: exploring the best in people. Greenwood Publishing Group, USA.

Bandura A 2001 Social cognitive theory. Ann Rev Psychol 52:1–26.

Barkway P 2013 Psychology for health professionals, 2nd edn. Elsevier, Sydney.

Bennett MC, Lengacher P 2008 Humor and laughter may influence health: III. Laughter and health outcomes. eCAM 5(1):37–40. Online. Available: http://downloads.hindawi.com/journals/ecam/2008/904752.pdf; accessed 28 May 2015.

Boecker H, Dishman R 2015 Physical activity and reward. In Ekkekakis P (ed), Routledge handbook of physical activity and mental health. Routledge, New York.

Brown S, Abdelhafiz A 2011 Institutionalization of older people: prediction and prevention. Aging Health 7(2):187–203.

Cannon W 1932 The wisdom of the body. Norton, New York.

Cash M, Gardner D 2011 Cognitive hardiness, appraisal and coping: comparing two transaction models. Journal of Managerial Psychology 26(8):646–64.

Central Australian Aboriginal Congress (CAAC) 2011 Aboriginal health. CAAC, Alice Springs. Online. Available: www.caac.org.au/health.html; accessed 9 Nov 2011.

Cochran C 2014 Religion in public and private life. Routledge Revivals, New York.

Cousins N 1979 Anatomy of an illness. Bantam, New York.

Crawford J, Ahmad F, Beaton D, Bierman A 2015 Cancer screening behaviours among South Asian immigrants in the UK, US and Canada: a scoping study. Health and Social Care in the Community. Wiley Online Library. Available: http://onlinelibrary.wiley.com/doi/10.1111/hsc.12208/full; accessed 27 May 2015.

Cutshall S, Wentworth L, Wahner-Roedler D et al 2011 Evaluation of a biofeedback-assisted meditation program as a stress management tool for hospital nurses: a pilot study. Explore (NY) 7(2):110–12.

Emmons RA 2005 Striving for the sacred: personal goals, life meaning and religion. J Soc Iss 61(4):731–45.

Erikson E 1963 Childhood and society, 2nd edn. WW Norton, New York.

Falconier M, Nussbeck F, Bodenmann G et al 2014 Stress from daily hassles in couples: its effects on intradyadic stress, relationship satisfaction, and psychological well-being. Journal of Marital and Family Therapy 41(2):221–35.

Findler L, Dayan-Sharab M, Yaniv I 2014 The overlooked side of the experience: personal growth and quality of life among grandparents of children who survived cancer. Journal of Family Social Work 17(5):418–37.

Fitzpatrick L, Simpson J, Smith A 2010 A qualitative analysis of mindfulness-based cognitive therapy (MBCT) in Parkinson's disease. Psychol Psychother 83(2):179–92.

Folkman S 2008 The case for positive emotions in the stress process. Anxiety Stress Coping 21(1):3–14.

Freud A 1966 The ego and the mechanisms of defense. International Universities Press, New York.

Gallagher-Thompson D, Coon DW 2007 Evidence-based psychological treatments for distress in family caregivers of older adults. Psychol Aging 22(1):37–51.

Gingerich N 2007 10 minutes that will protect your joints. Prevention 59(8):114.

Harris R 2009 ACT made simple: an easy to read primer on acceptance and commitment therapy. New Harbinger Publications, Oakland USA.

Hart V 2010 Patient provider communications: caring to listen. Jones & Bartlett Publishers, Sudbury, MA.

Holmes T, Rahe R 1967 The social readjustment rating scale. J Psychosom Res 11(12):213–18.

Hull-Rodgers K 2007 Laughter is good for you. Occupat Health 59(1):6.

Hurley M 2007 Managing stress in the workplace. Nurs Manage 14(3):16–18.

Hyrkäs K 2005 Clinical supervision, burnout, and job satisfaction among mental health and psychiatric nurses in Finland. Iss Mental Health Nurs 26(5):531–56.

Hyrkäs K, Appelqvist-Schmidlechner K, Haataja R 2006 Efficacy of clinical supervision: influence on job satisfaction, burnout and quality of care. J Adv Nurs 55(4):521–35.

Johnson M 2011 The shifting landscape of health care: toward a model of health care empowerment. Am J Public Health 101(2):265–70.

Kahn S 2007 Does your energy level need a boost? Better Nutrition 69(4):24–5.

Kanner A, Coyne J, Schaefer C et al 1981 Comparison of two models of stress management: daily hassles and uplifts versus major life events. J Behav Med 4:1–39.

Koutentaki E, Basta M, Stefanakis Z et al 2014 EPA-0735-The stress of chronic mental illness affects both mental and physical health of caregivers. European Psychiatry 29(Sup 1) 22nd European Congress of Psychiatry, Munich. Elsevier.

Landa J, Lopez-Zafra E, Martos M et al 2008 The relationship between emotional intelligence, occupational stress and health in nurses: a questionnaire survey. Int J Nurs Stud 45:888–901.

Laschinger H, Nosko A 2015 Exposure to workplace bullying and post-traumatic stress disorder symptomology: the role of protective psychological resources. J Nursing Management 23:252–62.

Lazarus R, Folkman S 1984 Stress appraisal and coping. Springer, New York.

Lee G 2010 Predictors of adjustment to nursing home life of elderly residents: a cross-sectional survey. Intl J Nurs Stud 47(8):957–64.

Leiter M, Maslach C 2009 Burnout and workplace injuries. In Rossi A, Quick J, Perrewé P (eds), Stress and quality working life: the positive and the negative. Information Age Publishing Inc, USA.

Levin J, Chatters M 2008 Religion, aging, and health: historical perspectives. Current trends and future directions. J Relig Spirituality Aging 20(1/2):153–72.

Lutgendorf S, Anderson 2015 Biobehavioural approaches to cancer progression and survival: mechanisms and interventions, American Psychologist 7(2):186–97.

Maslach C 2003 Job burnout: new directions in research and intervention. Curr Dir Psychol Sci 12:189–92.

Mechanic D 1962 Students under stress. Free Press, Glencoe.

McAlpine D, Mechanic D 2010 The influence of social factors on mental health. In Abou-Saleh M, Katona C, Kumar A (eds), Principles and practice of geriatric psychiatry, 3rd edn. John Wiley & Sons, Chichester.

Ministry of Health 2015 Māori health models. Ministry of Health, Wellington. Online. Available: www.health.govt.nz/our-work/populations/maori-health/maori-health-models; accessed 22 Feb 2016.

Ministry of Health 2011 Reducing inequalities in health. Ministry of Health, Wellington. Online. Available: www.health.govt.nz/publication/reducing-inequalities-health; accessed 17 Jul 2012.

Moskowitz J, Shmueli-Blumberg D, Acree M, Folkman S 2012 Positive effects in the midst of stress: implications for role functioning. Community and Applied Psychology 22(6):502–18.

Najvani B, Neshatdoost H, Abedi M, Mokarian F 2015 The effects of Acceptance and Commitment Therapy on depression and psychological flexibility in women with breast cancer. Research Medical Science 17(4)e965. Online. Available: http://cdn.neoscriber.org/cdn/serve/a7/72/a772ba3501e4ed00af66e77c02d95ca9e888c51d/zjrms-17-965.pdf; accessed 14 June 2015.

Pan F, Sun H, Guan R et al 2010 Effects of emergency nurses suffering workplace violence on job burnout. Chin J Nurs Educ 2010-01. DOI: CNKI:SUN:ZHHU.0.2010-01-015.

Pang P, Suen L 2008 Stressors in the ICU: a comparison of patients' and nurses' perceptions. J Clin Nurs 17(20):2681–9.

Papadiamantopoulou E, Giannakopoulou M, Mpouzika M et al 2010 Potential effects of stress in critical illness through the role of stress neuropeptides. Nurs Crit Care 15(4):204–16.

Parry Y, Willis E 2013 The social context of behaviour. In Barkway P (ed), Psychology for health professionals, 2nd edn. Elsevier, Sydney.

Podgorski C, King C 2009 Losing function, staying connected: family dynamics in provision of care for people with dementia. Generations 3(1):24–9.

Rahe R, Veach T, Tolles R 2000 The stress and coping inventory: an educational and research instrument. Stress Med 16:199–208.

Rueger S, Malecki C, Demaray M 2010 Relationship between multiple sources of perceived social support and psychological and academic adjustment in early adolescence: comparisons across gender. J Youth Adolesc 39(1):47–61.

Santrock J 2014 Lifespan development, 15th edn. McGraw-Hill, New York.

Sawrikar, P Katz I 2008 Enhancing family and relationship service accessibility and delivery to culturally and linguistically diverse families in Australia. Australian Family Relationships Clearinghouse No 3. Online. Available: www.aifs.gov.au/AFRC/pubs/issues/issues3/issues3.pdf; accessed 9 Nov 2011.

Schwabe L, Joëls M, Roozendaal B et al 2012 Stress effects on memory: an update and integration. Neuroscience and Behavioural Reviews 36(7):1740–9.

Schwarzbach M, Luppa M, Forstmeier S et al 2014, Social relations and depression in later life – A systematic review, International Journal of Geriatric Psychiatry 29(1):1–21.

Scully J, Tosi H, Banning K 2000 Life events checklist: revisiting the social readjustment rating scale after 30 years. Educ Psychol Measure 60(6):864–76.

Seligman M 2011 Flourish: a visionary new understanding of happiness and well-being. Free Press, New York.

Seligman M 2002 Authentic happiness: using the new positive psychology to realize your potential for lasting fulfillment. Free Press, New York.

Selye H 1976a The stress of life, 2nd edn. McGraw-Hill, New York.

Selye H 1976b Stress in health and disease. Butterworth Inc, Boston.

Selye H 1946 The general adaptation syndrome and the diseases of adaptation. Clin Endocrinol 6:117–231.

Shonkoff J, Garmer A 2012 The lifelong effects of early childhood adversity and toxic stress. Pediatrics 129(1):e232–e246.

Smith P, Blumenthal A 2015 Exercise and physical activity in the prevention and treatment of depression. In Ekkekakis P (ed),

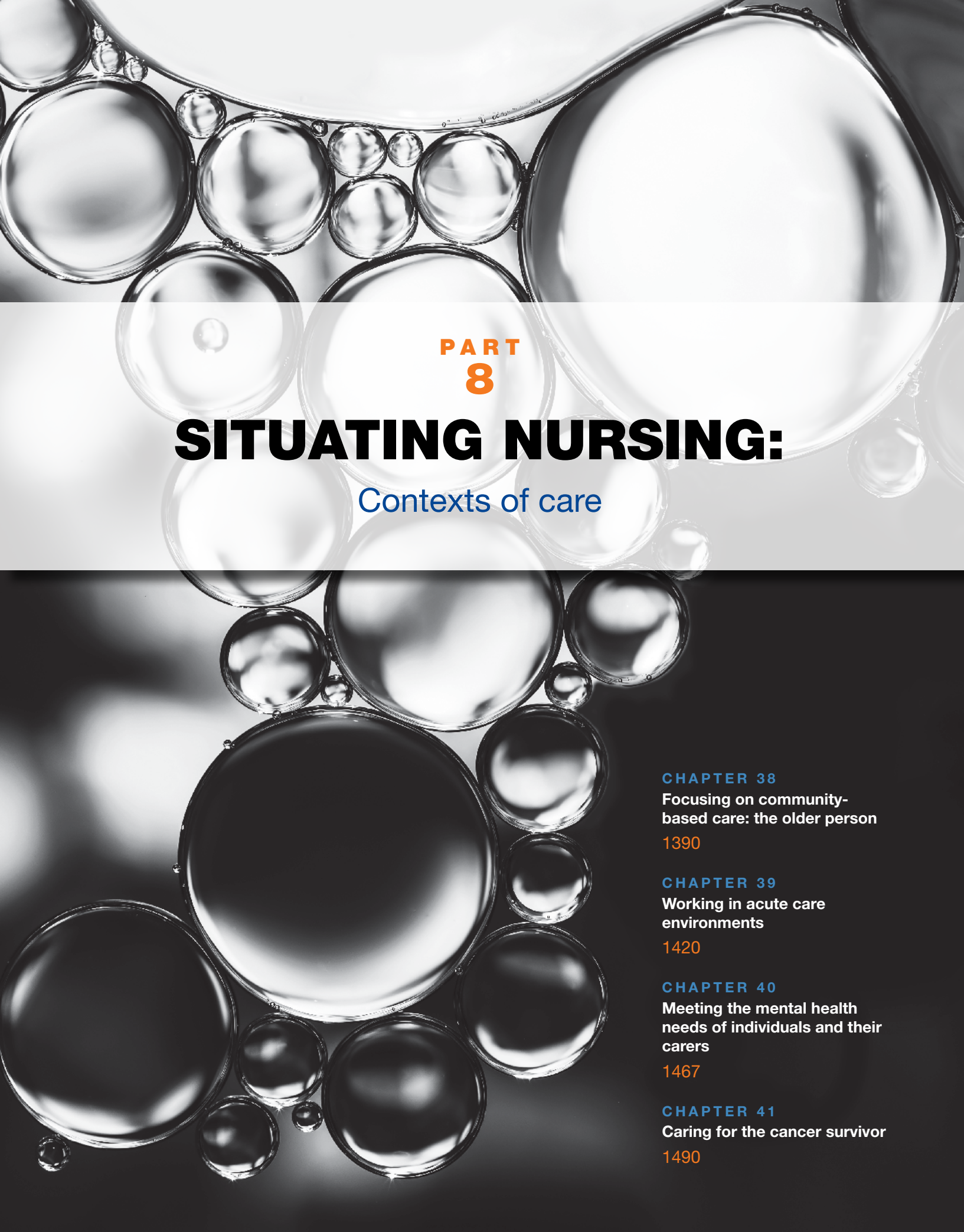
Routledge handbook of physical activity and mental health. Routledge, New York.

Taylor J, Simmonds J 2009 Family stress and coping in the fly-in fly-out workforce. Aust Commun Psychol 21(2):23–36.

Wåhlin I, Ek A Idvall E 2009 Empowerment in intensive care: patient experiences compared to next of kin and staff beliefs. Intensive Crit Care Nurs 25(6):332–40.

World Health Organization (WHO) 2008 Closing the gap in a generation: health equity through action on the social determinants of health. WHO Commission on the Social Determinants of Health, Geneva.

Young Y, Frich K, Phelan E 2009 Can successful aging and chronic illness coexist in the same individual? A multidimensional concept of successful aging, Journal of American Medical Directors Association, 10(2):87-92.



PART 8

SITUATING NURSING:

Contexts of care

CHAPTER 38
Focusing on community-based care: the older person
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CHAPTER 39
Working in acute care environments
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CHAPTER 40
Meeting the mental health needs of individuals and their carers
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Caring for the cancer survivor
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CHAPTER

38

Focusing on community-based care: the older person

Lynn Chenoweth and Ann McKillop

Learning outcomes

Mastery of content will enable you to:

- critically discuss the impacts of population ageing for Australian and New Zealand societies
- analyse and compare the policy approaches taken by Australian and New Zealand governments in response to the changing patterns of ageing
- examine and evaluate models of primary healthcare for the older person across the health continuum
- recognise the impact of inequity in community healthcare services for older Indigenous Australians, New Zealand Māori and Pacific peoples and discuss proactive health care to minimise their ill-effects
- evaluate the impact of formal and informal primary healthcare systems for the older person, their family and society
- recognise the complex scope of Australian and New Zealand community nursing care services for an ageing population
- identify the key principles and responsibilities of culturally competent community nursing practice in the care of the older person
- consider future directions of community nursing services for the older person and their family.

KEY TERMS

Aged care policy, p. 1393
Community nurse competencies, p. 1408
Community nursing, p. 1398
Community package programs, p. 1399
Consumer-directed care (CDC) strategy, p. 1393
Effective primary healthcare, p. 1398
Health inequity, p. 1395
Health of Older People Strategy, p. 1394
Home and Community Care (HACC) program, p. 1399
Indigenous Australians, p. 1392
'Living Longer Living Better' (LLLB) aged care reform package, p. 1393
Māori, p. 1391
Pacific peoples, p. 1391
Primary healthcare, p. 1394
Whānau Ora, p. 1395

Health care for older people is currently one of the major challenges facing developed countries and will be even more of a challenge in future decades. In most countries the chronological age of 65 years signals the start of old age, but there is no universally accepted criterion (World Health Organization (WHO) 2011). An estimated 20% of the population of developed countries is now over the age of 60 years, and by 2050 that age group is predicted to make up a third of the population in those countries (United Nations Population Fund 2010). Ageing baby boomers, declining fertility and ever-improving health treatments and technologies have created a population bulge of older people who are healthier and living longer than their parents did, but often live with a chronic illness. Health care for the older person is therefore integral to nursing care in all clinical settings and especially so in the community, because that is where the vast majority of older people live (Australian Bureau of Statistics (ABS) 2013a). Nurses are at the 'front-line' of community-based care and their role is of the utmost importance in health promotion, disease prevention and ongoing care for those living with a chronic illness.

In this chapter, factors that influence the health of older people are explored, including the effects of health problems on their lives and the health care that supports them to live as well as possible. The chapter also covers an overview of legal, policy, governance and conceptual perspectives of older person health. Healthcare systems and nursing roles and competencies that best support the health of older people are presented for critique. Models and frameworks will be used throughout the chapter to illustrate aspects of older person health, using triangular diagrams, which show how aspects of care intersect. Community-based care for younger adults and adolescents is covered in Chapter 20 of this textbook.

Health support for older people in Australia and New Zealand

Ageing population profile

Along with many developed countries, Australia and New Zealand have growing populations over the age of 65 years. The most recent census of the Australian population, taken on 30 June 2011, counted just over 3 million people over the age of 65, about 14.0% of the population (ABS 2012). In the next 15 years, this population will nearly double as the 'baby-boomer' generation ages. There were approximately 4.1 million people aged 60 years and older, with the number expected to rise from the current 13.5% of the total population to 22% (17.1 million) in 10 years' time (ABS 2013b). An issue for aged care service providers is that the number of Australians aged 70 and older, currently 9.7% of the total population, is expected to almost double between 2010 and 2030, from 2.1 million to 4.1 million. This is three times faster than the growth in the total population (Productivity Commission 2011). An even more startling picture is that over the next 20 years, the number of Australians 85 years and older (those most likely to need aged care services) will grow from 1.9% (365,000) to 2.8% (802,000) of the total population (ABS 2013b).

Women are living longer than men; the number of women aged 80 years and over is predicted to be almost double that of men in 2016. The trend is a continuation of decades of decreasing birth rates and lengthening life expectancies. Both of these phenomena have health and economic policy implications, with government estimates suggesting a fourfold increase in the number of people needing aged care services in the community (Access Economics 2010, Australian Treasury 2010). The Organisation for Economic Cooperation and Development (OECD) predicts that until 2025, both Australia and New Zealand will have continuing growth in demand for expenditure on community aged care services, greater than for the United States, Canada and Europe combined (OECD 2015). According to the *Intergenerational Report* published by the Australian Treasury, Australian government spending on aged care is expected to grow from 0.8% of GDP in 2010–11 (around $7 billion) to around 1.8% of GDP by 2049–50 (approximately $15.75 billion in current dollars) (Aged Care Financial Authority 2014).

New Zealand has a younger population than Australia, but a similar rate of growth in people over the age of 65 years (14.3% of the total population), which is expected to double to 1.2 million by 2036 (23% of the population). The 2013 census indicated that there were 73,000 people 85 years and over, 64.3% of whom were female, a 29.4% increase since 2006 (Statistics New Zealand 2014). Unlike the steady growth in the small number of older Indigenous Australians (ABS 2013b), increases in New Zealand's older **Māori** and **Pacific peoples** will be particularly significant over the next 50 years (Statistics New Zealand 2014). There is an expected 270% increase in the proportion of Māori aged 65 years and over, and a more than 400% increase in the proportion of Pasifika people aged 65 years and over. Other ethnic minority populations, while relatively young, are also projected to increase significantly, especially those from Asian countries (Statistics New Zealand 2014).

While the ageing process is experienced and understood by older people, their families and cultural

communities in many different ways, most Australians and New Zealanders aged 65 years or over are relatively fit and healthy. However, the burden of morbidity and mortality among **Indigenous Australians** is significantly worse than that of non-Indigenous Australians and of other 'Anglo-settler societies' like New Zealand (Hunter 2007). The majority of older non-Indigenous Australians are well enough to live independently in private dwellings: 80% of 60- to 79-year-olds and 34% of those aged 80 years and over. About 6% of these older people live in more than 2000 retirement villages across Australia. The Department of Social Services (DSS) report that of the small number of older people living in non-private dwellings, the majority (54%) live in some sort of care accommodation, including nursing homes or aged care hostels (50%) and hospitals (3.0%) (DSS 2014a).

In the 2011 Australian Census, about one-fifth (570,000) of Australians 65 years or older reported needing assistance with core activities of living (Crisp et al 2013a). A minority of this group were frail and vulnerable and required high levels of care and disability services, usually during the last few years of their lives, or as a result of chronic illness or disability that may have been present for many years. The proportion of people living in cared accommodation increases with age and illness, rising from 1.1% of all 60- to 79-year-olds to 15% of people aged 80 years and above (ABS 2013b). If current trends continue, nearly 300,000 Australians will require cared accommodation by 2030 (Department of Health and Ageing (DOHA) 2011).

The ageing of the population has impacts on different community members and systems, mainly the family. Estimates from the ABS (2013b) show that, of the 1.2 million people aged 65 years or older (80%) who need assistance living at home, close to three-quarters use unpaid, informal support, mainly provided by family members. Access Economics (2010) has estimated that around 60% of Australians with dementia are living in the community, with the majority being supported by 6.2 million informal carers (Australian Institute of Health and Welfare (AIHW) 2011a) (Figure 38-1). Over 113,000 people aged 65 years and above are the primary carer for an older person (i.e. providing the most assistance in terms of help or supervision) or a disabled care recipient (ABS 2013b). The number of Australians receiving unpaid home-based care has remained fairly constant over the last 10 years, despite the number of older people increasing by over 20%. The percentage receiving unpaid care has actually decreased, largely due to an increase in the mix of government and non-government community-based services. Together these services help the older person to maintain their connections to family and community and to exercise a choice of services if they require a higher level of care.



Figure 38-1 The level of care required by older people varies from individual to individual.

iStockphoto/Guven Demir.

People are now healthier for longer than in past generations, but the rapid growth of the number of chronic illnesses that tend to occur in older age will inevitably increase pressure on health funding. A New Zealand Ministry of Health paper (Johnston & Teasdale 1999) projected that, based on 2000–01 patterns, health expenditure would need to grow by an average of 3.6% per year over the next 50 years to meet increased demand for existing services (Ministry of Social Development 2001). Unless there are significant changes in the disability trajectory, more people will live with prolonged periods of needing health and supportive services and there will be fewer people to pay for these services. The actual rate of increase is difficult to predict; however, because of the impact of other factors, such as changes in the availability of informal carers, technological advances, rising expectations for more and better services and changing rates of disability among older populations, future funding pressures are likely. Australian and New Zealand governments have responded to the challenge of age-related chronic illness by establishing policies to support active, healthy ageing so as to reduce the prevalence of disability, and to enable older people to remain in their home longer with formal service support (DOHA 2011a, Ministry for Social Development 2001).

• CRITICAL REFLECTION POINT

Spend a couple of minutes now thinking about how future changes in the age profile of the population might affect the community you live in.

- **What activities do you know of that are popular with active older people?**

- **Explain what needs to happen for public facilities to meet the needs of a growing older population.**
- **What effect would there be on general practice services?**
- **What other health services might be affected by an older but healthier population?**

Policy contexts

Australia

Australian **aged care policy** is laid out in the Aged Care Act 1997 (Cth). Amendments to the Act in 2012 were, in part, a response to the Productivity Commission's *Caring for Older Australians* report (2011). These amendments built on earlier reforms found in the 2010 Council on Australian Governments' National Health Reform Agreement (COAG) 2011, and include:

- consumer-directed care initiatives that mark new directions in community and residential care
- informed consumer choice through My Aged Care website, which aims to inform consumer choice
- strengthening policy with the Aged Care Quality Agency and the Aged Care Financial Authority
- care/support needs being determined by local aged care assessment teams, while Centrelink administers means testing
- increased user charges for both community and residential care, with more account being taken in the means tests of the value of owner-occupied housing
- state government influence on the provision of public and community housing programs, land-use regulations, and fair trading regulations
- responsibility of the Australian Government for all aged care services (DSS 2014b).

Along with the state and territory governments, the Australian Government has undertaken a number of significant recent reforms that influence the way the older person and their family experience the aged care system. Under the 2010 COAG National Health Reform agreement, starting July 2012, the Australian Government took full responsibility (funding, policy, management and delivery) for the aged care system across the country, including home care and residential care. One particularly relevant component of this agreement is that the Home and Community Care Program (HACC), which was formerly the jurisdiction of state and territory governments, became an Australian government responsibility. In exchange, the state and territory governments became fully responsible for funding support services for people with disabilities under the age of 65. In 2012–13, Australian government expenditures on the aged care system reached $12.9 billion: 71% of spending was on the residential aged care program, 22% on Home and Community Care (HACC), Community Aged Care Packages (CACP), Extended Aged Care at Home (EACH), Extended Aged Care at Home–Dementia (EACH–D) and 7% on other programs, such as respite and the multidisciplinary aged care assessment program (DSS 2013).

As part of the **'Living Longer Living Better' (LLLB) aged care reform package**, the Australian Government also removed the distinction between low- and high-level residential care from 2014, thereby increasing the ability of residents to age in place (DOHA 2012). Although some residential care facilities specialise in either high or low care, many of these facilities broadened their service offerings to include the full continuum of care, which allows older people to stay in the same facility as their care needs increase. About 71% of the funding for residential aged care comes from the Australian Government, 25% from private contributions and 4% from accommodation payments (DSS 2014c).

It is proposed that the consolidation of aged care funding for these levels of aged care service will result in a nationally consistent and better-integrated aged care system (AIHW 2013). This consolidated system will also have strong links to health and hospital services, the logical next step in progressing integrated aged care in Australia, which aims to provide a more streamlined and positive care experience for older Australians. The COAG agreement also included the introduction of a national information line in July 2011, which was the first step to make it easier for people to access information about aged care services.

Fundamental to the reform process is a **consumer-directed care (CDC) system**, which is a significant shift in how aged care services have operated to date and how consumers have experienced the service system. The critical elements in this change are individualised budgets, consumer choice about which provider they receive services from, a home care agreement and a care plan, which together indicate the level of involvement the user wishes to have in decision-making and management of services (DSS 2014b). Since July 2015 all CDC Home Care Packages are now delivered in a consumer-directed way. In the longer term, CDC will be introduced into residential care.

Governance by Aboriginal boards of management will continue to support the rights of Indigenous Australians to attain good quality of life in older age, through self-determined community-based health programs. For Australian Indigenous communities, the health of their older members is not just about individual physical

wellbeing. Health incorporates all aspects of a person's life, including control over the physical environment, maintaining personal and community dignity, and self-esteem and justice. Health includes the social, emotional and cultural wellbeing of the whole community, which is directly associated with the community's relationship to the land of their ancestors. This is a whole-of-life view and also includes the cyclical concept of life–death–life (Anderson et al 2006).

Optimal **primary healthcare** for older Indigenous Australians will, therefore, provide a wide range of health-related community support services to achieve whole-community health. These may cover a variety of services; for example, community development work; advocacy for legal, public housing, Centrelink and disability support; cultural promotion activities; and transport to medical appointments (AIHW 2011b). Services to rural and remote areas are provided through regional primary health services (RPHS), which consolidate a range of these existing programs in a flexible way. As an example of flexible community health programs for Indigenous people that will affect the whole community, in December 2011 the Minister for Australian and Torres Strait Islander Health launched toolkits for health workers, including nurses, to tackle the high rates of smoking and chronic disease, such as type 2 diabetes and smoking-related deaths in these communities. In 1997, the National Aboriginal Community Controlled Health Organisation (NACCHO) was created as the national peak body for Aboriginal health in Australia. This organisation works with over 150 Aboriginal Community Controlled Health Services (ACCHS); examples of the range of programs and their impact on Aboriginal health can be found on the NACCHO website, listed at the end of this chapter.

New Zealand

The 'Health of Older People Strategy' is a key plank of the New Zealand Positive Ageing Strategy (Ministry of Social Development 2001). The policy emphasis on 'ageing in place' is intended to reflect the personal preferences of older people themselves, who prize their autonomy and independence (Davey 2006). Ageing 'baby boomers' are expected to be living longer and healthier, have higher levels of education and work experience, and women will have greater financial independence and literacy than did their mothers and grandmothers (Davey 2006). Therefore, the strategy focuses on older people's health and wellbeing through coordinated and responsive health and disability support programs. Development of the strategy was guided by the aims and principles of the New Zealand Health Strategy (Ministry of Health 2000), New Zealand Disability Strategy (Minister for Disability Issues 2001) and the Māori Health Strategy He Korowai Oranga (King & Turia 2002). The **Health of Older People Strategy** sets out a comprehensive framework for planning, funding and providing services. It includes a work program for the Ministry of Health on a national framework for implementing the strategy, and identifies the steps to be taken by district health boards (DHBs) to develop an integrated approach to service provision in their own districts. Implementing the strategy requires the Ministry of Health and DHBs to systematically review and refocus services to better meet the needs of older people now and in the future, by reallocating available resources between services.

New Zealand's Ministry of Social Development (2013) gave assurances that positive ageing principles would direct all relevant policy to:

- empower older people to make choices that enable them to live a satisfying life and lead a healthy lifestyle
- provide opportunities for older people to participate in and contribute to family, whānau and community
- reflect positive attitudes to older people
- recognise the diversity of older people and ageing as a normal part of the life cycle
- affirm the values and strengthen the capabilities of older Māori and their whānau
- recognise the diversity and strengthen the capabilities of older Pacific people
- appreciate the diverse cultural identity of older people living in New Zealand
- recognise the different issues facing men and women
- ensure older people, in both rural and urban areas, live with confidence in a secure environment and receive the services they need to do so
- enable older people to take responsibility for their personal growth and development through changing circumstances.

Services and programs within the jurisdiction of New Zealand's Positive Ageing Strategy include health promotion, preventive care, specialist medical and psychiatric care, hospital care, rehabilitation, community support services, equipment, respite care and residential care. All health services are older-person focused, the wellness model is promoted, and services are coordinated and responsive to needs; the family's, whānau and carers' needs are also considered and, where appropriate, there is information-sharing and a smooth transition between services. Planning and funding arrangements support integration. Employing an integrated continuum of care approach means that the older person is able to access

needed services at the *right time*, in the *right place* and from the *right provider* (Ministry for Social Development 2001).

Additionally, **Whānau Ora** is a policy direction and funding stream that has been developed to more adequately address the health and social needs of all New Zealand families, in a way that is designed to be consistent with Māori values. Whānau Ora, therefore, pays attention to the particular needs and place in society of older adults. Government agencies are required to work cooperatively to empower whānau (families) collectively, rather than individuals separately, in ways that enhance self-management, healthy lifestyles, active participation in society and te ao Māori (the Māori world). Support also fosters economic security and family cohesion and resilience. Specialist Whānau Ora providers offer comprehensive services tailored to the needs of whānau through the development of a 'whānau plan' that maximises access to health and social services (Durie 2013).

• CRITICAL REFLECTION POINT

Take some time now to reflect on the policies and strategies that guide health services for older adults in Australia and New Zealand.

1. **What values and beliefs of society are reflected in the intentions of these policies and strategies?**
2. **How are the interests of older people prioritised and served in your community?**
3. **To what extent do the health policy documents for older person health in Australia and New Zealand reflect a holistic view of health, especially with regard to Māori and Australian Indigenous peoples?**
4. **Make a list of the ways that older people are supported in the community in which you live. What facilities are especially user-friendly for them?**
5. **What improvements do you think could be made to better cater for their needs?**
6. **What may be some future options for housing older people?**

Health care for populations as well as individuals

Older people are members of many different communities – social, cultural, recreational, spiritual and political. Policies to support their health and wellbeing, therefore, focus on improving the health of individuals, families, communities and systems by modifying the social determinants of health (Box 38-1).

There are five characteristics of population health (Keller et al 2002). First, there is a focus on entire populations (those possessing similar health concerns or characteristics, such as the older person with a chronic illness); second, population-based practice is based on thorough community-involved health assessment to establish priorities and planning; third, population-based care includes the range of the determinants of health: social, economic, spiritual, physical and psychological. The fourth element is that all levels of prevention are employed. Primary prevention helps to maintain and/or improve health before a problem has occurred, and secondary prevention reduces risk factors or early symptoms and continues on to disease management and chronic care. Finally, population-based practice employs interventions for populations, communities, families and individuals. These practices emphasise population health outcomes to reduce **health inequity**, through the delivery of health care that portrays the features of primary healthcare. In their community-based practice, nurses work in a variety of ways to provide care for individuals and also for populations (McKillop et al 2011). The nature of their practice is described later in this chapter.

Population health supports care for people at all life stages and levels of health need. Systems are required for identifying health inequity in a population, planning health improvement initiatives in collaboration with the community and accessing local services that can contribute to health gain. Mechanisms are required to establish cooperative, integrated care, improve access to health care, collect and manage health information and monitor health gain indicators against population health targets (Coster & Gribben 1999). These mechanisms are evident

BOX 38-1 The features of a population health approach

- A culture across the organisation that places the same emphasis on promoting health and preventing disease as on treating illness.
- Investment in activities that influence the determinants of health.
- Operational commitment to reducing inequalities.
- Inter-sectorial and intra-sectorial collaboration on local initiatives so that there are working partnerships and alliances with a range of community groups.
- Genuine community participation.
- Support for sustainable community development.
- Data collection that is comprehensive and considers ethnicity, deprivation and outcomes.
- Workforce development to support this wider population health approach.

Poore M 2004 Would you recognise a population health approach if it passed you in the street? Ministry of Health, Wellington.

in the Aboriginal Community Controlled Health Services governance system for Indigenous people established by the Australian Government (AIHW 2011b) and the New Zealand Government's Māori Health Strategy (King & Turia 2002). Population-based health care:

> focuses on entire populations, is grounded in community assessment, considers all health determinants, emphasises prevention and intervenes at multiple levels (Keller et al 2004).

Population-based primary healthcare for the older person is provided at three levels simultaneously. The treatment of the biophysical effects of disease, such as type 2 diabetes, characterises a 'short-term, problem-specific, individual-based "downstream' approach"' (Cypress 2004:249). Midstream health care includes early risk detection and reduction of the factors giving rise to lifestyle-influenced diabetes, through a partnership approach (McKinlay & Marceau 2000). Upstream actions aim to strengthen the structural determinants affecting a person with a health condition like type 2 diabetes, which can include education, employment, housing, transport, nutrition, income and working conditions (Keller et al 2004, Kleffel 1991, Sharpe 2006). A population health approach is fundamental to the 'new' primary healthcare.

Primary healthcare

Modern-day primary healthcare has its origins in the global primary healthcare strategy conceived by nations attending the WHO conference at Alma-Ata in South Eastern Russia in 1978, where they collectively called for 'Health for all by the year 2000' and vowed to embrace the principles of the Declaration of Alma-Ata:

1. Health as a basic human right
2. Inequity as politically, socially and economically unacceptable, and
3. Health as a reflection of the social and economic conditions affecting people's lives (World Health Organization 1978).

These three principles heralded a turnaround from the view of health as a biological state, directed at individuals, experienced and modified by individuals and separated from the socioeconomic and political environment in which people reside. While the year 2000 is long gone and universal health remains an aspiration, the Declaration of Alma-Ata was a turning point for primary healthcare towards more actively addressing persistent inequity, injustice and general lack of fairness in the delivery of health care (Salmond 2008).

A fundamental shift in the provision of primary healthcare was required to reach the goals agreed to at Alma-Ata, a shift that continues today (McKillop et al 2012). Nurse leaders in New Zealand have defined primary healthcare nursing as:

> ... practical and research-based. Employing socially and culturally acceptable practices, nurses make care accessible to people in the places they live and work. Primary health care nurses aim to reduce inequity in the health status of the population, in particular for Māori, Pacific and other underserved populations. A population health approach is required, alongside work to assist individuals to make decisions about their own health and independence (Primary Health Care Nursing Expert Advisory Group 2008).

Traditionally, primary healthcare has been delivered in Australia and New Zealand from general practice clinics, which were originally set up for illness treatment rather than wellness support. When a health service is geared for treatment of sporadic, one-off illness episodes, or for regular chronic illness management, health promotion and assessment of illness risk are more likely to be neglected (McKillop et al 2012). More recently, health policy and funding have targeted health care along the continuum from health promotion to illness care, but changes in the way primary healthcare is organised are required to enable new approaches to primary healthcare.

An effective 'continuum of care' system is one where a complete array of health and health-related support services are offered, and mechanisms are in place that organise and track these services over time, in a way that is client-oriented. Older clients often have to move between providers as their care needs change (DOHA 2012). The motivation for reform on integrated packages of aged care services is particularly strong for the large and growing numbers of people with complex and/or ongoing health and social needs. The Australian aged care reforms represent significant improvements in the potential for service integration. The New South Wales state government, for example, has recently released details of an integrated care strategy that could provide a substantial framework for greater collaboration across the health system (O'Keeffe 2014). The framework encourages health organisations to work together and to form partnerships between hospitals and community-based services. The NSW state government will provide $120 million over 4 years to facilitate the integrated service package, whose goal is seamless or connected health care, which would particularly benefit older people who currently struggle to navigate the disjointed health system.

As well, the Australian Government instituted a new approach to primary healthcare to help improve the health and wellbeing of Australian Aboriginal and Torres Strait Islander peoples (AIHW 2011b). While comprehensive primary healthcare includes access to nurses, Aboriginal health workers and other healthcare professionals, it also

includes access to social and emotional wellbeing services. These programs help individuals to reunite with their kinship networks, and include the 'Bringing Them Home' and 'Link Up' programs and counselling services associated with family and community reconnection. The 'Bringing Them Home' and 'Link Up' counsellors help individuals (many of whom are now over 55 years of age), families and communities affected by past practices of the forced removal of children from Aboriginal and Torres Strait Islander families, to reunite with their families, culture and community, and to restore their social and emotional wellbeing. The Bringing Them Home counsellor program provides counselling and related services to individuals and families, while the Link Up services support people in tracing, locating and reuniting with their families. Access to these primary healthcare services is critical for preventing ill-health, effectively managing stress-related chronic disease and improving health outcomes, to help close the gap in life expectancy between Indigenous and non-Indigenous Australians (AIHW 2011b). Comparisons between 'old' and 'new' primary healthcare are presented in Table 38-1.

• CRITICAL REFLECTION POINT

Using the new primary healthcare column in Table 38-1, identify at least one example of how each of these aspects of health care would be played out in community-based care for older person health.

TABLE 38-1 The differences between 'old' and 'new' primary healthcare

Old primary healthcare	New primary healthcare
Focuses on individuals	Looks at health of populations as well
Provider-focused	Community and people-focused
Emphasis on treatment	Education and prevention important too
Doctors are principal providers	Teamwork – nursing and community outreach crucial
Fee-for-service	Needs-based funding for population care
Service delivery is monocultural	Attention paid to cultural competence
Providers tend to work alone	Connected to other health and non-health agencies

Ministry of Health 2001 Implementing the primary health strategy. Ministry of Health, Wellington.

Community and people-focused health care

Community engagement is a prerequisite for consumer and community involvement in the planning and delivery of health care for older people. There are various layers of healthcare governance, and each should include community representatives so that the voices of service users and/or their advocates are included in health decisions (Coney 2004). As previously identified, the concept of 'community' has many meanings. Five core elements were derived from a narrative review of 154 definitions of community: its location, sharing common interests and perspectives, joint action as a source of cohesion and identity, a foundation of social ties and that some diversity is expected and accepted since all people are unique (McQueen et al 2001).

The location of a community is not just where older people live, but other places where they come together; for example, where they socialise. In 2013, the Australian Institute of Health and Welfare (AIHW 2013) reported on the 'desire to age in place' among the vast majority of older Australians. Intentions to stay in current accommodation were highest among public tenants and homeowners and lowest among private renters, which signifies the role that income plays in this aspiration (DSS 2014a). Much of the desire to age in place is related to emotional and social attachment to the locale rather than to the dwelling. This highlights the need to create sustainable communities which provide enabling environments for older people and opportunities for social interaction, and which promote integration with local communities. Age-friendly communities incorporate social and physical structures that support healthy ageing (WHO 2007). This includes consideration of outdoor spaces, transportation, appropriate housing and public attitudes that encourage healthy ageing (Plouffe & Kalache 2010).

Where the older person lives and the availability of health infrastructure in that location will influence the way that nurses are able to engage with different rural communities. Rural people are more likely to have greater restrictions to accessing health care from their home in the community, especially for those living in remote and inhospitable locations. When community support systems are not available in rural areas, necessitating the move to a regional centre, older people can experience feelings of loneliness and isolation, which drastically lower their life expectancy (Bernoth et al 2012). The realities of rural and remote Aboriginal health, in particular, are distinguished by 'hardship, sufferance and invisibility' (Hunter 2007). Many Indigenous people have high levels of unrecognised

and untreated illnesses. One of the reasons for this is the failure of mainstream health services staff to understand and acknowledge the extreme difficulties that Indigenous people experience in seeking culturally sensitive health care in rural and remote locations.

Issues that will continue to impact on **community nursing** services relate to the changing social and political climate associated with an ageing population. Future needs for housing and support in later life will increase substantially with the decline in home ownership and continuing hardship for private tenants as rental costs rise (DSS 2014a). The gap between available income and the cost of formal services will continue to be an issue for older Australians and New Zealanders. In Australia, the majority of older people rely on a government pension for income support. Full superannuation coverage of older people is not expected for another decade (Chomik & MacLennan 2014a). As well, the availability of informal carers who provide the bulk of support for older people is projected to decline (Nepal et al 2011). Similarly, in New Zealand, most people over the age of 65 receive a fortnightly payment of 66% of the net national average wage adjusted annually, although the age for eligibility is under scrutiny. Income support will continue to be an issue as ageing baby boomers bring increased expectations for independent living and increasing diversity in lifestyles and service requirements (Beer & Faulkner 2009). To provide an effective community health service, nurses will need to gain a good understanding of the issues impacting on service access, in light of the changing health perspectives and needs of different communities of older people (Crisp et al 2013b).

Integrated community health services

As previously discussed, the purpose and focus of primary healthcare involves not only care for individuals with health problems, but also health promotion and preventative care. In their health promotion and preventative care work, and in light of ever-increasing rationing of health resources, nurses are challenged to provide older people and their families with the most appropriate education and support to improve the social determinants of health (Sharpe & O'Sullivan 2006). **Effective primary healthcare** involves expanded nursing services, community outreach and multidisciplinary team collaboration in providing health care across the continuum of care, as identified in the Australian and New Zealand aged care policies (Finlayson et al 2008, Ministry of Health 2001, 2003, Productivity Commission 2012, Wagner et al 2001).

Primary healthcare and social service providers that are well integrated with each other can provide a seamless service for their clients (Sheridan 2005). Nurses need to work with other services to improve access and to improve the social determinants of health, including housing, education and a range of social services. Not least, care that is integrated across primary and secondary services can avoid gaps and overlaps in health services. A discussion document published by the Australian Primary Health Care Advisory Council (PHCAC) suggests that future primary healthcare organisations, whatever form they take, 'will need to define together what the glue will be that will hold them together' (PHCAC 2009:4). Exploring the implementation of the PHCAC guidelines may reveal the 'glue' that integrates services. The way that services are arranged and connected with each other is represented in the model of health care on which they are based.

Appropriate community-based nursing, therefore, will be individualised to suit the client and their family, have a population health focus (Sheridan 2005) and rely on continuing relationships with other health services (Wagner et al 2001). This approach requires a reorienting of health services across the health continuum, not just in the primary healthcare sector (Bodenheimer et al 2002a). In particular, integrated care for the older adult requires coordination and collaboration within and across primary, secondary and tertiary healthcare providers to ensure continuity and relevance of care, in which nurses play a pivotal role. Key components of person-centred integrated care include coordination within and across care teams and community resources, relationships that enhance familiarity with patients across time, continuous proactive and responsive actions between visits, and shared responsibility (Singer 2011).

Six interlinked components are essential to the effective integration of care (Wagner et al 2001, Bodenheimer et al 2002b):

- *community resources* – mobilising community resources to meet the needs of people with long-term conditions
- *healthcare organisation* – creating a culture, organisation and mechanisms that promote safe, high-quality care
- *self-management support* – empowering and preparing people to manage their health and health care
- *delivery system design* – delivering effective, efficient care and self-management support
- *decision support* – promoting care that is consistent with research evidence and patient preferences
- *clinical information systems* – organising patient and population data to facilitate efficient and effective care (Wagner 1999).

Future areas of focus in improving integrated aged care services in Australia will be in designing information systems, supporting care management processes and developing a system of finance that creates the appropriate incentives to promote changes to the balance, or mix, of services and behaviour change (Daley et al 2014).

Community-based services for older Australians and New Zealanders

The six components listed above are essential to an effective integrated healthcare system for older people and their families. For example, in 2013–14 over one million older Australians and their family carers accessed government-subsidised integrated community-based services from the programs listed in Figure 38-2.

Australian aged care services

The service components of a continuum of aged care have grown and developed in Australia over three decades. Since 1963, the government has funded residential care at 'high' and 'low' levels. Residential care also includes respite services. In addition, the government has supported two major types of community care programs: the **Home and Community Care (HACC) program** and the **community package programs** (Community Aged Care Packages (CACP), Extended Aged Care at Home (EACH) and EACH for dementia clients (EACH-D)). As previously identified, these service offerings have recently been upgraded to consumer-directed (CDC) home care packages. The demographic pressure of an ageing population and an increase in the number of Australians living with significant disability increases the number who

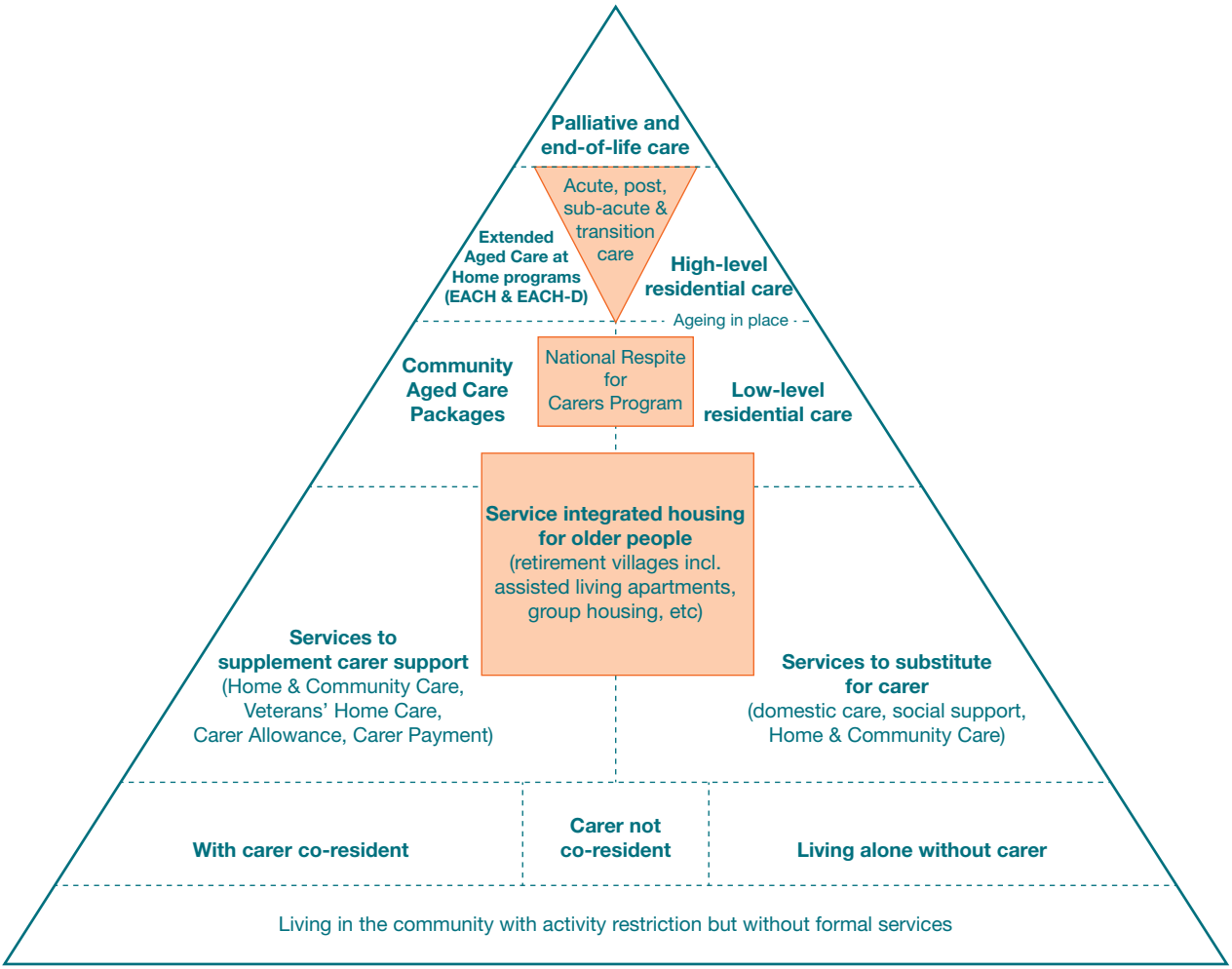


Figure 38-2 Services to support older people across the continuum of care.

Productivity Commission 2011 Caring for older Australians: overview. Inquiry report no. 53. Productivity Commission, Canberra, p. XXIV. © Commonwealth of Australia, Productivity Commission.

need government-subsidised aged care services. Ensuring that access to aged care services is both sufficient and appropriate to meet the needs of the population is an important governmental planning function (DSS 2014B).

To ensure that future needs are met, each year the Australian Government creates new residential and community aged care places to be allocated in each Australian state and territory, in relation to benchmark ratios for people aged 70 and above, set separately for high- and low-level residential care and for community care. The current target ratios are: 25 community care places, 44 low-level residential care places and 44 high-level residential care places per 1000 people aged 70 years and older (DSS 2014c), notwithstanding that the 'ageing in place' policy has removed the distinction between low- and high-care places. By employing a ratio of aged care places to those likely to use care (i.e. persons 70 years and older), the government hopes to ensure that the availability of care keeps pace with the ageing population.

Eligibility for community care packages is determined by an Aged Care Assessment Team (ACAT), which assesses general health, health conditions and ability to attend to activities of daily living (DSS 2014a). Altogether, community package programs served almost 83,000 older people living in the community in 2013–14. The CACP program provided the majority – with more than 63,000 recipients in 2012–13 (DSS 2013), while the EACH program served about 13,000 recipients, with almost 6500 of these receiving EACH-D packages in 2013. Funding is allocated largely based on demand and services are provided at the discretion of providers. Services included transport, nursing, home maintenance, counselling and personal care, and delivers services to people with a range of disabilities, regardless of whether that disability is related to an acquired condition or injury (DOHA 2014). The program also supported Indigenous health by improving access to community services in rural and remote Australia (DSS 2013).

RESEARCH HIGHLIGHT

Research focus

Issues and solutions for improving transitions from acute to community care for older people with dementia.

Research abstract

The aim of the research was to examine the literature on the impact of the discharge experience of patients with dementia and their continuity of care.

Peer-reviewed and grey literature published in the English language between 1995 and 2014 were systematically searched using Medline, CINAHL, PubMed, PsycINFO and Cochrane library databases, using a combination of the search terms: dementia, caregivers, integrated healthcare systems, managed care, patient discharge. Also reviewed were Department of Health and Ageing and Alzheimer's Australia research reports between 2000 and 2014.

Research findings

The review found a wide range of studies that raise concerns in relation to the quality of care provided to people with dementia during hospital discharge and in transitional care.

Conclusion

Discharge planning and transitional care for patients with dementia are not adequate and are likely to lead to re-admission and other poor health outcomes.

Evidence-based practice

It is clear from the research literature review that hospitalisation and discharge have a significant impact on the person with dementia and their carers and that these processes are not generally well managed. A need for further investment in training, improvement of discharge planning and referral pathways, and improved access to transitional care services for people with dementia who are leaving hospital have been identified. The case for beginning discharge planning on admission to hospital, in consultation with families and community health personnel, is also strong. These improvements are generally seen as leading to a reduction in re-admission rates. Various models of comprehensive discharge and follow-up support with more collaborative primary care also demonstrate reduced hospitalisations. Effective Australian models include: the Transitional Behavioural Assessment and Intervention Service (T-BASIS); the Behaviour Assessment Management Service (BAMS) established in 2013 under the aegis of Specialist Mental Health Services for Older People; and the Transition Care Program (TCP), a 12-week discharge package providing vulnerable patients with continuing care and optimising functionality through a range of support services in the community.

Reference

Chenoweth L, Kable A, Pond D 2015 Research in hospital discharge procedures addresses gaps in care continuity in the community, but leaves gaping holes for people with dementia – a review of the Literature. Australasian Journal on Ageing 34(1):9–14.

Aged care reforms in 2014–15 have significantly increased the amount of home care available, with four levels of Home Care Packages that support people with basic care needs, through to high care needs. The new Home Care Packages are a *coordinated* package of services tailored to meet the consumer's specific care needs. A home care provider coordinates a package, with funding provided by the Australian Government (DSS 2013).

Other community-based programs funded by the Australian Government include the Veterans Home Care program, which serves 70,000 mostly aged war veterans and their widows, or widowers, as well as Innovative Care, Multi-Purpose Services and Transition Care Services. Aided by funding by the Australian Government, for some older Indigenous Australians the Aboriginal Community Controlled Health Organisations (ACCHOs) contribute to primary healthcare services through Aboriginal-led locally elected boards of management (AIHW 2011b).

New Zealand aged care services

Home support services give older people the ability to make choices in later life about where they want to live, and to receive the support they need to do that. The New Zealand Ministry of Health is responsible for the development of home and community support services for older people. A continuum-of-care approach is taken for older people's support services, which emphasises home- and community-based services (Ministry of Social Development 2001). Consistent with a 'restorative' model of home support that maximises an older person's independence, District Health Boards provide for specialist assessment by a Needs Assessment Service Coordination (NASC) agency, many using the internationally validated inteRAI tool to effectively identify needs and guide integrated care plan development (Mello et al 2015), so each person can remain in his/her own home safely for longer (Ministry of Social Development 2013). New Zealand government agencies collaborate to fund services including health care, housing, transport and income support. Funding for equipment or housing and vehicle modifications is also available as required to enhance safety and independence.

Older people are also supported through church-based services such as:

- *Enliven* – a service offered by Presbyterian support organisations throughout New Zealand that enables older New Zealanders to stay in their own homes and to remain in control of their own destiny
- *Wesley Community Action* – a Methodist organisation with experience in working alongside older people in the community to help maintain their independence and quality of life
- *Selwyn Centres* – parish-based drop-in centres for older people hosted by the Anglican Selwyn Foundation. They offer older people in their communities a morning program, which includes gentle exercise, social time and activities, for a nominal fee.

Aged residential-care services are available for older people (usually aged 65 years and over) who need more support than can be made available to them in their own homes (Figures 38-3 and 38-4). Options include a range of private and public residential home-care facilities and specialist hospital facilities. In addition, a range of services and resources are provided by Age Concern, the Alzheimer's Society, Arthritis New Zealand, the Cancer Society, Diabetes New Zealand, the Hearing Association, Hospice New Zealand, the Mental Health Foundation, the National Heart Foundation, the National Foundation for the Deaf, the Parkinsonism Society of New Zealand,



Figure 38-3 Rehabilitation is crucial in maintaining the health of older people.

iStockphoto/Yuri Arcurs.



Figure 38-4 Meaningful occupational therapy is crucial in maintaining the health of older people.

iStockphoto/Jodi Jacobson.

the Public Health Association, the Royal New Zealand Foundation for the Blind and the Stroke Foundation.

Strengths-based approach

Both Australian and New Zealand aged care services support a primary healthcare, strengths-based approach that strives to meet older people's holistic needs by:

- being consumer-directed, allowing older people and their families choice and control over their lives
- being easy to navigate, by helping older people and families know what care and support is available and how to access those services
- promoting independence and wellness in older people and their continuing contribution to society
- ensuring access to person-centred services that can change as the older person's needs change
- treating older people with dignity and respect
- assisting informal carers and family to perform their caring role
- being affordable for older people requiring care and for society more generally and
- providing incentives to ensure the efficient use of resources devoted to the caring role and broadly equitable contributions between generations.

• CRITICAL REFLECTION POINT

Pause now to consider how nurses can best support the continuing optimal health of older people.

1. **How would you summarise a strengths-based approach to community-based nursing?**
2. **Make a list of what this would mean to the recipients of such care.**
3. **How would they be included in decisions about their care?**

The older person with chronic illness

Ageing is a natural part of life and there is great diversity in the health and wellbeing of older people. Two-thirds of older Australians who report having 'good', 'very good' or 'excellent' health attribute their health status to continued participation in the wider community and to lifestyle choice (AIHW 2013). The 2009–10 Family Characteristics Survey (ABS 2011) found that while the number of Australian grandparent families has decreased since 2003, there remained 17,000 grandparent families in which the grandparents were guardians or main carers of resident children aged 0–17 years, and approximately 43% of people over 65 years of age were actively involved in caring roles and/or volunteer work outside their home



Figure 38-5 Older people are commonly engaged in carer roles within the family.

Shutterstock/Yuri Arcurs.

(Figure 38-5). As well, in 2011 at least half of all Australians aged over 65 years (54%; 2.9 million older people) engaged in some sporting or exercise program on a regular basis, and regularly walked for fitness (ABS 2013b). On the other hand, in vulnerable populations like Australian Aborigines, social disadvantage and ill-health over the life span can lead to younger-onset chronic illness (COAG 2011).

'Chronic disease' is an umbrella term used to describe a diverse array of medical conditions, both communicable and non-communicable, that are most prevalent in people over 65 years of age. The Australian Institute of Health and Welfare (AIHW 2010) and the 'National Chronic Disease Strategy' (National Health Priority Action Council 2005) have broadly described chronic diseases as being:

- complex and multi-factorial in causation
- gradual in onset with variation in symptoms experienced, from acute or sudden onset of symptoms through to symptom-free periods
- persistent and long-term in nature, leading to gradual deterioration of health more prevalent with older age; but, like asthma and renal disease, can occur throughout the life span
- compromising to an individual's quality of life through physical limitations and disability
- not immediately life-threatening, but eventually leads to premature mortality.

In Australia, 77% of the population has at least one chronic condition and 80% of the burden of disease and injury is attributable to chronic diseases. In 2011, deaths due to these illnesses/conditions accounted for 77% of all underlying causes of death and were either associated with, or the underlying cause of, 90% of deaths (ABS 2013b). Data on 9156 patients attending general medical

practitioners in 2009 (Family Medicine Research Centre 2010) revealed that the incidence of chronic disease is on the rise, involving one or more of the following conditions: vascular, musculoskeletal, psychological, asthma, upper gastrointestinal diseases, cardiac, diabetes, cerebrovascular and malignant neoplasms. Australia's national health priority areas focus on chronic diseases and conditions that are generally occurring in older age: arthritis and musculoskeletal conditions, cancer, cardiovascular health, diabetes mellitus, injury prevention and control, mental health, including dementia, and obesity.

Chronic physical disease and mental illness often co-exist in Australians over 65 years of age (Grealish et al 2013). In the 2007 National Survey of Mental Health and Wellbeing, 20.0% of the population aged 16–85 years reported a mental health disorder in the past 12 months and nearly half the same population (45.5%) had experienced an anxiety, affective or substance use disorder at some time in their life (Slade et al 2009). Depression is an independent risk factor for cardiovascular disease in older Australians (Brunner et al 2014, Davidson et al 2001). Increased rates of complications of diabetes (up to fourfold) occur in older adults with both depression and diabetes, and a twofold mortality rate with co-existing myocardial infarction and an anxiety disorder (AIHW 2012a, 2014, Scherrer et al 2010).

Chronic illness is the main cause of disability. The prevalence of disability rises steeply with advancing age. Only about 11% of Australians aged 65–74 were severely disabled in 2009, but that proportion rose to 54% for people aged 85 and over (ABS 2013b). Alzheimer's disease, osteoporosis, heart disease and stroke predominate among the many diseases that cause chronic disability in older age (ABS 2013b). The leading cause of chronic-illness-related deaths in Australia and New Zealand alike is cardiovascular disease (40%). The proportion of deaths attributed to stroke has decreased from 9.6% of deaths in 1998 to 8.0% of deaths in 2010, although there was no such decrease among Indigenous people. Diabetes remains the underlying cause of 6.7% of deaths in Indigenous people, compared with 2.7% of deaths of non-Indigenous people (AIHW 2010). Within the next 20 years, dementia will account for the highest number of chronic diseases in people over 65 years of age (Alzheimer's Australia 2011).

In 2009, 48% of older Australians reported having a disability: 36% of people aged 60–64 years, 48% aged 70–74 years and 88% aged 90 years and over (Australian Indigenous Health Bulletin 2014). In the 60- to 79-years age group, the disability rate is higher among those living alone (49%) than it is for those living with others (40%). For people aged 80 years and above, the disability rates for living alone and with others is the same (68%). For older people living in a non-private dwelling, nearly four-fifths (79%) had a reported disability, with those living in cared accommodation being much more likely to have a disability (97%) (ABS 2012). Thirty-seven per cent of older people (48% for people aged over 85 years) report the need for assistance with at least one activity, including property maintenance (21%), health care (19%) and household chores (16%), because of a chronic-illness-related disability. The fastest growing age group in the population, those aged 85 and over, is also the group most likely to need long-term care for one or more chronic illnesses. Largely because women live longer than men, older people with disabilities are disproportionately very old women (ABS 2013b).

Many older people with one or more chronic illness are susceptible to developing *geriatric syndromes*. These syndromes are a group of connected symptoms with multi-factorial etiology which limit the person's functionality, independence and quality of life. They can include pressure ulcers, incontinence, falls, functional decline, delirium, malnutrition, eating and sleeping problems, dizziness and syncope, and self-neglect. Cognitive deficits, including changed behaviour, combined sensory loss and mal-adaption to changed abilities, distinguish other geriatric syndromes. Cognitive impairment, including confusion and memory loss, is also a side effect of medicines that can cross the blood–brain barrier (e.g. dopamine, glutamate, serotonin and acetylcholine) and those which alter mood (e.g. antihistamines and hypnotics). Concurrent administration of some medicines, such as benzodiazepines and antipsychotics, also reduce certain cognitive abilities (Bushhardt et al 2008).

Since there are multi-factorial causes for geriatric syndromes, each can be defined by isolating shared risk factors (Brown-O'Hara 2013). For example, hypo-mobility syndrome is distinguished by deconditioning and muscular weakness, which can arise from neurological impairment, depression, anxiety and fear of falling, shortness of breath, fatigue, pain, claudication, and environmental obstacles. As the person reduces their movement, atrophy of skeletal muscles occurs, leading to reduced ability to mobilise independently. With total loss of mobility there is a high risk of pressure and venous ulcers, urinary incontinence and constipation. Besides leading to increased mortality and disability, decreased financial and personal resources, and longer hospitalisations, geriatric syndromes can substantially diminish the older person's quality of life.

Impact of chronic illness

Age alone is not the key factor in determining the need for healthcare services, but rather ill-health, a change

in functional capacity and a reduction in informal support networks. It is predicted that nearly two-thirds of the Australian and New Zealand governments' health expenditures will be consumed by people 65 years and older by 2050, generally peaking in the last two years of life (Access Economics 2010, New Zealand Treasury 2013). This represents a 17.1% growth in service need over the past 5 years (ABS 2011). In Australian acute care services alone, people aged 65 years and over accounted for 38% of all hospital admissions and 51% of all inpatient days in 2011, with those aged over 85 years being more than five times as likely to be admitted to hospital, mainly as a result of chronic illness (ABS 2011).

Dementia is the second leading cause of overall burden of disease and the leading cause of disability burden, accounting for one-sixth of the total disability burden in older Australians (AIHW 2012b). People with dementia are at risk of developing diabetes and heart disease, and have a higher risk of sustaining injury from falls. They have higher hospitalisation rates than older Australians without dementia and when admitted for more than an overnight stay, people with dementia need to stay twice as long (18.3 days vs 9.1 days) (AIHW 2012b).

Increasing rates of chronic disease in Australia and New Zealand are, therefore, placing increasing pressure on health expenditure, as well as reduced future labour force participation rates and productivity. Diabetes, for example, is projected to increase from around 5% of the total burden of disease in 2003 to 9% by 2023, primarily due to increasing obesity rates (Access Economics 2010). Current data on the management of chronic diseases indicate that the current health system works best for individuals with specific, time-limited health needs (ABS 2012). Those with more complex needs who require ongoing services and management involving collaboration between health, community and aged care sectors tend to fare worse.

Older people with a chronic illness need access to services in order to maintain their independence, function and wellbeing over the longer term. This increases their chances of remaining at home longer and of avoiding premature admission to residential care and/or re-admission to hospital (ABS 2011). With the incidence of dementia rising, there are profound implications for community nursing provision (de Bruin 2012). Karmel et al (2012) found that timely access to community nursing care could be important in reducing the rate of entry to residential care after hospitalisation for people with dementia. It is essential that people with dementia have access to appropriate mental health and psychogeriatric services to minimise the need for unplanned acute health services, primarily through stronger, better-resourced community-based health care (AIHW 2010).

Without community healthcare support, family carer stress can lead to abuse and/or neglect of the older person (Aged Rights Advocacy Service (ARAS) 2013, Brown-O'Hara 2013, WHO 2008). The impact of chronic illness is known to predispose older people to elder abuse because of their increased likelihood of requiring support with activities of daily living (Collins 2014). Other risk factors include living alone, cognitive impairment, challenging behaviours and substance dependence. According to Age Concern New Zealand (Peri et al 2008), the main forms of elder abuse are:

- physical abuse: physical pain and injury or use of force
- psychological/emotional abuse: behaviours that cause anguish, stress or fear
- financial abuse: exploitation and illegal/unethical use of funds and other resources
- sexual abuse: threats, forced sexual activity or exploitation because of reduced ability to consent.

Unfortunately, those most likely to abuse older people are family members (73%) and friends or neighbours (10%), often because the person being abused is relatively powerless and dependent on them to some degree (Collins 2014). The older person may not complain for fear that the abuse will get worse. An essential aspect of community-based nursing for older adults is recognition of risk factors and the signs of abuse, and to respond and follow up by referring the older person to appropriate agencies to assist, for example, elder abuse and neglect prevention coordinators. Protective factors include supportive family and friends and skilled monitoring by all professionals in contact with the older person.

If nurses are concerned that elder abuse is occurring to an older client, they can access elder abuse support services to discuss their concerns and gain advice on procedures for reporting and obtaining help for the client. In New Zealand, Age Concern's Elder Abuse and Neglect Prevention (EANP) services provide advocacy, consultation and liaison with police, social care and support for more than 2000 referrals for older people who may be facing elder abuse (Collins 2014). The Australian Network for the Prevention of Elder Abuse (ANPEA) and each Australian state and territory provide information about elder abuse, abuse prevention and useful contacts.

There are many challenges that community nursing will need to address in relation to:

- the significant increase in the number of people aged 85 years and over with one or more chronic illnesses over the next few decades (United Nations Population Fund 2010)

- the growing number of older people who require complex care for a chronic illness, including dementia, as well as geriatric syndromes and palliative care
- the relative decline in the availability of informal carers, reducing the ability of some older people to receive home-based care
- the increasing cultural and social diversity among older people in their preferences and expectations, including a greater desire for independent living and culturally relevant care
- the declining community and aged care workforce, and 'age-induced' tightening of the overall labour market, alongside the expected relative decline in family support and informal carers and strong demand for healthcare workers from other parts of the health system
- the growing disparity in available and culturally sensitive health services for rural, remote and urban aged populations, especially for Indigenous older people
- the extent to which communities can support the values associated with ageing in place by enabling healthy, active ageing in an appropriate and supportive environment, including access to effective social and family support, improved lifestyle, enhanced health, affordable housing and housing security.

Evidence-based chronic illness models

When considering the best fit of health service support for older people with a chronic illness, Leutz (1999) divided them into three groups:

- the majority of people with mild to moderate but stable conditions and having high capacity for self-direction and/or strong informal networks who require a select few routine care services
- people with a moderate level of need
- the small percentage of older people with long-term, severe, unstable conditions who frequently require urgent intervention from various sectors and who have limited capacity for self-direction.

Leutz (1999) argued that the first group of people would likely be sufficiently served by relatively simple systematic linkage of different systems, as long as healthcare providers are aware of, and understand how to access, the range of services offered by other providers. The group with moderate health support needs would also operate mainly through existing health and social systems, but would require additional explicit structures and processes to maintain their health and prevent disability. This would require mechanisms for routinely sharing client information and collaborative discharge planning, case management and coordinated care across various sectors. It is the group with long-term, severe, unstable conditions that is likely to benefit most from a high level of service integration of different service domains. A fully integrated system would assume responsibility for all services, resources and funding, which might be subsumed into one managed structure (Leutz 1999).

Kaiser Permanente, a US health-maintenance organisation for older people with chronic illnesses, is a good example of a successfully integrated primary healthcare system which successfully provides three different levels of community health services at different levels of need, such as those described by Leutz (1999) (Bodenheimer et al 2002b). Another influential chronic illness primary healthcare model, also originating in the United States, is the Evercare model, the primary aim of which is to combine preventative and responsive health care for older people at high risk of health deterioration, mainly through case management (Boaden et al 2006). The program uses risk-stratification tools to assess the level of care required and to inform the development of an individualised care plan for older people living in the community, coordinated and monitored by an advanced practice nurse acting as a case manager. The Chronic Care Model (Wagner et al 1999, 2001) aims to provide a comprehensive framework for the organisation of health care for people with chronic conditions via four interacting system components: self-management support, delivery system design, decision support, and clinical information systems. The cornerstone of the productive interactions between the healthcare staff and the person in effectively managing the chronic illness is having an 'informed activated patient' and a 'prepared proactive health team'. The role of nurses in chronic care is pivotal to helping people navigate the health service by being 'informed and activated'.

The Chronic Care Model (Wagner et al 1999, 2001) has been influential in informing chronic-care policies in a number of countries (Glasgow et al 2001). In Australia, the NSW Department of Health has embraced the model, spearheaded by the Greater Metropolitan Clinical Taskforce (GMCT) Aged Care Health Network, a multidisciplinary peak-body advisory group to the director-general of NSW on matters relating to the health care of older people. One of the goals of the GMCT is to make illness prevention 'everybody's business' by strengthening primary healthcare and continuing care in the community, building community-based health partners to improve the healthcare opportunities and

experiences for older people and their families and promoting and evaluating evidence-based chronic illness care models in all health settings.

Meeting the complex needs of an increasing number of older adults with multiple chronic conditions has challenged community-based healthcare teams to offer innovative approaches to integrated, person-centred care. Integrated models of such care are comprehensive, person-oriented, health promoting, strengths-based, do not have a singular disease focus, and address inequity. Innovative models of integrated community-based primary healthcare have been implemented internationally (Beland et al 2006a, 2006b, Hébert et al 2009) and in New Zealand (Parsons et al 2012). These models have demonstrated better health outcomes and reductions in costly and often inappropriate hospital and residential long-term care.

• CRITICAL REFLECTION POINT

Pause here to consider:

1. **In their practice with older people who have chronic conditions, how would nurses help them to become 'informed and activated'?**
2. **What do nurses need to consider if they are to contribute to 'prepared and proactive health teams'?**

The changing scope of community nursing practice

The older person is now the core business of the whole healthcare system for those with rapid-response needs, short-term care needs and chronic disease long-term care needs. Consequently, in meeting these different healthcare needs the range of services provided and/or coordinated in the community include: telehealth; social enterprise; disability care; aged and dementia care and rehabilitation; chronic disease management; personal care and support; palliative care and respite; and specialist consultancies (DSS 2013, Ministry of Health 2001). With the reduced capacity of the acute care sector to meet the demands of older people with a chronic illness, and to reduce risks associated with hospitalisation, the Australian and New Zealand governments fund subacute and post-acute in-home projects for this population group (AIHW 2011a, Ministry of Health 2001). Palliative care in the community is also subsidised for those wishing to die at home, which not only improves care options but also provides palliative-care career pathways for community nurses (Kralik & van Loon 2011, Ministry of Health 2001).

Since the majority of older people choose to 'age in place' at home in the community (DOHA 2012, Ministry of Social Development 2001), the major work of community nurses is the care of older people with one or more chronic illnesses. Community nurses need to employ different strategies to support older people within a range of new services being offered by government and non-government agencies (Ellis et al 2010). In 2009–10, the Australian Government's budget extended access to the Medical Benefit Scheme (MBS) and the Pharmaceutical Benefit Scheme (PBS) for nurse practitioners (NPs). While nurse practitioners make up only a small proportion of the total community-based nursing workforce, this initiative represents a significant step forwards in recognising the knowledge, skills and expertise that nursing brings to the provision of primary healthcare services (Commonwealth of Australia 2009).

The scope of community nursing is expanding to take account of: the nursing context; the nurse's professional education, qualifications and competency levels; client health needs; and service provider policies (Kralik & van Loon 2011). Nevertheless, the community nursing role remains weighted towards community health and wellness, based on primary healthcare principles and their focus on strengthening community reserves (Griffiths 2008) and accommodating the complex factors associated with the older person's and family's life transitions (Heath & Phair 2009). Figure 38-6 illustrates some of the work that community nurses engage in: health-promoting activities that enable the older person to optimise health, wellbeing and independence in later life; curative and rehabilitative dimensions that focus on functional and psychological recovery from illness or injury; facilitating self-care and enabling effective management of chronic conditions; providing care for those who become frail and have limited self-care capacity; and palliative and end-of-life care (Tolson et al 2011). In each of these roles the community nurse, the older person and their carer/support network work as a team, being focused on the older person's needs and self-determined goals, not the nurse's goals (Meltzer et al 2010).

Advanced community nursing

The vignettes below identify the range of services provided by NPs, ones which rely on a great deal of initiative as well as collaboration with other healthcare providers, and culturally sensitive partnerships with health consumers and the community, to provide the very best healthcare services possible with limited resources.

Vignette 1 – a nurse practitioner in rural New Zealand

I see my role first and foremost to empower people in my community to have the best health possible. The most important support for this work comes from developing

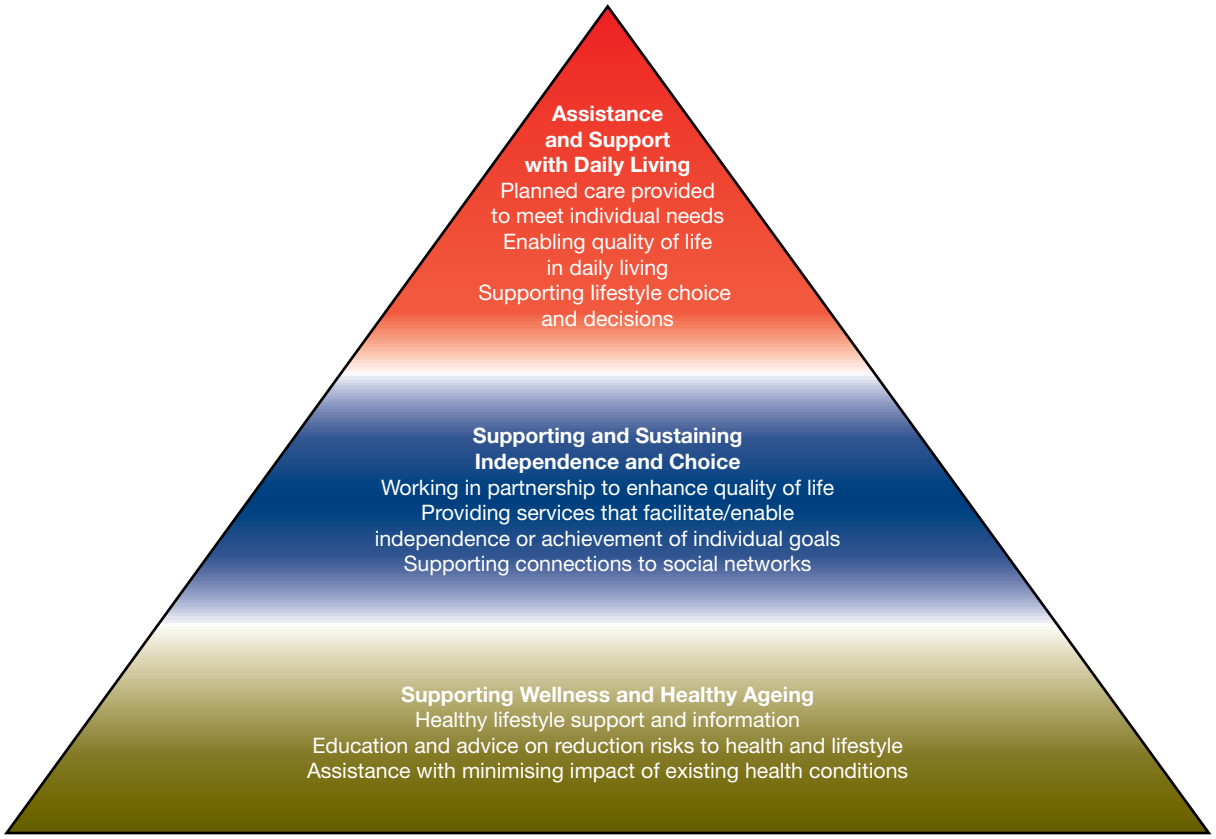


Figure 38-6 **Aspects of community nursing work.**

and maintaining good relationships with others, because they are essential to all aspects of my role – including community outreach clinics, home visits, connecting with people at community meeting places, preschools, seeing patients at medical clinics and as part of a multidisciplinary team. I provide primary healthcare to the whole community with a special focus on reducing health inequity and, as a Māori NP, I have a special connection to our Māori population and familiarity with how traditional values and beliefs influence our lives.

I don't really have a typical day as such, but here is what a day might involve. I would usually begin at 8 am or earlier, depending on how far I have to travel to my first appointment. Before heading off I have lab results to review and follow-up actions from previous patient visits. Usually the morning then involves providing outreach clinics at a medical centre, schools, preschools, community centres, marae [Māori meeting houses] or home visits. I have to be very well prepared for my day ahead to allow for travelling long distances, coping with bad weather that can cause flooding and road damage and being flexible enough to respond to a whole range of health needs I could encounter at any time. My afternoons typically involve more outreach visits into rural communities providing screening for health risks, support for self-management of chronic illness and wellness support for community groups. If I'm not doing outreach, I'll be holding clinics at a medical centre where I see patients, usually individually, for ongoing chronic illness support or with acute health problems. Also, I meet with nurses, either one-to-one for clinical supervision [mentoring] or case management discussions, and consult regularly with GPs for case reviews, advice and clinical supervision. All of this work depends on good communication, established networks and careful planning ahead.

My skills and knowledge have to be broad-based because of the wide age range of people I see, some with multiple health problems and needs. My clinical judgement relies on competent assessment of health needs for individuals and communities, efficient laboratory diagnostic services, access to good evidence for practice and effective collegial relationships, including other healthcare providers, social services and pharmacists. Most of all, though, it is engagement with my community that enables me to empower people to make health gains and to build strong networks across the region that keeps me informed of opportunities to work with groups and individuals and to know how best to support them.

Vignette 2 – an aged care nurse practitioner in urban Australia

I have been working as a nurse practitioner, aged care (cognition) within the metropolitan region for the ARV Retirement Villages for the last 5 years. ARV has approximately 5000 clients spread across all regions of central and wider Sydney, living in the general community receiving 'care packages', in independent living units or within 19 residential aged care facilities. My initial brief was to develop an organisational strategy that would address the growing incidence of dementia. The key elements included raising awareness of dementia, reducing the stigma, highlighting risk factors, promoting better health strategies, achieving early identification, supporting care and enhancing staff skills. In order to do this, we established our service, known as BrightMinds©, which initially consisted of two pilot sites. Since starting, the service has grown and is now an organisational-wide strategy, with an additional clinical nurse consultant (CNC) and clinical nurse specialist (CNS) to assist with service delivery.

My usual day includes not only team support, which can be direct, online or over the phone, but also direct clinical consultations. Those experiencing difficulty with memory, their families, friends, staff, community groups, or other healthcare professionals, frequently call upon our services. A clinical consultation includes compiling a detailed health and lifestyle history, reviewing pathology and medication and completing cognitive testing. Dependent on the outcome, liaising with the GP and often a specialist is required to facilitate access to first-line treatment, which usually includes acetyl cholinesterase inhibitors. As an NP working in cognition, I am constantly searching for underlying causes of cognitive decline, and it is rewarding to find a reversible delirium or a treatable depression, and know you have made a difference. When it is dementia I can still help, sometimes with practical tips, carer support or advice regarding treatment regimens. Most weeks involve presenting to a forum or group to discuss recent advances in research, novel treatment options or behavioural interventions. It is an exciting role that is continuing to grow and offers new and exciting opportunities, particularly in the field of research. Hopefully, we will have a major breakthrough soon, and our team is ready and prepared for paving the way.

Competencies for community nursing

While the competencies of all nurses are consistent, no matter where they work, the roles of nurses in community settings overlap, and are different from, the roles of nurses in acute secondary care settings. The most outstanding difference of community nursing is the focus on populations as clients, rather than individuals, which requires additional skills in population-focused interventions (Bigbee & Issel 2012). In shifting towards population-based practice, primary healthcare nursing emphasises the social determinants of health, focuses on primary prevention and health promotion, and addresses social injustice (Marmot & Allen 2014, Bigbee & Issel 2012). Primary healthcare nursing in New Zealand aims to reduce health and social inequity, in particular for Māori, Pacific peoples and other underserved populations, by adopting a population health approach (Sheridan et al 2009). Promoting health behaviours can sometimes require the community nurse to help the person and their carer to overcome barriers arising from the person's social situation, such as low social opportunities and levels of emotional support and poor access to some health services. In planning support services, the community nurse needs to consider the person's educational and employment backgrounds, their income availability, food supplies and access to social services (National Ageing Research Institute 2006). These issues are particularly relevant in community nursing support for Australian Indigenous people. It is, therefore, essential that the community nurse appreciates the client's and family's unique needs and circumstances, and is competent in all dealings with individuals and groups requiring their support (Garside & Nhemachena 2013, King et al 2012).

The WHO (WHO 2010a) has proposed that nurses need to change the discourse of clinical practice, so that public health and promoting health are central to their practice. The gains to individuals, society and national budgets will be immense with such changes, because a recalibration of nursing clinical practice has the potential to achieve

> **… fewer disabilities and loss of functional ability associated with diseases of old age; more people participating actively as they age in all aspects of society including paid and unpaid roles and in their families and in social, political and cultural life; and more people experiencing a high quality life as they age (WHO 2010a).**

Changes in community nursing practice as described above will be the most effective way of achieving lower costs related to health care, because it will minimise the need for medical treatments and hospital stays and social care to meet dependency needs.

As advocates of public health, **community nurse competencies** need to occur at three levels: the healthcare system; the health organisation and services; and the client

and family carer/support network (Australian Nursing Federation 2009). Capturing the complexity of practice in this setting was the catalyst for a large project in Minnesota (USA) that produced the Wheel of Public Health Nursing Interventions (the Wheel) (Keller et al 2004, Minnesota Department of Health 2001). In the United States, nursing that takes place in the community is known as public health nursing, which in Australia and New Zealand would be known as primary healthcare nursing, district nursing or community nursing. The Wheel model specifies the key interventions that community-based nurses generally use at the individual and family, community or systems levels. The Wheel has been identified as one of the primary conceptual models for public health nursing in the United States (Bigbee & Issel 2012), and has been found useful in an Australian setting (Woods 2010), in Ireland (McDonald et al 2015) and as an overarching framework for primary healthcare nursing in New Zealand (Sheridan 2005).

TABLE 38-2 Definitions of 17 public health interventions

Intervention	Definition
Surveillance	Describes and monitors health events through ongoing and systematic collection, analysis and interpretation of health data for planning, implementing and evaluating public health interventions
Disease and health event investigation	Systematically gathers and analyses data regarding threats to the health of populations, ascertains the source of the threat, identifies cases and others at risk, and determines control measures
Outreach	Locates populations-of-interest or populations-at-risk and provides information about the nature of the concern, what can be done about it, and how services can be obtained
Screening	Identifies individuals with unrecognised health risk factors or asymptomatic disease conditions in populations
Case-finding	Locates individuals and families with identified risk factors and connects them with resources
Referral and follow-up	Assists individuals, families, groups, organisations and/or communities to identify and access necessary resources to prevent or resolve problems or concerns
Case management	Optimises self-care capabilities of individuals and families and the capacity of systems and communities to coordinate and provide services
Delegated functions	Direct care tasks that a registered professional nurse carries out under the authority of a healthcare practitioner as allowed by law. Delegated functions also include direct care tasks entrusted by a registered nurse to be performed by other appropriate personnel
Health teaching	Communicates facts, ideas and skills that change knowledge, attitudes, values, beliefs, behaviours and the practices of individuals/families, systems, communities
Counselling	Establishes an interpersonal relationship with a community, a system, family or individual intended to increase or enhance their capacity for self-care and coping. Counselling engages the community, system, family or individual at an emotional level
Consultation	Seeks information and generates optional solutions to perceived problems or issues through interactive problem-solving with a community, system, family or individual. The community, system, family or individual selects and acts on the option best meeting the circumstances
Collaboration	Commits two or more persons or organisations to achieve a common goal through enhancing the capacity of one or more of the members to promote and protect health
Coalition building	Promotes and develops alliances among organisations or constituencies for a common purpose. It builds linkages, solves problems and enhances local leadership to address health concerns
Community organising	Helps community groups to identify common problems or goals, mobilise resources, and develop and implement strategies for reaching the goals they have agreed upon
Advocacy	Pleads someone's cause or acts on someone's behalf, with a focus on developing the community, system, individual or family's capacity to plead their own cause or act on their own behalf
Social marketing	Utilises commercial marketing principles and technologies for programs designed to influence the knowledge, attitudes, values, beliefs, behaviours and practices of the population-of-interest
Policy development and enforcement	Places health issues on decision-makers' agendas, acquires a plan of resolution, and determines resources. Policy development results in laws, rules, regulations, ordinances and policies. Policy enforcement compels others to comply with the laws, rules, regulations, ordinances and policies

Keller L et al 2004 Population-based public health interventions: practice-based and evidence-supported, Part 1. Public Health Nurs 21(5):453–68.

The Wheel represents a range of interventions, three levels of practice (individual and family, community, and systems), and the population health foundations characteristic of primary healthcare. Population-based practice is determined by five criteria: focusing on entire populations (with no limits or restrictions); informed by community health assessment (to identify risk factors, protective factors, and assets that impact health status, so that priorities are needs-based, and interventions are planned, implemented and evaluated); addressing determinants of health, such as income, poverty, education, housing, culture, and ethnicity (that impact health status); emphasising all levels of prevention, in particular primary prevention, promoting health and preventing problems before they occur; and directed at all levels of practice, often simultaneously (entire communities, a whole health system and/or individuals and families within populations known to be at risk) (Keller et al 2002, 2004).

Each of the interventions (surveillance, disease and health event investigation, outreach, screening, case-finding, referral and follow-up, case management, delegated functions, health teaching, counselling, consultation, collaboration, coalition building, community organising, advocacy, social marketing, policy development and enforcement) can be implemented at all three levels, with the exceptions of case finding, which occurs only at the individual level, and coalition building and community organising, which occurs only at the community and systems levels. Related interventions are grouped into 'wedges' and the sequencing reflects their relationship (Figure 38-7); surveillance is located at the top of the Wheel because it is where most public health work begins (Keller et al 2002, 2004).

The 17 interventions contribute to the overall goal of improving population health status at all three levels. Population-based practice aimed at individuals and families intends to change knowledge, attitudes, beliefs, practices, and the behaviours of individuals. However, interventions aimed at communities and systems can be a more effective and sustainable way of impacting population health (Keller et al 2002). At the community level, interventions can be aimed at all members or a specific group and success is measured in terms of changes

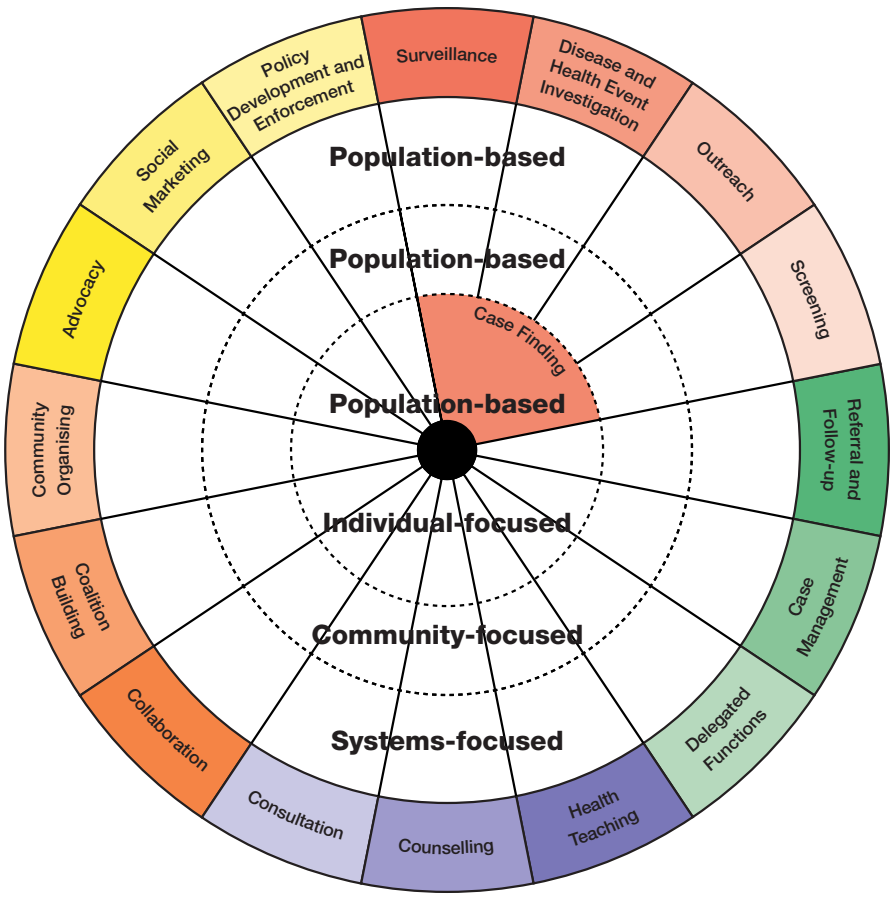


Figure 38-7 The Public Health Interventions Wheel.

Public Health Nursing Section: Public Health Interventions – Applications for Public Health Nursing Practice. St. Paul: Minnesota Department of Health, 2001.

in health status, community awareness, and community attitudes and behaviours.

• CRITICAL REFLECTION POINT

Thinking about primary healthcare nursing work, take an example of community-based care for older adults and consider each of the 17 public health interventions in turn. Can you identify a) the interventions that were being employed in your practice example? and b) the level at which the interventions were being used?

Cultural competence

As population mobility has increased the cultural diversity of populations worldwide, healthcare services have been more aware of the need to employ culturally competent staff (Omeri & Raymond 2009). Nurses work with people who hold a variety of beliefs about health, illness and treatment and who will also have different thresholds for seeking health care in older age (Chomik & MacLennan 2014b). Even though health outcomes research has been lacking in this respect, education for cultural competence in healthcare staff is expected to reduce health disparities and improve healthcare effectiveness (Callister 2005). From a Māori client's point of view, health care that has been designed to be culturally appropriate, affordable and accessible gains a high level of client satisfaction (Maniapoto & Gribben 2003). Cultural competence is vitally important in primary healthcare and has special meaning in New Zealand in light of the Treaty of Waitangi and health inequity for Māori.

Primary healthcare involves effective and meaningful relationships between clients/families and clinicians which are reliant on cultural competence. Clients judge the extent to which health care is culturally safe, based on individual experiences. Nurses are at the front-line of primary healthcare where cultural safety is pivotal to clients' experience of health care (Wilson & Grant 2008). The Treaty of Waitangi acknowledges the special status of Māori in New Zealand and is embedded into health law, whereby culturally safe care is required to be consistent with the principles of partnership, participation and protection. The application of partnership, participation and protection in health care requires the knowledge, skills and attitudes of cultural safety. Cultural safety denounces the uncritical aggregation of clients of similar cultures into groups with common values, customs, beliefs and behaviours (Carrillo et al 1999). Culturally safe nursing practice is informed by an analysis of the politics inherent in the systematic mechanisms of marginalisation, poverty and inequity for different community groups (Ramsden 2002).

Providing culturally safe health care is particularly relevant for the many individuals who access the Australian primary healthcare system, which services more than 200 different cultural and language health populations (ABS 2012), and for the growing number of international refugees living in Australia. This is an area requiring considerable improvement in the broad spectrum of Australian health services. Culturally competent nursing care is similarly essential in the care of older Indigenous Australians, given the unique needs and circumstances of the many hundreds of Indigenous nations, with their own languages, cultural mores and community structures. Developing nursing services that are attuned to local Indigenous circumstances and customs will demand more than simply enabling access to the full spectrum of health interventions; it requires nurses to work effectively with an expanded Indigenous workforce (Congress of Aboriginal and Torres Strait Islander Nurses (CATSIN) 2013). Culturally sensitive Indigenous nursing services require broad, health-affirming approaches which are attuned to the circumstances and priorities of each community, initiatives that support empowerment at individual, family and community levels, and the willingness of nurses to recognise and challenge underlying social disadvantage and injustice experienced by their Indigenous clients and families (Hunter 2007, Omeri & Raymond 2009).

• CRITICAL REFLECTION POINT

Work with a learning partner to consider what is meant by 'effective and meaningful relationships between client/families and clinicians that are reliant on cultural competence'.

1. **Who is the best judge of cultural competence?**
2. **How would a nurse know how culturally safe a client felt as a result of their healthcare experience?**

Nursing competencies for integrated care

Wolff and Boult (2005) have identified nine components that constitute a comprehensive system of community care service, one that is ideally suited to the community nurse role. This system includes: client and carer evaluation; individual care planning; evidence-based decision-making; consumer empowerment through joint decision-making; promotion of healthy lifestyles; coordination across multiple conditions, coordination across provider settings, carer support and education; and facilitating consumer access to health resources. In order to fulfil this comprehensive role, community nurses must arm themselves with the right sets of knowledge and skills.

Community nurses must be able to coordinate services at the micro level (nurses, other healthcare staff and client/carer), meso level (services and organisations) and macro level (healthcare system) (Davies et al 2006). Across these levels, the nurse must focus on processes to facilitate coordination (e.g. communication strategies, support for service providers and consumers) and focus on building structures for coordinating activities (e.g. shared information systems, referral proforma, care plans and decision support systems) (Rosenthal et al 2006). A proven strategy for improving client and carer outcomes involves strengthening the relationships between the community service, GP services and acute care services, and employing a shared client care plan and records tools to actively support coordination (Davies et al 2006).

As previously identified, the community nurse must recognise the broader context of health from one that focuses on the biological cause of illness, to one that enables the older person and their family/support networks to become actively involved in a range of health maintenance processes. This requires the nurse to have excellent assessment skills and a high capacity for communicating knowledge across the healthcare continuum. This will be especially important when needing to negotiate competing value systems in the provision of professional, equitable and ethical care to members of different generations, multiple cultures and broadly ranging socioeconomic backgrounds (CATSIN 2013, National Ageing Research Institute 2006).

Having a good knowledge of the available range of community-based services and developing effective partnerships with healthcare consumers and service providers is required for a number of key community nursing roles. These roles include: referral procedures; brokering services for older persons and carers; providing short- and long-term case management; and working with the older person and their carer to develop care plans aimed at self-management. Partner services will include mental health, ageing, palliative and disability services; continence, wound and stoma care services; drug, alcohol and sexual health services; carer respite and community support services; and specialist treatment services (Kralik & van Loon 2011).

In order to provide safe and effective care, the community nurse requires a good working knowledge of the unique healthcare changes experienced by the older person and the impact of these on the person's physical, psychological and social functioning. In the first instance the nurse must learn to recognise and pay attention to the key features of altered clinical presentation that can occur in the older person, such as the disease, multiple pathology, frailty, geriatric syndromes and cascading responses to physical, social or emotional factors that can lead to severe illness or even death (National Ageing Research Institute 2006). Common, potentially serious and debilitating conditions in older age, such as delirium, falls, pain, urinary incontinence and constipation, low body mass index and sensory impairment are examples of geriatric syndromes that lead to poor outcomes (Tolson et al 2011). These syndromes are indicative of a change in health status, but frequently do not represent the specific disease condition/s causing that change.

For this reason the community nurse requires an advanced knowledge to identify the 'atypical' signs of illness that are complicated by multiple pathology in the older person and even conditions that are relatively minor but debilitating, such as painful feet. Unless the community nurse pays attention to these early signs of illness, they can have a cumulative effect on the older person's overall condition, to the extent that the person can rapidly lose functional and cognitive capacity (Edvardsson & Nay 2009). As well, the community nurse must acknowledge that for each separate condition the older person might be prescribed different medicines. The resulting polypharmacy can lead to toxic drug reactions and interactions, which can lead to further loss of functional and cognitive capacity (Tolson et al 2011).

The Hartford Institute for Geriatric Nursing website offers many educational resources to assist nurses in developing a strengths-based plan of care for older people with complex health issues (Brown-O'Hara 2013). Evidence-based care protocols have been developed by Care Excellence for Seniors (ACES) in partnership with the National League for Nursing (NLN) and the Community College of Philadelphia with funding from the John A. Hartford Foundation, Laerdal Medical, and the Independence Foundation, USA. The website introduces ACES as essential nursing actions to improve quality of life for older adults, coordinate care, decrease caregiver stress, and promote shared decision-making (see *Online resources*).

Given the complex factors involved in chronic illness prevention, assessment and management, the community nurse has a major role to play in assessing the health risks of their older clients, helping them to develop self-efficacy (confidence) for self-management (Chenoweth et al 2015), while supporting the older person's dignity, autonomy and quality of life. This can be facilitated by providing education and supervision in self-management support and treatments, helping the person to set self-care goals and helping them to gain support from others with similar chronic illnesses through links to support and self-help groups (Wertenberger et al 2006).

In this respect the community nurse must provide strong leadership in pursuing a strengths-based approach to their practice, where the emphasis is on fostering confidence in self-management; building trust and positive relationships between the person, their support network and the nurse; facilitating the older person's and their carer's access to relevant services; and using evidence to inform the health consumer, rather than to control them (WHO 2010a, 2010b). The leadership qualities of an effective community nurse cover four main domains: personal values and character traits; responses and actions befitting a respected leader; high-level tacit and applied knowledge; and client-/colleague-centred professional behaviour (Kralik & van Loon 2011). Such leadership qualities are values-based, visionary, creative and inspiring (Stanley 2006).

• CRITICAL REFLECTION POINT

Discuss with a learning partner what you would consider to be positive indicators of these four domains of nursing leadership:

- **personal values and character traits**
- **responses and actions befitting a respected leader**
- **high-level tacit and applied knowledge**
- **client-/colleague-centred professional behaviour.**

Quality community nursing services for older people

Challenges for community nurses

The challenge for community nurses is how to support positive healthcare outcomes for older people within a resource-pressured healthcare system. Community nurses need to reconceptualise the way they provide care for older people who generally have one or more chronic illnesses and/or a geriatric syndrome, with high health service needs and expectations. As previously identified, policies aimed at shorter hospital episodes of care, including an increasing number of day-surgery procedures, means that at discharge older people require greater and more-complex care from community nurses (AIHW 2011c). In addition, some treatment and nursing care that has traditionally been provided in a hospital setting for people with a chronic illness is increasingly being provided in the community (e.g. dialysis and chemotherapy). Other factors over the last two decades, such as changes to mental health services, have increased the demand on community nursing services to support people with complex health needs (WHO 2010a).

Growing knowledge of what constitutes best-practice care, at both the consumer and the healthcare provider level, combined with new technologies that can change the way services are provided, have meant that expectations regarding health and the healthcare system have risen. Consumer demand is having more impact than ever on the community healthcare sector (AIHW 2011a, Ministry of Health 2004). Australian and New Zealand governments are grappling with how best to address these growing consumer needs and demands.

Given the projected health expenditure trends associated with population ageing, an important goal for healthcare reform in both countries is the long-term financial sustainability of a comprehensive primary healthcare system. One noticeable impact on community healthcare services is the ageing of the healthcare workforce, including nurses, and an exponential rise in retirement numbers in recent years. The average age of people employed in healthcare occupations in 2012 was 45 years, three years older than other people in the workforce (ABS 2012). Combined with rising consumer need and expectations, the loss of experienced nurses from the workforce leads to growing pressure on existing services, and leaves more healthcare consumers with gaps in care.

Older people with one or more chronic illnesses can miss out on necessary community care in a complex and fragmented healthcare system where access depends on the availability of services, the geographical location of suitable services and an individual's level of health insurance cover and ability to pay for services (Commonwealth of Australia 2009, Ministry of Health 2003). In some respects, fragmentation in health service provision occurs because of the variety of funding mechanisms and lack of integration, coordination and collaboration between different healthcare systems, including community nursing and acute care nursing services (Grealish et al 2013). As well, the traditional organisation of community-based health care, which separates general practice medical care and more-specialised health services, does not always meet healthcare consumer needs (Gray et al 2012).

Diabetes, for example, has been identified as a typical condition that requires the services of a wide range of healthcare practitioners, such as GPs, nurses, diabetes educators and specialist health staff such as podiatrists, endocrinologists, dietitians, nephrologists, neurologists, pharmacists and cardiologists (Lorig et al 2001). All these services are needed to ensure the best possible health outcomes for the person with diabetes; however, the person may not have access to all these services, especially in rural and remote areas, and health service providers may not be aware of the scope and range of services the person is accessing (AIHW 2011c).

Similarly, effective support for people living with dementia must include a range of community-based services: health care; family counselling and education; home support; respite care; and specialist services. This need is highlighted in people with younger-onset dementia, which occurs in an estimated 16,000 people under the age of 65 years, approximately 6.2% of the total population with dementia (Alzheimer's Australia 2011). Children of people with younger-onset dementia may be at greater risk as the family tries to cope with the condition, and relationships come under stress. Community-based support, education, respite and psychological services, therefore, need to be available for children and teenagers to help them cope with the effect of dementia on their parent (Alzheimer's Australia 2011).

The weaknesses of the current primary healthcare system affect not only older healthcare consumers through delays in care assessments and subsequent limits on the number of care packages and community nursing services available to them, but also on the work of community nurses, especially during times of staff shortages (Grealish et al 2013, National Health and Hospitals Reform Commission 2009).

Overcoming community nursing challenges

In Australia and New Zealand a number of strategies have been implemented to increase the quality of community health services, including using the healthcare workforce more effectively and broadening the current roles and responsibilities of this workforce (Finlayson et al 2009, Nepal et al 2011). Increasing the roles and responsibilities of the community nurse workforce, such as through NPs and practice nurses, provides opportunities for new models of care and collaborative partnerships (Australian Nursing Federation 2009). Improved collaboration among nurses and other healthcare professionals has required a reduction/eradication of some structural barriers, such as legislating for NP-authorised medicines and repeat prescriptions. This strategy has freed up resources, enabling more effective service delivery within the community sector. As well, community nurses have been employed in alternative primary healthcare service delivery models for older people with chronic illnesses, such as 'hub and spoke' arrangements and the 'Healthdirect' inbound/outbound call centre networks in Australia (Commonwealth of Australia 2009) and Care Plus in New Zealand (Ministry of Health 2004).

To address some of the health challenges associated with the ageing population, increasing numbers of people with chronic illnesses and reduced numbers of skilled healthcare workers, the 2010 report *Primary health care (now more than ever)* (WHO 2010a) calls for a return to primary healthcare to help align healthcare systems to deliver better performance, efficiency and equity. The report found that where countries at the same level of economic development were compared, those that were organised around the tenets of primary healthcare produced a higher level of population health for the same investment, in light of the growing burden of disease associated with chronic illness. Well-coordinated primary healthcare systems are also more efficient, have lower rates of hospitalisation and reduced lengths of hospital stay, fewer health inequalities and better health outcomes, including lower mortality, than those that do not, especially for managing chronic illness care (Gray et al 2012, WHO 2010b). Increasingly, there is also recognition that strengthening and improving the way in which community health care is provided is vital in determining how well the healthcare system responds to current and emerging pressures (Frenk 2011, Meltzer et al 2010, WHO 2010a).

However, increasing the level and scope of community-based health services will require a shift in current healthcare workforce allocations and reorientation of staff towards primary healthcare. The primary healthcare model will require greater partnerships between community nurses, healthcare consumers and other community-based services to manage the risks, symptoms and impacts of chronic disease, rather than focusing mainly on treatment of chronic conditions (Garside & Nhemachena 2013, Swerissen & Taylor 2008, WHO 2010b).

Summary

This chapter has emphasised that health care for older people is one of the major challenges facing nursing and other healthcare services now, and will be even greater in the future. The changes we can expect in the older population profiles of Australia and New Zealand over the next few decades will place health care for older people centre-stage, not only for healthcare funders and service providers, but also for community-based nursing services. Operating from a strengths-based approach to nursing care will require innovative, high-quality support and collaboration with the healthcare team and a range of support agencies, so that older people are able to exercise lifestyle choices that best suit their needs. Nursing roles and competencies that best support community-based care and older person health have been presented for critique, and learning exercises have been included throughout to develop critical thinking. The various knowledge bases and competencies required for nursing in the community were explored and have revealed both the rewards and the

challenges of this work. Primary healthcare, community-based nursing and the health care of older people are areas of specialty practice that have steadily grown in scope and are well recognised for the opportunities they offer for nurses to make a real contribution to health gains for what is becoming an even larger proportion of the population.

Key concepts

- Primary healthcare refers to healthcare services that are provided outside the hospital. Modern-day primary healthcare has its origins in the global primary healthcare strategy conceived by nations attending the WHO conference at Alma-Ata in South Eastern Russia in 1978, where they collectively called for 'Health for all by the year 2000' and vowed to embrace the principles of the Declaration of Alma-Ata: health as a basic human right; inequity as politically, socially and economically unacceptable; and health as a reflection of the social and economic conditions affecting people's lives.
- The health–illness continuum illustrates the process of change, in which individuals experience various states of health and illness (ranging from extremely good health to death) that fluctuate day to day and throughout their lives.
- Health equity is the absence of differences in health between groups with differential exposure to those social and economic policies and practices that create barriers to opportunity.
- The social determinants of health are the conditions in which people are born, grow, live, work and age, and receive services, including healthcare systems. Conditions across these domains are shaped by the distribution of money, power and resources, which are influenced by global, national and local policies. The social determinants of health are mostly responsible for health inequities – the unfair and avoidable differences in health status.
- Older person health refers to the relationship between increasing age and long-term health conditions, higher rates of disability and poorer reported health status. Population ageing, and the health of older people, is likely to have impacts on the overall health status of Australian and New Zealand communities.
- The role of local, state and national government agencies is to deliver programs and services that build the health and wellbeing of our community.
- Community-based nursing takes place where the clients live, work and play. It may be a school, work site or home; no matter where it is, however, the nursing care provided is individualised to suit the client and their family, and has a population health focus.

Online resources

Aged Care Financial Authority 2014 Report on the Funding and Financing of the Aged Care Industry. Canberra: Australian Government Department of Social Services, www.dss.gov.au/sites/default/files/documents/08_2014/2014_report_on_the_funding_and_financing_of_the_aged_care_industry_0.pdf

Australian Bureau of Statistics: Statistics from 2012 – summary of findings for disability, ageing and carers, www.abs.gov.au/ausstats/abs@.nsf/mf/4430.0\

Australian Department of Human Services: Incentive programs to promote quality aged care, http://www.humanservices.gov.au/health-professionals/professions/aged-care-providers

Australian Government Department of Health and Ageing 2013 Regional distribution of aged care places across Australia, 2012–13 Aged Care Approvals Round – Essential Guide. DoHA, Canberra, www.dss.gov.au/sites/default/files/documents/05_2014/section7_regionaldistributionagedcareplaces_2.pdf

Australian Indigenous HealthNetInfo – links to reports and other information concerning indigenous health, including mortality and life expectancy data, http://healthbulletin.org.au/articles/mortality-and-life-expectancy-of-indigenous-australians-2008-to-2012/

Health Promotion Forum of New Zealand: shares health promotion expertise and best practice to advance socio-economic wellbeing and other outcomes at all levels, www.hauora.co.nz/tools.html

Health Statistics New Zealand: provides a range of health statistics concerning the New Zealand population, www.stats.govt.nz/browse_for_stats.aspx

National Aboriginal Community Controlled Health Organisation: highlights the range of programs and other initiatives seeking to improve the health and wellbeing of Aboriginal communities, www.naccho.org.au

National League of Nursing, www.nln.org/ACES

New Zealand Ministry of Health: provides information about the work of the Ministry's Health of older people team, http://www.health.govt.nz/our-work/life-stages/health-older-people

New Zealand Office for Disabilities: provides dedicated policy support to the Minister for Disability Issues and to be the focal point in government on disability issues, www.odi.govt.nz

World Health Organization (WHO): definitions of 'older' or 'elderly persons' and a range of information concerning related global healthcare issues, www.who.int/healthinfo/sage/en/

World Health Organization (WHO): international health topics including ageing populations and primary healthcare, www.who.int/ageing/publications/upcoming_publications/en/

References

*Many of the reports cited below are available online – search the site of the relevant organisation

Access Economics 2010 Caring places: planning for aged care and dementia 2010–2050. Aged Community Services, Canberra, and Alzheimer's Australia, New South Wales.

Aged Care Financial Authority 2014 Report on the Funding and Financing of the Aged Care Industry. Australian Government Department of Social Services, Canberra. www.dss.gov.au/sites/default/files/documents/08_2014/2014_report_on_the_funding_and_financing_of_the_aged_care_industry_0.pdf

Aged Rights Advocacy Service (ARAS) 2013 Accessing the Aged Rights Advocacy Service to prevent elder abuse. ARAS, NSW.

Alzheimer's Australia 2011 Dementia: facing the epidemic. 2010–11 Federal budget submission to the Australian Government. Alzheimer's Australia, Canberra.

Anderson M et al 2006 Measuring the health of Aboriginal and Torres Strait Islander peoples. A background paper for the project 'Action-oriented indicators of health and health systems development for Indigenous peoples in Australia, Canada and New Zealand'. Onemda VicHealth Koori Health Unit, Melbourne.

Australian Bureau of Statistics (ABS) 2013a Where do Australia's older people live? Online. Available: www.abs.gov.au/ausstats/abs@.nsf/Lookup/2071.0main+features602012-201; accessed 8 May 2015.

Australian Bureau of Statistics (ABS) 2013b Disability, ageing and carers, Australia: summary of findings 2012. ABS, Canberra. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/mf/4430.0\; accessed 22 May 2015.

Australian Bureau of Statistics 2012 Census quickStats: all people – usual residents. Online. Available: www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/0; accessed 1 June 2015.

Australian Bureau of Statistics (ABS) 2011 Family characteristics survey 2009–2010, Cat. no. 4442.0. ABS, Canberra. Online. Available: www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/4442.0Main%20Features22009-10?opendocument&tabname=Summary&prodno=4442.0&issue=2009-10&num=&view=; accessed 25 Feb 2015.

Australian Indigenous Health Bulletin 2014 Mortality and life expectancy data of indigenous Australians 2008–2012. HealthinfoNet, Edith Cowan University. Online. Available: http://healthbulletin.org.au/articles/mortality-and-life-expectancy-of-indigenous-australians-2008-to-2012/; accessed 2 June 2015.

Australian Institute of Health and Welfare (AIHW) 2014 Australia's health 2014. Australia's health series no. 14 Cat. no. AUS 178. AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2013 The desire to age in place among older Australians. Bulletin no. 114. Cat. no. AUS 169. AIHW, Canberra. Online. Available: www.aihw.gov.au/publication-detail/?id=60129543093; accessed 2 Feb 2015.

Australian Institute of Health and Welfare (AIHW) 2012a Australia's health 2012. Australia's health series no. 13. Cat. no. AUS 156 AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2012b Risk factors contributing to chronic disease. Cat. no. PHE 157. AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2011a Pathways in aged care: program use after assessment. Data linkage series no. 10, Cat. no. CSI 10. AIHW, Canberra. Online. Available: www.aihw.gov.au/publication-detail/?id=6442475608; accessed 1 June 2015.

Australian Institute of Health and Welfare (AIHW) 2011b Aboriginal and Torres Strait Islander health services report 2009–10: OATSIH services reporting – key results. AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2011c Pathways in aged care: do people follow recommendations? Bulletin no. 88. Cat. no. AUS 137. AIHW, Canberra. Online. Available: www.aihw.gov.au/search/?q=pathways+in+aged+care; accessed 22 May 2015.

Australian Institute of Health and Welfare (AIHW) 2010 Australia's health 2010. AIHW, Canberra. Online. Available: www.aihw.gov.au/publication-detail/?id=6442468376&tab=2; accessed 23 June 2013.

Australian Nursing Federation 2009 Primary health care in Australia – a nursing and midwifery consensus view. Online. Available: http://anmf.org.au/documents/reports/PHC_Australia.pdf; accessed 12 June 2015.

Australian Treasury 2010 Intergenerational Report, Canberra, Commonwealth of Australia. Online. Available: http://archive.treasury.gov.au/igr/igr2010/report/pdf/IGR_2010.pdf; accessed 22 May 2015.

Beer A, Faulkner D 2009 21st century housing careers and Australia's housing future. AHURI Final Report No. 128. Australian Housing and Urban Research Institute, Melbourne.

Beland F et al 2006a A system of integrated care for older persons with disabilities in Canada: Results from a randomized controlled trial. Journals of Gerontology Series. Biological Sciences and Medical Sciences 61(4):367–73.

Beland F et al 2006b Integrated Services for Frail Elders (SIPA): A trial of a model for Canada. Canadian Journal on Aging/La Revue Canadienne du Vieillissement 25(1):25–42.

Bernoth M, Dietsch E, Davies C 2012 Forced into exile: The traumatising impact of rural aged care service inaccessibility. Rural and Remote Health 12:1924.

Bigbee JL, Issel LM 2012 Conceptual models for population-focused public health nursing interventions and outcomes: The state of the art. Public Health Nursing 29(4):370–9.

Boaden R et al 2006 Evaluation of Evercare: executive summary. Manchester, National Primary Care Research and Development Centre. Online. Available: www.population-health.manchester.ac.uk/primarycare/npcrdc-archive/archive/PublicationDetail.cfm/ID/171.htm; accessed 12 June 2015.

Bodenheimer T et al 2002a Improving primary care for patients with chronic illness. JAMA 288(14):1775–9.

Bodenheimer T et al 2002b Improving primary care for patients with chronic illness: the chronic care model, part 2. JAMA 288(15):1909–14.

Brown-O'Hara T 2013 Geriatric syndromes and their implications for nursing. Nursing 43(1):1–3.

Brunner EJ et al 2014 Depressive disorder, coronary heart disease, and stroke: dose-response and reverse causation effects in the Whitehall 11 Cohort Sudy. Eur J Prev Cardiol 21(3): DOI10.1177/2047487314520785. Epub Feb 3 2014.

Bushardt RL et al 2008 Polypharmacy: Misleading but manageable. Journal of Clinical Interventions in Aging 3(2):383–9.

Callister LC 2005 What has the literature taught us about culturally competent care of women and children? MCN 30(6):380–8.

Carrillo J et al 1999 Cross-cultural primary care: a patient-based approach. Ann Intern Med 130:829–34.

Chenoweth L et al 2015 Coaching in self-efficacy improves care responses, health and well-being in dementia carers: a pre/post-test/follow-up study BMC Health Services Research, Accepted for publication 15 May 2015.

Chomik R, MacLennan M 2014a Aged Care in Australia: Part I – Policy, demand and funding. CEPAR Research Brief 2014/1. Available: www.cepar.edu.au/research-briefs.aspx; accessed 6 June 2015.

Chomik R, MacLennan M 2014b Aged Care in Australia: Part II – Industry and Practice. CEPAR Research Brief 2014/2. Online. Available: www.cepar.edu.au/research-briefs.aspx; accessed 2 Sept 2014.

Collins L 2014 Elder abuse and neglect prevention. In Deifsfile K, McIntosh I (eds) Elder law in New Zealand, Thomson Reuters, Wellington.

Commonwealth of Australia 2009 Primary health care reform in Australia, report to support Australia's first national primary

health care strategy. Commonwealth of Australia, Canberra. Online. Available: http://apo.org.au/files/Resource/NPHC-supp.pdf; accessed 22 May 2015.

Coney S 2004 Effective consumer voice and participation for New Zealand: a systematic review of the evidence. New Zealand Guidelines Group, Wellington. Online. Available: www.health.govt.nz/publication/effective-consumer-voice-and-participation-new-zealand-systematic-review-evidence; accessed 12 June 2015.

Congress of Aboriginal and Torres Strait Islander Nurses 2013 Towards a shared understanding of terms and concepts: strengthening nursing and midwifery care of Aboriginal and Torres Strait Islander peoples/Congress of Aboriginal and Torres Strait Islander Nurses. CATSIN, Canberra. Online. Available: www.anmac.org.au/sites/default/files/documents/Definitive%20CATSIN%20Paper%20-%20Towards%20a%20shared%20understanding%20of%20terms%20and%20concepts..pdf; accessed 22 May 2015.

Coster G, Gribben B 1999 Primary care models for delivering population based health outcomes. National Health Committee, Wellington.

Council of Australian Governments (COAG) 2011 National Health Reform Agreement. Online. Available: www.federalfinancialrelations.gov.au/content/Content.aspx?doc=related_agreements.htm; accessed 3 Feb 2015.

Crisp DA et al 2013a Considering relocation to a retirement village: Predictors from a community sample. Australasian Journal on Ageing 32(2):97–102.

Crisp DA et al 2013b What are older adults seeking? Factors encouraging or discouraging retirement village living. Australasian Journal on Ageing 32(3):163–70.

Cypress M 2004 Looking upstream. Diabetes Spectr 17(4):249–53.

Daley et al 2014 Budget pressures on Australian governments, 2014 edition, Grattan Institute. Online. Available: http://grattan.edu.au/wp-content/uploads/2014/05/813-budget-presures-supporting-analysis.pdf; accessed 7 Jan 2016.

Davey J 2006 Ageing in place: the views of older homeowners on maintenance, renovation and adaptation. Social Policy Journal of New Zealand 27(27):128–9.

Davidson S et al 2001 Cardiovascular risk factors for people with mental illness. Aust N Z J Psychiatry 35(2):196–202.

Davies G et al 2006 Coordination of care within primary health care and with other sectors: a systematic review. Australian Primary Health Care Research Institute, NSW.

de Bruin SR et al 2012 Comprehensive care programs for patients with multiple chronic conditions: a systematic literature review. Health Policy 107(2–3):108–45.

Department of Health and Ageing (DoHA) 2014 Aged care approvals rounds. DoHA, Canberra. Online. Available: www.dss.gov.au/our-responsibilities/ageing-and-aged-care/aged-care-funding/aged-care-approvals-round-acar/2014-aged-care-approvals-round-acar; accessed 10 June 2015.

Department of Health and Ageing (DoHA) 2012 Living longer. Living better. Aged Care Reform Package April 2012. DoHA, Canberra. 3 Feb 2015.

Department of Health and Ageing (DoHA) 2011 Consumer directed care (CDC) in Australian government packaged care programs. DoHA, Canberra. Online. Available: www.dss.gov.au/sites/default/files/documents/11_2014/gap-012-2010-2011-information-on-consumer-directed-care-packages.pdf; accessed 10 June 2015.

Department of Social Services (DSS) 2014a Key directions for the Commonwealth Home Support Program, discussion paper. Online. Available: www.dss.gov.au/our-responsibilities/ageingand-aged-care/aged-care-reform/whats-new/commonwealth-home-supportprogramme/; accessed 3 Feb 2015.

Department of Social Services (DSS) 2014b Aged Care Reform. Online. Available: www.dss.gov.au/our-responsibilities/ageing-and-aged-care/aged-care-reformdiscussion-paper-key-directions-for-the-commonwealth-home-supportprogramme; accessed 03 Feb 2015.

Department of Social Services (DSS) 2014c Aged care subsidies and supplements new rates of payment from 20 March 2014. Online. Available: www.health.gov.au/internet/main/publishing.nsf/Content/8E99BD4D4FF74D7DCA257BF0001CAD79/$File/Published%20Rates%20from%2020%20March%2014.pdf; accessed 03 Feb 2015.

Department of Social Services (DSS) 2013 2012–13 Report on the operation of the Aged Care Act 1997. Online. Available: www.health.gov.au/internet/main/publishing.nsf/Content/ageing-reports-acarep-2013.htm; accessed 25 Nov 2014.

Durie M 2013 Whanau Ora Fact sheet Hakihea/December, Whānau Ora Governance Group.Online. Available: www.tpk.govt.nz/_documents/wo-factsheetdec2013.pdf; accessed 5 April 2015.

Ellis I et al 2010 Cultural awareness: nurses working with indigenous Australian people, 3rd edn. In: Daly J et al (eds) Contexts of nursing. Churchill Livingstone, Sydney.

Edvardsson D, Nay R 2009 Acute care and older people: challenges and way forward. Australian Journal of Advanced Nursing 27(2):63–9.

Family Medicine Research Centre 2010 General practice activity in Australia 2009–10: the BEACH project, bettering the evaluation and care of health. AIHW, Canberra.

Finlayson M et al 2009 Evaluation of the implementation and intermediate outcomes of the Primary Health Care Strategy. Second report: nursing developments in primary health care 2001–2007. Health Services Research Centre, Wellington.

Finlayson M et al 2008 Evaluation of the Primary Health Care Strategy: developments in nursing 2001–2007. Ministry of Health, Wellington.

Frenk J 2011 Health Professionals for a New Century: transforming education to strengthen health systems in an interdependent world. The Lancet 376(9756).

Garside JR, Nhemachena JZ 2013 Concept analysis of competence and its transition in nursing. Nurse Education Today 33:541–5.

Glasgow RE et al 2001 Does the chronic care model serve also as a template for improving prevention? Milbank Q 79(4):579–612.

Gray LC et al 2012 How effective are programs at managing transition from hospital to home? A case study of the Australian transition care program. BMC Geriatrics, Open Access 12:6.

Grealish L et al 2013 The interaction between hospital and community based services for people with dementia and their carers. Alzheimer's Australia NSW, Sydney, NSW. Online. Available: https://nsw.fightdementia.org.au/sites/default/files/20131211-NSW-REP-CommunityInteraction.pdf; accessed 2 May 2015.

Griffiths P 2008 Metrics for nursing. Nurs Manag 15:10–11.

Heath H, Phair L 2009 The concept of frailty and its significance in the consequences of care or neglect for older people: an analysis. Int J Older People Nurs 4:120–31.

Hébert R et al 2009 Impact of PRISMA, a coordination-type integrated service delivery system for frail older people in

Quebec (Canada): a quasi-experimental study. Journal of Gerontology: Social Sciences 65B(1):107–18.

Hunter E 2007 Disadvantage and discontent: a review of issues relevant to the mental health of rural and remote Australians. Aust J Rural Health 15(2):88–93.

Johnston G, Teasdale A 1999 Population ageing and health spending: 50-year projections, Occasional Paper No 2. Ministry of Health, Wellington.

Karmel R et al 2012 Care trajectories through community and residential care services: disease effects. Aging and Society. E-published Doi.10.1017/S0144686X11001231

Keller L et al 2004 Population-based public health interventions: practice-based and evidence-supported, Part 1. Public Health Nurs 21(5):453–68.

Keller L et al 2002 Assessment, program planning, and evaluation in population-based public health practice. J Public Health Manag Pract 8(5):30–43.

King A, Turia T 2002 He Korowai Oranga: Māori Health Strategy. Ministry of Health, Wellington.

King D et al 2012 The aged care workforce. Commonwealth Government, Canberra. Online. Available: www.dss.gov.au/sites/default/files/.../rdp004-nacwcas-report.docx

Kleffel D 1991 Rethinking the environment as a domain of nursing knowledge. Adv Nurs Sci 14(1):40–51.

Kralik D, van Loon A (eds) 2011 Community nursing in Australia, 2nd edn. John Wiley & Sons, Brisbane.

Leutz WN 1999 Five laws for integrating medical and social services: lessons from the United States and the United Kingdom. Milbank Q 77(1):77–110.

Lorig KR et al 2001 Effect of a self-management program on patients with chronic disease. Eff Clin Pract 4(6):256–62.

Maniapoto T, Gribben B 2003 Establishing a Māori case management clinic. NZ Med J 116(1169):328.

Marmot M, Allen J 2014 Social determinants of health equity [Editorial]. American Journal of Public Health, 104, S517–S519. doi:10.2105/AJPH.2014.302200

McDonald A et al 2015 Validating the 'Intervention Wheel' in the context of Irish public health nursing. British Journal of Community Nursing 20(3):140–5.

McKillop A et al 2012 Practice guidelines need to address the 'how' and the 'what' of implementation. Prim Health Care Res Dev 13(1):48–59.

McKillop A et al 2011 Barriers and enablers to implementation of a New Zealand-wide guideline for assessment and management of cardiovascular risk in primary health care: a template analysis. Worldviews Evid Based Nurs DOI: 10.1111/j.1741-6787.2011.00233.x.

McKinlay J, Marceau L 2000 US public health and the 21st century: diabetes mellitus. The Lancet 356(9231):757–61.

McQueen KM et al 2001 What is community? An evidence-based definition for participatory public health. Am J Pub Health 91(12):1929–38.

Mello JD et al 2015 Evaluations of home care interventions for frail older persons using the interRAI Home Care Instrument: A systematic review of the literature. Journal of the American Medical Directors Association 16(2): 173 e171–173 e110.

Meltzer D et al 2010 Exploring the use of social network methods in designing healthcare quality improvement teams. Soc Sci Med 71(6):1119–30.

Minister for Disability Issues 2001 The New Zealand disability strategy: making a world of difference, Whakanui oranga. Ministry of Health, Wellington. Online. Available: www.odi.govt.nz/nzds; accessed 12 June 2015.

Ministry of Health 2004 Care Plus: an overview. Ministry of Health, Wellington. Online. Available: www.health.govt.nz/publication/care-plus-overview; accessed 12 June 2015.

Ministry of Health 2003 Investing in health: whakatohutia te oranga tangata. Ministry of Health, Wellington.

Ministry of Health 2001 The Primary Health Care Strategy. Ministry of Health, Wellington. Online. Available: www.health.govt.nz/publication/primary-health-care-strategy; accessed 12 June 2015.

Ministry of Health 2000 The New Zealand health strategy. Ministry of Health, Wellington. Online. Available: www.health.govt.nz/publication/new-zealand-health-strategy; accessed 12 June 2015.

Ministry of Social Development 2013 Older New Zealanders: Healthy, independent, connected and respected. Online. Available: www.msd.govt.nz/oldernewzealanders; accessed 28 April 2015.

Ministry of Social Development 2001 The New Zealand Positive Ageing Strategy. Ministry of Social Development, Wellington. Online. Available: www.msd.govt.nz/what-we-can-do/seniorcitizens/positive-ageing/strategy/index.html; accessed 12 June 2015.

Minnesota Department of Health 2001 Public Health Interventions. Applications for Public Health Nursing Practice. The Wheel Manual. Department of Health, Division of Community Health Services, Public Health Nursing Section, Minnesota, USA. Online. Available: www.health.state.mn.us/divs/opi/cd/phn/docs/0301wheel_manual.pdf; accessed 15 June 2015.

National Aboriginal Community Controlled Health Organisation (NACCHO) 2011 Aboriginal and Torres Strait Islander outreach worker workshop report June 2011. Online. Available: www.healthinfonet.ecu.edu.au/key-resources/bibliography/?lid=22750; accessed 15 June 2015.

National Ageing Research Institute 2006 What is person-centred care? A literature review. Victorian Government Department of Human Services, Melbourne.

National Health and Hospitals Reform Commission 2009 A healthier future for all Australians – final report of the National Health and Hospitals Reform Commission. Commonwealth of Australia, Canberra. Online. Available: www.yourhealth.gov.au/internet/yourhealth/publishing.nsf/Content/nhhrc-report; accessed 27 July 2009.

National Health Priority Action Council 2005 National Chronic Disease Strategy. Department of Health and Ageing, Canberra. Online. Available: www.health.gov.au/internet/main/publishing.nsf/Content/66EC52273873D375CA257BF0001F3FED/$File/stratal3.pdf; accessed 22 May 2015.

Nepal B et al 2011 Projecting the need for formal and informal aged care in Australia: A dynamic microsimulation approach. NATSEM Working Paper 11/07. Online. Available: www.natsem.canberra.edu.au/publications/?publication=projecting-the-need-forformal-and-informal-aged-care-in-australia-a-dynamic-microsimulation-approach; accessed 5 March 2015.

New Zealand Treasury (2013) Health Projections and Policy Options for the 2013 Long-term Fiscal Statement. New Zealand Government. Available: www.treasury.govt.nz/government/longterm/externalpanel/pdfs/ltfep-s4-01.pdf; accessed 12 June 2015.

Organisation for Economic Cooperation and Development (OECD) 2015 Australia: Economic policy reforms 2015.Going for growth. OECD Publishing.

O'Keeffe D 2014 NSW takes the lead with connected healthcare. Australian Ageing Agenda. Online. Available: www.australianageingagenda.com.au/2014/03/20/nsw-takes-lead-connected-healthcare/; accessed 2 Feb 2015.

Omeri A Raymond L 2009 Diversity in the context of multicultural Australia: Implications for nursing practice. In J Daly, S Speedy, D Jackson (eds) Contexts of nursing: An introduction, Ch. 19, 3rd edn. Elsevier, Churchill Livingstone, Sydney.

Parsons M et al 2012 Should care managers for older adults be located in primary care? A Randomized Controlled Trial. Journal of the American Geriatrics Society 60(1):86–92.

Peri K et al 2008 Elder abuse and neglect: exploration of risk and protective factors, Research Report 1/08. The Families Commission, Wellington.

Plouffe L Kalache A 2010 Towards global age-friendly cities: Determining urban features that promote active aging. Journal of Urban Health 87(5):733–9.

Primary Health Care Advisory Council (PHCAC) 2009 Discussion paper: service models to meet the aims of the primary health care strategy and deliver better, sooner, more convenient primary health care. Ministry of Health, Wellington. Online. Available: www.health.govt.nz/our-work/primary-health-care; accessed 22 May 2015.

Primary Health Care Nursing Expert Advisory Group 2008 Position statement. Ministry of Health, Wellington.

Productivity Commission 2012 Report on government services 2010. Productivity Commission, Canberra.

Productivity Commission 2011 Caring for Older Australians report. Productivity Commission, Canberra. Online. Available: www.pc.gov.au/inquiries/completed/aged-care/report/aged-care-overview-booklet.pdf; accessed 22 May 2015.

Ramsden I 2002 Cultural safety and nursing education in Aotearoa and Te Waipounamu, PhD thesis. Victoria University of Wellington, Wellington.

Rosenthal MB et al 2006 Pay for performance in commercial HMOs. N Engl J Med 355(18):1895–902.

Salmond G 2008 The legacy of Alma-Ata: thirty years on. NZ Fam Physician 35(5):299–300.

Scherrer JF et al 2010 Anxiety disorders increase risk for incident myocardial infarction in depressed and non-depressed Veterans Administration patients. Am Heart J 159(5):772–9.

Sharpe N 2006 Heart health has an adverse future forecast in New Zealand: an alarm call to action across the continuum. N Z Med J 119(1232):U1936.

Sharpe N, O'Sullivan L 2006 Turning the tide of inequalities in heart health. N Z Med J 119(1238):U2085.

Sheridan NF 2005 Mapping a new future: primary health care nursing in New Zealand, PhD thesis. University of Auckland, Auckland.

Sheridan, N et al 2009 Position statement: Primary Health Care Nursing. Journal of Primary Health Care 1 (2):95–7.

Singer SJ, Burgers J, Friedberg M et al 2011 Defining and measuring integrated patient care: Promoting the next frontier in health care delivery. Medical Care Research and Review 68(1):112–27.

Slade, T et al 2009 The Mental Health of Australians 2. Report on the 2007 National Survey of Mental Health and Wellbeing. Department of Health and Ageing, Canberra.

Stanley D 2006 In command of care: clinical nurse leadership explored. J Res Nurs 11(1):20–9.

Statistics New Zealand 2014 National population projections 2009 (base)–2068. Statistics New Zealand, Wellington. Online. Available: www.stats.govt.nz/browse_for_stats/population/estimates_and_projections/NationalPopulationProjections_HOTP2014.aspx; accessed 12 June 2015.

Swerissen H, Taylor M 2008 System reform and development for chronic disease management. Australian Institute for Primary Care, Melbourne. Online. Available: www.health.gov.au/internet/nhhrc/publishing.nsf/Content/038-aipclatrobe/$FILE/038%20Australian%20Institute%20for%20Primary%20Care,%20La%20Trobe%20University%20Attachment%20B.pdf; accessed 12 May 2014.

Tolson D et al 2011 Principles of gerontological nursing. In: Tolson D et al (eds) Evidence-informed nursing with older people. Wiley-Blackwell, Chichester.

United Nations Population Fund (UNFPA) 2010 Population ageing: a larger and older population. UNFPA, New York. Online. Available: www.unfpa.org/pds/ageing.html; accessed 12 June 2015.

Wagner E et al 2001 Quality improvement in chronic illness care: a collaborative approach. J Qual Improv 27(3):63–80.

Wagner E et al 1999 A survey of leading chronic disease management programs: are they consistent with the literature? Manag Care Q 7(3):56–66.

Wertenberger S et al 2006 Veterans Health Administration Office of Nursing Services exploration of positive patient care synergies fuelled by consumer demand: care coordination, advanced clinic access, and patient self-management. Nurs Admin Q 30(2):137–46.

Wilson D, Grant J 2008 Culturally competent partnerships with communities. In: Francis K et al (eds) Australia and New Zealand community as partner: theory and practice of nursing. Lippincott Williams & Wilkins, Sydney.

Wolff JL, Boult C 2005 Moving beyond round pegs and square holes: restructuring medicare to improve chronic care. Am Coll Physicians 143:439–45.

Woods MA 2010 Public Health Intervention Model: Impact on Australian community and mental health nursing students' practice. International Journal of Nursing Education Scholarship 7(1): doi.org/10.2202/1548-923X.1957.

World Health Organization (WHO) 2011 Definition of an older or elderly person. WHO, Geneva. Online. Available: www.who.int/healthinfo/survey/ageingdefnolder/en/index.html; accessed 12 June 2015.

World Health Organization (WHO) 2010a The world health report 2008 – primary health care (now more than ever). WHO, Geneva. Online. Available: www.who.int/whr/2008/en/index.html; accessed 12 June 2015.

World Health Organization (WHO) 2010b Framework for action on interprofessional education and collaborative practice. WHO Press, Geneva. Online. Available: www.who.int/hrh/resources/framework_action/en/; accessed 22 May 2015.

World Health Organization (WHO) 2008 A global response to elder abuse and neglect. Building primary health care capacity. WHO Press, Geneva.

World Health Organization (2007). Global age-friendly cities: a guide. WHO Press, Geneva. Online. Available: www.who.int/ageing/publications/Global_age_friendly_cities_Guide_English.pdf; accessed 22 May 2015.

World Health Organization (WHO) 1978 Report of the international conference on primary health care. Elma Ata. Geneva, Switzerland 1978. World Health Organization, Geneva.

CHAPTER

39

Working in acute care environments

Nicole M Phillips and Debbie Massey

KEY TERMS

Acute care, p. 1421
Acute-on-chronic, p. 1421
Antiembolism stockings, p. 1449
Atelectasis, p. 1432
Clinical deterioration, p. 1422
Coughing exercises, p. 1439
Deep vein thrombosis (DVT), p. 1437
Diaphragmatic breathing, p. 1439
Leg exercises, p. 1445
Paralytic ileus, p. 1457
Post-anaesthetic care unit (PACU), p. 1452
Postoperative, p. 1452
Preoperative education, p. 1437
Same-day surgery, p. 1435
Surgical site infection (SSI), p. 1448
Venous thromboembolism (VTE), p. 1439

Learning outcomes

Mastery of content will enable you to:

- identify reasons for a patient being admitted to the acute care environment
- explain the acute care nurse's role in keeping patients safe, including patient identification and procedure matching, recognising and responding to patient deterioration, and providing a safe clinical handover
- perform a preoperative assessment of a surgical patient
- demonstrate postoperative exercises: diaphragmatic breathing, coughing, turning and leg exercises
- discuss the interventions to prevent venous thromboembolism in medical and surgical patients in the acute care setting
- prepare a patient for surgery
- explain the rationale for specific nursing interventions designed to prevent postoperative complications
- identify specific evaluation criteria to determine the effectiveness of postoperative nursing care.

Introduction

The World Health Organization (WHO) acknowledges that as populations continue to grow and age, there will be increasing demand for acute curative services (Hirshon et al 2013). This chapter will focus on the specific knowledge and skills required of nurses in general acute care settings. Discussion of advanced practice areas within the acute care setting, such as the intensive care unit (ICU), coronary care unit (CCU) and operating theatre (OT), are beyond the scope of this chapter. These are areas where specialty nursing knowledge and skill are demanded. In this chapter, we draw on WHO to define acute care. Second, we explore the role of the nurse in establishing and maintaining patient safety in the acute care setting. The clinical reasoning process (see Chapter 4) then provides a framework to discuss the nursing management of an acute care patient.

Defining acute care

Acute care nursing is complex and challenging. Working in an acute care setting requires: multidisciplinary teamwork; effective and therapeutic communication and collaboration with the patient and their family/significant others; accurate assessment; problem identification, implementation of priority nursing interventions and the ability to evaluate their effectiveness; and advocacy for the patient and their significant others. **Acute care** can be defined as 'the health system components, or care delivery platforms, used to treat sudden, often unexpected, urgent or emergent episodes of injury and illness that can lead to death or disability without rapid intervention' (Hirshon et al 2013:386). Acute care is a broad term that encompasses a range of clinical healthcare domains (Figure 39-1), including emergency medicine, trauma care, pre-hospital emergency care, acute care surgery, critical care, urgent care and short-term inpatient stabilisation (Hirshon et al 2013).

Acute care encompasses public or private acute hospital settings, large teaching hospitals and smaller ambulatory-care facilities. A person may enter the acute care setting due to a medical illness, need for surgery or for diagnostic purposes. Persons may be admitted to an acute care setting for a variety of reasons: an emergency or unplanned admission (e.g. injured in a car accident, chest pain, loss of consciousness), for elective planned surgery or treatment (e.g. total hip replacement, chemotherapy, day surgery), for review (e.g. in outpatients) or for ongoing treatment in their own home (hospital in the home). Many persons in the acute setting have complex illnesses and are seriously ill. They may be treated in the emergency department (ED), a medical or surgical unit,

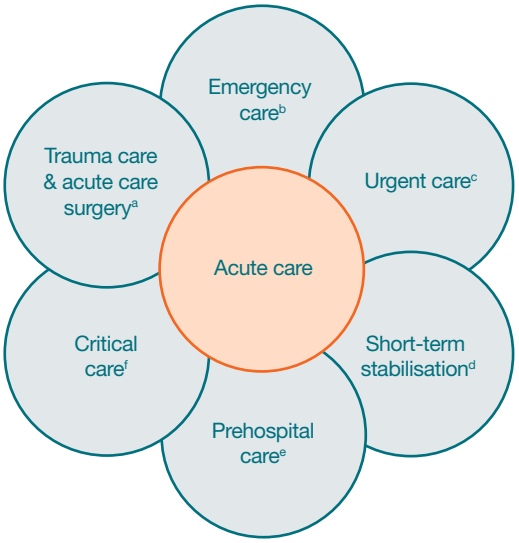


Figure 39-1 Domains in acute care.

Hirshon JM et al 2013 Health systems and services: The role of acute care. Bulletin of the World Health Organization 91:386–88.

a day-care or short-stay unit or an ICU. Large public and private hospitals have specialised medical and surgical units, such as a respiratory unit or cardiac unit, while smaller hospitals tend to have more generalised medical and surgical units. Although the specific acute care setting may differ, the fundamental knowledge and skills required of RNs practising in acute areas in Australia and New Zealand are transferable.

A person may be admitted for an acute medical reason, or for treatment of an **acute-on-chronic** condition (see Figure 39-2). An acute illness is generally recognised to be an illness that lasts for less than 3 months. For example, an older person admitted with pneumonia or a teenager having an appendicectomy (removal of the appendix) would be considered to have an acute illness. In contrast, a chronic illness is one that lasts for more than 3 months (e.g. asthma, emphysema, diabetes). When a person is admitted with an exacerbation of a chronic illness this is referred to as an acute-on-chronic admission. An exacerbation refers to an increase in severity of the signs and symptoms of a disease or the worsening of a disease (e.g. acute exacerbation of chronic obstructive pulmonary disease). The condition has worsened to the extent that it requires clinical management in the acute care setting.

• CRITICAL REFLECTION POINT

Reflect on the reasons people you have cared for were admitted to an acute care setting. Was it for surgical, medical or diagnostic purposes? Make a judgement as to whether each individual's admission was due to an acute, chronic or acute-on-chronic health problem.

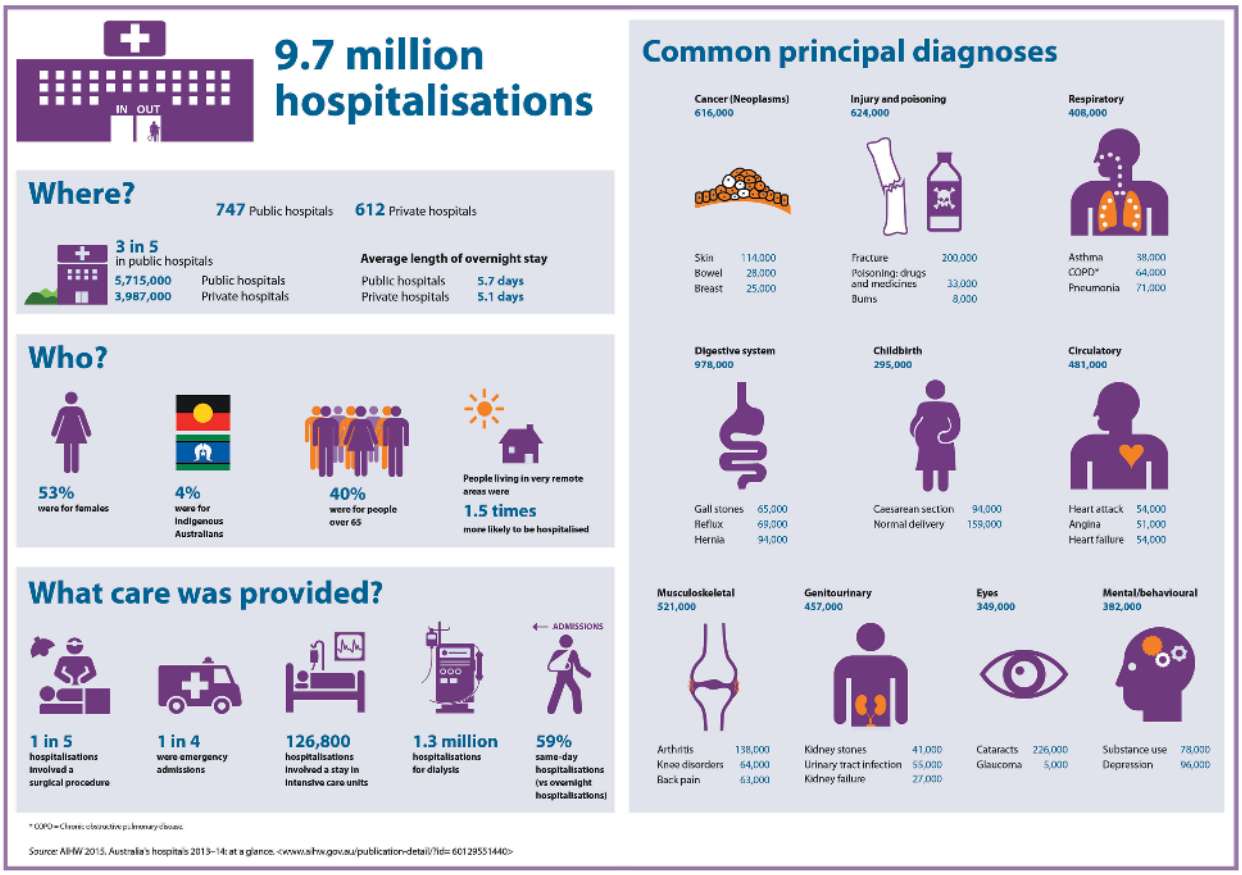


Figure 39-2 **Australian hospitalisation data infographic.**

AIHW, 2015. Available: www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129551486.

Promoting patient safety in the acute care setting

Recognising and responding to patient deterioration

Acute hospitals have an increasing number of patients with complex or high acuity care needs, who are at risk of **clinical deterioration**. Technological developments, an ageing population and economic rationalisation are all factors contributing to increasing *patient acuity* on hospital wards. Several studies have demonstrated that patients who deteriorate on hospital wards exhibit early signs of physical decline many hours before clinical deterioration (Bingham et al 2015). Failure to recognise and respond to patients at risk of clinical deterioration contributes to negative patient outcomes (Massey et al 2014). Delays in care may be explained by a number of factors. For example, clinical staff may lack the knowledge and skills required to safely and effectively manage the deteriorating patient; they may not have access to the appropriate resources; there may be inefficient systems for accessing appropriate help and support; or there may be a lack of appropriate supervision. Whatever the reasons, failure to recognise and respond to patient deterioration care can have devastating consequences: it may lead to death, increased length of hospital stay; or decreased quality of life, together with a significant increase in healthcare costs (Aranaz-Andres et al 2011, Jha et al 2013).

In response to this recognised threat to safe high-quality care, a number of safety systems have been developed and implemented. The most well known is the rapid response system (RRS). An RRS is a safety initiative aimed at improving the care and management of the deteriorating patient in an acute ward (Massey et al 2010). An RRS provides a safety net for patients who deteriorate suddenly, and develop complex clinical care needs that may be outside the scope of clinical staff knowledge and skills (Hillman et al 2014). At a minimum, RRSs must have an afferent limb (detection of deterioration) and an efferent limb (response to deterioration). Detection of patient deterioration (the afferent limb) utilises a set of predetermined criteria that involve the assessment, measurement and documentation of patients' vital signs

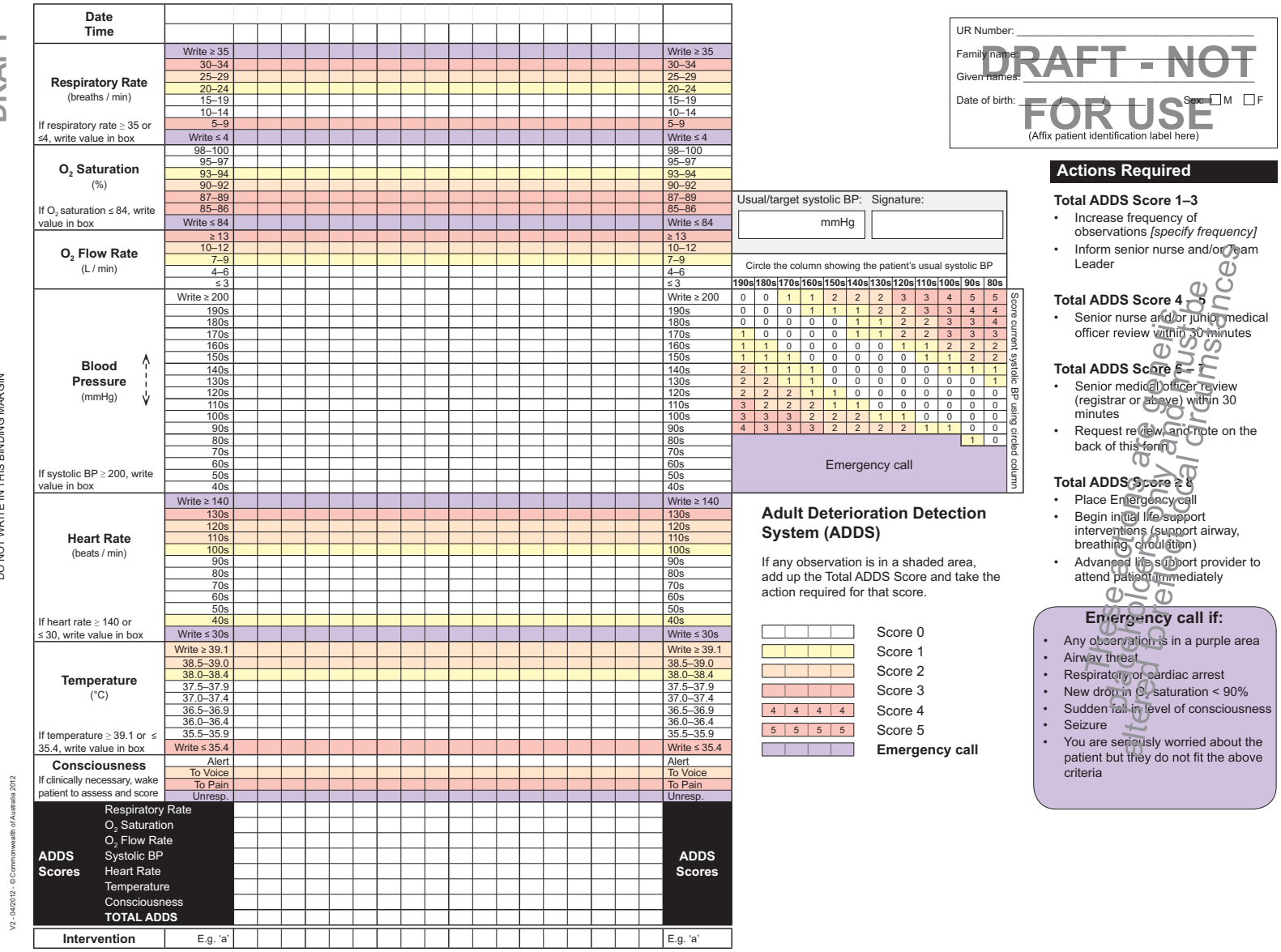


Figure 39-3 Adult Deterioration Detection System (ADDS).

The Australian Commission on Safety and Quality in Health Care, Adult Deterioration Detection System (ADDS) chart with blood pressure table 2012. ACSQHC, Sydney. Available: www.safetyandquality.gov.au/wp-content/uploads/2010/01/ADDS-chart-with-blood-pressure-table-2012.pdf

(DeVita et al 2006, Jansen et al 2010). These criteria are increasingly referred to as track and trigger systems (Jansen et al 2010). An example of the criteria used is displayed in the adult deterioration detection system chart in Figure 39-3.

The efferent limb of an RRS directs response to the deteriorating patient. The medical emergency team (MET), critical care outreach team, intensive care liaison nurse, and after-hours advanced practice nurse service are all examples of an RRS. The key aims of an RRS are to improve the care and management of the deteriorating patient by averting admission to critical care units, facilitating discharge from a critical care facility and sharing critical care skills throughout the hospital (Hillman et al 2015).

The ability of nurses to recognise and respond to signs of patient deterioration is an important predictor in improving patient outcomes (Purling & King 2012) and preventing adverse events (AEs). The past decade has seen an increased focus on recognising and responding to deteriorating hospitalised patients (Preece et al 2010). Much of this interest has been prompted by findings that demonstrated patient deterioration is often not recognised, or responded to, in a timely manner (Jones et al 2013). Failure to recognise and respond to patient deterioration and escalate care has led to an increased risk of AEs in hospitalised patients that may have been avoided if patient deterioration had been recognised and responded to earlier (Massey et al 2014).

Recognising and responding to patient deterioration in the acute care setting is primarily a nursing responsibility. It is important that nurses working in the acute care setting understand the importance of patient assessment and the clinical reasoning process when recognising and responding to patient deterioration. A deteriorating patient is defined by Jones et al (2013:1031) as:

> **A patient who moves from one clinical state to a worse clinical state which increases their individual risk of morbidity, including organ dysfunction, protracted hospital stay, disability, or death.**

Accurate assessment is the key to early recognition and response to patient deterioration. Nurses rely on assessment findings to guide their decision about nursing care and, when necessary, escalate care (Massey et al 2014). Managing a deteriorating patient in the ward environment can be complex and challenging and the successful rescue of a deteriorating patient depends on assessment skills (see Chapters 23 and 24). While patient assessment is a fundamental part of nursing practice, it is by no means a basic skill; it requires knowledge of the patient, the disease processes (pathophysiology) and integration of this knowledge into clinical practice. In the following section we identify the nursing priorities in recognising and responding to patient deterioration and the use of assessment skills (Skill 39-1).

SKILL 39-1

Assessment and management of the deteriorating patient (ABCDE)

Delegation and other considerations

Clinical assessment and judgement about patient status should not be delegated by the registered nurse (RN). The RN who is providing direct care for the patient should provide handover to the treating team or medical emergency team (MET).

Equipment

- Patient bedside folder or charts
  - Vital signs (and other relevant documents, e.g. neurovascular chart)
  - Intravenous fluid chart
  - Medication chart
  - Fluid balance chart
- Equipment for physical examination

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
Critical decision point: Inform the nurse-in-charge, senior nurse or another member of the team that you are concerned about the safety of your patient as early as possible.	
1. Identify and confirm that you have the correct patient. Review the patient's observation charts to ensure that you have all of the available information and that the data you will be referring to is accurate and up to date.	To prevent errors used a minimum of three (3) identifiers for each patient when handing over (South Australia Health 2012). Ensure that all patient documentation is up to date with the current information about the patient.
2. Assess the patient using the primary survey ABCDE approach. Commence the process for monitoring vital signs, attach ECG monitoring (if available), blood pressure cuff and the pulse oximeter probe.	Assessing the patient with simple questions such as 'How are you?', can provide you with valuable information. How the patient answers may alert you to an underlying medical condition. The pulse oximeter probe should not be placed on extremities if the patient is hypothermic or peripherally compromised. Instead, consider using a probe that attaches to the patient's ear or nose (Thim et al 2012).
Critical decision point: Treat an airway obstruction as a medical emergency. This constitutes the highest level of medical intervention and the initiation of the rapid response team, or Code Blue, and takes precedence over any medical condition or injury including suspected spinal injuries.	
Airway (A) 1. Identify any signs that there may be an airway obstruction. 2. If present, treat as a medical emergency. a. Alert senior nursing and medical team members that you need assistance. b. Attempt to remove or dislodge the object (chin-thrust, airway suction, back thrust or insertion of a nasopharyngeal airway). c. Apply supplemental O_2 if deemed necessary (high concentration via a non-rebreather mask).	Foreign bodies may lead to laryngeal spasms which may result in partial or total airway obstruction. An obstruction of the upper airway is often accompanied by loud abnormal breath sounds (stridor) (Australian Resuscitation Council & New Zealand Resuscitation Council 2016a).
Breathing (B) 1. Identify signs of respiratory distress or impairment (cyanosis, increased work of breathing, use of accessory muscles). 2. Check position of trachea (should be located in the suprasternal notch). 3. Count respiratory rate. a. Note rate, rhythm or patterns, and if the chest rise is symmetric. b. Identify any physiological deformities that could identify cause or other medical conditions (e.g. flail chest). 4. Auscultate the chest (bilaterally). a. Identify lung sounds (wheeze, stridor, crackles or creps). b. Compare lung sounds (left and right lung sounds may vary).	Breathing is essential for life. If the patient's breathing is absent or impaired, this identifies the need for resuscitation (Australian Resuscitation Council & New Zealand Resuscitation Council 2016b). The effectiveness of inspiration can be assessed by the depth and duration of each breath. Assessment of the function of the lungs identifies the function of the respiratory system and allows for the identification of potential obstructions and the relative amount of air, liquid or solid mass in the lungs.

STEPS	RATIONALE
5. Palpate and percuss the chest. a. Identify chest sounds (hyper-resonance sounds, surgical emphysema or crepitus). 6. Record oxygen %, SaO_2 – identify if oxygen concentration is sufficient.	
Circulation (C) 1. Identify signs of circulatory impairment (cyanosis, tachycardia, cool peripheries and low blood pressure). 2. Check patient appearance (colour, warmth – centrally and peripherally). 3. Count pulse rate. a. Note rate, rhythm or patterns, and if pulse rates are present and equal. b. Identify any physiological deformities that could identify cause or other medical conditions. 4. Measure blood pressure. 5. Measure capillary refill time. 6. Auscultate heart sounds. 7. Palpate pulses peripheral to central. a. Note rate, rhythm or patterns, and if pulse rates are present and equal (Note: radial pulse may be absent in patients post coronary arterial bypass graft surgery [CABGS]). b. Identify any physiological deformities that could identify cause or other medical conditions.	Hypovolaemic shock is a common cause of altered cardiac physiology and should be considered in presentations without an obvious cardiac cause. When assessing the rate and quality of the patient's pulse, never use your thumb; this is a 'false' pulse and impacts on the accurate measurement of the heart rate. Certain medical conditions such as renal disease, diabetes, acute or chronic pain, can affect blood pressure levels. Impaired or absent pulses may indicate peripheral vascular disease, which can affect the vascularisation to the limbs and surrounding tissue. Never palpate the carotid arteries simultaneously; this can occlude the supply of blood to the brain and surrounding areas.

■ **Critical decision point: Hypoglycaemia can mimic the signs and symptoms of a stroke. Therefore, it is important that a blood sugar level (BSL) is completed as part of assessing the level of consciousness.**

Disability (D) 1. Identify the level of consciousness and potential causes for the altered conscious state. 2. Assess conscious state (AVPU or Glasgow Coma Score). AVPU a. (A) – Alert b. (V) – Voice responsive c. (P) – Pain responsive OR d. (U) – Pain unresponsive Glasgow Coma Score (GCS) a. (E) – Best eye opening b. (V) – Best verbal response c. (M) – Best motor response 3 Assess pupils. a. Note response and size and if both pupils are equal. 4. Measure blood glucose levels.	Identifying level of consciousness in your patient can identify the patient's alertness, cognitive abilities and other medical conditions (e.g. raised intracranial pressure). GCS scores range from 3–15: never zero. Sluggish or unresponsive pupils may be a sign of head injury or raised intracranial pressure or a pre-existing medical condition, e.g. glaucoma.

STEPS	RATIONALE
Critical point: Remember when exposing the bodies of potentially at-risk patients (e.g. children, elderly), they will lose body heat quickly. Only expose the areas that are required for assessment or assess the patient in stages to avoid a long period of time where the patient's body is exposed.	
Exposure (E)	
1. Perform head-to-toe scan. Identify areas of the patient's body that will be exposed. a. Remember to cover patient once assessment has been completed. 2. Ensure patient confidentiality and dignity. 3. Document your findings at the conclusion of the ABCDE assessment.	Changing the patient into a hospital gown will allow you to assess your patient and may highlight injuries that may be hidden by the patient's clothing.
Critical decision point: The medical emergency team (MET) may be called by any member of the healthcare team (including student nurses). Rapid response team, or Code Blue or may be initiated by phone or by an emergency button on the wall or beside the patient's bed.	
If assessment findings are abnormal or within the reportable parameters for the patient, consider calling for the medical emergency team (MET).	Always be aware of emergency policies and phone numbers (MET call, Code Blue, Code Grey, etc), as they may be different depending on the hospital's policy. Criteria for activation of the MET: a. A member of staff is very worried about a patient. b. Acute change in conscious state. c. Acute change in respiratory rate < 8 to > 30. d. Acute change in oxygen saturation < 90% despite high flow oxygen. e. Acute change in heart rate to < 40 or > 130 beats per minute. f. Acute change in systolic blood pressure to < 90 mmHg. g. Acute change in urine output to < 50 mL over 4 hours. (Austin Health 2016)

RECORDING AND REPORTING

- Record assessment findings in patient's healthcare record following local hospital policy and protocols.
- Report any abnormal data following comprehensive assessment to the senior nurse, acute pain service or another appropriate medical officer.

HOME CARE CONSIDERATIONS

- Has a discharge plan been created?
- Has the client received information about the ongoing plan and follow-up arrangements?
- Do the family or significant others have concerns or need information to help with the plan?

All patients in the acute care setting should have a comprehensive nursing assessment at the time of admission (Osborne et al 2015). This assessment should include physical assessment, collection of essential biographical data, and brief history of the presenting signs and symptoms. Nursing assessment involves gathering and synthesising clinical data, recording this information, communicating within the multidisciplinary team and acting on abnormalities. It is an ongoing dynamic process that requires clinical reasoning. A high degree of knowledge application and translation is required. Knowledge of normal physiological parameters is important, but, used in isolation, can be of limited value. It is of greater value to know what is normal for that particular patient. Two

or more abnormal vital signs is a significant predictor of deterioration (Hodgetts et al 2002, Jacques et al 2006). The ABCDE primary survey framework discussed in Chapters 23 and 24 is useful in performing a systematic clinical assessment. It ensures that acutely ill patients are assessed and managed in a logical manner.

Communicating your assessment findings

Effective communication about patient deterioration is important to ensure the situation is escalated in a timely and appropriate way and resultant management is appropriate to prevent AEs and promote positive outcomes. The SBAR (situation, background, assessment, recommendation) framework is an easy-to-remember communication tool that you can use to frame conversations, especially critical ones that require a clinician's immediate attention and action (see Chapter 12). It enables you to clarify what information should be communicated between members of the team, and how. It can also help you to develop teamwork and foster a culture of safety. The example in Box 39-1 shows how SBAR can be used to communicate

CLINICAL EXAMPLE

Harry Summers, a 73-year-old man, is admitted to the ED by ambulance following a fall at home. He lives alone, but his daughter lives with her family in the next suburb. Your nursing assessment on presentation reveals:

Airway	Patent
Breathing	Respiratory rate 22 breaths/minute SpO_2 99% on room air
Circulation	Heart rate 90 beats/minute and regular Blood pressure 145/92 mmHg
Disability	Alert. Pain in his right leg and hip
Exposure	Temperature 36.9°C
	Some bruising and skin discolouration to his right upper thigh. His right leg was externally rotated and slightly shorter than the left

Focused neurovascular assessment

	Right leg	Left leg
Colour	Pale	Pink
Temperature	Cool	Warm
Capillary refill	> 2 seconds	< 2 seconds
Distal pulses	Present	Present
Oedema	Yes, to hip	Nil

X-ray confirms a fractured right neck of femur and transfer to the orthopaedic ward is arranged.

BOX 39-1 SBAR tool

S: Situation

- Identify yourself – the site/unit you are calling from.
- Identify the patient by name and the reason for your report.
- Describe your concern.

An example of a script would be:

> **This is Dee Smith, an RN in CCU. I am contacting you about Miss Singh in bed 11. She has become suddenly short of breath.**

B: Background

- Give the patient's reason for admission.
- Explain significant medical history.
- Outline the patient's background: admitting diagnosis, date of admission, prior procedures, current medications, allergies, pertinent laboratory results and other relevant diagnostic results. For example:

> **Miss Singh is 29, admitted yesterday with bilateral deep vein thrombosis following a long haul flight 2 weeks ago. Her care has been complicated by a pulmonary embolism. She has been on strict bed rest since admission and is on a heparin infusion at 1.2 mL an hour. Since admission she has been tachycardic and tachypnoic.**

A: Assessment

- Vital signs and patient assessment findings
- Clinical impressions, concerns

You need to think critically when informing the person listening to your assessment of the situation. This means that you have considered what might be the underlying reason for your patient's condition.

> **Her oxygen saturation has dropped to 89% on room air, her respiration rate is 30 per minute, her heart rate is 120 and her blood pressure is 90/50. Her work of breathing is increased; she is anxious, short of breath on minimal exertion and on auscultation has bilateral crackles.**

R: Recommendation

- Explain what you need; be specific about request and timeframe.
- Clarify expectations.

What is your recommendation? That is, what would you like to happen by the end of the conversation? Any order that is given on the phone needs to be repeated back to ensure accuracy:

> **I think she is deteriorating. I would like you to come and review her immediately and outline a clear management plan.**

Chaboyer W, McMurray A, Wallis M 2010 Bedside nursing handover: a case study. International Journal of Nursing Practice 16(1):27–34.

your concerns about a deteriorating patient. If you have not used the SBAR framework in your clinical practice, try using it and see if it helps your communication skills and patient care.

• CRITICAL REFLECTION POINT

Review the important and relevant information provided in the *Clinical example* on the previous page. Apply the information provided using the SBAR framework for handover of the patient to the orthopaedic ward.

Patient identification and procedure matching

Ensuring patients are correctly identified is a nursing responsibility required to reduce the risk of misidentification and possible harm as a result. The Australian Commission on Safety and Quality in Health Care (ACSQHC) developed The National Safety and Quality Health Service (NSQHS) Standards. The purpose of these standards is to improve the quality of health care and protect the public from harm (ACSQHC 2012). Standard 5 relates to patient identification and procedure matching (Box 39-2) to ensure that patients are always correctly identified and matched to their intended treatment (ACSQHC 2012).

• CRITICAL REFLECTION POINT

Reflect on why a patient's bed and room number are not approved patient identifiers under Standard 5. Consider also why is it imperative that patients in the acute care setting wear an identification band, such as a wristband? Think about these from a patient safety perspective.

BOX 39-2 Standard 5 – Patient identification and procedure matching

In the acute care setting you will need to formally verify a patient's identification on numerous occasions throughout a shift, for example at handover, each time medications are administered, prior to transfer, and prior to any procedure. When identifying an individual patient, for example, as part of assessing the 'right patient' prior to medication administration, at least *three* patient identifiers must be used (ACSQHC 2012). The ACSQHC specifies that an identification band, such as a wristband, be worn by patients in hospital (Box 39-3). Identifiers such as room or bed numbers are not to be used. Health service organisations must have clear policies governing patient identification practices within the health service and the ACQSHC requires this as part of accreditation of the services.

Australian Commission on Safety and Quality in Health Care (ACSQHC) 2012 National Safety and Quality Health Service Standards. ACSQHC, Sydney.

BOX 39-3 Approved patient identifiers: Items of information

Accepted for use in patient identification, includes: patient name (family and given names), date of birth, gender, address, medical record number and/or Individual Healthcare Identifier.

Australian Commission on Safety and Quality in Health Care (ACSQHC) 2012 National Safety and Quality Health Service Standards. ACSQHC, Sydney.

The essentials of safe and quality care for patients undergoing a procedure or surgery

All nurses in the acute care setting need to be skilled to manage patients before surgery (preoperatively) and after surgery (postoperatively). Pre- and postoperative care may take place in a hospital, a surgical centre attached to a hospital, a free-standing day-surgery or an ambulatory-care centre. A number of invasive procedures are conducted in acute care settings and nurses have responsibilities in relation to pre- and post-procedure care.

Anticipating surgery or a procedure may lead to fear and anxiety for patients and their families/significant others. For example, surgery may be associated with pain, possible disfigurement, loss of independence and perhaps even death. An upcoming procedure may cause concerns around the implications of the procedure and recovery afterwards. The ability to quickly establish rapport with patients and really listen to them, so that their concerns can be discussed and addressed, is important. The continuing care of the patient after some surgeries/procedures has shifted from hospital-based rehabilitation to home-based rehabilitation, with resultant increased responsibility for the patient and/or family and significant others. As the length of hospital stay decreases, the educational needs of the patient undergoing a surgery or procedure increase. Patients are discharged home with complex conditions

CLINICAL EXAMPLE

Mr Summers is admitted to the orthopaedic ward from the ED with a diagnosis of fractured right neck of femur. He has 4 kg of straight leg traction in place and is booked for theatre for open reduction and internal fixation (ORIF) of the right femur the following day.

that require both education and follow-up by nurses. Appropriate patient education is essential to ensure a positive overall patient experience and optimal outcomes (Hamlin et al 2009).

• CRITICAL REFLECTION POINT

Review the important and relevant information provided in the *Clinical example* on the previous page; for example, the handover report. What new information do you need to collect?



CLINICAL REASONING PROCESS: THE PREOPERATIVE PHASE

In the preoperative or pre-procedure phase, your role centres on 1) gathering relevant information and data; 2) making appropriate judgements and decisions; 3) setting priorities and establishing goals; 4) preparing for and taking action; and 5) evaluating impacts and outcomes. Nurses are involved in preparing the patient both physically and emotionally for the surgery or procedure, and providing relevant education relating to preventing complications, assuming self-care, or the provision of ongoing care for patients requiring extended observation and interventions.

Patients enter the acute care setting in different stages of health and with different levels of preparedness. A patient may enter the hospital or surgical unit on a predetermined day being relatively healthy, or with a significant medical history that may affect the surgery and subsequent recovery, and feel prepared to undergo elective surgery. In contrast, an individual involved in a motor vehicle accident facing emergency surgery will feel totally unprepared for such an event. The ability to quickly establish and develop rapport with the patient and maintain a professional relationship is an essential component of the preop phase.

The patient may undergo tests and procedures to establish baseline measurement of relevant body systems. Testing may be performed on the day of or several days before surgery. Testing performed on the day of surgery or procedure is usually limited to such areas as glucose monitoring for a patient with a history of diabetes. You should become familiar with these tests, their purpose and be able to interpret the results.

During an acute care admission, the patient meets many healthcare professionals other than nurses. This team includes surgeons, anaesthetists and relevant allied health professionals, such as a physiotherapist, dietitian and occupational therapist. All play a role in the patient's care and recovery. While family members and significant others attempt to provide support through their presence, they are often as stressed as the patient. Effective communication with the patient and family is critical because the nurse–patient relationship is the foundation of care (see Chapters 2 and 3). The nurse assesses the patient's physical and psychosocial status, recognises the degree of surgical risk, gathers results of diagnostic tests, identifies the patient's priority problems and interventions and establishes outcomes in collaboration with the patient and the patient's family. Pertinent data and the plan of care are communicated to the surgical team.

GATHERING RELEVANT INFORMATION AND DATA

Assessment of the preoperative patient can be extensive. Same-day procedure/surgery can provide challenges in gathering a complete assessment within a limited timeframe. A multidisciplinary team approach is essential. Patients are admitted only hours before surgery/procedure, so nurses gather relevant data and information to inform the clinical reasoning process and ensure safe and quality patient care. It has become common practice for patients to be admitted on the day of surgery, even for major procedures such as open heart surgery or craniotomy. The majority of assessments begin before admission for surgery in the medical practitioner's office, pre-admission clinic, anaesthesia clinic or by telephone. Patients may answer a self-report checklist, the nurse may conduct a physical examination, laboratory tests may be required, education is commenced, patient questions are answered and documentation is initiated. This streamlines the care required by the patient on the day of surgery. Nurses in the immediate preoperative period are well positioned to assess the patient's understanding of previous education and individualise patient and family care.

For patients undergoing elective surgery, a comprehensive history and physical examination are usually performed by a medical practitioner prior to admission, with follow-up by the pre-admission or admitting nurse. In this case you need to review findings of assessments and testing. Focus on key assessments for all body systems to ensure that no obvious priorities are overlooked, and clarify that the patient has understood education previously provided. Even though the surgeon will screen the patient before scheduling surgery, preoperative assessment occasionally reveals an abnormality that delays or cancels the procedure/surgery. For example, the patient may have a cough and low-grade fever on admission. This may indicate the onset of infection, and the surgeon will need to be notified. Further education regarding the procedure and related care may also be required if the patient demonstrates a knowledge deficit.

The goal of the assessment of the preoperative patient is the same, no matter what the setting. The intent is to establish the patient's normal preoperative function to assist the nurse in preventing and recognising possible postoperative complications, thereby minimising risk and assisting the patient to return to their previous functional status.

CLINICAL EXAMPLE

Mr Summers is retired and depends on the pension for his income. He is self-sufficient and prides himself on his independence. He makes all his own meals, cleans his house and cares for the garden himself. As you continue your assessment, Mr Summers discloses a past medical history of osteoarthritis, high cholesterol and type 2 diabetes controlled by diet, diagnosed 10 years ago. His blood glucose levels are normally between 11–14 mmol/L. His cholesterol is well controlled with atorvastatin 20 mg daily.

Patient history

Conduct an initial interview to collect a patient history similar to that described in Chapter 5. If a patient is unable to provide all of the necessary information, rely on family members, caregivers or significant others as resources. Various conditions and factors increase a person's risk for surgery and some procedures. Knowledge of risk factors enables you to take the necessary precautions to make appropriate decisions and plan effective and individualised care.

Past medical history

A review of the patient's medical history should include the main reason for seeking health care and any illnesses. The patient's healthcare record provides this information and is an excellent resource, as are the healthcare records from any previous hospitalisations in partner hospitals.

Pre-existing illnesses and lifestyle behaviours can influence the choice of anaesthetic agents used, as well as the patient's ability to tolerate surgery or certain procedures and reach full recovery (Table 39-1). Preoperative and pre-procedure patients must be carefully screened for medical conditions that may increase the risk of complications during or after the surgery or procedure. For example, a patient with a history of heart failure may experience a further decline in cardiac function both intraoperatively and postoperatively. Intravenous fluids may need to be administered at a slower rate, or a diuretic may need to be given after a blood transfusion.

Perceptions and understanding

The surgical experience affects not only the patient, but also the family and/or significant others. It is therefore important to prepare both the patient and their significant other(s) regarding the experience. Identification of the patient's and family's knowledge, expectations and perceptions allows you to plan education and to provide the appropriate support.

Each patient brings certain fears to the acute setting. Some are due to past hospital experiences, family and friends' experiences, events they might have seen on television or a lack of knowledge. During the assessment, ask for a description of the patient's understanding of the planned procedure/surgery and its implications. Sample questions include: 'Explain what you know about the surgery you are having' or 'What do you think will happen after the procedure?' Contact the surgeon if the patient has an inaccurate perception or knowledge of the surgical procedure, before the patient is transported to the theatre suite.

TABLE 39-1 Medical conditions that increase the risks of surgery

Type of condition	Reason for risk
Bleeding disorders (thrombocytopenia, haemophilia)	Disorders increase risk of haemorrhaging during and after surgery
Diabetes mellitus	Diabetes increases susceptibility to infection and may impair wound healing from altered glucose metabolism and associated circulatory impairment Fluctuating blood levels may cause central nervous system malfunction during anaesthesia Stress of surgery may cause increases in blood glucose levels
Heart disease (recent myocardial infarction, dysrhythmias, heart failure) and peripheral vascular disease	Stress of surgery causes increased demands on myocardium to maintain cardiac output General anaesthetic agents depress cardiac function
Upper respiratory infection	Infection increases risk of respiratory complications during anaesthesia (e.g. pneumonia and spasm of laryngeal muscles)
Liver disease	Liver disease alters metabolism and elimination of drugs administered during surgery and impairs wound healing and clotting time because of alterations in protein metabolism
Fever	Fever predisposes patient to fluid and electrolyte imbalances and may indicate underlying infection
Chronic respiratory disease (emphysema, bronchitis, asthma)	Respiratory disease reduces ability to compensate for acid–base alterations Anaesthetic agents reduce respiratory function, increasing risk of severe hypoventilation
Immunological disorders (leukaemia, acquired immune deficiency syndrome, bone marrow depression and use of chemotherapeutic drugs)	Immunological disorders increase risk of infection and delay wound healing after surgery
Recreational IV drug use	Persons using recreational IV drugs may have underlying disease (HIV/hepatitis), which affects healing
Chronic pain	Regular use of pain medications may result in higher tolerance. Increased doses of opioids/analgesics may be required to achieve postoperative pain control

Medication history

If a patient regularly uses prescription or over-the-counter medicines, the surgeon or anaesthetist may temporarily discontinue the medicines or adjust the dosages. Certain medicines may have implications for the patient, creating greater risk for complications. For example, anticoagulants alter normal clotting times and therefore increase the risk of bleeding. Aspirin is a commonly used medication that can alter clotting mechanisms and is usually discontinued for at least 48 hours prior to surgery and some procedures. Some patients who usually administer insulin for diabetes may need a reduced dose following surgery because of a reduced nutritional intake; others may need an increased dose due to the stress response and intravenous infusion of glucose solutions during surgery.

Patients should also be specifically asked if they use any herbal preparations, since many patients do not view herbs as medications and may omit them from their medication history. There are herbs that may interfere with the action of other medicines (consult the pharmacist).

Allergies

To minimise risk, it is critical to ask the patient if they have known allergies to any medicines, latex, food and possible contact allergies (e.g. to tapes, ointments or solutions). If the patient identifies any allergy, you should follow the institution's policy and procedures regarding documenting and alerting other healthcare professionals to the patient's allergy.

Smoking habits

The patient who smokes is at greater risk of postoperative pulmonary complications. Someone who has smoked chronically already has an increased amount and thickness of secretions in the lungs. General anaesthetics increase airway irritation and stimulate pulmonary secretions, which are retained as a result of reduction in ciliary activity during anaesthesia. After surgery the patient who smokes has greater difficulty clearing the airways of mucous secretions, and the importance of postoperative deep-breathing and coughing must be emphasised (see Chapter 35).

Alcohol and substance use

Alcohol and substance misuse can affect the choice of anaesthetic agents and post-procedure pain management. Patients who use alcohol excessively are at risk of acute alcohol withdrawal and delirium postoperatively (Rudolph & Marcantonio 2011). Use of prescription opioids or barbiturates and abuse of recreational drugs may affect the level and amount of anaesthesia/sedation required, as well as impact on the level of pain experienced, and its management, post-surgery/procedure.

Obesity

Obesity increases risk. A person who is obese is more likely to have associated hypertension, heart disease, type 2 diabetes mellitus, metabolic syndrome, and/or sleep apnoea (Mayo Clinic 2015). Respiratory postoperative complications including pulmonary embolus and **atelectasis** (collapse of alveoli) are also more-frequent postoperative complications in patients with obesity (Poirier et al 2009). The patient may have difficulty resuming normal physical activity after surgery. Patients who are obese are more susceptible to delayed wound healing and wound infection because of the structure of fatty tissue, which contains a poor blood supply. This slows delivery of essential nutrients, antibodies and enzymes needed for wound healing (see Chapter 26 on surgical wounds).

Fluid and electrolyte balance

The body responds to surgery as a form of trauma. As a result of the adrenocortical stress response, hormonal reactions cause sodium and water retention and potassium loss within the first 2–5 days after surgery. Severe protein breakdown causes a negative nitrogen balance. The severity of the stress response influences the degree of fluid and electrolyte imbalance. The more extensive the surgery, the more severe the stress. A patient who is hypovolaemic or who has serious preoperative electrolyte alterations is at significant risk during and after surgery. For example, an excess or depletion of potassium increases the chance of arrhythmia during or after surgery. If the patient has pre-existing renal, gastrointestinal or cardiovascular abnormalities, the risk of fluid and electrolyte alterations is even greater.

Level of support

It is important to determine the extent of support from the patient's family members or significant others. Surgery often results in a temporary or permanently altered functional status that requires understanding, support and assistance to manage effectively during recovery. Often patients cannot immediately assume the same level of physical activity experienced before surgery or the illness that resulted in the surgery. Patients may return home with a dressing, exercises to perform or with certain restrictions to adhere to. Involvement of support persons in preoperative and postoperative education is an important strategy to assist and encourage the patient in implementing the education.

Pain

Manipulation of tissues, treatments and positioning during surgery or some procedures usually results in some degree of pain for the patient following the procedure. Pain is a very personal experience and requires an individualised plan of care. It is a nursing responsibility to collect information about the patient's expectations regarding pain management following surgery. Preoperative education should emphasise the need for the patient to report their pain and the importance of adequate pain control for their recovery. Refer to Chapter 36 for a discussion of acute pain management.

Body image

Surgical removal of any diseased body part often leaves permanent disfigurement, alteration in body function or concern over mutilation. Loss of certain body functions (e.g. with a colostomy or urostomy) compounds a patient's fears. Assessment of a patient's perceived body image alterations is important. Sometimes surgery changes the physical or psychological aspects of a patient's sexuality. Excision of breast tissue, colostomy, ureterostomy, hysterectomy or prostatectomy may affect patients' perceptions of their sexuality. Patients may have to refrain temporarily from sexual intercourse until they return to normal physical activity after some surgery.

Patients should be encouraged to express their concerns about sexuality (see Chapter 21). The patient facing even temporary sexual dysfunction requires understanding and support. Ideally, discussions about the patient's sexuality should be

held with the patient's sexual partner, so that they can gain a shared understanding of how to cope with limitations in sexual function.

Coping resources

It is important to ask the patient about coping strategies and past stress management. If the patient has had previous surgery, successful coping strategies can be determined and incorporated into the care plan if appropriate. Relaxation exercises can also be taught to help control anxiety (see Chapter 20).

Culture

Patients come from diverse backgrounds, cultures and religions. The way a patient perceives their experience related to surgery is affected by their background. If potential cultural, ethnic and religious implications are not acknowledged and planned for, desired surgical outcomes may not be achieved. Although it is important to recognise and plan for cultural differences, it is also necessary to recognise that members of the same culture are individuals and may not hold the same beliefs. A culturally safe approach is needed that respects and seeks to understand the implications of acute illness from the patient and family's perspective (see Chapter 14).

• CRITICAL REFLECTION POINT

Reflect on the *Clinical example* on p. 1430. How could the additional information provided to you by Mr Summers be of use to you in your decision-making relating to his care?

Physical assessment

A focused physical assessment is undertaken, based on the patient's condition and the surgery or procedure. Chapters 23 and 24 describe the techniques used in physical assessment. Assessment focuses on findings related to the patient's medical history and on the body systems that are likely to be affected by the surgery/procedure. It is important to establish a baseline of information and to identify any actual alterations or potential complications (see Figure 39-4).

General survey and baseline vital signs

Observe the patient's general appearance, including their skin colour and moisture, facial expression, gait and height and weight. These are all important cues that may be indicators of underlying disease and an alteration in status and function. Weight is usually recorded to ascertain baseline data and may be required information for accurate medication dosages.

Preoperative assessment of vital signs provides important *baseline data* with which to compare alterations that occur during and after surgery/procedure (see Chapter 23). Anxiety and fear commonly cause elevations in heart rate and blood pressure. Anaesthetic agents typically depress all vital functions. As the effects of the anaesthesia diminish after surgery, the nurse closely monitors vital signs and compares findings with the preoperative baseline. Vital signs are considered in the discharge or transfer of the patient from the post-anaesthetic care unit (PACU) back to the ward environment or to home.

Preoperative assessment of vital signs is also important to rule out fluid and electrolyte abnormalities before surgery commences (see Chapter 23). An elevated heart rate may result from a fluid volume deficit, potassium deficit or sodium excess. If the pulse is full and bounding, a fluid volume excess may be the cause. Cardiac arrhythmias are commonly caused by electrolyte imbalances, especially potassium, magnesium and calcium.

An elevated body temperature before surgery is a cause for concern. If the patient has an underlying infection, it may be necessary to postpone surgery until the infection has been treated.

Head and neck

Assessment of oral mucous membranes reveals data about hydration status. A patient who is dehydrated is at risk of developing serious fluid and electrolyte imbalances during surgery. Excess fluid within the circulatory system or failure of the heart to contract efficiently may lead to jugular vein distension and reveal a risk of cardiovascular complications during surgery.

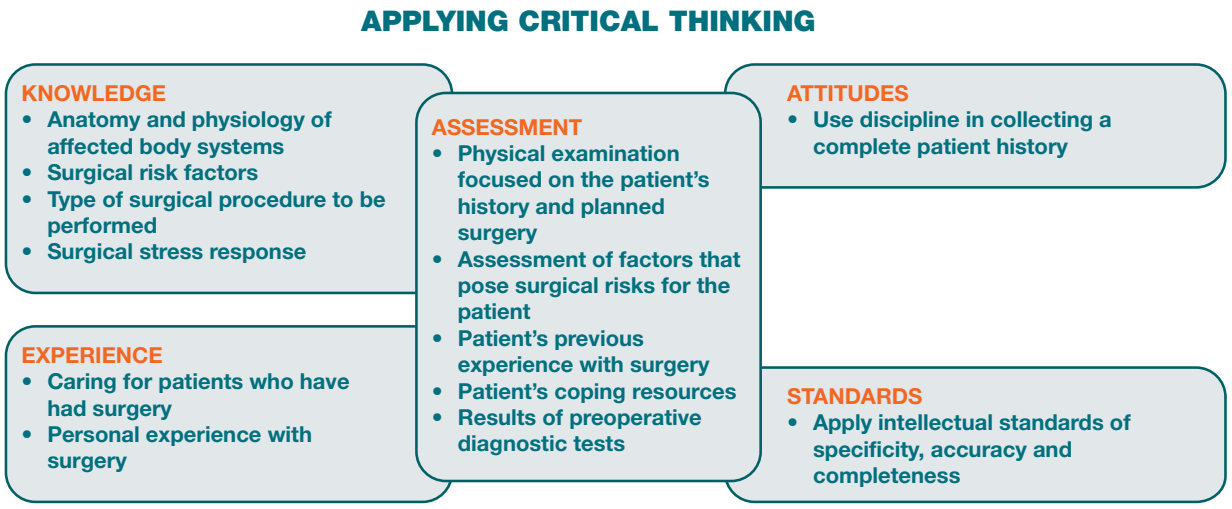


Figure 39-4 Critical thinking associated with the assessment phase for the surgical patient.

Thorax and lungs

Assessment of the patient's respiratory rate, breathing pattern and chest movement helps assess ventilatory capacity. Patients are encouraged to deep-breathe and cough postoperatively. A decline in ventilatory function may place the patient at risk of respiratory complications. Auscultation of lung sounds will indicate whether there is pulmonary congestion or narrowing of airways. Existing atelectasis or moisture in the airways will be aggravated during surgery. Serious pulmonary congestion may cause postponement of the surgery. Certain anaesthetics can cause bronchospasm; thus if you auscultate a wheeze preoperatively, the patient is at risk of further airway narrowing during surgery and after extubation (removal of the endotracheal tube).

Heart and vascular system

Anaesthetic agents, alterations in fluid and electrolyte balance, and stimulation from the surgical stress response can cause cardiac arrhythmias. Depending on the type of surgery/procedure and the patient's past history, assessment of peripheral pulses, capillary refill time and the colour and temperature of extremities may be conducted. If peripheral pulses are not palpable, a Doppler ultrasound should be used for assessment of their presence and their position marked with a pen. Measurement of capillary refill and assessment of peripheral pulses are particularly important for patients having vascular surgery or for those who may have casts or constricting bandages applied to the extremities after surgery.

Abdomen

The abdomen is assessed for size, shape and symmetry. If the patient is having abdominal surgery, the nurse will be frequently assessing the abdominal incision dressing site postoperatively and will compare with preoperative data. Abdominal distension may indicate postoperative alterations in gastrointestinal function, or possible abdominal bleeding. Assessment of preoperative bowel sounds may be useful to use for postoperative comparison. If the surgery requires manipulation of the bowel or if a general anaesthetic is used, normal peristalsis and bowel sounds will be absent or diminished for several days after surgery.

Neurological status

Preoperative assessment of neurological status is imperative for all patients receiving general anaesthesia. Baseline assessment aids the assessment of the patient when recovering from anaesthesia. During the health history and physical assessment, observe the patient's alertness, orientation and speech, noting whether the patient answers questions appropriately and can recall recent and past events. Level of consciousness changes as a result of general anaesthesia. However, after the effects of anaesthesia resolve, the patient should return to the preoperative level of responsiveness.

If the patient is having a spinal anaesthesia, preoperative assessment of gross motor function and strength is important. Spinal anaesthesia causes temporary paralysis of the lower extremities (see Chapter 36).

Integument

It is important to carefully inspect the skin, paying particular attention to bony prominences, such as the heels, elbows, sacrum and scapula. During surgery in particular, a patient must lie in a fixed position, often for several hours, which makes them susceptible to pressure injuries (see Chapter 26), especially if the skin is thin and dry. An older person is often at high risk for an alteration in skin integrity related to positioning and sliding on the operating room table, causing shear and pressure. In addition, skin turgor is an indicator of hydration status.

CLINICAL EXAMPLE

Mr Summers' diagnostic test results include: FBC haemoglobin 13.0 g/dL and normal WBC count. Blood chemistry within normal limits.

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

Cluster patterns of assessment data identified during assessment, to identify relevant patient needs, concerns or clinical problems (Box 39-4). The acute care patient with pre-existing health problems is likely to have a variety of risks for complications (Box 39-5). For example, a patient with pre-existing chronic bronchitis who has abnormal breath sounds and a productive cough will be *at risk of having difficulty clearing their airway*. The nature of the surgery and the patient's health status provide defining characteristics for a number of problem statements. For example, a patient who undergoes a surgical procedure is at risk of developing infection at either the surgical site, the IV site or in the bloodstream (sepsis). The *risk of infection* will need to be addressed by nurses from admission to rehabilitation.

Clinical priorities identified preoperatively may also focus on the potential risks a patient will face after surgery (e.g. risk for chest infection). Preventive care is essential so that the surgical patient can be managed effectively and risk be reduced.

BOX 39-4 Examples of priority problems associated with surgery

- Anxiety
- Airway clearance, ineffective
- Breathing pattern, ineffective
- Constipation, risk of
- Coping, family: potential for growth
- Fear
- Fluid volume deficit, risk of
- Infection, risk of
- Knowledge deficit (specify)
- Latex allergy response, risk of
- Management of therapeutic regimen, individual: effective
- Mobility, impaired physical
- Pain
- Powerlessness
- Skin integrity, impaired, risk of
- Surgical recovery, delayed

BOX 39-5 Example of clinical reasoning process

Patient facing surgery

Assessment activities	Clustered data	Nursing priority problem
Ask patient to describe any previous surgical experiences. Ask patient about their knowledge relating to preoperative education/ preparation before admission. Observe patient's non-verbal behaviour. Assess vital signs.	States they feel apprehensive. Identifies fear of surgery. Unaware of preoperative testing that will take place. Tense – wringing hands, slight rocking, speech speeds up when talking of feeling scared. Elevated heart rate (> 96 beats/ minute).	Fear related to knowledge deficit and previous surgical experience.

SETTING PRIORITIES AND ESTABLISHING GOALS

Develop an individualised plan of care for each patient problem (see *Sample student nursing care plan*). The nurse and patient set realistic individualised goals for care with realistic measurable outcomes. Successful application of the clinical reasoning process requires the involvement of the patient and family. Involving the patient early on when identifying the priorities can minimise risks and postoperative complications. A patient informed about the surgical experience is likely to be less fearful and can prepare to participate in the postoperative recovery phase so that outcomes can be met.

For **same-day surgery** patients and patients admitted the day of their scheduled surgery, preoperative planning occurs (ideally) days before admission to the hospital or surgical centre. Often, preoperative education begins in the doctor's surgery, continues during the scheduled pre-admission testing visit and is reinforced by the nurse on the day of admission. Preoperative information and instructions may include follow-up telephone calls, mailings from the clinic or hospital, or the use of videos or patient pathways (Figure 39-5). Preoperative instruction gives the patient time to think about the surgical experience, make necessary physical preparations (e.g. altering diet or discontinuing medication use) and ask questions about postoperative procedures. Well-planned preoperative care ensures that the patient is well informed and able to be an active participant during recovery. The family/significant others can also play an active supportive role.

Establishing priorities and setting goals preoperatively is individualised for the patient. However, there are broad goals that are relevant to the majority of patients undergoing a procedure or surgery. These are:

- understanding physiological and psychological responses to the procedure/surgery
- understanding reasons for postoperative care
- achieving emotional comfort and relaxation
- achieving return of normal physiological function after the surgery
- maintaining fluid and electrolyte balance
- achieving comfort and rest
- remaining free of wound infection
- remaining safe from harm during the acute care admission.

• CRITICAL REFLECTION POINT

Reflect on the *Clinical example* on p. 1434. Can you identify at least four priority nursing problems and goals for Mr Summers' preoperative phase of hospitalisation?

PREPARING FOR AND TAKING ACTION

Nursing actions include providing the patient with an understanding of the procedure or surgery and prepare the patient physically and psychologically for the intervention. Actions implemented by the RN are always focused on providing safe and effective patient care, to reduce risk and ensure optimal patient outcomes.

Informed consent

An important responsibility when caring for a patient before surgery or a procedure is ensuring that patient consent has been obtained. You should be aware of the requirements of a valid consent and of who may provide consent if the patient is unable to do so because of an altered mental state, illness or emergency situation. In Australia and New Zealand it is common practice that patients are expected to complete a written consent form prior to surgery. For the patient's consent to be valid, all the elements that constitute consent must be fulfilled (see Chapters 10 and 11). The signed consent form is evidence that consent has been given. The healthcare professional undertaking the procedure or surgery is responsible for obtaining the patient's consent.

A patient can revoke consent at any time. This can be done verbally or by writing on the consent form. There are also times when patients alter the written form. If this occurs, the treating medical practitioner needs to be informed and the patient should be asked to initial the alteration, consistent with hospital policy. Likewise, if the patient asks specific questions regarding the procedure when the nurse is admitting or preparing the patient, it is important that the nurse practises within their scope of practice. The nurse should inform the treating medical officer of the patient's specific concerns and document this in the patient's file.

There is no clear life span of a written consent form, so many agencies will have policies that stipulate an acceptable timeframe (e.g. 30 days). The older the form, the greater the potential risk that the patient's condition or cognitive status may

SAMPLE STUDENT NURSING CARE PLAN

Gathering relevant data and information*

Mr Molosky is 78 years of age and is scheduled to be admitted in 5 days for elective bowel resection. Anne Holloway, RN, is responsible for preparing Mr Molosky for surgery. During Anne's initial discussion with Mr Molosky, she ascertains that Mr Molosky is alert and oriented. Mr Molosky wears glasses for reading and is able to hear Anne's questions. Mr Molosky last had **surgery over 25 years ago**. He says to Anne, **'It is my understanding that I will probably be in the hospital for quite a while.'** Anne clarifies that hospitalisation for surgery is shorter than what was expected 25 years ago. After further questioning, Anne learns that Mr Molosky **has not received instruction on the surgical procedure and the care relating to effective postoperative recovery**. Mr Molosky **shows interest in Anne's questions and asks what to expect following surgery.**

** Important data to cluster in setting priorities in bold.*

Priority problem(s)

Knowledge deficit regarding preoperative and post-operative care requirements.

Making appropriate judgements and decisions

Setting priorities and establishing goals	Expected outcomes
Mr Molosky will demonstrate the ability to perform deep-breathing and coughing exercises and leg exercises by the day before surgery. Mr Molosky will be able to discuss a clear understanding of the postoperative routines related to surgical care by the day before surgery.	Mr Molosky will accurately perform leg exercises and breathing and coughing exercises by the day before the surgery. Mr Molosky will discuss monitoring routines following surgery by the day before surgery. Mr Molosky will be able to describe the importance of postoperative exercises by the day before surgery. Mr Molosky will be able to describe his schedule for activity and nutritional management following surgery by the day before surgery.
Preparing for and taking action†	**Rationale**
Teaching: preoperative • Provide educational written information (e.g. pamphlet). Make a follow-up call to give Mr Molosky the opportunity to ask questions, clarify any information and voice concerns. • On admission to hospital, ask Mr Molosky to demonstrate performance of the expected postoperative exercises. • Explain sensations to be expected postoperatively (e.g. incisional pain, IV, nasogastric tube, wound care solutions). • Ask Mr Molosky to discuss their expectations and correct any unrealistic expectations relating to the surgery.	It is beneficial to give the patient written material and audiovisual material that they can listen to repeatedly if necessary. The patient has the opportunity to clarify anything they do not understand clearly. The nurse can rectify any misinterpreted information prior to admission, so that the patient can participate in their care effectively. Preoperative education can assist in reducing postoperative anxiety. The patient can obtain feedback on their performance. The nurse can ascertain accuracy and correct any misunderstanding. It is important to educate about sensory aspects, so the patient is adequately prepared and doesn't become alarmed after surgery. Unrealistic expectations, when unmet, can contribute to the patient's anxiety.

Evaluating impacts and outcomes

- Ask Mr Molosky to describe typical monitoring and care activities following surgery.
- Observe Mr Molosky's demonstration of post-operative exercises.
- Ask Mr Molosky to express any remaining fears or concerns.

APPLYING CRITICAL THINKING

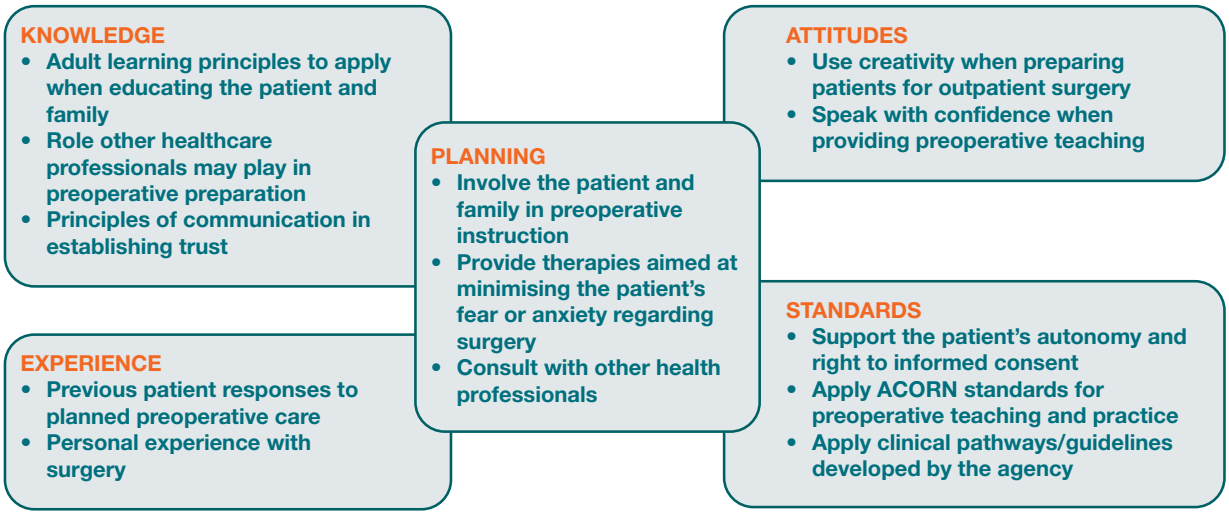


Figure 39-5 **Critical thinking associated with the planning phase for the surgical patient.**

have changed. If a consent form is used, it is filed in the patient's record; the record accompanies the patient to surgery.

Although healthcare professionals can witness a patient's signature, the precise role of the witness remains unclear. In general terms, a witnessed signature merely attests that the witness actually saw the patient sign the form. It is policy in some agencies for the witness to write 'witness to signature' next to their signature, if not already documented on the form. However, in the healthcare context, questions can also be raised in relation to the information given and the specifics of the discussion between the parties. For this reason, it is preferred that the person explaining the procedure, the medical practitioner, signs as the witness.

Preoperative patient education

Preoperative education concerning a patient's expected postoperative experience, provided in a systematic and structured format underpinned by teaching and learning principles, can have a positive influence on the patient's recovery. The ACORN (2014) asserts that the competence of the nurse conducting the preoperative assessment and providing education can influence the patient's surgical outcome.

Structured preoperative education can influence postoperative factors such as the following:

- *Lung function*. Explaining and demonstrating the technique of deep-breathing and coughing while the patient is pain-free helps the patient learn and perform these exercises postoperatively.
- *Physical functional capacity*. Teaching feet and leg exercises helps to reduce the incidence of postoperative **deep vein thrombosis (DVT)**. These exercises and teaching turning assist to improve the patient's ability to walk and resume activities of daily living.
- *Sense of wellbeing*. Patients who are adequately prepared for surgery often experience less anxiety and report a greater sense of psychological wellbeing.
- *Pain control*. Patients who are involved in learning about pain and ways to relieve it may be less anxious about it and more inclined to ask for what they need.

For preoperative education to be effective, it is important for it to be planned so that the appropriate information is covered, but also for it to have a person-centred approach. It needs to be individualised and tailored to the patient; some patients will want only minimal information and may experience increased levels of anxiety with too much detail, while others will want very detailed and involved information. This is highly individual and, as such, you need to be able to adequately assess the needs of the patient, their existing knowledge in relation to the surgery and identify the specific knowledge gaps.

Detailed discussion and demonstration of postoperative exercises are vital to reduce the risks associated with postoperative recovery. If the patient understands why these exercises are important to postoperative recovery and knows how to perform them correctly, the recovery period will be less complicated. However, despite the education provided to patients, patient retention of information following discharge is often poor. To counteract this, education before admission that is reinforced during the hospital stay and after discharge is important. Frequently, day-surgery centres conduct follow-up telephone interviews with patients after they have been discharged. One of the reasons for this is to ascertain any knowledge gaps and to reinforce previous education provided regarding postoperative care.

Including the patient's family, significant others and/or carer in the perioperative preparation is advised, and the benefits of this should be discussed with the patient. For example, when the patient returns from surgery, a family member may take on the role of 'coach' in relation to the postoperative exercises. If anxious relatives do not understand routine postoperative events, it is likely that their anxiety will heighten the patient's fears and concerns. To minimise anxiety and misunderstanding, preoperative preparation of carers, family and significant others should occur before surgery. It is optimal to also include written

UR No…… **Name:** ……

CRITICAL PATH	ON ADMISSION / PRE-OP DATE:	AM	PM	ND	AM
PSYCHOSOCIAL / SPIRITUAL	• Patient/family/carer informed of and verbalise understanding of procedures • Patient/family/carer designate a person for Surgeon to contact post-op – contact number clearly visible within clipboard that goes to theatre				

NURSING ASSESSMENT	**NB MAY HAVE BEEN COMPLETED AT PRE-ADMISSION**
	• Admission medical / nursing history reviewed in consultation with patient
	• Relevant nursing risk factors discussed with patient / next of kin
	  • Documented as a variance and followed up with relevant clinician
	• Dementia, acute brain syndrome / impulsive behaviours
	  • Nil risk identified ☐
	  • At risk ☐ (documented on MR 050)
	• Bariatric assessment
	  • Notify bookings / Theatre if patient > 100 kgs				

NUTRITION / HYDRATION	• NBM from: ……				
HYGIENE	• Self care – Betadine shower night before and am of op • After second shower – dress in hospital gown and hat, clean sheets to bed				
ELIMINATION	• Normal function. Date of last bowel action……				

SKIN / WOUNDS	• Full shave as per cardiac surgery clinical guidelines (MCC 5.1)
	• Skin integrity intact
	• All jewellery removed prior to surgery, including wedding band/s (tick relevant)
	  • Sent home with next of kin ☐
	  • Placed in Hospital safe ☐				

PAIN / COMFORT / SLEEP	• Patient pain free, comfortable, night sedation offered • Patient educated and verbalises understanding of pain management plan-post-op				
RISK ASSESSMENT	Falls Risk – Screening score _____ if > 65 years or at risk If score > 2 complete Falls Risk Assessment Tool MR 048				
	Skin / Pressure Risk – Complete Braden Risk Assessment Tool MR 047 if > 65 years and LOS > 4 days or at risk.				
	ASSIST LEVEL (CIRCLE) / EQUIPMENT NEEDS / No. OF STAFF (CIRCLE) On Bed: I S A N — 1 2 3 Off Bed: I S A N — 1 2 3 Mobilising: I S A N — 1 2 3 Refer to Patient mobility & Transfer Risk Assessment Equipment Guide				
PHYSIOTHERAPY / MOBILITY	• Pre-op physiotherapy assessment completed • Mobility as per pre-admission				
TREATMENTS / ASSESSMENTS	• Full physical assessment per shift • Cardiac and Medical Admission Assessment MR028/MR033 completed • Chest clear – SaO2 > 92% on Room air • Tape test attended – nil abnormal reaction • Height & weight recorded • Consent Form completed • Oxygen 6L/Min via mask with pre-med administration				
MEDICATIONS	• Administered as per MR075 • Clopidergrol ceased 5-7 days pre surgery				
INVESTIGATIONS	**NB MAY HAVE BEEN COMPLETED AT PRE-ADMISSION** **(check pathology box)** • U&E & Cr, FBE, LFTs, APTT / INR, Hep B & C serology, ECG, CXR (PA & Lat), Group & X-match 3 units • Surgeon notified of abnormal results • FWT urine – results recorded on MR028				

Figure 39-6 Extract of preoperative clinical pathway for cardiac surgery.

Courtesy Warringal Private and Ramsay Health Care, Melbourne, Victoria.

continued

UR No..... **Name:** .....

CONSULTATIONS	• S/B Cardiologist, Cardiac Surgeon, Anaesthetist, Intensive Care RMO, Physiotherapist • Evidence of dental check for patients undergoing Valve / David / Bentall procedure				
DISCHARGE PLAN / EDUCATION	• ICU visit ☐ • Video viewed ☐ • Education Booklet given to patient and family (if not already received) ☐ • Pre and Post op care plan discussed • Social and domestic situation and discharge plan reviewed and documented • Patient and family express understanding of all instructions, discharge plan and expected length of stay • Rehabilitation Program discussed • Toiletries, labels, and Transfer Sheet sent to ICU when pt. transferred to theatre				

	Signature	Designation	Print	Time
RN SIGN - AM				
- PM				
- ND				
- AM				
ALLIED HEALTH				

Figure 39-6 ***continued***

material. Many hospitals will also provide video information aimed at both the patient and the key people who support them.

Provide patients with information about sensations typically experienced after surgery/procedure. Preparatory information helps patients anticipate the steps of a procedure and thus helps them form realistic images of the surgical experience. When events occur as predicted, patients are better able to cope with the experiences. Sensations that the nurse may cover include the expected pain at the surgical site, tightness of dressings, dryness of the mouth or the sensation of a sore throat resulting from an endotracheal tube.

Anxiety and fear are barriers to learning, and both emotions may be heightened. The patient's readiness and ability to learn must be assessed. If the patient is capable of and receptive to learning, the nurse presents information in a logical sequence, beginning with preoperative events and proceeding to postoperative routines. If possible, the family or significant others should be present during teaching.

The following can be used to guide discussions and facilitate demonstration of patient understanding of the surgical experience.

Patient cites reasons for instructions and exercises

Given a rationale for pre- and post-procedures, the patient is better prepared to participate in care. For example, a preoperative education program may include explanation and demonstration of postoperative exercises: diaphragmatic breathing, incentive spirometry, positive expiratory pressure (PEP) therapy, coughing, turning and leg exercises. These exercises are designed to prevent postoperative complications (Skill 39-2).

When a patient is under general anaesthesia, the lungs do not ventilate fully. After surgery the patient has a reduced lung volume and needs greater effort to breathe. **Diaphragmatic breathing** improves lung expansion and oxygen delivery without using excess energy. The patient learns to use the diaphragm during deep-breathing to take slow, deep, relaxed breaths. The goal is to inhale slowly and deeply through the nose, hold the breath for a few seconds and then exhale slowly and completely through the mouth. Eventually the patient's lung volume improves. Deep-breathing also helps clear out anaesthetic gases that remain in the airways. To facilitate deep-breathing, the patient may use an *incentive spirometer*, which encourages effective deep-breathing through sustained maximal inspiration (see Chapter 35).

Patients undergoing cardiothoracic procedures or who may have pre-existing lung disease may use *PEP therapy* postoperatively, such as using a blow-bottle device to reduce atelectasis and improve respiratory function. After use of the device, the patient inhales deeply, holds for 3 seconds, and exhales in short, rapid, forced exhalations ('huff' coughing). **Coughing exercises** help move respiratory secretions to larger airways for expectoration. A deep, productive cough is more beneficial than merely clearing the throat. Nebulised treatments with bronchodilators, such as salbutamol (Ventolin) and ipratropium (Atrovent), may also be prescribed to help with sputum expectoration. Postoperative incisional pain makes coughing difficult. Aggressively manage acute pain and demonstrate methods for splinting the incision to minimise pain during coughing. Encourage patients to cough and breathe deeply every 1–2 hours while awake.

Stasis of circulation may lead to thrombi or clots. A clot that breaks off is referred to as an embolus. An embolus from the leg usually lodges in the lungs (pulmonary embolism), but may also lodge in the heart or brain. Emboli are potentially fatal complications. According to the National Health and Medical Research Council (NHMRC 2011), the incidence of **venous thromboembolism (VTE)** is more than 100 times greater in hospitalised patients than in the community. VTE includes DVT and pulmonary embolus (PE). The cause of 10% of all deaths in hospitals is a PE. The prevention of VTE has been identified

SKILL 39-2

Demonstrating postoperative exercises

Delegation considerations

This task requires the problem-solving and knowledge-application skills of a registered nurse. For this reason, delegation of this task to nurse assistants is inappropriate. The registered nurse can teach assistants to encourage patients to practise exercises regularly following instruction.

Equipment

- Pillow or wrapped towel (optional)
- Incentive spirometer
- Positive expiratory pressure (PEP) device

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Assess patient's risk of postoperative respiratory complications. Review medical history to identify presence of chronic pulmonary conditions (e.g. emphysema, asthma), any condition that affects chest wall movement, history of smoking and presence of reduced haemoglobin.	General anaesthesia predisposes patient to respiratory problems because lungs are not fully inflated during surgery; cough reflex is suppressed, so secretions collect within airway passages. After surgery, patient may have reduced lung volume and require greater efforts to cough and deep-breathe; inadequate lung expansion can lead to atelectasis and pneumonia. Patient is at greater risk of developing respiratory complications if other chronic lung conditions are present. Smoking damages ciliary clearance and increases mucous secretion. Reduced haemoglobin level can lead to inadequate oxygenation.
2. Assess ability to cough and deep-breathe by having patient take deep breath and observing movement of shoulders and chest wall. Measure chest excursion during deep breath. Ask patient to cough after taking deep breath.	Reveals maximum potential for chest expansion and ability to cough forcefully; serves as baseline to measure ability to perform exercises after surgery.
3. Assess risk for postoperative thrombus formation (see Figure 39-6). Observe for calf pain, redness, warmth, swelling or vein distension.	General anaesthesia and immobilisation results in decreased muscular contraction in lower extremities, which promotes venous stasis.
4. Explain postoperative exercises to patient, including their importance to recovery and physiological benefits.	Information allows patient to attend and can motivate learning. People tend to learn new skills when benefits can be gained.

STEPS	RATIONALE
5. Demonstrate exercises. **A. Diaphragmatic breathing**	
(1) Help patient into comfortable sitting or standing position. If patient chooses to sit, help to side of bed or to upright position in chair.	Upright position facilitates diaphragmatic excursion.
(2) Stand or sit facing patient.	Allows patient to observe breathing exercise.
(3) Ask the patient to place palms of hands across from each other, down and along lower borders of anterior rib cage. Place tips of third fingers lightly together (see illustration). Demonstrate for patient.	Position of hands allows patient to feel movement of chest and abdomen as diaphragm descends and lungs expand.



Step 5A(3) Demonstrating placement of hands on upper abdomen.

(4) Have patient take slow, deep breaths, inhaling through nose. Tell patient to feel middle fingers separate during inhalation. Demonstrate.	Taking slow, deep breaths prevents panting or hyperventilation. Inhaling through nose warms, humidifies and filters air.
(5) Explain that patient will feel normal downward movement of diaphragm during inspiration. Explain that abdominal organs descend and chest wall expands.	Explanation and demonstration focus on normal ventilatory movement of chest wall. Patient develops understanding of how diaphragmatic breathing feels.
(6) Avoid using chest and shoulders while inhaling and instruct patient in same manner.	Using auxiliary chest and shoulder muscles increases useless energy expenditure.
(7) Have patient hold slow, deep breath for count of 3 and slowly exhale through mouth. Tell patient middle fingertips will touch as chest wall contracts.	Allows for gradual expulsion of all air.

STEPS	RATIONALE
(8) Repeat breathing exercise 3–5 times.	Allows patient to observe slow, rhythmic breathing pattern.
(9) Have patient practise exercise. Instruct patient to take 10 slow, deep breaths every 2 hours while awake during postoperative period until mobile.	Repetition of exercise reinforces learning. Regular deep-breathing prevents postoperative complications.
B. Incentive spirometry	
(1) Wash hands.	Reduces transmission of microorganisms.
(2) Ask the patient to assume semi-Fowler's or high-Fowler's position.	Promotes optimal lung expansion during respiratory manoeuvre.
(3) Either set or indicate to patient on the device scale the volume level to be attained with each breath.	Establishes volume level necessary for lung expansion.
(4) Demonstrate to patient how to place mouthpiece of spirometer so that lips completely cover mouthpiece (see illustration).	Demonstration is a reliable technique for teaching psychomotor skill and enables the patient to ask questions.
(5) Teach the patient to inhale slowly and maintain constant flow through unit. When maximal inspiration is reached, patient should hold breath for 2–3 seconds and then exhale slowly. Number of breaths should not exceed 10–12/minute.	Maintains maximal inspiration and reduces risk of progressive collapse of individual alveoli. Slow breath prevents or minimises pain from sudden pressure changes in chest.



Step 5B(4) Patient learning incentive spirometry.

(6) Ask the patient to breathe normally for short period.	Prevents hyperventilation and fatigue.

STEPS	RATIONALE
(7) Have patient repeat manoeuvre until volume goals are achieved.	Ensures correct use of spirometer.
(8) Wash hands.	Reduces transmission of microorganisms.
C. Positive expiratory pressure therapy and 'huff' coughing	
(1) Wash hands.	Reduces transmission of microorganisms.
(2) Assemble appropriate PEP device, e.g. blow-bottle.	
(3) Ask the patient to assume semi-Fowler's or high-Fowler's position.	Promotes optimal lung expansion and expectoration of secretions.
(4) Have patient place lips around tubing. Patient should take a full breath and then exhale 2–3 times longer than inhalation. Pattern should be repeated for 10–20 breaths.	Ensures that all breathing is done through the mouth and that the device is used properly.
(5) Remove device from mouth and have patient take a slow, deep breath and hold for 3 seconds.	Promotes lung expansion before coughing.
(6) Teach the patient to exhale in quick, short, forced exhalations.	'Huff' coughing, or forced expiratory technique, promotes bronchial hygiene by increased expectoration of secretions.
D. Controlled coughing	
(1) Explain importance of maintaining upright position.	Position facilitates diaphragm excursion and enhances thorax expansion.
(2) Demonstrate coughing. Take two slow, deep breaths, inhaling through nose and exhaling through mouth.	Deep breaths expand lungs fully so that air moves behind mucous and facilitates effects of coughing.
(3) Inhale deeply third time and hold breath to count of three. Cough fully for two or three consecutive coughs without inhaling between coughs. (Tell patient to push all air out of lungs.)	Consecutive coughs help remove mucous more effectively and completely than one forceful cough.
(4) Caution patient against just clearing throat instead of coughing.	Clearing throat does not remove mucous from deep in airways.
(5) If surgical incision will be abdominal or thoracic, teach patient to place one hand over incisional area and other hand on top of first. During breathing and coughing exercises, patient presses gently against incisional area to splint or support it. Pillow over incision is optional (see illustration).	Surgical incision cuts through muscles, tissues and nerve endings. Deep-breathing and coughing exercises place additional stress on suture line and cause discomfort. Splinting incision with hands provides firm support and reduces incisional pulling. (Some patients prefer to have a pillow to place over incision.)

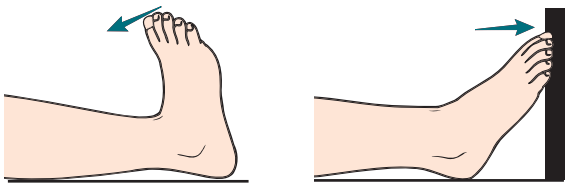
STEPS	RATIONALE



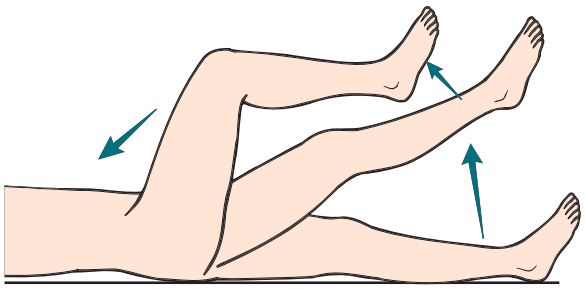
Step 5D(5) Techniques for splinting incision.

(6) Patient continues to practise coughing exercises, splinting imaginary incision. Teach the patient to cough 2–3 times every 2 hours while awake.	Value of deep coughing with splinting is stressed to effectively expectorate secretions with minimal discomfort.
(7) Teach the patient to examine sputum for consistency, amount and colour changes.	Sputum consistency, amount and colour changes may indicate presence of pulmonary complication, such as pneumonia.
E. Turning	
(1) Ask the patient to assume supine position to the right side of bed if permitted by surgery. Side rails on both sides of bed should be in up position.	Positioning begins on right side of bed so that turning to left side will not cause patient to roll towards bed's edge.
(2) Have the patient place their left hand over the incisional area to splint it.	Supports and minimises pulling on suture line during turning.
(3) Ask the patient to keep the left leg straight and flex the right knee up and over the left leg (if back surgery was performed, patient will need to logroll).	Straight leg stabilises patient's position. Flexed right leg shifts weight for easier turning.
(4) Have the patient grab the left side rail with the right hand, pull towards the left and roll onto their left side.	Pulling towards side rail reduces effort needed for turning.
(5) Teach the patient to turn every 2 hours while awake.	Reduces risk of vascular and pulmonary complications.
F. Leg exercises	
(1) Have patient assume supine position in bed. Demonstrate leg exercises by performing passive range-of-motion exercises and simultaneously explaining exercise.	Provides normal anatomical position of lower extremities.
(2) Rotate each ankle in complete circle. Instruct patient to draw imaginary circles with big toe. Repeat 5 times.	Leg exercises maintain joint mobility and promote venous return to prevent thrombi.
(3) Alternate dorsiflexion and plantar flexion of both feet. Direct patient to feel calf muscles contract and relax alternately (see illustration). Repeat 5 times.	Stretches and contracts gastrocnemius muscles.

STEPS	RATIONALE
(4) Have patient alternately raise each leg straight up from bed surface, keeping legs straight. Repeat 5 times.	Promotes contraction and relaxation of quadriceps muscles.
(5) Have patient continue leg exercises by alternately flexing and extending knees. Repeat 5 times (see illustration).	Contracts muscles of upper legs and maintains knee mobility.



Step 5F(3) Alternate dorsiflexion and plantar flexion of foot.



Step 5F(4 & 5) Hip and knee movements.

6. Have the patient practise exercises at least every 2 hours while awake. Teach the patient to coordinate turning and leg exercises with diaphragmatic breathing, incentive spirometry and coughing exercises.	Repetition of sequence reinforces learning. Establishes routine for exercises that develops habit for performance. Sequence of exercises should be leg exercises, turning, breathing, incentive spirometry and coughing.
7. Observe the patient's ability to perform all exercises independently.	Ensures that patient has learnt correct technique.
8. Record exercises demonstrated and the patient's ability to perform them independently.	Documents patient's education and provides data for instructional follow-up.

as a national and international priority area for improving patient safety (NHMRC 2011). Effective prophylactic measures include wearing compression stockings, performing feet and leg exercises while in bed, using a compression pump on the lower legs and anticoagulants (NHMRC 2008). A summary of the current Australian evidence-based guidelines for thromboprophylaxis for both medical and surgical patients admitted to hospital is presented in Figure 39-7.

Leg exercises and mobilisation improve venous return from the extremities and thus reduce stasis. Contraction of lower leg muscles promotes venous return, reducing the risk for clot formation. Encourage the patient to perform leg exercises 10–12 times at least every 1–2 hours while awake if not ambulant. If the patient is measured for elastic compression stockings or pneumatic compression devices, they must be educated about the purposes and nursing care that will be required following application (see Chapter 28).

Each exercise needs to be explained and demonstrated. The nurse acts as a coach, guiding the patient through each one. For example, assess whether the patient is sitting properly and help them place the hands in the proper position during breathing. It is important to evaluate the effectiveness of the education session and the patient's ability to perform the exercises correctly. The patient should be given time for independent practice and you need to re-evaluate the overall effectiveness of the patient performing the exercises before surgery.

Patient states the unit location and location of the family during procedure/surgery and immediate recovery period

The unit to which the patient is admitted before the procedure/surgery may be different from the unit afterwards. The family needs to know where the patient will be. Explain where the family can wait. If the patient is to be taken to a special unit after surgery, for example, it helps to orient the patient and family to the unit's environment before surgery.

Prevention of Venous Thromboembolism (VTE) in Patients Admitted to Australian Hospitals: Guideline Summary

This summary and full guideline available from **www.nhmrc.gov.au**

Steps in selecting thromboprophylaxis

STEP 1: If the patient is admitted for any of the following surgical procedures or injury, the procedures carry a high risk of VTE and some form of thromboprophylaxis is warranted (as per page 2 of this guideline summary):

- any surgical procedure, but especially abdominal, pelvic, thoracic or orthopaedic surgery. Major joint surgery and curative surgery for cancer carry very high VTE risk
- leg injury requiring surgery or prolonged immobilisation
- prolonged surgery and/or prolonged immobilisation.

Prior to selecting an appropriate method, consider other VTE risk factors (STEP 2), patient preference and possible pharmacological (STEP 3) or mechanical (STEP 4) contraindications and then refer to page 2 for advice on recommended VTE prophylactic options based on the type of surgery or injury.

STEP 2: Assess other VTE risk factors (patient and condition based).
Presence of any of these risk factors or conditions may warrant VTE prophylaxis for any hospital admission.

VTE risk is increased with:
- previous VTE
- active cancer
- age (incidence of VTE rises with each decade over age 40)
- prolonged severe immobility (prolonged bed rest, immobilisation in a plaster cast/brace or prolonged travel with limited movement and venous stasis)
- pregnancy and the puerperium
- marked obesity
- oestrogen-containing hormone replacement therapy (HRT) or oral contraceptive
- certain types of thrombophilia
- general anaesthesia (versus regional anaesthesia).

VTE risk is increased with the following medical conditions:
- acute/acute-on-chronic chest infection
- heart failure
- myocardial infarction
- ischaemic stroke with immobility
- some forms of cancer chemotherapy
- acute inflammatory bowel disease.

STEP 3: Assess the risk of bleeding/contraindications to pharmacological prophylaxis. Presence of any of the following factors may contraindicate pharmacological prophylaxis. If pharmacological prophylaxis is contraindicated, consider mechanical prophylaxis, if appropriate (STEP 4).

Consider:
- significant renal impairment (reduced creatinine clearance for renally excreted anticoagulants)
- current active major bleeding (i.e. at least 2 units of blood/blood products transfused in 24 hours)
- current chronic, clinically significant and measurable bleeding over 48 hours
- inherited or acquired bleeding disorders, e.g. haemophilia or other coagulation factor abnormality, coagulopathy or disseminated intravascular coagulation (DIC)
- severe platelet function disorder or thrombocytopenia (pharmacological prophylaxis not recommended with platelet count <50,000/μL)
- recent central nervous system (CNS) bleeding
- intracranial or spinal lesion
- recent major surgical procedure of high bleeding risk
- active peptic ulcer or active ulcerative gastrointestinal disease
- liver failure or prolonged obstructive jaundice
- concomitant use of medications that may affect clotting (e.g. anticoagulants, antiplatelet agents, selective/non-selective nonsteroidal anti-inflammatory drugs—NSAIDs)
- neuraxial block or recent lumbar puncture.

STEP 4: Assess any contraindications to mechanical prophylaxis.

- Graduated compression stockings may cause reduced blood flow, pressure ulcers or increase the risk of falls, so are contraindicated with:
  - any factor that prevents correct fitting of stockings (e.g. morbid obesity)
  - inflammatory conditions of the lower leg
  - severe peripheral arterial disease
  - diabetic neuropathy
  - severe oedema of the legs
  - severe lower limb deformity or inability to correctly fit stockings.
- Intermittent pneumatic compression (IPC) or foot pumps can exacerbate peripheral arterial disease or arterial ulcers.

STEP 5: Select appropriate thromboprophylaxis.

Consult with patient to ensure support for, and adherence to, VTE prophylaxis measures.

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Figure 39-7 Prevention of venous thromboembolism (VTE) in patients admitted to Australian hospitals: guideline summary.

NHMRC 2010 Prevention of venous thromboembolism (VTE) in patients admitted to Australian hospitals: Guideline summary. NHRMC, Canberra.

continued

Thromboprophylaxis for admitted surgical patients

Anaesthesia	• Consider neuraxial block as an alternative to general anaesthesia if feasible. If neuraxial block is used, there is a risk of developing an epidural haematoma (A) • To minimise this risk with neuraxial block, timing of pharmacological thromboprophylaxis should be carefully planned and discussed in advance with the anaesthetist (GPP)

Type of surgery	Recommendations (and grade of recommendations)	
	Pharmacological options	**Mechanical options**
Total hip replacement	*Use either:* • LMWH (A) or • Fondaparinux (B) or • Rivaroxaban (B) or • Dabigatran etexilate (B) *For up to 35 days*	• Use GCS or IPC or foot pump (B) whether or not pharmacological prophylaxis is used • If pharmacological prophylaxis is contra-indicated, use GCS and foot pump (B) *Use until fully mobile*
Hip fracture surgery	*Use either:* • Fondaparinux (B) or • LMWH (B). If using LMWH, consider adding low dose aspirin (B) *For up to 35 days*	• If pharmacological prophylaxis is contra-indicated, use foot pump or IPC (C) *Use until fully mobile*
Total knee replacement	*Use either:* • LMWH (A) or • Fondaparinux (B) or • Rivaroxaban (B) or • Dabigatran etexilate (B) *For up to 14 days*	• Use foot pump or IPC (C) whether or not pharmacological prophylaxis is used *Use until fully mobile*
Knee arthroscopy	• Thromboprophylaxis is not recommended unless the patient has additional VTE risk factors (see Step 2, page 1) (C)	• Insufficient evidence; unable to make a recommendation
Lower leg fractures/ injuries with immobilisation in a brace or plaster cast	• LMWH (A) *For the entire period of immobilisation*	• Insufficient evidence; unable to make a recommendation
General surgery	*Use either:* • LMWH (B) or • UFH (B) *For up to one week or until fully mobile*	• Use GCS, whether or not pharmacological prophylaxis is used (B) *Use until fully mobile*
Urological surgery	• Consider thromboprophylaxis based on assessment of the patient's risk of VTE and of bleeding (GPP)	• Inconclusive evidence; unable to make a recommendation
Gynaecological surgery	*Use either:* • LMWH (B) or • UFH (B) *For up to one week or until fully mobile*	• Consider using GCS or other mechanical options, especially if pharmacological prophylaxis is contraindicated (GPP) *Use until fully mobile*
Abdominal surgery	• Use LMWH (B) *For 5–9 days*	• Use GCS, whether or not pharmacological prophylaxis is used (B) *Use until fully mobile*
Cardiac, thoracic and vascular surgery	*Use either:* • LMWH (B) or • UFH (B) *For up to one week or until fully mobile*	• Use GCS or IPC, whether or not pharmacological prophylaxis is used (C) *Use until fully mobile*
Neurosurgery	• Due to high risk of bleeding, use thromboprophylaxis with extreme caution (GPP) • If appropriate and not contraindicated, use LMWH or UFH (B)	• Use IPC, whether or not pharmacological prophylaxis is used (A) • Consider use of GCS (C) *Use until fully mobile*
Trauma and spinal surgery	• Use LMWH, starting 5 days after admission (C) • Do not start thromboprophylaxis until primary haemostasis has been established (GPP) *Use until fully mobile*	• In addition to pharmacological prophylaxis, use foot pump for trauma surgery patients, from admission (C) *Use until fully mobile*
Cancer patients having general, abdominal, pelvic or neurosurgery (see also next category)	• Use LMWH or UFH. In particular, consider risk of bleeding (GPP) *For at least 7–10 days post surgery* • Consider extending the duration of LMWH to 28 days for patients having major abdominal or pelvic surgery for cancer, especially if obese, slow to mobilise or with past history of VTE (GPP)	• Use GCS, if pharmacological prophylaxis is contraindicated (GPP) *Use until fully mobile*
Head and neck cancer patients having head and neck surgery	• Unless other significant VTE risk factors are present (see Step 2, page 1), thromboprophylaxis is **not recommended** (GPP)	• Insufficient evidence; unable to make a recommendation
Caesarean section	• Mobilise promptly post caesarean (GPP) • Use LMWH after caesarean delivery *for 5–7 days post caesarean or until fully mobile* (GPP) • For women with additional risk factors (see Step 2, page 1), extend LMWH or adjusted therapeutic dose warfarin *to six weeks* (GPP)	• Consider using IPC *during and 24 hours after caesarean* (GPP) • Consider using GCS if pharmacological prophylaxis is contraindicated (GPP)

Thromboprophylaxis for admitted medical patients

Medical condition	Recommendations (and grade of recommendations)	
	Pharmacological options	**Mechanical options**
Ischaemic stroke	• Consider LMWH, based on degree of immobility and risk of bleeding (B) • If LMWH is contraindicated or not available, use UFH (B)	• Inconclusive evidence; unable to make a recommendation
Haemorrhagic stroke	• **Do not use** any pharmacological prophylaxis due to the risk of intracranial bleeding (GPP)	• Inconclusive evidence; unable to make a recommendation
Myocardial infarction	• UFH (C), only when full anticoagulation is not in use	• Insufficient evidence; unable to make a recommendation
General medical: **• acute/ acute-on-chronic chest infection** **• heart failure** **• myocardial infarction** **• stroke with immobility** **• some forms of cancer chemo-therapy** **• acute inflammatory bowel disease**	*Use either:* • LMWH or UFH, based on assessment of patient's risk of VTE and bleeding (B)	• Insufficient evidence; unable to make a recommendation
Cancer (non-surgical)	• Use LMWH or UFH (GPP) *From admission until discharge*	• Use GCS, if pharmacological prophylaxis is contraindicated (GPP)
Pregnancy and childbirth (not caesarean – see surgical recommendations)	• Minimise immobilisation and ensure adequate hydration during pregnancy, labour and the puerperium (GPP) • For women with additional VTE risk factors (see Step 2, page 1), use LMWH or adjusted dose warfarin *for six weeks post vaginal delivery* (GPP)	• Consider using GCS if pharmacological prophylaxis is contraindicated or not used (GPP)

NHMRC grading of recommendations

A	Body of evidence can be trusted to guide practice
B	Body of evidence can be trusted to guide practice in most situations
C	Body of evidence provides some support for recommendation(s) but care should be taken in its application
D	Body of evidence is weak and recommendation must be applied with caution
GPP	Good practice point – consensus-based recommendations

Key

LMWH	Low molecular weight heparin
UFH	Unfractionated heparin
GCS	Graduated compression stockings
IPC	Intermittent pneumatic compression

This summary is based on the National Health and Medical Research Council's *Clinical Practice Guideline for the Prevention of Venous Thromboembolism in Patients Admitted to Australian Hospitals.*

This summary and the guideline on which it is based are available for download from **www.nhmrc.gov.au**

December 2010

ERC: 100328

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Figure 39-7 ***continued***

Patient discusses anticipated postoperative monitoring and therapies

The patient and family want to know about post-procedure and postoperative events. If they understand the frequency of vital sign monitoring before surgery occurs, they will be less apprehensive when nurses regularly assess vital signs. The nurse can also explain whether the patient is likely to have IV lines, monitoring lines, dressings or drainage tubes.

Patient describes surgical procedures and postoperative treatment

After the surgeon has explained the basic purpose of a surgical procedure, the patient may ask additional questions to clarify misunderstandings. Pre-established teaching standards, such as those integrated in clinical pathways for preoperative and postoperative care (Figures 39-6 and 39-11), give the nurse an excellent guide for instruction. One way to avoid problems is to first ask what the patient has been told.

Patient describes activity resumption after the procedure/surgery

The specific surgery or procedure a patient undergoes affects the speed with which normal physical activity and regular eating habits can be resumed. Explain that it is normal to progress gradually in activity and eating. If the patient tolerates activity and diet well, activity levels will progress more quickly.

Patient has understanding of expected pain management

One of the patient's greatest fears is pain. The family is also concerned for the patient's comfort. Acute pain after surgery and some procedures should be aggressively treated and prevented where possible. Inform the patient and family of interventions available for pain relief (e.g. analgesics, positioning, splinting and relaxation exercises) and determine the patient's comfort–function goal (see Chapter 36). The patient needs to know about the use of analgesics, the route of administration and their effects.

Some patients avoid taking analgesics because of prevalent myths and misconceptions, such as the fear of becoming addicted to opioids. You should dispel any misconceptions about pain management and encourage the patient to use analgesics as needed (see Chapter 36). Uncontrolled pain leads to prolonged recovery time and postoperative complications.

The patient should be encouraged to inform nurses as soon as they experience pain or discomfort. If a patient waits until pain becomes severe, pain-relief interventions are less effective. Patients who will have patient-controlled analgesia (PCA) after surgery should know how to use the machine to prevent pain and understand that use of PCA will not cause overdose. Regional analgesia (see Chapter 36) is also commonly used for postoperative pain control. The use of a pain scale can help the patient to express the intensity and presence of pain, as well as assisting the nurse in evaluating effectiveness of pain-control interventions. Information from preoperative pain assessment will be helpful to the nurse when educating about pain-relief measures.

Physical preparation

The degree of physical preparation depends on the patient's health status, the surgery or procedure to be performed and sometimes surgeon preferences. An acutely ill patient will receive more supportive care in the form of medication, IV therapy and monitoring than the patient having a minor elective procedure.

Maintenance of fluid and electrolyte balance

The patient having surgery and some procedures is vulnerable to fluid and electrolyte imbalances as a result of inadequate preoperative intake or excessive fluid losses during surgery. It is relatively common practice for the patient to be ordered to fast or take nil by mouth (NBM) prior to surgery. The timeframe varies depending on the type of surgery and/or procedure. Fasting is required to reduce the risk associated with general anaesthesia for aspiration of gastric contents during and after surgery. Medical staff will also consider the patient's usual medications and, if indicated, may prescribe necessary medications to be taken with 30 mL of water (e.g. antihypertensive and anticonvulsant medications).

The Australian and New Zealand College of Anaesthetists (2010) recommends the following guidelines for preoperative fasting for patients selected for day-care surgery, unless otherwise specifically prescribed by the anaesthetist, or where other institution guidelines apply:

- For healthy adults having an elective procedure, limited solid food may be taken up to 6 hours prior to anaesthesia and clear fluids totalling not more than 200 mL per hour may be taken up to 2 hours prior to anaesthesia.
- For healthy children over 6 weeks of age having an elective procedure, limited solid food and formula milk may be given up to 6 hours, breast milk may be given up to 4 hours and clear fluids up to 2 hours prior to anaesthesia.
- For healthy infants under 6 weeks of age having an elective procedure, formula or breast milk may be given up to 4 hours and clear fluids up to 2 hours prior to anaesthesia.
- Only medications with a little water if required as prescribed by the anaesthetist should be taken less than 2 hours prior to anaesthesia.
- A proton-pump inhibitor or other appropriate agent should be considered for patients with an increased risk of gastric regurgitation.

It is the nurse's responsibility to educate the patient, significant others and family about fasting time and to ensure they understand the importance of fasting. All fluids and foods should be removed from the patient's bedside and a sign posted over the bed to alert all hospital personnel and family members of the fasting restrictions.

As patients may experience thirst and dryness in the mouth while fasting, it is important to assist the patient with mouth care, rinsing the mouth with water or mouthwash and/or brushing teeth. If the patient eats or drinks anything during the fasting period, notify the surgeon. An IV route for fluid replacement may be commenced if indicated.

Reduction of risk of surgical site infection

Infection of the surgical wound is a risk associated with having surgery. A **surgical site infection (SSI)** is not only a potentially serious complication which can cause morbidity and possible mortality; it can also lengthen hospital stay for the patient and results in increased healthcare-related costs (ACORN 2014, Webster & Osborne 2015). The skin is a site for microorganisms to grow and multiply. Skin preparation is used in the operating

room, immediately prior to making the incision and, depending on the type of surgery, the patient may be required to bath or shower before the operation using an antiseptic wash. According to recent evidence-based standards (ACORN 2014), the antiseptic must be registered with the Therapeutic Goods Administration and is used to remove contamination and reduce skin microbial counts.

Hair removal is needed only if the hair has the potential to interfere with exposure, closure or dressing of the surgical site. Hair removal can damage and cause breaks in the patient's skin integrity, which puts the patient at risk for infection due to microorganism entry. The ACORN (2014) standards recommend: the skin at, and surrounding, the operative site should be assessed for integrity and inflammatory reactions to depilatory creams and antiseptic washes (if used); if hair removal is to be performed, it should be as close to the time of surgery as practical; hair removal should be undertaken outside of the operating room where the surgery is to be conducted; hair clippers with disposable blades are to be used to preserve skin integrity.

Short hospital stays are known to reduce the chance of a nosocomial infection. SSIs and respiratory infections can all be acquired during hospitalisation. This is one advantage of having same-day surgery, since the patient usually returns home on the day of surgery, reducing the time spent in hospital.

Bowel and urinary elimination

If the patient's surgery or procedure involves the GI tract, they may be ordered to receive bowel preparation prior to the procedure. What this specifically involves depends on the type of surgery or procedure. For example, prior to a colonoscopy procedure, the patient will be ordered an oral prepkit that entails taking medication to induce loose and frequent stools and following a specific diet 1–2 days before the colonoscopy. This is to assist in the success of the colonoscopy and to ensure clear visualisation.

Manipulation of parts of the GI tract during surgery results in reduced peristalsis for 24 hours and sometimes longer. Enemas and cathartics cleanse the GI tract to prevent intraoperative incontinence and postoperative constipation. An empty bowel reduces risk of injury to the intestines and prevents contamination of the operative wound in case a part of the bowel is incised or opened accidentally, or if colon surgery is planned.

In relation to urinary elimination, ask the patient to void just before administering any ordered preoperative medications and/or leaving for the operating room. An empty bladder reduces the risk of urinary incontinence during surgery and is also important for abdominal surgery, when it may be necessary for the surgeon to manipulate the bladder. An empty bladder also makes abdominal organs more accessible during surgery. An indwelling urinary catheter (IDC) may be inserted in the operating room to maintain an empty bladder.

Promotion of rest and comfort

Rest is essential for normal healing. Anxiety about surgery can easily interfere with the ability to relax or sleep. The underlying condition requiring surgery may be painful, further impairing rest. Attempts should be made to ensure that the patient's environment is quiet and comfortable. The surgeon may order a sedative–hypnotic or antianxiety agent before the surgery.

An advantage of same-day surgery is that the patient is able to sleep at home the night before. The patient is likely to get more rest in a familiar and usually quieter environment than a hospital. The non-hospitalised patient may also have medication ordered if apprehension about surgery is likely to interfere with their sleep pattern.

Preparation on the day of surgery or procedure

On the day the nurse completes a number of activities before transferring the patient to the operating theatre or procedure room. These activities are conducted as part of risk-management strategies for patients undergoing surgery and a checklist must often be completed by the nurse; see example in Figure 39-8 of a preoperative checklist. Examples of requirements on the checklist are: patient wearing patient identifiers, completed consent form, and medication chart and diagnostic test results to accompany the patient.

The nurse makes a final preoperative assessment of vital signs. The anaesthetist uses these values as a baseline for intraoperative/during procedure vital signs. If the baseline vital signs are abnormal for the patient, the surgery or procedure may be postponed. In addition to assessing vital signs, it is important that the patient enters the operating suite clean. If the patient is unwilling or unable to independently meet their own hygiene needs, assist the patient to have a shower, bath, or bed-bath. A clean hospital gown is provided. The patient's mouth may be dry due to fasting and it is important that mouth care is addressed. The patient should be cautioned not to swallow any water. No make-up (lipstick, powder, blusher, nail polish) is to be worn which can interfere with skin and mucous membrane assessment to determine the patient's level of oxygenation and circulation both during and after the procedure/surgery. Therefore all make-up should be removed to expose normal skin and nail colouring. Nail polish is generally removed too as some colours (e.g. black and brown) may affect peripheral pulse-oximetry readings (Chan et al 2013).

If a patient has any valuables (e.g. money, jewellery), with permission of the patient, give these to a family member/significant other in the first instance, or secure them for safekeeping. Many hospitals require patients to sign a release form to free the institution of responsibility for lost valuables. There may be a facility for securely storing valuables in a designated location. Often patients are reluctant to remove wedding rings or religious medals. A wedding ring can be taped in place. However, if there is a risk that the patient will experience swelling of the hand or fingers (e.g. hand surgery, mastectomy, fluid shifts), the ring should be removed.

VTE is a major cause of death among hospitalised adults. To prevent DVT, **antiembolism stockings** or sequential compression devices (SCDs) are commonly used. Antiembolism stockings are designed to support the lower extremities and maintain compression of small veins and capillaries. The constant compression forces blood into larger vessels, thus promoting venous return and preventing circulatory stasis. When correctly sized and properly applied, antiembolism stockings can reduce the risk of thrombi. SCDs may be applied to the lower extremities for the same purpose. These devices promote circulation by sequentially compressing the legs from the ankle upwards, promoting venous return. Application may be ordered preoperatively, intraoperatively (especially for long surgery) or postoperatively

Perioperative Patient Record

Facility: .....

(Affix identification label here)

URN:

Family name:

Given name(s):

Address:

Date of birth: Sex: ☐ M ☐ F ☐ I

Preoperative checklist Patient must not be transferred to operating suite unless Procedural Consent is completed

Date / /	Temp: °C	Pulse:	Resps	Blood pressure: /	BGL: mmol/L Time :	O_2 sats:	Check 1 Preoperative preparation area			Check 2 Patient handover/ transfer			Check 3 Patient handover/ transfer		
Beta HCG	Weight: kg	Height: cm	BMI:	Pressure injury risk score ☐ Adult ☐ Paediatric	Ward from	Ward to	Checked	N/A	Variance	Checked	N/A	Variance	Checked	N/A	Variance

	1 **Patient/parent/legal guardian to state full name and DOB; full name DOB and URN match ID band and medical record** Patient's preferred name:		
	2 **Procedural Consent Form completed**		
	3 **Patient/parent/legal guardian to state procedure in own words, procedure stated corresponds with signed consent form** Response:		
	4 **Intended surgical site marked by surgeon**		
	5 **X-rays/Medical Imaging/PACS** ☐ Queensland Health ☐ Private Number of packets:		
ALERTS	6 **Allergy status documented** ☐ Yes (note on page 2) ☐ Nil known		
ALERTS	7 **Infection alert** ☐ Contact ☐ Droplet ☐ Airborne ☐ MRO *Contact operating theatre*		
ALERTS	8 **Cytotoxic medication administered in the last 7 days** ☐ Yes (note on page 2) ☐ No		
ALERTS	9 **Anticoagulant / antiplatelet agent / fish oil administered within the last 7 days** ☐ Yes (note on page 2) ☐ No		
ALERTS	10 **Pregnant** ☐ Yes ☐ Suspected/Unknown (document as variance) ☐ No		
ALERTS	11 **Diabetic status** ☐ NIDDM ☐ IDDM		
ALERTS	12 **Other alerts (e.g. falls, interpreter, aggression)** (if yes, document as variance)		
	13 **Fasted** Last food intake: ../../.. :.. hrs Last fluid intake: ../../.. :.. hrs		
	14 **Pre-medication administered** ☐ Yes ☐ No **Other medication taken** ☐ Yes (note on page 2) ☐ No **Other medication withheld** ☐ Yes (note on page 2) ☐ No		
	15 **Haematology documented** ☐ Group and hold ☐ INR ☐ Blood cross-match ☐ Blood product refusal		
	16 **Existing implants/prostheses** ☐ Yes (note on page 2)		
	17 **Caps/crowns/loose teeth or dentures documented** ☐ Caps ☐ Crowns ☐ Loose teeth Specify site(s): ..... ☐ Dentures: → ☐ Upper ☐ Lower ☐ Partial ☐ Full ☐ Insitu ☐ Remain on ward		
	18 **Preparation** ☐ Pre-op shower ☐ Surgical attire ☐ Removed/taped: jewellery, body jewellery, hair pins, make-up, nail polish - Operation site prepared: ☐ Clip ☐ Bowel prep and return: ..... - Anti-embolic devices applied ☐ TEDs™ ☐ SCDs/IPCs ☐ Other:		
	19 **Skin integrity assessed** ☐ Rash ☐ Bruise ☐ Tears ☐ Pimples ☐ Pressure injury ☐ Other Site:		
	20 **Personal aides/items documented** Specify: ..... Glasses: ☐ Insitu ☐ Remain on ward Contact lenses: ☐ Removed Hearing aid: ☐ Insitu ☐ Remain on ward		
	21 **Passed urine:** ..... hrs ☐ IDC insitu ☐ Nappy/Pad		
	22 **Relevant documentation** ☐ Medical record ☐ Fluid order sheet ☐ Medication chart ☐ Fluid balance chart ☐ Diabetic chart ☐ 3 sheets of patient labels ☐ Observation sheet ☐ ECG		
	23 **Patient/parent/legal guardian agrees to clinicians discussing the procedure with the nominated support person** ☐ Yes ☐ No Support person Name: ..... Phone number		

Ck1	Print name:	Designation:	Signature:	Time: .. : ..
Ck2	Print name:	Designation:	Signature:	Time: .. : ..
Ck3	Print name:	Designation:	Signature:	Time: .. : ..

Figure 39-8 Preoperative checklist.

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continued

Surgical Safety Checklist

Date: / /

Document variances on page 2

(Affix identification label here)

URN:

Family name:

Given name(s):

Address:

Date of birth: Sex: ☐ M ☐ F ☐ I

All checks need to be read out loud at time of confirmation

Sign in - Before anaesthesia or equivalent

1. Patient has confirmed:
- ☐ Identity AND
- ☐ Site / Side AND
- ☐ Procedure AND
- ☐ Consent

2. Site marked:
- ☐ Yes OR
- ☐ Not applicable

3. Anaesthesia safety check completed:
- ☐ Yes

4. Appropriate equipment / assistance available for managing a difficult airway / aspiration risk:
- ☐ Yes

5. Known allergy(ies):
- ☐ Yes OR
- ☐ No

6. Known alert(s):
- ☐ Yes OR
- ☐ No

7. Risk of blood loss of > 500mL (7mL/kg in children):
- ☐ Yes, and adequate planning for intravenous access and fluids OR
- ☐ No

8. Prosthesis (or special equipment) has been checked and confirmed:
- ☐ Yes OR
- ☐ Not applicable

9. Plan for antibiotic prophylaxis has been made:
- ☐ Yes OR
- ☐ Not applicable

10. Thromboprophylaxis:

Mechanical:
- ☐ Implemented OR
- ☐ Not indicated

Mechanical:
- ☐ Ordered OR
- ☐ Not indicated

11. Essential imaging:
- ☐ Checked with patient ID AND
- ☐ Available in theatre and viewed by operator AND
- ☐ Cross-checked against planned procedure OR
- ☐ Not applicable

Time out - Before operative procedure or equivalent commences

12. Confirm all team members have:
- ☐ Introduced themselves by name and role OR
- ☐ Already know each other by name and role

13. Surgeon, Anaesthetist and Nurse confirm:
- ☐ Patient AND
- ☐ Site / Side AND
- ☐ Procedure

14. Antibiotic prophylaxis has been given:
- ☐ Yes OR
- ☐ Not applicable

15. Pressure injury prevention plan implemented:
- ☐ Yes

16. Anticipated critical events:

Surgical team review:
- ☐ Confirm the critical or non-routine steps

Anaesthesia team review:
- ☐ Confirm any patient-specific concerns

Nursing team review:
- ☐ Confirm sterility (including indicator results) AND
- ☐ Confirm all equipment available

Sign out - Before patient leaves operating room

17. Nurse confirms with the team:
- ☐ The name of the procedure documented AND
- ☐ Accountable items count correct

18. Specimens are correctly labelled:
- ☐ Yes OR
- ☐ Not applicable

19. Equipment problems to be addressed:
- ☐ Yes OR
- ☐ Not applicable

20. Specific concerns for post operative care including pressure injury prevention:
- ☐ Surgical team AND
- ☐ Anaesthetic team AND
- ☐ Nursing team

Figure 39-8 ***continued***

according to agency policy and the procedure manual. Documentation of application, capillary refill and patient tolerance should be in the patient chart.

Performing special procedures

The patient may be prescribed pre-anaesthetic medication ('on-call medication', 'pre-med', 'preop med') for a number of reasons, including to reduce patient anxiety, the amount of anaesthetic required, and the risk of nausea and vomiting (Table 39-2). Prior to administering the medication, all other nursing care measures are completed. The consent form must have been signed before administration and the patient should have been assisted to the toilet (if able) to void. As some medication may cause sedation, the patient is advised not to leave the bed or trolley. The call bell is left within the patient's reach and the patient is advised to call for assistance if required. If the patient asks to go to the toilet after premedication is administered and it has a sedating effect, the patient is given a pan or urinal in the bed.

EVALUATING IMPACTS AND OUTCOMES

The admitting nurse or the nurse caring for the patient preoperatively will evaluate patient preoperative outcomes (Figure 39-9). With regard to the preoperative patient's plan of care, there may be limited time to evaluate the outcomes, for example in the case of immediate, emergency surgery and same-day surgery. To determine the effectiveness of preoperative interventions, ask the patient to discuss their understanding of the surgical procedure and their expectations after the surgery. This will assist in determining the patient's knowledge level and identify any gaps that should be addressed. Skilled observation and interaction with the patient will assist in identifying the presence of fear or anxiety, which can then be investigated further and addressed appropriately with reassurance, information and/or possibly medication. Evaluate the patient's knowledge of postoperative care, which may include use of patient-controlled analgesia, exercises and use of a pain scale. The patient's status is compared with expected outcomes to determine whether new or revised interventions need to be implemented and/or priorities of care identified.

TABLE 39-2 Preoperative medications and their purpose

Medication	Purpose
Antacids	Decrease gastric acidity
Antibiotics	Minimise risk of wound infection
Anticholinergics Atropine Hyoscine Glycopyrrolate	Dry secretions and decrease risk of aspiration and airway irritability
Antiemetics Ranitidine (Zantac) Cimetidine (Tagamet) Famotidine (Pepcidine) Metoclopramide (Maxolon)	Increase gastric pH and/or promote gastric emptying (decreasing risk of aspiration)
Barbiturates Secobarbital Pentobarbitone	Provide sedation with minimal cardiopulmonary depressant effects
Benzodiazepines Midazolam (Hypnovel) Diazepam (Valium) Lorazepam (Ativan)	Reduce anxiety and/or provide sedation
Opioids	Decrease intraoperative anaesthesia requirements and facilitate induction

The essentials of safe and quality care post-procedure/surgery

After surgery or some procedures a patient's care can become complex as a result of physiological changes that may occur. Patients who have undergone general anaesthesia (GA) are more likely to face complications than those who have had only local anaesthesia. The patient who requires GA has usually undergone extensive surgery as well. In contrast, a same-day surgery patient who has had local anaesthesia with no sedation and has stable vital signs may be immediately discharged. A patient who has undergone regional anaesthesia or GA is usually transferred to a high-dependency area in the operating suite called the post-anaesthesia care unit (PACU; also referred to as the **post-anaesthetic recovery unit (PARU)** in a number of settings) to be stabilised before discharge, whereas a patient who has had local anaesthesia may go directly to the nursing unit or back to the same-day surgery centre.

A patient's **postoperative** course involves two phases: the immediate recovery period (in PACU) and post-operative rehabilitation. For a same-day surgery patient, recovery normally lasts only 1–2 hours, and rehabilitation takes place at home. For a hospitalised patient, recovery may last a few hours, and rehabilitation takes 1 or more days, depending on the extent of surgery and the patient's response.

Immediate postoperative recovery

Immediately following surgery the patient is usually transferred to the PACU to allow close observation to identify and/or prevent complications and adverse events (Street et al 2015). The patient may ask the PACU nurse what the surgeon specifically did during the operation. It is the surgeon's responsibility to describe the patient's status, the results of surgery and any complications that may have been encountered.

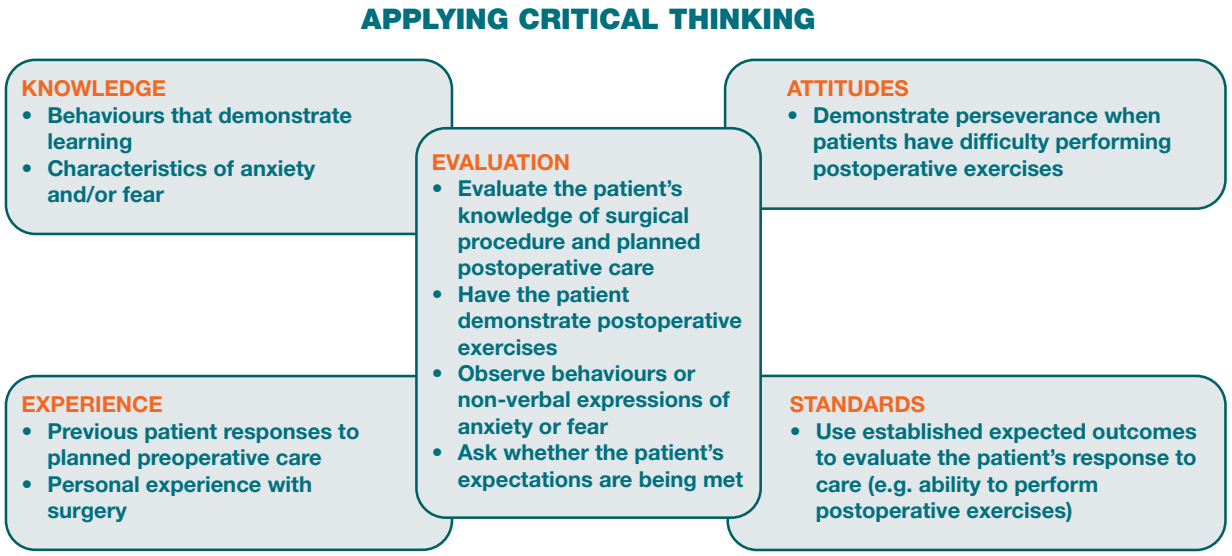

Figure 39-9 **Critical thinking model associated with the evaluation phase for the surgical patient.**

Discharge from the PACU

The recovery nurse evaluates patient readiness for discharge from the PACU on the basis of several factors, including preoperative status, surgical procedure, anaesthetic, level of conscious state, level of pain, nausea and vomiting, and vital sign stability (Phillips et al 2011). Other outcomes for discharge include absence of complications, controlled wound drainage and adequate urine output. Patients with more-extensive surgery requiring anaesthesia of longer duration usually recover more slowly.

When the patient has been assessed as ready to be discharged from the PACU, the recovery nurse calls the acute care unit. The nurse from the unit attends the post-anaesthetic unit and receives a handover from the PACU nurse. The comprehensive handover includes specifics regarding the surgery performed and type of anaesthesia, and a report of vital signs, blood loss, level of consciousness, general physical condition, presence of IV lines, drainage tubes or catheters and any specific documented postoperative orders. The PACU nurse's report helps the nurse in the acute care area to anticipate special patient needs and obtain necessary equipment. The patient is usually returned to the surgical unit on a trolley. Nurses in the surgical unit assist to safely transfer the patient to a bed.

Recovery in same-day surgery

The thoroughness and extent of postoperative assessment depends on the same-day surgery patient's condition, type of surgery and anaesthesia. In many cases, the assessment is identical to that conducted for hospitalised patients. However, if the patient has undergone minor surgery (e.g. cosmetic removal of a mole), the postoperative recovery phase requires minimal assessment.

The time that a patient spends in recovery depends on several factors. Outpatient anaesthesia is gauged to provide a quick recovery time, few after-effects and a speedy return to daily routines. Patients are encouraged to gradually sit up on the trolley or bed and begin to take ice chips or sips of water while regaining full alertness. Some patients who have undergone minor surgery may be transferred directly to a room equipped with medical recliner chairs, side tables and foot rests. Kitchen facilities for preparing light snacks and beverages are usually located in the area, along with bathrooms. Considerations for discharge for ambulatory patients include condition of the dressing, intensity and location of pain, ability to stand and walk, tolerance of oral fluids and/or food and ability to urinate spontaneously (Herrera et al 2007). Nurses review postoperative education and instructions with the patient and their support person (Box 39-6).

Postoperative rehabilitation

Same-day surgery patients are discharged to home when they meet certain criteria; for example, they are alert and oriented, have minimal nausea/vomiting, minimal postoperative pain and no excess bleeding or drainage, are able to void (if applicable) and walk, they have received written postoperative instructions and prescriptions, they understand these instructions and they are being discharged to a responsible adult.

BOX 39-6 Client teaching of postoperative instructions for ambulatory surgical client

Objectives

- Client will list resources to contact for assistance.
- Client will describe signs and symptoms of postoperative problems.
- Client will list the name and dose of medications.
- Client will describe guidelines related to specific surgery.

Teaching strategies

- Give instruction sheet with centre's number and follow-up appointment date and time. Allow client and family to ask questions.
- Explain to family member the signs and symptoms of infection or other relevant complications to watch for.
- Explain name, dose, schedule and purpose of medications. Provide drug information leaflets.
- Explain activity restrictions, diet progression and any special wound care related to specific surgery. Provide instruction sheet with clear, focused explanations.

Evaluation

- To confirm the client's understanding after teaching, have the client 'teach back' discharge information to you (e.g. 'What are you going to do when you get home?')
- Client is able to explain when to call healthcare provider with problems.
- Client is able to state date for follow-up appointment.
- Client and family member describe signs and symptoms of infection or other relevant complications.
- Client able to state name of drug/s, dose and when to take.
- Client demonstrates appropriate activity/movement and wound care.



CLINICAL REASONING PROCESS: THE POSTOPERATIVE PHASE

Nursing care in the PACU focuses on careful monitoring and maintenance of the patient's airway, breathing, circulation and neurological status, as well as the management of acute pain and other postoperative complications. Other important factors to assess include temperature, skin and incision/wound status, fluid and electrolyte balance and genitourinary and GI function. These factors are not, however, unique to the PARU setting. The nurse in the acute care area continues assessment of these critical factors on a less-intensive and less-frequent basis until the patient's discharge from the acute care facility.

GATHERING RELEVANT INFORMATION AND DATA

After the patient is transferred from the PACU to the acute care area, an initial assessment is conducted by the nurse accepting responsibility for the patient. This focused body systems assessment is based on the nature of the surgery/procedure, type of anaesthetic given and the postoperative plan of care. An important component of monitoring to detect complications is the assessment of vital signs (see Chapter 23) (Phillips et al 2014). Vital sign assessment is often conducted every 30 minutes for 2–4 hours initially, and if the patient's condition is stable the frequency is reduced as per the institution policy and the patient's condition. The postoperative orders usually specify criteria for when vital sign changes are to be reported. However, you must carefully monitor the patient as their condition can change rapidly, especially during the postoperative period.

Document the initial assessment, including vital signs, level of consciousness, condition of dressings and drains, pain level, IV fluid status and urinary output measurements. Patient data can be entered on flow sheets, a computerised patient record or progress notes; this is specific to the institution. The preoperative findings are used as a baseline for comparing postoperative changes.

After the first assessment is completed in the acute care area and immediate needs are attended to, the family/significant others may visit. The purpose of postoperative procedures or equipment and the patient's condition may need to be explained to them.

Airway and breathing

If the patient has an altered conscious state and is extremely drowsy, and there is difficulty rousing the patient, consideration needs to be given regarding the ability of the patient to maintain a patent airway, especially if there is any vomiting or secretions. The patient may not be able to clear their own secretions and suction may be required. In the post-anaesthetic patient, the tongue causes the majority of airway obstructions.

Certain anaesthetic agents and opioid analgesics may cause respiratory depression. The first and most important clinical indicator of opioid-induced respiratory depression is increasing level of sedation (see Chapter 36). Be alert for shallow, slow breathing and a weak cough. Regularly assess sedation score, respiratory rate, rhythm, depth, symmetry of chest wall movement, breath sounds, and colour of mucous membranes. If breathing is unusually shallow, placement of the hand over the patient's face or mouth allows you to feel exhaled air. Pulse oximetry is also used to monitor the patient's oxygen saturation (Phillips et al 2014).

It is important after the immediate postoperative period that the nurse providing ongoing care in the acute environment continues respiratory assessments, especially auscultation of lung sounds. Older patients and those with a history of respiratory disease or smoking are more prone to developing complications, such as atelectasis or pneumonia. The patient should also be assessed for signs of shortness of breath or difficulty breathing on exertion (e.g. when showering). A pulmonary infection caused by aspiration in the operating room or PACU setting may not be evident until several days later. Patients should also be instructed to report any symptoms to their medical practitioner after discharge, since the length of stay in acute care may be quite short.

Circulation

The patient is at risk of cardiovascular complications resulting from blood loss from the wound site, side effects of anaesthesia,

electrolyte imbalances and depression of normal circulatory regulating mechanisms. Careful assessment of heart rate and rhythm, along with blood pressure, reveals the patient's cardiovascular status. An ECG may be performed if, for example, the patient has a cardiac history.

Assess peripheral perfusion by palpating pulses and noting colour, warmth, movement, sensation, and capillary refill time for the nail beds and skin. If the patient has had vascular surgery or has casts or constricting devices that may impair circulation, assess peripheral pulses distal to the site of surgery. For example, after surgery to the femoral artery, assess posterior tibial and dorsalis pedis pulses. Compare pulses in the affected extremity with those in the non-affected extremity. Redness, pain and swelling, especially in a lower extremity, could be an indication of a DVT.

A common early circulatory problem is *haemorrhage*. Blood loss may occur externally through a drain or incision or internally within the surgical wound. Haemorrhaging may result in an elevated heart and respiratory rate; thready pulse; cool, clammy, pale skin; restlessness; and with progressive shock, decreased blood pressure. If haemorrhage is external, the nurse observes increased bloody drainage on dressings or through drains. Sometimes, the blood can ooze down the patient's side and collect in a pool under the patient. *It is important to always check under the patient for drainage, even if the dressing is not saturated.* When haemorrhage is internal, the operation site becomes swollen and tight. For example, if a patient bleeds within the abdomen, the abdomen becomes tight and distended. The first signs of suspected haemorrhaging should be reported to the surgeon immediately. The nurse maintains IV fluids and monitors the patient's vital signs every 15 minutes or more frequently until the patient's condition stabilises. Oxygen may be initiated and the patient's legs and head slightly elevated to promote venous return and increase the volume of blood available for supplying oxygen and nutrients to vital organ systems. Further medications and IV volume replacement, such as blood products, may be ordered.

If the patient is on prolonged bed rest or has reduced mobility, anticoagulants may be ordered in addition to the use of pneumatic compression stockings. This is to prevent the formation of a DVT. The risk of DVT decreases when the patient begins to mobilise.

Because of the surgical patient's risk of fluid and electrolyte abnormalities, assess hydration status and monitor cardiac and neurological function for signs of electrolyte alterations (see Chapter 34). Fluids are especially important as the patient recovers from regional anaesthesia. Laboratory values will be monitored and compared with the patient's baseline values.

An important responsibility is assessment of the patient's IV site for signs and symptoms of infiltration and phlebitis. The patient's only source of fluid intake immediately after surgery may be through an IV.

To ensure adequate fluid intake, administer the infusion as ordered. If assessments indicate a fluid volume deficit or a fluid volume excess, notify the medical officer of the data and the infusion and/or rate may be changed. As the patient begins to commence oral fluids, the ordered IV rate will usually be decreased. When the patient no longer requires a continuous IV infusion, the IV line may be capped ('bunged off') and Normal saline flushes ordered to ensure IV cannula patency for medication administration (e.g. antibiotics). The patient may also be ordered to receive blood products after surgery, depending on blood loss during surgery.

Accurate recording of fluid intake and output assists with assessment of renal and circulatory function. You may need to document input and output on a fluid balance chart. This is dependent on the surgery, patient's past history, patient condition and whether the patient has an IV, drains and other interventions such as an IDC or NGT. Measure all sources of output, including urine, drains, gastric drainage via emesis or NGT and drainage from wounds, and note any insensible loss from diaphoresis.

Disability

A patient will have been orientated to the environment before being discharged from the PACU, and the nurse from the acute area should ensure that the patient is rousable prior to agreeing to accept the patient from the PARU. If a patient has had surgery involving a part of the neurological system, conduct a thorough neurological assessment. For example, if the patient has had lower back surgery, assess leg movement, sensation and strength. Patients with regional anaesthesia begin to experience a return in motor function before tactile sensation returns. Dermatome (a segmental skin area innervated by segments of spinal cord) assessment of the spinal nerves is performed (Figure 39-10). Typically, the level of sensory block is assessed by testing the dermatome level at which the patient reports a

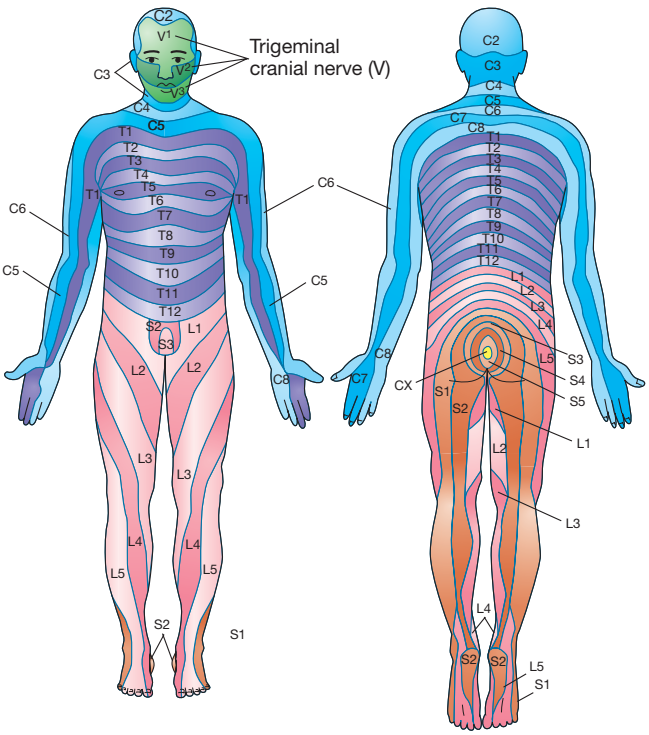

Figure 39-10 Segmental dermatome distribution of spinal nerves.

C, Cervical segments; T, thoracic segments; L, lumbar segments; S, sacral segments.

Modified from Thibodeau GA, Patton KT 2002 Anthony's textbook of anatomy and physiology, 17th edn. Mosby, St Louis.

WORKING WITH DIVERSITY

Focus on older adults

Acute delirium is common in older people following surgery, occurring in up to 30% of elderly patients. Delirium can be caused by many physiological problems, including metabolic imbalances, infection, dehydration and malnutrition. Nurses need to be alert to rapid changes in a patient's mental state which may include disorganised thinking, incoherent speech and restless, agitated behaviour. A focused nursing assessment is necessary to determine the cause of delirium, which is often reversible.

Reference

Poole J, Mott S 2003 Agitated older patients: nurses' perceptions and reality. Int J Nurs Pract 9(5):306.

change in temperature sensation when ice or alcohol is applied to the skin.

Orientation to the environment is important in maintaining the patient's alertness. You may need to re-orientate the patient to the ward, explain that the surgery is completed and describe the nursing measures being carried out. The patient who was properly prepared before surgery is likely to be less anxious when nurses begin their care.

Unless the patient has undergone neurological surgery, the focus of nursing assessment will be a basic neurological examination. Of primary importance is the patient's level of consciousness. An altered level of alertness may be an indicator that patient condition is deteriorating. Although the patient may still be drowsy from anaesthesia, you should be able to assess the patient's ability to follow commands and answer questions assessing their orientation. Extremity strength assessment is important if spinal or epidural anaesthesia has been administered.

Exposure

The operating room and PACU environments are extremely cool. The patient's anaesthetically depressed level of body function results in a lowering of metabolism and a fall in body temperature. When patients begin to wake, they often complain of feeling cold. The length of time spent in the operating room and laminar flow rooms contributes to heat loss. Surgeries that require an open body cavity also contribute to heat loss. Older adults and paediatric patients are at higher risk of developing problems associated with hypothermia.

Measure the patient's body temperature and provide warmed blankets if required. Shivering may not be a sign of hypothermia, but rather a side effect of certain anaesthetic agents. Deep-breathing and coughing help expel retained anaesthetic gases. If the patient's temperature is 35.6°C or below, a warming device may be used. Increasing body warmth causes the patient's metabolism to rise and circulatory and respiratory functions to improve.

In rare instances, malignant hyperthermia can develop, a life-threatening complication of some anaesthetic drugs. Malignant hyperthermia causes tachypnoea, tachycardia, unstable blood pressure, cyanosis, skin mottling and muscular rigidity. Despite the name, an elevated temperature is a late sign. Although it is often seen during the induction phase of anaesthesia, symptoms may recur 24–72 hours postoperatively. Without proper treatment, it can be fatal.

Temperature is monitored relatively closely when a patient who has had surgery is in the acute care area. An elevated temperature may be the first indication of an infection. If the patient's temperature is elevated, the nurse assesses the patient for a potential source of infection, including the IV site (if present), the surgical incision/wound, the respiratory system (potential for chest infection) and the urinary system (potential for urinary tract infection). The medical officer must be notified, as further assessments may be ordered, including blood collection (e.g. blood cultures), sputum specimen and urinary specimen.

Comfort

As patients regain consciousness from general anaesthesia, the perception of pain becomes prominent. Pain can be perceived before full consciousness is regained. Acute incisional pain causes patients to become restless and may be responsible for changes in vital signs. It is difficult for patients to begin deep-breathing and coughing exercises when they experience pain. This is of particular significance for patients who have had abdominal, back or chest surgery, as the pain experienced will impede their ability to effectively perform these exercises, placing them at greater risk for chest infection. The patient who has had regional or local anaesthesia usually does not experience pain initially, because the incision area is still anaesthetised.

Thorough assessment of the patient's pain and evaluation of pain-relief therapies are essential. Pain scales are an effective way for nurses to assess the severity of postoperative pain, evaluate response to analgesics and objectively document pain severity (see Chapter 36). Using preoperative pain assessments as a baseline, evaluate the effectiveness of interventions throughout the patient's recovery.

It is common to administer opioid analgesics immediately after surgery for pain relief and to maximise the patient's ability to perform respiratory exercises, such as deep-breathing and coughing. Initial analgesic doses are usually given IV in the PARU and titrated to patient comfort. Patient-controlled analgesia (PCA) may also be commenced. Many patients receive epidural analgesia, which may be continued throughout the recovery period (see Chapter 36).

If the patient has a PCA and is making attempts to use it more frequently than it is programmed for (the number of patient demands is displayed on the machine) or pain is uncontrolled, the nurse should contact the acute pain team to change the order. The amount of medication the patient can receive may be increased, the lockout period decreased or other medication may be commenced. As oral intake is tolerated, and dependent on the pain assessment, the patient's analgesia will usually be changed from IV to oral administration. Non-pharmacological interventions should also be implemented. An example is to lower the head of the bed and use a pillow for incisional splinting while turning a patient with recent abdominal surgery.

Gastrointestinal function

Anaesthetics slow GI motility and may cause nausea. Normally, during the immediate recovery phase faint or absent bowel sounds can be auscultated in all four quadrants. Inspection of the abdomen rules out distension which may be caused by accumulation of gas. In a patient who has had abdominal surgery, distension will develop if internal bleeding occurs.

Distension may also occur in the patient who develops a **paralytic ileus** from handling of the bowel in surgery. This paralysis of intestines with distension and symptoms of acute obstruction may also be related to the administration of anticholinergic drugs. This usually does not occur for 24 hours. Be aware of the risk for paralytic ileus and observe for abdominal distension and reduction in bowel sounds.

The level of nausea should be regularly assessed, as well as the effect of any interventions (e.g. administration of antiemetics). Because stomach-emptying slows with the patient under anaesthesia, the accumulated contents cannot escape, and nausea and vomiting develop. Normally a patient does not receive fluids to drink in the PARU because of bowel sluggishness, with the risk of nausea and vomiting, and because of grogginess from GA. If the patient has an NGT on free drainage, the nurse assesses the output for amount and colour.

The patient is likely to begin taking ice chips or sips of fluids when arriving in the acute care unit. If these are tolerated, diet can usually be commenced. In the case of some abdominal surgery, the bowel may need to be rested, and commencement of oral intake will not be indicated for several days.

Skin integrity

After surgery, most surgical wounds are covered with a dressing that protects the wound site and absorbs drainage. Observe the dressing for drainage: colour, amount (marking around the ooze with a permanent pen, including date and time), consistency and odour. Some smaller wounds are covered with a transparent dressing only, facilitating ongoing assessment of the wound. The dressing is left intact, thereby reducing the risk for infection from dressing changes.

Some surgeons prefer to assess the incision and surrounding skin the first time the dressing is removed, or 'taken down'. The nurse in the acute care area assesses the wound site and documents the assessment and any related interventions (see Chapter 30). The first assessment is important as it forms the baseline for continued wound evaluation during the patient's hospital stay.

It is also important to consider the patient's mobility level. If the patient is unable or unwilling to turn, they are at increased risk for pressure injury. Follow institutional policy regarding assessment of patient risk for pressure injury (e.g. use of the Braden Scale). Appropriate preventive measures can then be implemented to manage the risk (see Chapter 30).

Assess the condition of the patient's skin, noting rashes, abrasions, bruising or burns. A rash may indicate a drug sensitivity or allergy. Abrasions or bruising may result from inappropriate positioning during surgery. A burn may indicate that an electrical cautery grounding pad was incorrectly placed on the patient's skin during surgery. Burns or serious injury to the skin should be documented following institutional policy (e.g. completion of an incident report and entry into the risk-management system).

Genitourinary function

Depending on the surgery or procedure, a patient may not regain voluntary control over urinary function for 6–8 hours after anaesthesia. An epidural or spinal anaesthetic may prevent the patient from feeling bladder fullness or distension. Palpate and percuss the lower abdomen just above the symphysis pubis for bladder distension. Patients may need an intervention to void if their bladder becomes distended. If an IDC is inserted, the expected minimum urine output is 0.5–1 mL per kg per hour (0.5–1 mL/kg/h) in adults. Assess urine colour and odour. A urinalysis may be conducted to ascertain specific gravity if fluid volume deficit is suspected.

Surgery involving portions of the urinary tract normally cause bloody urine for at least 12–24 hours, depending on the type of surgery. If the patient has an IDC, the goal should be to have it removed as soon as possible. Patients with an IDC are at high risk of developing a healthcare-associated bladder or urinary tract infection. This will contribute to patient discomfort, increased costs and possible increase in length of hospitalisation.

CLINICAL EXAMPLE

You go to the PACU to retrieve Mr Summers, who has had an open reduction and internal fixation (ORIF) of the right femur. He has recovered satisfactorily postoperatively. His vital signs in the PACU are:

Heart rate	110 beats/minute and regular
Blood pressure	156/96 mmHg
Respiratory rate	10 breaths/minute, shallow
SpO_2	94% on Hudson mask at 6 L/minute oxygen
Temperature	37.1°C
Conscious state	drowsy but rousable
Pain score	4/10

Dressing dry and intact. IDC in situ with minimal drainage.

He required supplemental oxygen to maintain oxygen saturations above 95%. Pain was managed with a morphine patient-controlled analgesia (PCA), 1 mg bolus dose with 5 minute lockout. The PACU nurse is keen for you to take him back to the ward.

• CRITICAL REFLECTION POINT

Using the ABCDE mnemonic to assess Mr Summers' situation described in the *Clinical example* above, would you agree to take Mr Summers back to the ward? Justify your decision based on scientific rationale and evidence-based literature.

MAKING APPROPRIATE JUDGEMENTS AND DECISIONS

The nurse evaluates the status of any priorities identified from the preoperative assessment and gathers new relevant data and information to ascertain if the priorities and goals are still relevant postoperatively, modify if relevant, or identify new ones. Previously defined priorities, such as *impaired skin integrity*, may continue as a postoperative problem (e.g. if the patient has an incisional wound, then they clearly have impaired skin integrity). The nurse may also identify new risk factors leading to identification of new priorities (Box 39-7). For example, an older patient who has undergone major

BOX 39-7 Examples of postoperative priority problems

Difficulty clearing airway related to:
- Retained secretions
- Bronchospasm
- Acute pain with movement/coughing
- Decreased level of consciousness

Risk of impaired skin integrity related to:
- Exposure to wound drainage
- Altered fluid status
- Altered sensation
- Altered nutritional status

abdominal surgery and who has a pre-existing problem of reduced hip mobility resulting from arthritis will have the problem and thus priority of *impaired physical mobility*. The surgery or procedure itself may add risk factors for the patient. Consider the needs of a patient's family when identifying priorities. For example, the inability of the family to cope with the patient's condition requires intervention.

SETTING PRIORITIES AND ESTABLISHING GOALS

When a patient is recovering from surgery or a procedure, the nurse has a great deal of assessment data and information to inform making appropriate judgements and decisions to plan patient care. The preoperative history, postoperative assessment data and the postoperative orders all inform the nurse to plan specific patient-centred nursing interventions. Box 39-8 presents a sample of typical postoperative orders. Typical postoperative orders include the following:

Multidisciplinary clinical pathways are commonly used to plan care for the surgical patient, although these must be individualised for each patient based on the RN's assessment and clinical judgement (see Figure 39-11). The nurse considers the effects of the stress of surgery and the limitations it produces when establishing expected outcomes and interventions for the individual patient. Measurable outcomes help to facilitate the evaluation of appropriate recovery from surgery. For example, the patient with impaired mobility should have specific outcomes selected, which may include walking at least 20 metres four times a day, performing range-of-movement exercises (as taught) on the relevant joint every 2 hours while awake, a pain level no greater than 3 (on a scale of 0–10), wound edges approximated and absence of wound infection, performing deep-breathing and coughing exercises correctly every 1–2 hours when awake. Outcomes can then be evaluated as to whether they were met and whether any modifications need to be made.

Typical broad goals of postoperative care include:
- demonstrating return or maintenance of normal physiological function, including respiratory, circulatory, elimination and nutritional status
- demonstrating absence of postoperative surgical wound infection
- achieving rest and comfort
- maintaining or enhancing self-concept.

BOX 39-8 Typical postoperative orders

- Frequency of vital sign monitoring and any focused assessments (e.g. related to drain tubes, NGTs, IDCs)
- IV fluids and rates of infusion
- postoperative medications (especially those for pain and nausea)
- fluids and food allowed by mouth
- level of activity the patient is allowed to resume
- position the patient is to maintain while in bed
- intake and output recording
- laboratory tests and X-rays
- special directions relevant to the surgery performed.

WORKING WITH DIVERSITY

Focus on older adults

Being aware of older adults' special needs and addressing them early can reduce the incidence of postoperative complications.
- *Hearing and vision loss* – ensure that the patient uses their hearing aid and/or glasses. Miscommunication has the potential to have serious adverse consequences. For example, hearing and vision losses may lead to confusion, increased anxiety and non-adherence to plan of care, based on misunderstanding.
- *Comorbidities* – older adults may present with vague symptoms that mask serious underlying conditions. Be aware of the likelihood of cardiovascular, respiratory, renal and central nervous system disorders.
- *Polypharmacy* – older adults may be prescribed multiple medications. It is essential that all current medications are noted during the admission assessment. For elective surgery, patient should be asked to bring all medications in with them.
- *Hypothermia* – older people are more vulnerable to hypothermia than other age groups. Hypothermia can result in serious physical and psychological consequences: renal concentrating ability, drug clearance, wound healing and tissue oxygenation requirements can all be seriously impaired by hypothermia. The older patient must be kept warm by using warm blankets, patient-controlled warming gowns, warmed infusion fluids and/or heated, humidified inspired gases.

UR No..... **Name: .....**

CRITICAL PATH	ICU ADMISSION POST OP DATE:	AM	PM	ND
PSYCHOSOCIAL	• Post-op contact with family / carer established • Patient, family / carer concerns verbalised and attended			
NUTRITION / HYDRATION	• NBM. NGT free drainage. Ice to suck – oral fluids as tolerated 4/24 post extubation • IVT / PA / CVC infusions as per MR170			
HYGIENE	• Post-op sponge and oral hygiene prn • Patient clean and mouth moist			
ELIMINATION	• IDC – 1/24 urine output within limits set by ICU Consultant • Urine / NGT output recorded on MR064 • Bowel sounds present on auscultation			
SKIN / WOUNDS / DRAINS	• Hydrocolloid dressings intact on sternum – minimal ooze • Radial and / or SVG (donor sites) – hydrocolloid dressing and bandage intact. • ICCs insitu at 20cm suction – no air leak evident • ICC patency and drainage maintained – turn patient 2/24 • ICC drainage <200mL/hr for 1st 2hrs or 100mL/hr thereafter and recorded on MR064 • 2/24 pressure care – skin dry, integrity intact and well perfused			
PAIN Mx / COMFORT	•Strict 4/24-6/24 analgesia – medication as per MR075 •Intermittent sleep – RIB •Epidural insitu YES ☐ •Epidural obs as per protocol & as per Anaesthetic guidelines. Obs within normal limits			
RISK ASSESSMENT	Falls Risk – Screening score _____ if > 65 years or at risk If score >2 complete Falls Risk Assessment Tool MR 048			
	Skin / Pressure Risk – Complete Braden Risk Assessment Tool MR 047 if > 65 years and LOS > 4 days or at risk.			
	ASSIST LEVEL (CIRCLE) / EQUIPMENT NEEDS / No. OF STAFF (CIRCLE) On Bed: I S A N — 1 2 3 Off Bed: I S A N — 1 2 3 Mobilising: I S A N — 1 2 3 Refer to Patient mobility & Transfer Risk Assessment Equipment Guide			
PHYSIOTHERAPY / MOBILITY	• Lung expansion exercises encouraged during weaning from ventilator • 1/24 lung expansion exercises completed when extubated • 2/24 leg exercises & position changes (side lying / semi upright) tolerated • Good air entry & muscle tone maintained • Patient able to cooperate with physiotherapy regime			
TREATMENTS / ASSESSMENTS	• Post op assessments – hourly } • Vascular observations (donor sites) } per ICU Guidelines & • Neuro assessments } recorded on MR063 • Mechanical ventilation } • Patient extubated 6-12 hours post-op. NGT removed at extubation **Time:.....** • Continuous pulse oximetry – SaO^2>92% with O^2 therapy via mask or nasal prongs at meal times • Haemodynamic monitoring within limits set by ICU Consultant • Pacing wires in situ YES ☐ NO ☐ Patient paced YES ☐ • Sit at 45º within 1 hr if stable • SGC/ CVC/ IVT/ IAL insitu, nil infection / ooze evident at sites • IVT site ..... • IAL site.....			
MEDICATIONS	• Antibiotics and medications as per MR075 – Nil abnormal reaction • Vasoactive infusions as per MR170 • Withold Clexane / Heparin 12hrs. prior to removal of epidural and 2 hrs. post removal			

Figure 39-11 Extract of postoperative clinical pathway for cardiac surgery.

Courtesy Warringal Private and Ramsay Health Care, Melbourne.

continued

UR No..... **Name: .....**

	• Other:			
INVESTIGATIONS	• Portable CXR ☐ ECG ☐ Glucose ☐ Hb ☐ • ABG / K on admission then prn – results within normal limits • Other			
DOCTORS ORDERS / CONSULTATIONS	• ICU Consultant •Cardiac Surgeon • ICU RMO •Cardiologist			

CRITICAL PATH	**ICU ADMISSION POST OP** **DATE:**	**AM**	**PM**	**ND**
DISCHARGE PLAN				

	Signature	**Designation**	**Print**	**Time**
RN SIGN - AM				
- PM				
- ND				
ALLIED HEALTH				

Figure 39-11 ***continued***

• CRITICAL REFLECTION POINT

Reflect on the *Clinical example* on p. 1457. Outline your postoperative assessment of Harry Summers, focusing on immediate postoperative recovery issues. Identify the immediate nursing priority goals and interventions based on scientific rationale and the evidence.

PREPARING FOR AND TAKING ACTION

The principal causes of postoperative complications are a surgical wound, the effects of prolonged immobility during surgery and recovery rehabilitation and the influence of anaesthesia and analgesics. Nursing management is directed at preventing complications so that the patient returns to the highest level of functioning possible. Failure of the patient to become actively involved in recovery adds to the risk of complications (Table 39-3). Virtually any body system can be

TABLE 39-3 Postoperative complications

Complication	Cause
Respiratory system	
Atelectasis is collapse of alveoli Signs and symptoms include elevated respiratory rate, dyspnoea, fever, crackles auscultated over involved lobes of lungs and productive cough	Atelectasis is caused by inadequate lung expansion. Anaesthesia, analgesia and immobilised position prevent full lung expansion. There is greater risk in patients with upper abdominal surgery who have pain during inspiration and repress deep-breathing
Pneumonia is inflammation and consolidation of alveoli caused by infectious process. It may involve one or several lobes of lung. Development of pneumonia in lower dependent lobes of lung is common in immobilised surgical patient Signs and symptoms include fever, chills, productive cough, chest pain, purulent sputum and dyspnoea	Pneumonia is caused by poor lung expansion with retained secretions. Common resident bacterium in respiratory tract is *Diplococcus pneumoniae*
Hypoxaemia is inadequate concentration of oxygen in arterial blood Signs and symptoms include restlessness, dyspnoea, high blood pressure, tachycardia, diaphoresis and cyanosis	Respirations are depressed by anaesthetics or analgesics. Increased retention of secretions with impaired ventilation occurs because of pain or poor positioning
Pulmonary embolism is caused by an embolus blocking a pulmonary artery and disrupting blood flow to one or more lobes of lung Signs and symptoms include dyspnoea, sudden chest pain, cyanosis, tachycardia and drop in blood pressure	Immobilised surgical patients with pre-existing circulatory or coagulation disorders are at risk
Circulatory system	
Haemorrhage is loss of large amount of blood externally or internally in short period of time Signs and symptoms are same as for hypovolaemic shock	Haemorrhage is caused by slipping of suture or dislodged clot at incisional site. Patients with coagulation disorders are at greater risk

continued

TABLE 39-3 ***continued***

Complication	Cause
Hypovolaemic shock is inadequate oxygenation and perfusion of tissues and cells from loss of circulatory fluid volume Signs and symptoms include hypotension, weak and rapid pulse, cool and clammy skin, rapid breathing, restlessness and reduced urine output and hypertension	In surgical patient, hypovolaemic shock is usually caused by haemorrhage
Thrombophlebitis is inflammation of vein often accompanied by clot formation. Veins in legs are most commonly affected Signs and symptoms include swelling and inflammation of involved site and aching or cramping pain. Vein feels hard, cord-like and sensitive to touch. Pain in calf may occur when patient walks or dorsiflexes foot (Homans' sign)	Venous stasis is aggravated by prolonged sitting or immobilisation. Trauma to vessel wall and hypercoagulability of blood increase risk of vessel inflammation
Thrombus is formation of clot attached to interior wall of a vein or artery, which can occlude the vessel lumen	Thrombus is caused by venous stasis (see thrombophlebitis) and vessel trauma. Venous injury is common after surgery of legs, abdomen, pelvis and major vessels
Embolus is piece of thrombus that has dislodged and circulates in bloodstream until it lodges in another vessel, commonly lungs, heart or brain	Thrombi also form from increased coagulability of blood (e.g. polycythaemia and use of contraceptives containing oestrogen)
Gastrointestinal system	
Abdominal distension is increased abdominal girth and tympanic percussion over abdominal quadrants. Patient complains of fullness and 'gas pains'	Distension is caused by slowed peristalsis from anaesthesia, bowel manipulation or immobilisation
Constipation is infrequent passage of stools. It should not be an immediate concern after surgery, especially if patient has preoperative bowel preparation. After patient resumes solid diet, failure to pass stool within 48 hours is cause for concern	Slowed peristalsis (see causes of distension) and delay in resuming normal diet cause constipation
Nausea and vomiting are symptoms of improper gastric emptying or chemical stimulation of vomiting centre Patient complains of gagging or feeling full or sick in stomach	Nausea and vomiting are caused by severe pain, abdominal distension, fear, medications, eating or drinking before peristalsis returns and initiation of gag reflex
Genitourinary system	
Urinary retention is involuntary accumulation of urine in bladder as result of loss of muscle tone Signs and symptoms include inability to void, restlessness, abdominal pain and bladder distension. It appears 6–8 hours after surgery	Retention is caused by effects of anaesthesia and opioid analgesics. Local manipulation of tissues surrounding bladder and oedema interfere with bladder tone. Poor positioning of patient impairs voiding reflexes
Integumentary system	
Wound infection is an invasion of deep or superficial wound tissues by pathogenic microorganisms Signs and symptoms include warm, red and tender skin around incision. Patient may have fever and chills. Purulent material may exit from drains or from separated wound edges. It appears 3–6 days after surgery	Infection is caused by poor aseptic technique and contaminated wound before surgical exploration
Wound dehiscence is separation of wound edges at suture line Signs and symptoms include increased drainage and appearance of underlying tissues. It usually occurs 6–8 days after surgery	Malnutrition, obesity, preoperative radiation to surgical site, old age, poor circulation to tissues and unusual strain on suture line from coughing cause dehiscence
Wound evisceration is protrusion of internal organs and tissues through incision. It usually occurs 6–8 days after surgery	See *Wound dehiscence*. Patient with dehiscence is at risk of developing evisceration
Nervous system	
Uncontrolled acute pain	Severe pain despite adequate analgesia may have a surgical cause

affected. The nurse must consider the interrelationship of all systems and therapies provided.

Maintaining respiratory function

To manage risk and prevent respiratory complications, begin aggressive pulmonary measures preoperatively. The benefits of thorough preoperative education are realised when patients are able to participate actively. Skill 39-2 (p. 1440) outlines postoperative exercises to prevent respiratory complications postoperatively. The following measures promote expansion of the lungs:

- Encourage diaphragmatic breathing exercises at least every 2 hours while patient is awake. Maximal inspirations lasting 3–5 seconds open up alveoli.
- Instruct patients to use an incentive spirometer for maximum inspiration.
- Encourage early ambulation. Walking means that patients assume a position that does not restrict chest wall expansion and stimulates an increased respiratory rate.
- Assist patients who are restricted to bed to turn on their sides every 1–2 hours while awake and to sit when possible. Turning permits expansion of the lungs. Sitting causes lowering of abdominal organs, thus facilitating diaphragmatic movement and lung expansion.
- Keep the patient comfortable. A patient who is comfortable will be able to participate in the postoperative regimen. Assess, document, treat and evaluate the patient's pain and nausea levels.

The following measures promote removal of pulmonary secretions if they are present:

- Encourage coughing exercises every 1–2 hours while the patient is awake and effectively manage pain to promote a deep, productive cough. Note that for patients who have had eye, intracranial or spinal surgery, coughing may be contraindicated because of the potential increase in intraocular or intracranial pressure.
- Maintain adequate hydration (e.g. with IV or oral fluids as tolerated) and provide oral hygiene to help thin and expectorate secretions. Secretions become thick and tenacious and the oral mucosa becomes dry when patients are NBM or are placed on limited fluid intake.
- Initiate orotracheal or nasotracheal suction for patients who are too weak or are unable to cough (see Chapter 35).

Maintain circulatory function

Nursing interventions aimed at preventing the risk of circulatory complications need to be implemented. Some patients are at greater risk of venous stasis because of the nature of their surgery and/or postoperative care. The following measures promote venous return and circulatory blood flow.

- Remind the patient to perform leg exercises at least every hour while awake. Exercise may be contraindicated in an affected extremity involving vascular repair or realignment of fractured bones and torn cartilage.
- Apply antiembolism stockings as ordered. The stockings should be removed every 8 hours and left off for 1 hour (see Chapter 28).
- Apply pneumatic compression stockings as prescribed. Each stocking wraps around a patient's leg and is kept in place with a Velcro attachment. Compressed air inflates the padded plastic stocking systematically from ankle to calf to thigh, and then deflates. The alternating inflation and deflation of the stocking reduces venous stasis.
- Encourage early ambulation. Most patients are expected to walk the evening of surgery, depending on the severity of the surgery and their condition. Even if a patient has an epidural catheter or PCA device, walking should be encouraged. The degree of activity allowed progresses as the patient's condition improves. Before walking, assess the patient's vital signs. Abnormalities may contraindicate walking. If vital signs are normal, assist the patient to sit on the side of the bed and encourage them to wiggle their toes. Dizziness may be a sign of postural hypotension. Recheck blood pressure to determine whether walking is safe. Ensure that the patient is steady when they first stand and walk by the patient's side. Evaluate exercise tolerance.
- Avoid positioning patients in a manner that interrupts blood flow to the extremities. While in bed, patients should not have pillows or rolled blankets placed under the knees, as compression of the popliteal vessels can cause thrombi.
- Administer anticoagulant medication as prescribed. Anticoagulants, such as heparin, are often ordered for patients at risk of thrombus formation.
- Assess for adequate fluid intake, and when able to commence oral fluids encourage intake. Adequate hydration prevents concentrated build-up of formed blood elements, such as platelets and red blood cells. When the plasma volume is low, these elements may gather and form small clots within blood vessels.

Promoting elimination and adequate nutrition

Interventions for preventing GI complications promote return of normal elimination and faster return of normal nutritional intake. It may take several days for a patient who has had surgery on GI structures (e.g. a colon resection) to resume a normal diet. Normal peristalsis may not return for 2–3 days. In contrast, the patient whose GI tract is unaffected directly by surgery can resume dietary intake after recovering from the effects of anaesthesia. The following measures promote return of normal elimination:

- Dependent on the surgery, the nurse may be required to assess for return of peristalsis. This involves auscultation of the abdomen to detect bowel sounds; 5–30 gurgles per minute over each quadrant indicate normal bowel sounds. Asking whether the patient has passed flatus also indicates that peristalsis is returning. Abdominal distension should be reported to the medical officer.
- Maintain a gradual progression in dietary intake. A patient having day-surgery may be able to eat and drink as soon as they wake from the anaesthetic. Some patients may receive only IV fluids for the first few hours after surgery. Once oral fluids and food can be commenced, it is sensible to encourage the patient to start with water, progressing to clear fluids and a light diet (e.g. soup and sandwiches), as overloading with large amounts of fluids may lead to nausea and vomiting. Patients who have had abdominal surgery with interference to the bowel or GI tract are usually NBM for the first 24–48 hours. As peristalsis returns, clear fluids only may be ordered, followed by free fluids, then light food diet, and finally a regular diet.

- Promote walking and exercise. Physical activity stimulates a return of peristalsis. The patient who suffers abdominal distension and 'gas pain' will often obtain relief while walking.
- Maintain an adequate fluid intake. Patients who have had surgery are often at a higher risk for constipation due to the side effects of pain medication and reduced mobility. Fluids keep faecal material soft for easy passage. Administer stool softeners and enemas as prescribed.

The following measures assist in maintaining an adequate dietary intake:

- Remove sources of noxious odours which may deter the patient from eating.
- Assist the patient into a comfortable position at meal-times. The patient should sit if possible.
- Assist the patient in selecting desired servings of food. For example, a patient may be more willing to face the first meal when servings are small.
- Provide oral hygiene. Adequate hydration and cleansing of the oral cavity diminish dryness and bad tastes.
- Provide meals when the patient is rested and free from pain. Often a patient loses interest in eating if meal-time has been preceded by exhausting activities, such as walking, coughing and deep-breathing exercises or extensive dressing changes. When a patient has pain, there may be associated nausea which will often cause a loss of appetite.

Promoting urinary elimination

The depressant effects of anaesthetics and analgesics impair the sensation of bladder fullness and can cause urinary retention. If bladder tone is reduced, the patient has difficulty voiding. However, patients should void within 8–12 hours after surgery. Patients who undergo surgery of the urinary system often have an IDC inserted to maintain free urinary flow until voluntary control of micturition returns. The following measures promote normal urinary elimination:

- If possible, considering the patient's medical condition, assist the patient to assume their normal position when voiding. A male patient may prefer to stand to void. A bed pan can make voiding difficult and a female patient may prefer to use a toilet or bedside commode.
- Assess the patient for the need to void. A surgical patient restricted to bed needs assistance to handle and use bed pans or urinals. Often the patient acquires a sudden feeling of bladder fullness and urgency to void and will need help quickly.
- Assess for bladder distension by palpating the lower abdomen above the symphysis pubis. A bladder scanner may be used to assess the volume of urine in the bladder. If a patient does not void within 8 hours of surgery or bladder distension is present, it may be necessary to insert a urinary catheter so you need to notify the medical officer.
- Monitor intake and output. An accepted level of urinary output is at least 0.5–1 mL/kg/h for adults. If the urine is dark, concentrated and low in volume (< 30–60 mL per hour), the medical officer should be notified. A patient can easily become dehydrated as a result of fluid loss from the surgical wound or a lengthy fasting preoperative period. Measure intake and output for several days after surgery until normal fluid intake and urinary output are achieved.

Promoting wound healing

A number of factors may affect surgical wound healing and place the patient at risk for delayed healing, such as inadequate nutrition, impaired circulation and metabolic alterations (see Chapter 26). A wound may also undergo considerable physical stress. Strain on sutures from coughing, vomiting, distension and movement of body parts can disrupt the wound layers. The nurse has a role in promoting wound healing. If a wound becomes infected, the infection usually establishes itself 3–6 days after surgery. A clean surgical wound usually does not regain strength against normal stress for 15–20 days after surgery. The nurse uses aseptic non-touch technique during dressing changes and wound care (see Chapter 25). Surgical drains must remain patent so that accumulated secretions can escape from the wound bed. Assessment of the wound identifies early signs and symptoms of infection.

Achieving rest and comfort

A surgical patient's pain usually increases as the anaesthesia wears off. The incisional area may be only one source of pain. Irritation from drainage tubes, tight dressings or casts and the muscular strains caused from positioning on the operating-room table can make the patient feel uncomfortable. As such, do not assume that expression of pain is only related to the incision.

Pain can significantly slow recovery. The patient becomes reluctant to cough, breathe deeply, turn, walk or perform necessary exercises. The nurse assesses the patient's pain thoroughly (see Chapter 36) and ensures that interventions and therapies are adequate. If they are not, the nurse needs to collaborate with the acute pain service or medical staff to obtain more-effective pain relief. The nurse should also independently implement non-pharmacological interventions to promote pain relief, such as appropriate positioning that aids the patient's comfort, gentle back massage and use of hot or cold packs (if appropriate).

Epidural infusion of local anaesthetic and opioids, such as morphine or fentanyl via patient-controlled epidural analgesia (PCEA), is another common method for administering effective postoperative analgesia for many surgical patients. These medications may be delivered as a continuous infusion or a pre-programmed bolus dose or interval, or both. Epidural opioids relieve severe pain, often without the central nervous system depression that can occur with systemic opioids. Recognising potential complications and what to do if they occur is an important role for the postoperative nurse (see Chapter 36 on preventing and managing complications of epidural analgesia).

Maintaining/enhancing self-concept

The appearance of wounds, bulky dressings, bruising, extruding drains and tubes affects a patient's self-concept. The effects of surgery, such as disfiguring scars, may create permanent changes for the patient's body image. If surgery leads to impairment in body function, the patient's role within the family can change significantly.

The nurse observes patients for alterations in self-concept. Patients may show revulsion towards their appearance by refusing to look at incisions, carefully covering dressings with

bedclothes or refusing to get out of bed because of tubes and devices. The fear of not being able to return to a functional role in their families may even cause patients to avoid participating in their plan of care.

The family and significant others are important to improving the patient's self-concept. The nurse explains the patient's appearance to the family in a way that avoids non-verbal expressions of revulsion or surprise. The family needs to accept the patient's needs and still encourage the patient's independence. If the condition is permanent, the family learns to help the patient through the grieving process so that the patient can reach a stage of acceptance. The following measures maintain the patient's self-concept:

- Offer opportunities for the patient to discuss feelings about appearance. A patient who avoids looking at an incision may need to discuss fears or concerns. Many patients may worry about permanent scarring. When the patient chooses to look at an incision for the first time, the area should be clean. If necessary, the patient should eventually be able to care for the incision site by applying simple dressings or bathing the affected area.
- Provide privacy during dressing changes or inspection of the wound and appropriately drape the patient so that only the dressing or incisional area is exposed.
- Maintain the patient's hygiene. Wound drainage and antiseptic solutions from the surgical skin preparation dry on the skin's surface and cause irritation. A bed bath following surgery facilitates patient wellbeing. When the gown becomes soiled by wound drainage, offer a clean gown and washcloth. Keep the patient's hair neatly combed and offer frequent oral hygiene, especially for the patient who is NBM. Room deodorisers may be useful if the odour from drainage seems particularly troublesome to the patient and family.
- The patient sometimes becomes preoccupied with observing the drains and gradual collection of drainage. Drains can leak if they become too full; change or empty the drains as per institution policy.
- Maintain an environment conducive to recovery. Self-concept is heightened by being in pleasant, comfortable surroundings. Often the room of a surgical patient becomes cluttered with extra dressings, rolls of tape and bottles of antiseptic solution. If the patient requires frequent dressing changes, the room may take on the appearance of a supply room. Store or remove unused supplies and keep the patient's bedside and room orderly and clean.
- Provide the family and significant others with opportunities to discuss ways to promote the patient's self-concept. Encouraging independence can be difficult for a family member who has a strong desire to help the patient in any way. By knowing about the appearance of a wound or incision, family members can be supportive during dressing changes. The topic or tone of a conversation can also help family members distract a patient from dwelling on fears and concerns. Family members should not avoid discussing the future. However, they need help to know when it is appropriate to discuss future plans. This makes it possible for the patient and family to work together to discuss realistic plans for the patient's return home.

CLINICAL EXAMPLE

Mr Summers is now 2 days post-surgery and you are the RN caring for him today. At the beginning of your shift you collect the following assessment data:

Heart rate	108 beats/minute and regular
Blood pressure	165/98 mmHg
Respiratory rate	28 breaths/minute, deep and laboured
Chest	Appears to be some intercostal muscle recession. Air entry diminished to both bases and crackles present in right base.
SpO_2	89% on Hudson mask at 6 L/minute oxygen
Temperature	38.5°C

When assessing his pain, you note that he has utilised the PCA only once in the last 3 hours. He reports his pain is currently at 5 at rest on a 0–10 numerical rating scale. He is reluctant to move and, on questioning, states that he has not used the PCA much as he does not want to become addicted to the drugs.

Mr Summers is reviewed by the resident medical officer. A chest X-ray shows right-sided basal consolidation and collapse and he is diagnosed with right-sided pneumonia.

CRITICAL REFLECTION POINT

1. **From the *Clinical example* above, explain the most likely cause for Mr Summers' postoperative respiratory complication. What postoperative nursing interventions might have prevented this complication?**
2. **Using the primary survey as a framework to prioritise, identify the priority interventions for Mr Summers' postoperative respiratory compromise. Ensure that you can justify your priority interventions with scientific rationales and evidence-based literature.**
3. **For each intervention you have selected, outline two specific evaluation criteria that would indicate to you that this intervention is having the desired effect.**

EVALUATING IMPACTS AND OUTCOMES

The nurse evaluates the effectiveness of care provided to the patient on the basis of expected outcomes of nursing interventions. In all acute settings, the nurse consults with the patient, family and significant others to determine outcomes and review processes. The nurse can evaluate the same-day surgery patient's outcomes by making a telephone call to the patient's home to follow up on the patient's recovery and see whether the patient understands restrictions or medications. The call is usually placed 24 hours after surgery, which allows the nurse to evaluate the progress of recovery.

In an acute care setting, the evaluation of a surgical patient is ongoing. If a patient fails to progress as expected, the nurse revises the patient's plan of care based on the priorities of the

patient's needs. Every effort is made to assist the patient to return to an optimal functional status.

Part of the nurse's evaluation is determining the extent to which the patient and family have learnt self-care measures. A patient often has to continue wound-dressing care, follow activity restrictions, continue medication therapy and observe for signs and symptoms of complications on returning home. Patients who are unable to perform self-care activities and who lack support may be referred to home healthcare agencies, or admitted to rehabilitation facilities. A comprehensive discharge summary should be provided to ensure continuity of care. Ensuring that discharge plans are in place facilitates that process and enhances the patient's satisfaction with care.

Key concepts

- Patients are admitted to the acute care setting for a range of reasons, including treatment of medical conditions, for surgery and for diagnostic tests. These can be acute, chronic or acute-on-chronic illnesses.
- Nurses play a crucial role in ensuring and promoting patient safety in the acute setting.
- Nurses are integral to recognising and responding to patient deterioration: early identification of patient deterioration saves lives.
- There are approved patient identifiers to be used for patient identification and procedure matching as specified by the Australian Commission for Quality and Safety in Health Care.
- Acute care nurses play a key role in managing health problems and preventing complications. For example, the prevention of venous thromboembolism has been identified as a national and international priority area for improving patient safety in the acute care setting.
- Previous illnesses, past surgeries and the nature of nursing care provided influence the patient's ability to tolerate surgery and/or procedures.
- Family members and/or significant others are important in helping patients with any physical limitations and in providing emotional support during recovery.
- Preoperative/preprocedure assessment of vital signs and physical examination findings provide an important baseline with which to compare postoperative assessment data.
- Primary responsibility for informed consent rests with the patient's doctor.
- Structured preoperative education has a positive influence on postoperative recovery.

Online resources

Australian College of Operating Room Nurses (ACORN). A registered health promotion charity for patients, community and perioperative nursing professionals which promotes the prevention and control of disease, www.acorn.org.au

Australian Commission on Safety and Quality in Health Care (ACSQHC). Government agency leader and coordinator of national improvements in safety and quality health care across Australia, www.safetyandquality.gov.au

Cochrane Collaboration. Collaborates with contributors worldwide to produce authoritative, relevant, and reliable evidence, in the form of Cochrane Reviews, www.cochrane.org

Joanna Briggs Institute. International not-for-profit research and development centre of the Faculty of Health Sciences at the University of Adelaide, www.joannabriggs.org

National Health and Medical Research Council (NHMRC). Australia's leading expert body supporting health and medical research, develops health advice for the Australian community, health professionals and government and provides advice on ethical behaviour in health care and research, www.nhmrc.gov.au

Royal Children's Hospital, Melbourne. Resources for healthcare professionals, www.rch.org.au/rch/health-professionals/professionals

References

Aranaz-Andrés JM, Aibar-Remón C, Limón-Ramírez R et al 2011 Prevalence of adverse events in the hospitals of five Latin American countries: results of the Iberoamerican study of adverse events (IBEAS). BMJ Qual Saf 20(12):1043–51.

Austin Health 2016 Medical Emergency team (MET). Online. Available: www.austin.org.au/page?ID=297#Section2; accessed 25 April 2016.

Australian Commission on Safety and Quality in Health Care (ACSQHC) 2012 National Safety and Quality Health Service Standards. ACSQHC, Sydney.

Australian and New Zealand College of Anaesthetists (ANZCA) 2010 PS15: Recommendations for the perioperative care of patients selected for day care surgery. Online. Available: www.anzca.edu.au/resources/professional-documents/professional-documents.html/?searchterm=Recommendations for the perioperative care of patients selected for day care surgery; accessed 5 Feb 2016.

Australian College of Operating Room Nurses (ACORN) 2014 ACORN standards for perioperative nursing 2014–2015. ACORN Ltd, South Australia.

Australian Resuscitation Council, New Zealand Resuscitation Council 2016a ANZCOR Guideline 4 – Airway. Online. Available: http://resus.org.au/guidelines/; accessed 25 April 2016.

Australian Resuscitation Council. New Zealand Resuscitation Council 2016b ANZCOR Guideline 5 – Breathing. Online. Available: http://resus.org.au/guidelines/; accessed 25 April 2016.

Bingham G, Fossum M, Barratt M, Bucknall T 2015 Clinical review criteria and medical emergency teams: evaluating a two-tier rapid response system. Critical Care and Resuscitation 17(3):167.

Chaboyer W, McMurray A, Wallis M 2010 Bedside nursing handover: a case study. International Journal of Nursing Practice 16(1):27–34.

Chan ED, Chan MM, Chan MM 2013 Pulse oximetry: understanding its basic principles facilitates appreciation of its limitations. Respiratory Medicine 107:789–99.

DeVita MA, Bellomo R, Hillman K et al 2006 Findings of the first consensus conference on medical emergency teams. CritCare Med 34(9):2463–78.

Hamlin L, Richardson-Tench M, Davies M 2009 Perioperative nursing an introductory text. Elsevier, Chatswood, Sydney.

Herrera FJ, Wong J, Chung F 2007 A systematic review of postoperative recovery outcomes measurements after ambulatory surgery. Anaesthes Analg 105:63–9.

Hillman KM, Chen J, Jones D 2014 Rapid response systems. Med J Aust 201(9) 519–21.

Hirshon JM, Risko N, Calvello EJB et al 2013 Health systems and services: the role of acute care. Bulletin of the World Health Organization 91:386–88.

Hodgetts TJ, Kenward G, Vlackonikolis I et al 2002 Incidence, location and reasons for avoidable in-hospital cardiac arrest in a district general hospital. Resuscitation 54(2):115–23.

Jacques T, Harrison GA, McLaws ML, Kilborn G 2006 Signs of critical conditions and emergency responses (SOCCER): a model for predicting adverse events in the inpatient setting. Resuscitation 69(2):175–83.

Jansen JO, Cuthbertson BH 2010 Detecting critical illness outside the ICU: the role of track and trigger systems. Curr Opin Crit Care 16(3):184–90.doi: 10.1097/MCC.0b013e328338844e

Jha AK, Larizgoitia I, Audera-Lopez C et al 2013 The global burden of unsafe medical care: analytic modelling of observational studies. BMJ Quality & Safety 22(10):809–15.

Jones D, Mitchell I, Hillman K, Story D 2013 Defining clinical deterioration. Resuscitation 84(8):1029–34.

Massey D, Aitken LM, Chaboyer W 2010 Literature review: do rapid response systems reduce the incidence of major adverse events in the deteriorating ward patient? Journal of Clinical Nursing 19(23–24):3260–73.

Massey D, Chaboyer W, Aitken L 2014 Nurses' perceptions of accessing a medical emergency team: a qualitative study. Australian Critical Care 27(3):133–8.

Mayo Clinic 2015 Health information: obesity – complications. Online. Available: www.mayoclinic.com/health/obesity/DS00314/DSECTION=complications; accessed 5 Feb 2016.

National Health and Medical Research Council (NHMRC) 2011 Why venous thromoembolism prevention? NHMRC, Canberra. Online. Available: www.nhmrc.gov.au/nics/programs/vtp/index.htm; accessed 30 May 2011.

National Health and Medical Research Council NHMRC 2010 Prevention of venous thromboembolism (VTE) in patients admitted to Australian hospitals: guideline summary. Online. Available: www.nhmrc.gov.au/_files_nhmrc/file/nics/programs/vtp/NHMRC_VTE_prevention_guideline_summary_for_clinicians.pdf; accessed 30 May 2011.

National Health and Medical Research Council (NHMRC) 2008 Stop the clot – reducing blood clot risk for hospital patients (media release). NHMRC, Canberra. Online. Available: www.nhmrc.gov.au/media/media/rel08/080527.htm; accessed 30 May 2011.

Osborne S, Douglas C, Reid C et al 2015 The primacy of vital signs – acute care nurses' and midwives' use of physical assessment skills: a crosssectional study. International Journal of Nursing Studies 52(5):951–62.

Phillips NM, Haesler E, Street M et al 2011 Post-anaesthetic discharge scoring criteria: a systematic review. JBI Library Systematic Review 9(41):1679–713.

Phillips NM, Street M, Kent B, Cadeddu M 2014 Determining criteria to assess patient readiness for discharge from postanaesthetic care: an international Delphi study. Journal of Clinical Nursing 23(23–24):3345–55.

Poirier P, Alpert M, Fleisher L et al 2009 Cardiovascular evaluation and management of severely obese patients undergoing surgery: a science advisory. American Heart Association. Circulation 120(1):86–95.

Preece MH, Horswill MS, Hill A, Watson MO 2010 The development of the Adult Deterioration Detection System (ADDS) chart report prepared for the Australian Commission on Safety and Quality in Health Care's program for Recognising and Responding to Clinical Deterioration. ACSQHC, Sydney.

Purling A, King L 2012 A literature review: Graduate nurses' preparedness for recognising and responding to the deteriorating patient. Journal of Clinical Nursing 21(23–24):3451–65.

Rudolph JL, Marcantonio ER 2011 Postoperative delirium: acute change with long-term implications. Anesth Anal 112(5):1202–11.

South Australia Health 2012 ISBAR – Identify, Situation, Background, Assessment and Recommendation. Online. Available: www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/clinical+resources/clinical+topics/clinical+handover/isbar+-+identify+situation+background+assessment+and+recommendation; accessed 25 April 2016.

Street M, Phillips NM, Kent B et al 2015 Minimising post-operative risk using a Post-Anaesthetic Care Tool (PACT): protocol for a prospective observational study and cost-effectiveness analysis. BMJ Open. 5:e007200.doi:10.1136/bmjopen-2014-007200

Thim T, Krarup NHV, Grove EL et al 2012 Initial assessment and treatment with the Airway, Breathing, Circulation, Disability, Exposure (ABCDE) approach. International Journal of General Medicine 5:117–21. doi:http://doi.org/10.2147/IJGM.S28478

Wagner D, Byrne M, Kolcaba K 2006 Effects of comfort warming on preoperative patients. Assoc Periop RN J 84(3):427–48.

Webster J, Osborne S 2015 Preoperative bathing or showering with skin antiseptics to prevent surgical site infection. Cochrane Database Syst Rev (2):CD004985. DOI: 10.1002/14651858.CD004985.pub5.

CHAPTER

40

Meeting the mental health needs of individuals and their carers

Anthony O'Brien

Learning outcomes

Mastery of content will enable you to:

- define the mental health nursing scope of practice
- discuss the concept of recovery in mental healthcare
- discuss the role of assessment in mental health nursing
- identify the range of practice contexts for mental health nursing
- discuss common treatment modalities used in mental healthcare
- discuss the role of mental health legislation
- discuss mental health promotion
- name Australian and New Zealand professional organisations in mental health nursing.

KEY TERMS

Acceptance and commitment therapy (ACT), p. 1482
Clinical supervision, p. 1485
Cognitive therapy, p. 1481
Culture, p. 1483
Developmental disability, p. 1487
Dialectical behaviour therapy (DBT), p. 1481
Electroconvulsive therapy (ECT), p. 1483
Group therapy, p. 1482
Hearing voices, p. 1484
Individual psychotherapy, p. 1481
Mental health legislation, p. 1485
Mental health nursing, p. 1485
Mental health promotion, p. 1486
Mental illness, p. 1468
Mental state assessment, p. 1475
Personality disorders, p. 1471
Pharmacological treatment, p. 1482
Psychiatric diagnosis, p. 1474
Recovery, p. 1470
Self-harming behaviours and suicide attempts, p. 1473
Stigma, p. 1484

Mental health issues within acute nursing contexts

Mental health is an integral aspect of the holistic care provided by nurses. Nurses encounter people with mental health problems in all clinical settings, from primary care through to medical and surgical settings, emergency departments, residential care facilities and prisons. If we think of mental health problems as including not only problems of mood, perception or cognition (for example), but also the hazardous use of substances, such as alcohol and drugs, they are very common indeed. For some people, mental health issues will be a temporary adjustment to a difficult period in their life, such as the stress of illness and hospitalisation. For others, mental health problems can be lifelong. Many people in the community live with **mental illness** and are able to make the adjustments necessary to successfully manage their lives with minimal professional support. Others might seek support from health professionals, social agencies and specialist mental health services. Because mental health issues are common in our communities, programs of nursing education include a focus on mental health problems encountered in day-to-day life, as well as more severe mental health problems, including mental illness.

Knowledge of mental health issues, and skills in responding to patients' mental health needs, are among the core competencies of every nurse. The person with diabetes or heart disease may also have low mood or suffer from depression. Having a long-term physical illness may be a challenge to the person's coping skills, and may in turn lead to low mood. Also, a person with a serious mental illness such as bipolar disorder or schizophrenia may attend primary care or be admitted to hospital for a physical illness not related to their mental illness. The co-occurrence of mental and physical illness is called comorbidity and is very common. Nurses need to be able to respond to the full range of needs that patients present with, including physical and mental health needs.

There is a lot a nurse can do to incorporate mental health responses into the care of patients in various health settings. Mental health issues do not always require a specialist response. Helpful responses can include acknowledging and validating the mental health issues experienced by a patient, inquiring about any care preferences related to their mental health, and incorporating reference to mental health issues into routine care. Addressing mental health needs does not have to be something that takes place after attending to other needs. Providing mental healthcare can be part of the routine practice of nursing in every healthcare setting (O'Brien 2014). In order to incorporate responses to mental health needs into routine nursing practice, it is helpful to have an understanding of the broader area of mental health and mental healthcare. These issues are the focus of this chapter. The purpose of the chapter is to outline the scope of practice of mental health nursing, to describe key aspects of mental health nursing practice and to discuss some current issues in mental healthcare. As you read the chapter, keep in mind that the information presented is to inform your practice and assist you in the development of holistic nursing skills. It is not intended, by itself, to prepare you for the specialist practice of mental health nursing.

The mental health service system

Mental health nursing is a specialist area of nursing practice concerned with caring for people with mental distress and illness, and with the promotion of mental health. While every registered nurse responds to clients' mental health needs, mental health nurses specialise in this area of practice and work specifically within health services for people with mental illness. In response to the global prevalence of mental health problems, the World Health Organization (WHO) has developed a Mental Health Action Plan (WHO 2013) aimed at providing better mental healthcare internationally. Both Australia and New Zealand have mental health strategies, which set priority areas for service provision (Commonwealth of Australia 2009, Ministry of Health 2005). In both countries mental healthcare has seen the 'deinstitutionalisation' of public mental health services, with the closure of the old institutions in favour of care provided in community settings. An understanding of the mental health service system, common clinical syndromes and available treatments is therefore important for nursing practice.

• CRITICAL REFLECTION POINT

How do you think you might respond to the mental health needs of people in your nursing practice?

As you read through this chapter, keep asking yourself: what would I need to think about if I was providing care for a person with this mental illness within an acute care setting?

Mental health scope of practice

Mental health nursing is an area of specialty practice that is concerned with providing care for people with mental distress and illness and with the promotion of mental health. A definition of the mental health scope

BOX 40-1 Mental health nursing scope of practice

A mental health nurse is a registered nurse who holds a recognised specialist qualification in mental health [nursing]. Taking a holistic approach, guided by evidence, the mental health nurse works in collaboration with people who have mental health issues, their family and community, towards recovery as defined by the individual (Australian College of Mental Health Nurses 2013).

of practice provided by the Australian College of Mental Health Nurses is given in Box 40-1. Mental health nurses are registered nurses who are graduates of degree nursing programs or from the former hospital programs. They are educationally prepared to provide physical and mental healthcare. New graduates will usually undertake postgraduate study in the specialty of mental health nursing in their first year of employment.

There are approximately 19,000 mental health nurses in Australia (MHSA 2015) and 4300 in New Zealand (NCNZ 2014). Mental health nurses are employed in clinical, teaching, research, administration and service management. Roles include staff nurse, community mental health nurse, nurse educator, nurse specialist, nurse advisor and nurse practitioner. Areas of clinical practice include community mental health services, inpatient units, specialist mental health services such as eating disorders, liaison psychiatry and home-based treatment, forensic services, child and youth, old age, alcohol and drug services, and primary healthcare.

Mental health nursing can be defined as a caring process whereby the nurse forms a therapeutic relationship with a client, and uses that relationship as the basis for assessment, identification of problems, formulation of a plan of care and evaluation of that care. Although mental health nurses practise within a healthcare system based on medicine, the practice of mental health nursing is underpinned by nursing philosophy, values and theory.

History of mental health nursing

As with other nursing specialties, mental health nursing has its history in the caring practices of religious orders of the Middle Ages. Until the 18th century there was little organised care for people with mental illness (Shorter 1997), although the Bethlem asylum in England first opened in 1247 and received people with mental illness from 1376 (Andrews et al 1997). Most institutions of the 18th century were small in scale, and were known as 'madhouses'. Some were private houses with accommodation for people with mental illness. The madhouses of the 18th century employed staff referred to as 'keepers', who performed custodial and caregiving functions. Some keepers were doctors who took clients into their homes, where they administered the medical treatments of the time, such as bloodletting and purging. In many cases, 'treatment' involved physical punishment and harsh living conditions. From the late 18th century, larger asylums were provided, and in the 19th century the number and size of asylums grew considerably in England, Europe, the United States and the British colonies. The first asylum in Australia was opened in 1811 (Dax 1989) and in New Zealand in 1852 (Brunton 2005). In the asylums, attendants were employed to provide care, most of which was custodial in nature. As the medical discipline of psychiatry became organised in the late 19th century, attendants began training as nurses (Sands 2009).

The first specialist training as asylum (later 'psychiatric') nurses was provided in psychiatric hospitals, which were the almost exclusive site of public mental healthcare. Registration of Australian and New Zealand psychiatric nurses began early in the 20th century (Prebble 2008/09, Sands 2009), soon after registration for general nurses. The psychiatric hospital served as the sole location for nursing training until the last half of the 20th century, when nursing education moved into the tertiary education sector (Happell 2009, Prebble 2001). Mental health nurses now receive their undergraduate education in university or polytechnic degree programs and specialise in mental health following graduation. Since its asylum beginnings, mental health nursing has expanded to include a diverse range of practice settings and roles. Practice settings have expanded beyond psychiatric hospital sites to include community clinics, general hospitals, courts and prisons, and service users'[1] homes.

Hildegard Peplau and interpersonal care

The first recognised theorist of mental health nursing was Hildegard Peplau (1909–1999), whose theory of interpersonal relations in nursing was first published in 1952 (Peplau 1952/1988). Peplau was influenced by the principles of psychodynamic psychiatry which have their origins in the psychoanalytical theories of Sigmund Freud. These ideas were introduced into American psychiatry by Harry Stack Sullivan and Frieda Fromm-Reichmann, who were early influences on Peplau's work. Peplau's interpersonal theory was developed at a time when care and treatment in the 'mental' hospitals was predominantly custodial and physical. Sullivan, Peplau and colleagues

reasoned that through therapeutic relationships, people with mental illness could develop more-adaptive patterns of living and more satisfying interpersonal relationships (D'Antonio 2014).

Peplau identified three core elements of mental health nursing: the patient, the nurse and the interaction between patient and nurse. Her interpersonal theory described mental health nursing as a negotiated relationship which developed in four sequential phases: orientation, identification, exploitation and resolution. By working with people through these four phases, nurses were able to act as a 'maturing force' to assist people towards health. Interpersonal relationships subsequently came to form the theoretical basis for nursing generally (Olson 1996). Today, interpersonal practice remains a core skill for nurses in every clinical setting. Current models of mental health nursing continue to emphasise Peplau's interpersonal theory (e.g. Barker & Buchanan-Barker 2005), although nurses are also encouraged to develop skills in specific forms of therapy such as cognitive therapy (Turner 2010) and brief solution focused therapy (Wand 2010). These and other forms of psychological therapy are based on the development of a therapeutic relationship between client and therapist (Hill 2005).

Recovery and mental health

Recovery is not a new concept in health care, but it has been given new meaning in mental healthcare as service users have advocated for models of care and service delivery that place service users' experience, rather than clinicians' perceptions, at the centre of mental healthcare (Anthony 1993). The current concept of recovery does not mean 'cure' as it does in other healthcare contexts. Recovery refers to *living with* mental health problems. The Scottish Recovery Network (2015) provides the following definition of recovery:

> **Recovery is being able to live a meaningful and satisfying life, as defined by each person, in the presence or absence of symptoms. It is about having control over and input into your own life. Each individual's recovery, like his or her experience of the mental health problems or illness, is a unique and deeply personal process.**

The reason for this change in the concept of recovery is that some service users' mental health problems are of long standing, and the concept of recovery as 'cure' can lead to a sense of pessimism about the future. The concept of *hope* is central to recovery, based on the belief that hope can sustain people through times of distress and illness and will support the individual in maintaining their personal life goals. Recovery is included in the mental health scope-of-practice statement of the Australian College of Mental Health Nurses, provided in Box 40-1, and is referenced in contemporary mental health policy documents.

• CRITICAL REFLECTION POINT

1. **In which clinical settings do you expect to encounter people with mental illness?**
2. **How can the attitudes and beliefs of nurses influence the care of a person with mental illness?**
3. **How might a chronic illness such as diabetes affect a person's mental health?**

Mental illness

Everyone can expect to experience mental health issues at some point in their lives, such as in life crises or life transitions. For some individuals, mental health issues become severe or prolonged, and may develop into mental illness. Illnesses such as diabetes and heart disease are more common in people with mental illness and are associated with worse health outcomes. Mental illnesses are disturbances in emotional state, thinking and social functioning which occur in recognisable patterns and which reach a threshold of severity in comparison with common life experiences such as stress and sadness. Mental illnesses include disturbances in mood, such as depression and bipolar disorder; disturbances in reality testing, such as schizophrenia, the manic phase of bipolar disorder and delirium; disturbances in arousal and thinking, such as panic and anxiety; and disturbances in cognition, such as the dementias. Addiction is a form of mental illness that involves persistent harmful use of alcohol or other substances, usually over a long period. In most cases of mental illness there will be disruption in more than one area of functioning. Mental illnesses are sometimes classified as *organic* (having a demonstrated biological cause, such as delirium and the dementias) and *non-organic* (where there is no identifiable organic cause, such as schizophrenia). The term *psychosis* is used to refer to mental illness in which the person is thought to be out of touch with reality, with abnormal sensory perceptions (*hallucinations*) or fixed false ideas about the nature of reality (*delusions*). Psychosis may be temporary or enduring and will cause disturbance in personal and social functioning. A description of the most common mental illnesses is provided in Box 40-2.

The causes of mental illness are not fully understood. They include adverse early life experiences, interpersonal stress, trauma and adverse social environments. While there is a presumed biological basis to some mental illnesses, this does not explain all cases, and so is considered to be only a partial explanation of cause. The multiple causal factors at work give rise to the *biopsychosocial model*, which recognises that many factors play a part in mental illness as they also do in physical illness.

BOX 40-2 Common mental illnesses

Anxiety

Anxiety is a common experience in response to stress, but becomes a disorder if the response is maintained for a long period or if it is out of proportion to the stressor. Anxiety disorders can occur in all age groups, from children through to older people. They may take the form of prolonged and excessive concern about situations such as social encounters, leading to avoidance; or may be specific to situations such as closed or open spaces. Anxiety may lead to *panic*, a state of acutely increased physical and psychological arousal. Anxiety can be treated with psychological therapy, in some cases with supportive pharmacological treatment.

Bipolar disorder

Bipolar disorder is a mental illness which is characterised by disturbances of mood leading to episodes of either mania or depression. Bipolar disorder typically follows a cyclical pattern with episodes of mood disturbance followed by periods of normal mood (*euthymia*) and good social functioning. Treatment with a mood stabiliser will help to prevent extremes of mood, and psychological treatment will help maintain social functioning and prevent or minimise extremes of mood.

Delirium

Delirium is an organic disorder which is most commonly acute in onset and involves marked change in thinking and perception, often with heightened arousal and confusion. The cause of delirium is interference with brain functioning as the result of a physiological disturbance. There are many possible sources of physiological disturbance, including illness, fever, prescribed pharmacological agents and anaesthesia. Although older people are more vulnerable to developing delirium, it can also occur in young people. Delirium is common in general hospital patients. Nursing care involves reducing confusion by providing a safe, predictable environment, treating the underlying cause if it is known and pharmacological treatment to reduce confusion and arousal.

Dementia

Dementia is an organic syndrome in which brain function is impaired by a degenerative or disease process, leading to impairment in cognitive functioning. Memory is usually most markedly affected. Dementia most commonly affects older people, but can also occur in young adults. The course is progressive, although variable. Assessment is important to establish the extent of impaired functioning and to assist the person to maintain existing functioning. Although there are some pharmacological agents available, treatment is usually supportive and aimed at preserving cognitive and social functioning as long as possible.

Depression

Depression is a disorder of mood in which the person's mood is lowered for a prolonged period with resulting disruption to personal and social functioning. Depression affects all age groups and may be precipitated by stressful events, especially those involving loss, such as bereavement. Physical illness is associated with a higher incidence of depression, and low mood can make adjustment to physical illness difficult. Especially in its milder forms, depression may respond to psychological interventions such as cognitive therapy, or to interventions such as exercise or social support. In some cases people with depression will also benefit from pharmacological treatment.

Schizophrenia

Schizophrenia is a disorder of thinking and perception which also causes disruption to social functioning and performance of social roles. People with schizophrenia may experience hallucinations and/or delusions, and impaired social functioning. Schizophrenia most frequently manifests in young adults, although the symptoms and impaired social functioning may be enduring. Psychological and pharmacological treatment and social support can help reduce the symptoms of schizophrenia.

For a more comprehensive description of common mental illnesses, see Elder R, Evans K, Nizette D 2016 Psychiatric and mental health nursing. Elsevier, Sydney.

For a full list of mental disorders, with diagnostic criteria, see American Psychiatric Association (APA) 2013 Diagnostic and Statistical Manual of Mental Disorders (DSM-5), 5th edn. APA, Washington.

Mental illness is relatively common, especially in the clinical populations nurses will encounter in various healthcare settings. It is estimated that almost half (45%) of the Australian population will experience a mental illness in their lifetime and that 20% of the adult population (18–65 years) will have experienced a mental disorder in the past 12 months (ABS 2008). While most people who seek help for mental illness will consult their general practitioner, those with more severe illness will be referred to specialist mental health services, where they will be assessed by a psychiatrist or another clinical specialist such as a mental health nurse.

Mental illness and personality disorders

Personality disorders are lifelong patterns of thinking, emotional response, impulse control and interpersonal functioning that are problematic for the individual because they disrupt social role performance and relationships.

Personality disorders are thought to result from problems in early development, and for that reason are often marked by stable but dysfunctional patterns of relating and behaviour rather than changes from the person's own established patterns. In cases where patterns of relating and behaviour influence the person's personality but without causing major disruption to personal and social functioning, these patterns are referred to as personality *traits*, rather than disorders. Personality disorders are not regarded as mental illnesses, although their effects may be equally disabling. Distinguishing between mental disorder and personality disorder can be quite difficult as the two types of disorder share a lot of common characteristics and the presenting features can be quite similar. In most cases it is after thorough exploration of the person's clinical and social history that a distinction can be made. Individuals may be diagnosed with both a mental disorder and a personality disorder.

Three clusters of personality disorder have been recognised (American Psychiatric Association 2013). The *odd or eccentric* cluster (cluster A) refers to personality disorders marked by prominent difficulty in relationships, either through excessive concern with what others think or indifference to others. The *dramatic, erratic and emotional* cluster (cluster B) includes those disorders in which the person is considered to show excessive self-regard, usually at the expense of empathy with others. Despite their excessive self-regard, people with cluster B personality disorders are unusually vulnerable to criticism or perceived rejection from others, and may act on these perceptions in ways that arouse the concern of others, such as self-harm or other behaviour that attracts attention. The final cluster of personality disorders (cluster C) is the *anxious and fearful* type. People with cluster C personality disorders may be avoidant of contact with others, or may be either excessively dependent or controlling in social relationships.

People with personality disorders may seek health care in unusual ways, may avoid health care altogether and may not share healthcare professionals' views of their needs for health care. Often the problems experienced in personal relationships will be re-created within the healthcare context, and nurses may find themselves drawn into conflict with these individuals. An important aspect of mental health nursing practice is for nurses to maintain awareness of their own emotional responses to service users who do not share, or even reject, nurses' attempts to engage or to help. It is important to remember that personality patterns that healthcare professionals find challenging may result from adverse developmental experiences such as trauma, which offers some opportunities for treatment and change (Bowen 2013). Having clear goals of care is important, and it is important for nurses to manage their own emotional responses through peer support and clinical supervision (Deans & Meocevic 2006).

Substance use

Substance use and addiction form an important part of the mental health scope of practice, for two reasons. First, use of substances is prevalent in Australian and New Zealand society (AIHW 2005, Ministry of Health 2010), and extends from the use of prescription medications (sometimes illegally obtained) to illegal substances (such as marijuana and methamphetamine) and legal substances (such as alcohol and tobacco). Second, mental illness and substance use frequently occur together, either in the form of comorbid disorders (where a person may have both a substance-use disorder and a mental illness) or where substance use complicates a mental illness (such as the contribution of alcohol consumption to depression and self-harm). Nurses will encounter individuals with substance-use and addiction problems in every clinical setting, including primary care, medical and surgical settings, older adult services and specialist mental health and addiction services.

With the exception of tobacco, the most commonly used substance is alcohol, which is unsurprising as the use of alcohol has a long history in Australia and New Zealand and is deeply embedded in cultural norms. Other substances used are methamphetamine, cocaine, benzodiazepines, ecstasy (MDMA), LSD, marijuana and opiates. While most substances are taken orally or by smoking, some users take substances by intravenous injection, a practice which carries the additional risks of blood-borne infection with hepatitis C or human immunodeficiency virus (HIV). In addition, injecting substance users run the risk of accidental overdose or of injecting impure drugs. Some individuals will use more than one substance, and may combine prescription drugs such as benzodiazepines or opiates with illegal substances such as methamphetamine.

Substance-use problems range from acute intoxication to physical dependence. Understanding the nature and severity of the person's problems involves taking a comprehensive personal and substance-use history, and considering the possibility of a comorbid mental disorder such as anxiety or depression. Key terms related to substance use are explained in Box 40-3. Assessment should also include a physical examination and health history because of the high rate of physical comorbidity associated with substance use and the risks to health posed by various substances. Substance users may avoid

BOX 40-3 Key terms related to substance use

Addiction

Addiction is the state of continuing substance use despite the presence of behavioural, psychological, physical or social problems caused by the substance use. Addiction may be characterised by the use of increasing amounts of a substance, or by a stable pattern of problematic use. A person who is addicted will experience withdrawal symptoms on cessation, usually leading to further substance use.

Dependence

Dependence on a substance occurs when the individual needs to take a substance in order to be able to function. Dependence can be physical or psychological and is usually marked by signs and symptoms of withdrawal when the substance is not available.

Harmful use

Harmful substance use describes a pattern of use that results in disruption to psychological, physical or social functioning. While there are established thresholds for harmful use of substances such as alcohol, some individuals are more vulnerable than others and the effects of the substance use need to be individually assessed.

Hazardous use

Hazardous use of substances occurs when the level of use is such that future harm can be predicted on the basis of the current pattern of use. Harm may not be occurring currently, but can be predicted on the basis of cumulative effects of substance use and any increase in use.

Intoxication

Intoxication refers to altered physiological or psychological functioning as a result of substance use. Intoxication can be mild, such as the effect of a single alcoholic drink or a small amount of marijuana, or severe, such as intoxication associated with a drinking binge. Intoxication is reversible, with the time involved dependent on the half-life and metabolism of the substance.

Tolerance

Tolerance refers to physiological and behavioural adaptation to the presence of a substance. Increasing tolerance can mask the harmful effects of substances such as tobacco and alcohol, for example, lung and liver damage. With increasing tolerance, individuals will use more of the substance to achieve the same psychological effects.

Withdrawal

Withdrawal is a syndrome of central nervous system arousal which occurs in individuals who have become dependent on a substance and who stop taking that substance. People experience withdrawal from nicotine soon after cessation, although with other substances withdrawal takes longer to begin. Withdrawal symptoms can be relatively mild, for example a slight feeling of anxiety, to the severe and dangerous syndrome of delirium tremens.

health care because they wish to avoid health messages about cessation or moderation, or because they prefer to apply their financial resources to purchasing substances.

Intervention in substance use will often involve a harm-reduction approach rather than aiming for cessation. The advantage of the harm-reduction approach is that it allows the substance user to engage in health care and to work towards minimising the harmful effects of their substance use. This can mean moderating the amount of substances used, avoiding additional risks such as driving, learning safe injection practices and avoiding substance use that places the person at personal risk of assault or exploitation. Harm-reduction approaches are especially helpful for individuals with a pattern of relapse, or who are unable to commit to cessation of substance use. Because of the long-term nature of substance-use problems, many services use a philosophical model such as the Wheel of Change (Prochaska et al 1994), which recognises that recovery may be marked by several relapses. Motivational interviewing, an intervention that focuses on identifying the client's goals for change, is another commonly used strategy in the treatment of people with substance-use problems.

While most people with harmful patterns of substance use are seen in primary care, those who seek professional help will be referred to specialist substance-use and addiction services. Symptoms of low mood, anxiety and sleep disturbance, which frequently occur in this population, will be treated concurrently and are likely to significantly reduce as use of substances diminishes. Substance use is associated with a high incidence of thoughts of self-harm, **self-harming behaviour and suicide attempts**, meaning that treatment of substance use also involves treatment of accompanying thoughts of self-harm. In cases of acute withdrawal from addictive drugs such as alcohol or benzodiazepines, inpatient admission might be necessary in order to provide treatment in a safe environment and provide the necessary supportive physical care. Such treatment is usually short term and may be followed by residential rehabilitation or engagement in a community-based rehabilitation program. For many people, inpatient admission is not necessary, and the entire treatment program can be provided as a community-based service. For people with long-term substance-use problems, recovery is a lifelong process and may be marked by recurrent relapses.

Intellectual disability

The term 'intellectual disability' refers to people whose intellectual functioning is less than average and who also have impaired social and adaptive functioning. Intellectual disability may result from hereditary factors such as genetic disorders; developmental factors such as exposure to alcohol or other toxins in pregnancy; sensory deprivation during early years; or damage to the brain from impaired oxygen supply, infection or other medical conditions. Intellectual disability may be accompanied by impaired physical functioning, sensory loss, impaired neuromuscular development or complications of medical disorders. The term 'dual disability' is used when a person has both an intellectual disability and a physical disability.

As with mental health, services for people with intellectual disability are predominantly provided in community settings. The principle of 'normalisation' was articulated in 1972 by Wolfensberger as a means of advocating for social inclusion and the opportunity for people with intellectual disability to fully develop their talents and abilities (Jugessur & Iles 2009). Within the normalisation model, people with intellectual disability are seen as possessing the full range of human rights, including the right to participate in society. Society is seen as having an obligation to provide the services necessary for the realisation of human rights.

People with intellectual disabilities have high rates of physical illness and so are seen in a wide range of health settings. Nurses need to be aware of the many issues facing people with intellectual disabilities in order to ensure the best outcomes of care (Temple & Mordoch 2012). Treatment for intellectual disability includes medical treatment for any physical health problems, pharmacological treatment for problems with emotional regulation and impulse control, and occupational programs aimed at developing social and living skills and providing meaningful occupation. Nursing skills used with people with intellectual disability include assessment, with an emphasis on assessment of cognitive functioning; and communication, care planning and goal setting.

• CRITICAL REFLECTION POINT

1. **What personal experience have you had with people with mental illness, personality disorder, addictions or developmental disability?**
2. **What personal attributes do you think a nurse would need in order to provide effective care for people experiencing mental illness?**

Self-harm and suicide

Self-harm and suicide are related mental health problems that affect people in a wide range of health settings from primary care through to specialist mental health services. Self-harm can involve cutting, taking harmful amounts of prescribed or illicit drugs and risk-taking behaviour. While people who self-harm are at high risk of suicide, some people who self-harm do not do so with the intent to commit suicide but rather as a means of communicating or reducing distress. Individuals who self-harm or attempt suicide may present to emergency departments for treatment of injuries or toxic states, for example, the effects of overdose of prescribed or over-the-counter medications. Although people who self-harm or attempt suicide are more likely to have a mental illness, these problems are not confined to those with mental illness. Common means of suicide are overdose of medication, jumping, poisoning and firearms. Suicide is internationally recognised as a mental health issue, and both Australia and New Zealand have national suicide prevention strategies (Associate Minister of Health 2006, Commonwealth of Australia 2008).

Risk factors for suicide include male gender, substance use, depression, alcohol use and the presence of multiple stressors. Nurses working with individuals who have self-harmed or are suicidal will assess suicide risk as part of their nursing assessment, and will work with the individual to develop a safety plan. This can involve identifying and including friends or family members in the safety plan, distraction, utilising support systems, avoiding stressful situations, limiting use of alcohol and calling crisis or support services. For people with depression or other mental illness, treatment with medication may be part of a longer-term plan to reduce suicide risk.

Psychiatric diagnosis

Psychiatric diagnosis is the practice of assigning a category of mental illness following history-taking and assessment. In Australia and New Zealand, the most widely used system of psychiatric diagnosis is the Diagnostic and Statistical Manual of Mental Disorders (the DSM) (American Psychiatric Association 2013). The current version of the DSM, the DSM-5, lists over 400 mental disorders, although in practice only a limited number of those disorders are diagnosed. The DSM provides a set of criteria for each diagnosis. Criteria include subjective symptoms, severity of symptoms and duration of symptoms. Criteria also list disorders which must be excluded before a diagnosis can be made. For example, for the diagnosis of major depressive episode, the possibility

of substance-induced mood disorder must be excluded. Some symptoms of mental illness are common to many disorders; for example, sleep disturbance, anxiety, agitation and changes in energy levels. In some cases, such as post-traumatic stress disorder, a diagnosis cannot be made for a number of weeks following the precipitating event. In the case of a major depressive disorder, the person's symptoms must be present for a minimum of 2 weeks. Duration of symptoms is also considered in diagnosis. Psychiatric diagnosis requires comprehensive assessment, including a history of the presenting problem, mental health history and assessment of the person's current mental state.

Diagnosis may be uncertain due to lack of a clear history, or uncertainty about the nature of subjective experiences, and may be provisional, or even deferred, until the person's presentation is better understood. Diagnosis should be made with caution, as the treatment for different disorders, especially pharmacological treatment, is different. Diagnosis may also create expectations for the person's prognosis and future, and so needs to be reviewed regularly as part of the person's care. Psychiatric diagnosis is not formally part of most nurses' practice, although all nurses need to be aware of how diagnoses are made, the diagnostic criteria of the more common disorders and the sometimes uncertain nature of psychiatric diagnosis. The full diagnostic criteria for each disorder are contained in the DSM (American Psychiatric Association, 2013).

Mental health assessment in nursing

Assessment is the process of gaining an understanding of the issues and problems faced by the person with mental illness, and of engaging with that person in a plan of intervention. Assessment involves a structured conversation in which the person is invited to discuss their concerns and what forms of support or intervention they would find helpful. The role of the nurse in mental health assessment is to listen, validate and explore concerns, ask key questions about the person's problems, observe, and offer an interpretation. The process of assessment in mental health nursing focuses on the client's presenting problems, clinical symptoms, mental health history, current mental state, risk, strengths and protective factors, physical health strengths and protective factors, and other aspects of psychosocial functioning.

Assessment will usually begin with a statement of the client's presenting problem, followed by exploration of that problem so that the client is able to relate their unique experience of stress, distress, or change in functioning or coping. Changes might have begun recently, or be of long duration. During the assessment the nurse adopts an empathic listening role, using key questions to enable the client to talk freely. As the client describes their concerns they are validated by the nurse using empathic communication. Some areas, such as thoughts of self-harm or of harming others, may require direct questions, but often these can be integrated into an assessment interview. The assessment interview is allowed to develop according to the concerns expressed by the client, and to the client's level of distress and ability to communicate. In some cases a complete assessment may take more than one interview. Initial assessment ends with careful documentation of all aspects of the client's history and presenting problems. However, assessment continues throughout the process of care and will need to be revised as the person's needs change.

There are many different tools and models of mental health assessment, including conversational interview (Brown 1995), history-taking, systems review and use of validated assessment instruments. Examples of validated instruments include the Alcohol Use Disorders Identification Test (AUDIT) for assessment of alcohol use (Saunders et al 1993); the Mini Mental State Examination (MMSE) for assessment of cognitive function (Folstein et al 1975); the Beck Depression Inventory (BDI) for assessment of mood (Beck et al 1961); and the Liverpool University Neuroleptic Side Effect Rating Scale (LUNSERS) for assessment of side effects of medication (Morrison et al 2000).

Mental state assessment

Mental state assessment is a core mental health nursing skill, and involves assessment of behaviour, mood, thoughts, perception, cognition and judgement (Skill 40 1). Assessment of mental state is integrated into an overall mental health assessment, which includes history-taking and inquiry about symptoms and relevant experiences. Many aspects of mental state assessment can be incorporated into everyday nursing practice, such as bedside care or a clinic review. The mental state assessment focuses on the service user's mental state at the time of the assessment, not on historical information. Nurses sometimes find it helpful to use a mnemonic for recording the mental state assessment, as this allows the assessment to be recorded in a consistent manner and ensures that no important areas of mental state are omitted. An example of a mnemonic, BATOMI, is outlined in Box 40-4, which also illustrates how the observations in a mental state assessment are recorded.

The assessment of mental state is usually documented towards the end of an overall assessment, once all the aspects of personal and clinical history have been recorded. Mental state assessment will be undertaken at several points during an episode of care, with the initial assessment providing a baseline against which to measure response to care and treatment.

SKILL 40-1

Mental state assessment

Mental state assessment is a key nursing skill and provides a structured set of observations about the patient's cognitive and emotional state at a specific point in time.

Delegation and other considerations

The mental state assessment can be conducted without supervision. Most aspects of the mental state assessment can be carried out as part of routine nursing care, that is, they can be integrated into other nursing procedures.

Before proceeding:

- review the categories of mental state assessment, and communication skills
- revise the structured format for mental state assessment (BATOMI) (see Box 40-5).

Equipment

- Mental health assessment uses communication skills and the therapeutic use of self.
- Consider privacy and appropriateness of setting

Therapeutic relationship and patient considerations

- Confirms patient identity
- Gains patient consent
- Initiates communication by introductions and clarification of patient's immediate needs and problems
- Identifies how the skill will affect the patient
- Discusses procedure with the patient to clarify understanding
- Provides reassurance
- Assesses patient knowledge and expectations and ensures patient understanding
- Where necessary, provides further clarification
- Explains actions and potential discomfort at all stages of procedure

STEPS	RATIONALE
1. Determine the need to assess mental state of patient.	Mental state is changeable, and is influenced by a range of biological, psychological and emotional factors.
2. **Focused mental health history** a. Consider the patient's usual mental state, and how mental state may be affected by illness. b. Consider the presence of factors that may affect mental state: • pain/discomfort • sedative or other effects of medication • tiredness • anxiety about health/hospitalisation • sensory loss or impairment • nausea or other symptoms • any history of mental illness • alcohol or drug use.	The focused mental health history provides insight into the links between a patient's general health and their cognitive and emotional functioning.
Procedure (1) Initiate communication by introductions, clarification of the patient's immediate needs and problems. (2) Consider positioning of nurse and patient to assist communication, that is, by enabling eye contact. (3) Ideally sit at the same level as the patient. (4) Continue with assessment using guidelines below to assess mental state.	Promotes rapport and psychological comfort during assessment.

STEPS	RATIONALE
3. Assess mental state	Appearance provides an initial set of clues to the patient's mental state.
A. Assessment of appearance – includes both expected and unusual aspects of appearance.	
Observe for:	
(1) Gross appearance (stature, state of dress, appropriateness of dress for current situation).	Expected and unusual aspects of appearance are equally important.
(2) Patient's apparent age compared with recorded age.	
(3) Position during assessment (sitting, lying).	
(4) Grooming and evidence of self-care or neglect.	
(5) Jewellery, make-up.	
(6) Distinguishing features (complexion, marks on skin, any observable disabilities).	
(7) Facial expressions.	
B. Assessment of behaviour – includes all observable behaviour.	Many changes in mental state are apparent from observations of behaviour.
Observe for:	
(1) Physical signs of anxiety or distress (handwringing, nervous mannerisms, plucking at clothes/hair, clutching objects such as purse or personal items).	
(2) Changes in behaviour in response to assessment.	Changes in behaviour can provide an indication of concerns and anxieties.
(3) Any tremor or involuntary movements.	
(4) Gestures with hands, eyes, head.	
(5) Crying, laughing or other behavioural indicators of mood.	
(6) Eye contact with interviewer (observe for constant, intermittent, intense or absent eye contact).	
(7) Motor activity (settled/relaxed, changes of position, restlessness).	
C. Assessment of affect and mood – includes direct and indirect observations of emotional state.	Assessment of mood includes both the nurse's assessment and the patient's statements about their mood.
(1) Emotional responsiveness (warm, engaging, distant, aloof).	
(2) Responses to topics of discussion.	
(3) Crying, smiling, laughing and other behavioural indicators of emotional state.	Affect may change throughout an interview or procedure; changes can be as important as overall mood.
(4) Conversational triggers to emotional responses.	
(5) Congruence between emotional response and content of conversation.	
(6) Irritability/anger.	
(7) Indications of anxiety.	
(8) Patient's self-rating of mood (1 = lowest ever; 10 = best ever).	

STEPS	RATIONALE
D. Assessment of thought and speech – includes directly observed speech and underlying thought processes. Make allowances for age, culture, language. Observe for: (1) Rate of speech (slowed, normal, accelerated, pressured). (2) Themes of thought and speech (preoccupations, guilt, depressive themes, dominant concerns). (3) Reduced/absent speech. (4) Organisation of speech (coherent, logical, complete sentences, goal oriented). (5) Evidence of ideas that are out of context (i.e. paranoid ideas, delusions). (6) Evidence of unexplained perceptions (voices, visual hallucinations). Patients can also be asked to describe their thoughts.	Patterns of thought are assessed by attending to speech.
E. Assessment of orientation (1) Aspects of orientation are: • Time • Place • Person (2) Orientation is assessed by asking specific questions or interpreting conversational cues to orientation (e.g. names, time, place of assessment).	Orientation provides important clues to organic or functional confusional states as well as additional information about problems of mood, thinking and perception.
F. Assessment of memory – includes all retention of information, whether short or long term. (1) Observe for: • attention/concentration/registration • short-term memory loss • long-term memory loss. (2) Ask specific questions if you need to test different aspects of memory, that is, can the patient remember: • events that just occurred (registration) • events that occurred 5 minutes ago (short-term memory) • events that occurred on the previous day (long-term memory). Memory can be further tested by giving the names of three unrelated items (ball, flag, tree) and asking the patient to repeat (registration) and then recall after 5 minutes' conversation.	Memory can be disrupted in many illnesses and when emotional and cognitive functioning is impaired. General assessment conversation can provide important information about memory.

STEPS	RATIONALE
G. Assessment of insight and judgement – assesses and records the patient's understanding of their current: (1) realistic perception of current health problems (2) realistic perception of any need for treatment (3) awareness of consequences of own choices.	Insight is important in order to engage patient in a plan of care. Impaired cognitive and emotional functioning can lead to reduced insight. Assessment of judgement can be an important indicator of safety.

■ **Critical decision point: Routine mental state assessment may show or confirm changes in cognitive or emotional state that require amendment of the plan of care, and possibly further assessment or referral. For example, if the mental state assessment shows a developing confusional state the patient may need more intensive nursing care and closer observation.**

RECORDING AND REPORTING

- Mental state assessment is recorded in a narrative style using a structured format with headings for each component of assessment (see Box 40-5). Issues of concern such as low mood or anxiety should be discussed with a senior colleague or supervisor.
- Each mental state assessment should be compared with the patient's baseline assessment.

HOME CARE CONSIDERATIONS

- Mental state assessment can be undertaken in the home as part of the routine nursing care.
- The assessment may need to be abridged if there is not sufficient privacy.

BOX 40-4 Mental state assessment using BATOMI mnemonic

The following assessment records the mental state of a woman assessed following an overdose of over-the-counter medication and medical treatment in the emergency department. The mental state assessment is one component of a complete mental health assessment, which would also include taking a history and formulating a diagnosis and problem list.

Behaviour and appearance

45-year-old Caucasian woman who attends well to interview. Looks older than her chronological age. Casually dressed in jeans and T-shirt. Is well groomed and appears well cared for. No unusual movements or mannerisms. Maintains good eye contact. Tearful at times.

Affect and mood

Affect is predominantly sad, with occasional brightening in response to questions. Mood is objectively depressed. She describes her mood as low, rates it at 3 on 1–10 scale where 1 is the lowest it has been.

Thought and speech

Thoughts focus on recent stressors, especially loss of a significant relationship. States she is currently unable to see a future without her partner. Is unable to focus on problem-solving about employment or other issues. There is a depressive theme to her thoughts. Thoughts are slowed. No delusional ideas expressed. No unusual perceptions. Has occasional thoughts of suicide but stresses she would not act on these. Has no specific plan. Gives concern for her children as a preventive factor.

Orientation

Oriented to time, place and person. Knows her whereabouts, the date and time of day. Accurately identifies staff by role or name.

Memory

Both short- and long-term memory are intact. She remembers events of the past few days, and more distant. Able to recall new information presented during interview.

Insight and judgement

Identifies that her mood is currently low and has been low prior to her recent separation. Accepts that professional care will help raise her mood and resolve current difficulties. Is willing to consider a review of current antidepressant medication. Judgement is unimpaired.

Practice contexts

Mental health nurses practise in a range of clinical contexts where they provide direct care either to individuals or to groups. Practice contexts include community and inpatient mental health and addiction services. Community mental health settings can include visits to service users' homes and care provided in clinic visits. Mental health nurses usually work as members of multidisciplinary teams which consist of a psychiatrist, registered nurse, social worker, psychologist, occupational therapist and other healthcare professionals. Teams might also include non-professional support workers. Mental health teams liaise with service users' primary healthcare providers, with social agencies and in some cases with housing and other welfare services. Other clinical roles include therapist roles for nurses with specific postgraduate education, liaison psychiatry in general hospitals, court and police liaison roles and others. An outline of some of the more common contexts in which mental health nursing is practised is listed in Box 40-5.

BOX 40-5 Mental health practice contexts

Addiction services

Nurses working in addiction services may provide direct care to clients with addiction or substance dependence, or may work in inpatient settings which provide either detoxification services or a period of inpatient care prior to discharge to community care. Some nurses practise in long-term care settings where clients may be admitted for weeks or even months of rehabilitation. Although nurses working in alcohol and drug services may administer prescribed treatments such as medications, they will also use psychological treatment strategies such as motivational interviewing and problem-solving.

Child and youth services

Many of the mental health needs of children and youth are specific to their age group or developmental stage, and require nurses and clinical practitioners responsive to the unique needs of this population group. Mental health nurses may work in inpatient settings providing 24-hour care as well as participating in a range of therapeutic activities including family meetings, liaison with school or other guidance counsellors, individual therapy, medication and group therapy. Child and youth services are also provided in community settings, including mobile mental health teams and outpatient clinics. Some mental health nurses practise in roles that involve liaison with schools and social agencies where mental health problems might first become apparent.

Community mental health services

These include adult community mental health teams and specialist mental health services based in the community. Nurses may work as case managers for a group of clients with long-term mental health problems, crisis workers providing triage and assessment of people presenting in mental health crisis, and home-based treatment teams, providing intensive support for individuals and their families in their homes as an alternative to hospital admission.

Forensic services

Forensic mental health services provide care and treatment for service users whose mental illness has brought them before a court on criminal charges. If the behaviour leading to the criminal charge is thought to be due to mental illness, the court may order that the service user is admitted to an inpatient forensic service rather than face the possibility of conviction and a jail sentence. Forensic mental health services also provide community follow-up for service users discharged from inpatient forensic services, usually with the objective that the service user will later be transferred to the care of adult community mental health services.

Inpatient care

This practice context involves care for service users who have been admitted to hospital usually because their mental health problems are especially acute and cannot be managed in a community setting. Inpatient care may be necessary for service users with acute depression or psychosis, especially if the clinical severity is associated with significant risk to self or others. In inpatient settings nurses provide 24-hour care, including liaison with families, community mental health services and other health or social agencies. Inpatient care may be voluntary or may be compulsory under mental health legislation.

Liaison psychiatry

Liaison psychiatry is an area of specialty practice that provides assessment and treatment for people presenting to general hospitals with self-harm or suicide attempts or with medical consequences of overdose or drug use. Clients also include those with mental distress or illness related to a physical health problem or with alcohol and substance-use issues. Nurses in liaison psychiatry roles may provide initial assessment, brief intervention and referral to follow-up services on discharge.

Older adult mental health services

Older adult mental health services provide inpatient and community services for older people, usually for those aged 65 years and over. Some mental health problems are markedly more common in old age, such as the dementias and others take on specific characteristics in the older adult population, such as depression and schizophrenia. Substance use and addiction are also prevalent in the older adult age group. Older people may have co-existing physical health problems such as heart disease, diabetes and impaired renal and liver function that exacerbate mental illness and make treatment more complex.

continued

Primary care

Primary care is a relatively new mental health nursing role and involves nursing in primary care clinics where nurses assess patients, develop plans of care, provide psychological interventions and in some cases prescribe pharmacological agents. Mental health nurses working in primary care liaise closely with general practitioners and may make referrals to specialist mental health services.

Treatment modalities

Treatments provided in mental healthcare vary, from group and individual psychotherapy, to specific psychological therapies, such as cognitive therapy and dialectical behaviour therapy, to inpatient admission, community case management, pharmacological treatments, electroconvulsive treatment, and a range of others. Different treatments may be provided together, such as psychological and pharmacological treatment for depression. Some of the more commonly used psychological treatments are described below.

Individual psychotherapy

Individual psychotherapy is a form of one-to-one psychological intervention in which a clinician (or therapist) meets with an individual client to talk about emotional problems. There are many models of individual psychotherapy, such as interpersonal psychotherapy, brief focused psychotherapy, cognitive therapy and others. Individual psychotherapy may be goal-focused with an agreement to work towards a particular objective; solution-focused in which the aim is to solve a specific problem; or open-ended where there is no specific aim but a commitment to exploration and change on the part of the client. Components of individual psychotherapy have been integrated into mental health nursing practice, although nurses may also practise individual psychotherapy as a structured form of clinical intervention. Individual psychotherapy will usually involve regular individual appointments for a set period of time.

Cognitive therapy

Cognitive therapy (or cognitive behaviour therapy) is a form of individual or group psychotherapy in which a nurse will assist a client to reflect on their habitual patterns of thoughts and beliefs and how those patterns affect their emotional state, decision-making and responses to others. Cognitive therapy is based on the theory that emotions and behaviour are influenced by thoughts (cognitions) and that if we consciously change our habitual patterns of thought, emotions and behaviour will change as a result. Cognitive therapy has been found to be effective in the treatment of depression and anxiety (see *Research highlight*) and in helping clients develop adaptive responses to physical illness and trauma.

Dialectical behaviour therapy

Dialectical behaviour therapy (DBT) is a form of individual or group therapy specifically developed for people who have difficulty managing painful emotional states, and who tend to self-harm as a form of emotional regulation. DBT was developed as a means of assisting this group of people to manage emotional distress without

RESEARCH HIGHLIGHT

Research focus

Depression is common in people with diabetes, and has an adverse effect on physical and mental health. Psychological interventions such as cognitive therapy are effective interventions for depression in the general population, as well as in people with chronic illness.

Research abstract

The study was a randomised controlled trial in which 94 people with type 1 or type 2 diabetes and depression were assigned to individual mindfulness cognitive behavioural therapy (MCBT, 31), individual cognitive behavioural therapy (CBT, 32) or a wait list (31).

Evidence-based practice

- Following the intervention, people receiving MBCT and CBT showed significantly greater reductions in depressive symptoms compared with those on the wait list. There was no significant difference in HbA1c (glycosylated haemoglobin test).
- In people with type 1 or type 2 diabetes mindfulness cognitive behavioural therapy and cognitive behavioural therapy are effective in reducing depressive symptoms.
- Both interventions could be implemented to improve psychological care for depressed patients with diabetes.

Reference

Tovote et al 2014 Individual mindfulness-based cognitive therapy and cognitive behaviour therapy for treating depressive symptoms in patients with diabetes: Results of a randomized controlled trial. Diabetes Care 37(9):2427–34.

direct intervention from nurses or other therapists. However, the skills of DBT need to be learnt and practised with professional support before they can be implemented independently. Components of DBT include mindfulness, self-soothing, problem-solving, distraction and asking for help. An important aspect of DBT is helping the client to manage painful emotions without resorting to self-harm. DBT has been found to be effective in people with borderline personality disorder.

Acceptance and commitment therapy

Acceptance and commitment therapy (ACT) is a relatively new form of psychological therapy, which attempts to blend influences of traditional Western models of psychotherapy with the Eastern-inspired idea of mindfulness. ACT is different to other psychotherapies, as it does not focus directly on symptoms, but rather on helping people to live a rich and satisfying life while accepting that pain, in the form of psychological discomfort, is an inevitable part of life. In addition to acceptance of the pain of life, ACT involves a commitment to taking steps that will help to achieve a valued life. The core skill of mindfulness has four components. These are: acceptance; cognitive diffusion; contact with the present moment; and the observing self. ACT has been found to be effective in a number of clinical conditions such as anxiety, depression and schizophrenia, as well as with psychological problems such as smoking cessation, stress, pain, and coping with physical illnesses such as diabetes.

Group therapy

Group therapy is a form of psychological intervention in which people are treated in small or large groups. Many of the techniques used in group therapy are also used in individual psychotherapy, with the added aspect that fellow clients participate in the therapy. Group therapy has many applications, including inpatient care, addictions, bipolar disorder and schizophrenia. Groups are a powerful means of intervention when problem-solving is important to treatment, as the experience and resources of group members can be used to generate strategies and validate individuals' efforts to manage problems. Nurses working in therapeutic groups will encourage clients to develop a sense of belonging to the group and will attempt to use that sense of belonging to help motivate the client to change. Groups may be open (accepting new members on a regular basis) or closed (not open to new members once they have formed). They may run for a predetermined number of meetings, or they may have no set endpoint. On joining a group, a new member will be asked to commit to a set of rules covering issues such as attendance, participation, confidentiality, and norms of behaviour while in the group. Groups may also have rules about what topics are acceptable for discussion, and about contact between members between group meetings.

Pharmacological treatments

There are many pharmacological treatments used in mental healthcare. These include anxiolytics, antidepressants, antipsychotics, hypnotics and mood stabilisers. Nurses may be involved in administering medication, educating service users about its effects and side effects and discussing with service users the place of **pharmacological treatment** in their recovery.

Anxiolytics

These agents are used for the treatment of anxiety. Examples are lorazepam, diazepam and midazolam, all of the benzodiazepine group. Long-term treatment with anxiolytics is not recommended because of the possibility of dependence. However, the anxiolytics have an important role in the treatment of acute anxiety for people with anxiety disorders, and also for the acute anxiety that frequently accompanies psychosis. Because of their sedative effect, anxiolytics are sometimes used to assist sleep and to help service users achieve behavioural control.

Antidepressants

As the name suggests, antidepressants are used in the treatment of depression. Antidepressants are considered to work by increasing available serotonin at key sites in the brain, and thus elevating the person's mood. They are most effective in cases of severe depression. The effects may not be apparent for up to 3 weeks, and the treatment will then need to be continued for several months to achieve a sustained lift in mood. Antidepressant agents work well in combination with psychological approaches. Some individuals report an initial increase in anxiety on antidepressant medication, and this needs to be carefully managed as anxiety is also a feature of depression. An initial increase in anxiety will usually decrease over the first few weeks of treatment. Antidepressant medication is not addictive, but people notice a 'rebound effect' if treatment is discontinued suddenly. Examples of commonly used antidepressants are citalopram, fluoxetine, amitriptyline and paroxetine.

Antipsychotic agents

Antipsychotic agents are those given for the treatment of psychosis, especially schizophrenia and mania. These agents are considered to work on dopamine receptors at

various sites in the brain. Because of their effect in reducing the intensity of negative perceptions, antipsychotic agents may also be used in the treatment of severe depression, delirium and dementia. Antipsychotic agents have variable sedative effects, and so the right agent and dose will need to be carefully considered for each individual. Antipsychotic agents can be given orally, intramuscularly and sub-lingually. Some intramuscular forms of antipsychotic agents are stored in muscle and released slowly, meaning that they only need to be administered at 2-weekly or even monthly intervals. Antipsychotic agents can cause muscular side effects, such as rigidity and tremor, and in some cases long-term involuntary movements. Some antipsychotic agents are associated with the metabolic syndrome, type 2 diabetes, and cardiovascular side effects. Because of their potential for significant side effects and adverse effects clients should have a full health assessment prior to commencing treatment. Antipsychotic agents need to be chosen carefully and closely monitored. Examples of antipsychotic agents are haloperidol, chlorpromazine, risperidone, olanzapine and clozapine.

Mood stabilisers

Mood stabilisers are used in the treatment of bipolar disorder and other illnesses in which there is marked mood instability. The most commonly used mood stabiliser is lithium carbonate, which is used in the treatment of bipolar disorder. Other examples are carbamazepine, lamotrigine, and sodium valproate. Mood stabilisers are prescribed as maintenance treatment rather than as treatment for acute episodes of psychosis. They are most effective at preventing further acute episodes and helping the individual maintain a steady mood state. In some cases people will be prescribed an additional antipsychotic agent, especially in the early stages of recovery from an acute episode. Blood levels of mood stabilisers need to be regularly monitored to prevent toxicity. Clients should also have liver and renal function monitored regularly.

Hypnotics

Hypnotics are pharmacological agents prescribed to enhance sleep. Sleep disturbance is a common health problem, and is a feature of mental illness. Poor sleep also impedes recovery by limiting the individual's ability to benefit from the recuperative powers of sleep. Some antidepressant and antipsychotic agents have a hypnotic effect which can be enhanced by taking the medication close to retiring to bed. In other cases the individual will benefit from an additional hypnotic. Most hypnotic agents are benzodiazepines and have the potential for addiction, so use of hypnotics needs to be limited to periods of acute sleep disturbance, with sleep hygiene measures used as a longer-term strategy. Examples of hypnotics are zopiclone, triazolam and temazepam.

Electroconvulsive therapy

Electroconvulsive therapy (ECT) is a form of treatment for severe depression and mood disorder. ECT consists of passing an electrical current through the temples into the brain, sufficient to induce a tonic–clonic seizure. The procedure is carried out under a short-acting general anaesthetic, and the muscular effects of the seizure are controlled by the use of a muscle-relaxant drug such as methohexital (brevital sodium). A typical course of ECT is usually six to eight treatments with a day between each one. The service user's mental state, especially mood, is assessed following each treatment. ECT has a controversial history, as it is associated with excessive and punitive use in the past and is associated with memory loss. However, ECT is also considered to be an effective treatment for severe depression and catatonia. In current mental healthcare, ECT is usually subject to specific consent processes, unlike most medical treatments. In the case of individuals considered to lack competence to consent, a court-appointed guardian may be asked to consent.

• CRITICAL REFLECTION POINT

1. **If you or a family member were being treated for mental illness, what choices of therapy would you want to be offered?**
2. **Are there any forms of therapy you would not want for yourself or a family member?**
3. **What further learning do you feel you need about treatment of mental illness?**

Culture and mental illness

Although disturbances in thinking, emotional state and social relationships occur in every **culture**, the forms they take are in some cases specific to those contexts. For example, the experience of *whakamaa* (shame, self-abasement, shyness, excessive modesty and withdrawal describe some aspects of this concept) is only seen in the Māori culture (Hirini et al 2005). Vukic et al (2010) have described the culturally specific understandings of mental health among Australian Aboriginals. The concept of 'mental illness' is a construct of Western societies and so represents Western ideas of the individual and the relationship between the individual and society. The increasing ethnic and cultural diversity of Western societies means that individuals attend Western health services with presentations influenced

by cultural beliefs and practices different to those of clinicians trained in Western models. Nurses respond to this diversity by developing an understanding of the diversity of cultures in their own societies, and by developing cross-cultural communication skills (O'Brien et al 2009). Services also attempt to provide clinicians from the cultural group of the service user, and in some cases develop specialty services based on a culturally specific model of treatment.

Stigma

A continuing issue facing people with mental illness is **stigma** (Fitzpatrick 2015). Stigma is a complex issue that has historical origins in the perception of people with mental illness as dangerous, bizarre and unreasonable. Social responses to mental illness, including the conditions of the former asylums, have also contributed to stigma towards mental illness. The perceptions of others may become internalised so that individuals with mental illness come to accept negative views of themselves, a concept known as *self-stigma* (MacInnes & Lewis 2008). The causes and expressions of stigma vary across different cultural groups and can result in people from cultural minorities avoiding mainstream services because they feel they will not be understood by service providers (Choudhury & Chopra 2011) (see Chapter 14). The effects of stigma are that people may not seek intervention for mental illness, may be socially excluded and may be ostracised from family and friends. People with mental illness also encounter stigma in health services, and in some cases have difficulties in accessing care (Horsfall et al 2010). In recent times concerted efforts have been made to counter the stigma of mental illness, including campaigns such as the Australian beyondblue depression initiative (Pike 2010) and the New Zealand Like Minds, Like Mine project (Thornicroft et al 2014). These campaigns have had some impact in improving public perceptions of mental illness. One focus of these campaigns is to inform the public of the prevalence of mental illness, and to use well-known public figures to talk about their experience of mental illness. An example of an intervention to reduce self-stigma is outlined in the following *Research highlight*.

Hearing voices

As discussed in the section on mental illness above, some people with mental illness experience *hallucinations*, often in the form of **hearing voices**. While hearing voices has traditionally been viewed as a symptom of illness, recent approaches have drawn attention to hearing voices as a common human experience and one which is not necessarily symptomatic of illness (Jones & Coffey 2012). Many people report hearing the voice of a deceased family member and others report hearing voices that become part of their life and are not experienced as negative or adverse. In addition, people

RESEARCH HIGHLIGHT

Research focus

Stigma towards people with mental illness involves negative perceptions, including perceptions of the person with mental illness as different, dangerous, bizarre or unreasonable. One effect of stigma is that individuals with mental illness come to share these negative perceptions and apply them to themselves, a concept known as self-stigma.

Research abstract

The researchers conducted a 6-week trial of a program designed to reduce self-stigma in a group of service users with severe and enduring mental illness. Twenty male participants were recruited to the study and assessed for self-stigma using a 12-item standardised measure of devaluation–discrimination. Additional measurements were made of self-esteem, self-acceptance and psychological wellbeing. The study used a 'before and after' design, and the intervention used a cognitive therapy approach in addition to psychoeducational strategies. The intervention was delivered to groups of six to eight participants. Following the intervention, there was a significant reduction in self-stigma using the devaluation–discrimination measure, but no changes in the measures of self-esteem, self-acceptance and psychological wellbeing.

Evidence-based practice

- Structured group interventions can be effective in reducing self-stigma in people with severe and enduring mental illness.
- Self-stigma appears to be distinct from self-esteem, self-acceptance and psychological wellbeing.
- Further research is needed to test these findings with other forms of stigma about mental illness and with female participants.

Reference

MacInnes DL, Lewis M 2008 The evaluation of a short group programme to reduce self-stigma in people with serious and enduring mental health problems. J Psychiatr Ment Health Nurs 15:59–65.

who hear unpleasant voices can learn to limit the effects of these voices, and to manage their responses using a range of skills and strategies. Managing responses to hearing voices is part of dialectical behaviour therapy and other forms of self-management.

Mental health nurses work with service users who hear voices by exploring the nature of the voices, acknowledging the sometimes distressing nature of the voices, helping service users identify patterns in the voices heard and assisting service users to develop their own management strategies. Strategies include blocking out voices with alternative auditory stimuli (such as earphones), talking back to voices that make derogatory comments, and recognising the situations in which the voices occur. Service users may be offered medication if that is something they find helpful.

• CRITICAL REFLECTION POINT

1. **Do you or anyone you know have the experience of hearing voices?**
2. **After reading the section above, do you think people who hear voices are always mentally ill?**
3. **What actions can you take to reduce stigma about mental illness?**

Mental health legislation

A characteristic that is almost unique to mental healthcare is the existence of legislation which compels people with mental illness to accept treatment without consent and to remain in hospital for the purposes of treatment. Treatment without consent is considered unethical under most circumstances, and is specifically forbidden under professional codes of practice and human rights legislation. In mental health services, however, specific legislation allows clinicians to provide treatment without consent (in specific circumstances). Why is this so? Mental illness can impair a person's judgement so that their actions pose a risk to themselves or other people. This might include an impulse to attempt suicide in the case of a person with depression, or might include thoughts of harming others in the case of someone who is hearing voices telling them someone is intent on harming them. These are exceptional circumstances, and the purpose of **mental health legislation** is both to protect the individual from self-harm and to protect others from impulses to harm arising from mental illness.

The process of applying mental health legislation is known as *committal*, or *civil commitment*, and usually involves a period of treatment without consent in a hospital or mental health unit. Under the principle of least-restrictive care, committal should be for the briefest period necessary to contain the risk of harm, and should be aimed at returning the person to their former level of autonomy. In many cases, people placed in hospital under mental health legislation will be discharged under a community treatment order. A community treatment order allows the person to live in the community while at the same time receiving compulsory treatment for mental illness. People placed under civil commitment have rights to consult a lawyer or advocate and to appeal their legal status. Legislation will usually specify the period of treatment necessary and will also require periodic formal reviews of the need for compulsory treatment.

Clinical supervision in mental health nursing

Mental health nursing is known to be a stressful occupation that places significant psychological and emotional demands on practitioners. These demands arise because of the nature of service users' clinical problems and the emotional responses of nurses. Other sources of stress include relationships with peers and senior nurses, and the organisational demands of health service providers such as shift work, staff shortages and requirements for continuous professional development. The stress arising from clinical practice is an addition to stresses arising in the nurse's personal life. The effects of multiple stressors can affect nurses' mental health and their enjoyment of clinical practice, leading to disengagement, emotional distancing and a reduced sense of optimism. In extreme cases this can lead to *burnout*, a state in which the nurse is no longer able to manage the emotional and psychological demands of nursing (Kravits et al 2010).

Clinical supervision is used by nurses as a way to help manage stress, address professional and clinical issues and to seek support and validation for their clinical work (Brunero & Stein-Parbury 2008). Clinical supervision has a long history in psychology, counselling and social work, but has only recently been introduced into nursing. Different models of supervision have been described (Te Pou 2009), and nurses engaging in supervision will identify a supervisor who utilises a model that meets the developmental needs of the supervisee. Standards of mental health nursing practice in Australia and New Zealand require that mental health nurses are actively involved in clinical supervision (Australian College of Mental Health Nurses 2013, Te Ao Maramatanga 2012).

Typically, a nurse will negotiate a supervision contract with a more experienced nurse, who, in addition to having a depth of clinical experience, will themselves be engaged in clinical supervision and will have undertaken training in providing supervision. For supervision to work effectively,

it is important that the relationship between nurse and supervisor is one of trust. The supervisee needs to find the process safe and supportive. Within the supervision relationship the supervisor will encourage the supervisee to reflect on their practice and identify ways in which practice can be improved. Other issues that can be a focus of discussion in supervision are the political and social context of nursing and health care, and the supervisee's professional and career development plans. Supervision discussions should be confidential between the nurse and supervisor, although an employer might require evidence that the nurse is participating in supervision. The issues discussed in the supervision relationship can be quite personal, but it is essential that supervision does not become counselling or psychotherapy. Supervision should also be distinguished from line management. Establishing clear guidelines for supervision can help maintain the focus on professional support.

Benefits of supervision are reduced sense of burden, greater enthusiasm for clinical practice and an increased sense of optimism about patients and about the nurse's own professional development (Koivu 2011). Supervision also helps to maintain a safe and healthy workplace by providing nurses with an opportunity to manage issues that might otherwise result in impaired performance and conflict with colleagues. Clinical supervision can play an important supportive role in maintaining mental health by helping the nurse identify strategies for coping with clinical work, providing an opportunity to identify problems before they become overwhelming, and validating the nurse's clinical practice.

Mental health promotion

The focus of this chapter so far has been on mental illness, assessment and treatment, and on the variety of specialist mental health services available. The focus has therefore been on what nurses need to know to provide care for people whose mental health problems have reached a significant level of severity. **Mental health promotion** is aimed at the prevention of such problems, and in creating conditions in which serious mental health problems are less likely to occur.

Mental health promotion involves nurses and other healthcare practitioners in activities that promote mental health for individuals, as well as advocating for social changes that support mental health. The focus of mental health promotion is promoting wellbeing in the context of people's everyday lives. Through mental health promotion, people are enabled to develop personal coping skills and resources, to establish and maintain supportive relationships and to make positive lifestyle choices.

In addition to focusing on the mental health of individuals, mental health promotion is concerned with community development (O'Brien 2013). Strategies include participation in development of policy, contributing to local and national debates about social issues, and advocating for services and amenities that will enhance mental health. Mental health promotion initiatives involve the health sector, but also extend to other agencies such as education, social services, housing and transport.

Nurses employed in every clinical setting can use principles of mental health promotion to help clients improve their mental health, manage the stresses of their lives and identify support systems that can help promote positive mental health. This can include providing health information and identifying those who might benefit from referral to specialist mental health services.

Professional organisations in mental health nursing

In both Australia and New Zealand, colleges of mental health nursing represent the professional interests of mental health nurses through developing standards of practice, formulating position statements on professional and public issues relevant to mental health and liaising with policy makers and other professional groups. Colleges in both Australia and New Zealand have developed credentialling processes which enable nurses to gain professional recognition for their specialty status. Both colleges hold regular conferences and the Australian college produces a peer-reviewed journal, the *International Journal of Mental Health Nursing*. As with other nursing specialties, having a professional voice is an important aspect of professional practice. A brief summary of the roles of both colleges is provided in Box 40-6.

Summary

In summary, mental health nursing is an area of specialist nursing practice concerned with people with mental distress and illness in a wide range of clinical contexts. Mental health nurses practise in inpatient and community settings, and usually work as members of multidisciplinary mental health teams. Mental health nursing is underpinned by the interpersonal theory first developed by Hildegard Peplau and subsequently by more recent mental health nursing theorists. Interpersonal theory places the relationship between service user and nurse at the centre of mental healthcare, and seeks to utilise that relationship to assist the service user to reach their health goals. The concept of recovery has recently been advocated as a means of focusing mental healthcare

BOX 40-6 Colleges of mental health nursing

Australian College of Mental Health Nurses

The Australian College of Mental Health Nurses Inc (ACMHN) was established in 1974, and is a nursing body representing the professional interests of mental health nurses in Australia. Members of the College work in a variety of settings throughout the public and private healthcare and education sectors. The majority of members work in clinical practice in hospital or community services. The College produces the quarterly *International Journal of Mental Health Nursing*. Website: www.acmhn.org

Te Ao Maramatanga (New Zealand College of Mental Health Nurses)

Te Ao Maramatanga (New Zealand College of Mental Health Nurses, NZCMHN) was established in 1993 as a branch of the Australian college, and as a separate college since 2004. Te Ao Maramatanga is a nursing body representing the professional interests of mental health nurses in New Zealand. Members practise in community and inpatient clinical settings, in education, management and research. The College has a bicultural governance structure reflected in the office of Kaiwhakahaere (chair) and through a caucus of Māori members. Website: www.nzcmhn.org.nz.

Elder R, Evans K, Nizette D 2016 Psychiatric and mental health nursing Elsevier, Sydney.

on the experience of the person receiving services, and of maintaining hope in the face of mental distress and illness. Clinical practice occurs in a range of practice settings and includes care of people with mental illness, **developmental disability** and substance-use problems.

Mental health nursing is based on comprehensive health assessment with a special focus on social and developmental history, and on current mental state. Treatments are both interpersonal and pharmacological, sometimes a combination of both. The emotional demands of mental health nursing make clinical supervision an important part of professional practice in order for nurses to maintain their own mental health, and to manage the emotional needs of service users. In addition to direct clinical care, mental health nurses may be involved in mental health promotion which seeks to promote positive mental health for individuals and communities. Professional colleges provide support to mental health nurses by articulating standards of clinical practice and through a range of professional activities. Current challenges facing mental health nursing are the continued devolvement of mental healthcare into the primary care sector and the need to integrate clinical interventions into a recovery-focused philosophy of care.

Key concepts

- Mental health nursing is a specialist branch of nursing aimed at supporting and assisting people with mental distress or illness.
- Nurses will encounter people with mental illness in every practice setting.
- The therapeutic relationship is a concept introduced into mental health nursing by theorist Hildegard Peplau. Therapeutic relationships are considered fundamental to nursing practice and provide the basis for nursing intervention and psychological therapies.
- Recovery in mental health refers to living well in the presence or absence of illness. It does not refer to cure. Recovery is aimed at assisting people with mental illness to maintain hope and an optimistic sense of their future.
- The terms mental distress and mental illness are often used together because it can be difficult to establish when the distress of life should be regarded as an illness to be treated by a healthcare professional. Mental illnesses are categorised in the American Psychiatric Association's Diagnostic and Statistical Manual (DSM).
- A personality disorder is an enduring pattern of thinking and behaviour that is problematic because it adversely affects interpersonal relationships and social role performance.
- Substance use refers to the problematic use of substances that affect psychological, physical and social functioning. Although numerous substances are used problematically, the most common substance used in Australia and New Zealand is alcohol. Substance-use problems occur across a continuum from intoxication to addiction.
- Mental health assessment refers to the process of taking a mental health history, conducting a mental state assessment and arriving at a statement of problems that can be the focus of nursing intervention.
- A mental state assessment is an assessment of a person's present cognitive, emotional and perceptual functioning.
- A psychiatric diagnosis is a category of mental illness assigned on the basis of a person's history and presenting symptoms.
- Mental health and addiction services are specialist services for people with significant mental health and/or addiction problems. Nurses working in specialist services have usually undertaken postgraduate study in the mental health or addictions specialties.
- Mental health treatment refers to the range of interventions provided by mental healthcare professionals. These include psychological therapy and pharmacological therapy.
- Mental health legislation refers to Acts of Parliament that give mental healthcare professionals, under defined

circumstances, the legal power to detain people who are mentally ill and present a significant risk of harm to themselves or others, and to treat people detained without consent.

- Clinical supervision is the process of engaging in structured discussion about professional practice with the aims of improving practice, supporting the nurse and helping to develop strategies of professional development.

Note

1. The term 'service user' is sometimes used in mental health to refer to people who are receiving mental health services. Other terms used are 'consumer', 'client' and 'patient'.

Online resources

Alcohol Advisory Council of New Zealand – resources and information including publications, policy documents and community strategies about alcohol in New Zealand, www.alac.org.nz

Alcohol (Australia) – Information about alcohol in Australia, including policy developments, strategies, safe drinking and other issues, www.alcohol.gov.au

beyondblue – information about a wide range of programs and depression strategies as well as links to personal stories, research and other resources, www.beyondblue.org.au

bipolarcaregivers.org – information about treatment, support, advocacy, problem-solving, crisis intervention and other aspects of bipolar disorder, www.bipolarcaregivers.org

Boston University Center for Psychiatric Rehabilitation – resources aimed at improving services for people with mental disabilities, www.bu.edu/cpr

Computer Assisted Learning for the Mind (CALM) – information about stress, anxiety and depression, health relationships and mental resilience, www.calm.auckland.ac.nz

Grow (Australia). Peer Support for Mental Health – peer support site with information, news, events and publications on mental health, www.grow.net.au

Headspace. National Youth Mental Health Foundation – Australian website with a range of mental health resources for young people, www.headspace.org.au

Hearing Voices Network, Australia, www.hvna.net.au

Hearing Voices Network, Aotearoa New Zealand, www.hearingvoices.org.nz

Health and Disability Commission (New Zealand) – a variety of mental health resources, links to publications and information about services, www.hdc.org.nz/

Like Minds, Like Mine – resources aimed at reducing stigma about mental illness, www.likeminds.org.nz

Mental Health Council of Australia – links to publications, information about mental-health-related events, programs and resources for those seeking personal help with mental health, www.mhca.org.au

Mental Health Foundation of New Zealand – online resources and links to community organisations concerned with mental health, www.mentalhealth.org.nz

Mental Illness Fellowship of Australia – information about a range of Australian mental health service providers, www.mifa.org.au

Peerzone: peer-led workshops in mental health and addiction www.peerzone.info/

The Lowdown – interactive site with information resources, a chat room, personal stories from young people who have experienced depression, and music files with a mental health theme, www.thelowdown.co.nz

The Mental Elf – UK-based site with information about mental health, including research, evidence-based guidelines and publications, www.thementalelf.net

References

American Psychiatric Association (APA) 2013 Diagnostic and Statistical Manual of Mental Disorders (DSM-5). APA, Washington.

Andrews J et al 1997 The history of Bethlem. Routledge, London.

Anthony WA 1993 Recovery from mental illness. The guiding vision of the mental health service system in the 1990s. Psychosoc Rehab J 16:11–23.

Associate Minister of Health 2006 New Zealand Suicide Prevention Strategy 2006–2016. Ministry of Health, Wellington.

Australian Bureau of Statistics 2008 National Survey of Mental Health and Wellbeing, Australian Bureau of Statistics, Canberra. Online. Available: http://www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/6AE6DA447F985FC2CA2574EA00122BD6/$File/43260_2007.pdf; accessed 22 May 2015.

Australian College of Mental Health Nurses (ACMHN) 2013 Mental health nurses in Australia. Scope of practice 2013 and Standards of Practice 2010. ACMN, Canberra.

Australian Institute of Health and Welfare (AIHW) 2008 Mental health services in Australia 2005–06 (Drug statistics series no. 15), Mental health series no. 10. Cat. no. HSE 56. AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) 2005 Statistics on drug use in Australia 2004. Cat. no. PHE 62. AIHW, Canberra.

Barker PJ, Buchanan-Barker, P 2005 The tidal model. A guide for mental health professionals. J Psychiatr Ment Health Nurs 8:233–40.

Beck AT et al 1961 An inventory for measuring depression. Arch Gen Psychiatr 4:561–71.

Bowen M 2013 Borderline personality disorder: clinicians' accounts of good practice. Journal of psychiatric and mental health nursing: 20(6):491–8.

Brown S 1995 An interviewing style for nursing assessment. J Adv Nurs 21:340–3.

Brunero S, Stein-Parbury J 2008 The effectiveness of clinical supervision in nursing: an evidence based literature review. Aust J Adv Nurs 25(3):86–94.

Brunton W 2005 The place of public inquiries in shaping New Zealand's national mental health policy 1858–1996. Aust N Z Health Policy 2(24). DOI: 10.1186/1743-8462-2-24.

Choudhury SN, Chopra P 2011 Culture, perception of mental illness and stigma. Asia-Pac J Psyhiatr 3(1):42.

Commonwealth of Australia 2009 Fourth National Mental Health Plan – An agenda for collaborative government action in mental health 2009–2014. Commonwealth of Australia, Canberra.

Commonwealth of Australia 2008 Living Is For Everyone (LIFE) framework (2007) A framework for prevention of suicide in Australia. Commonwealth of Australia, Canberra.

D'Antonio P et al 2014 The future in the past: Hildegard Peplau and interpersonal relations in nursing. Nurs Inquiry 21(4):311–17.

Dax EC 1989 The first 200 years of Australian psychiatry. Aust N Z J Psychiatr 23:103–10.

Deans C, Meocevic M 2006 Attitudes of registered psychiatric nurses towards patients diagnosed with borderline personality disorder. Contemp Nurse 21(1):43–9.

Elder R, Evans K, Nizette D 2016 Psychiatric and mental health nursing. Elsevier, Sydney.

Fitzpatrick JJ 2015 The continuing stigma of mental illness. Arch Psych Nurs.

Folstein MF et al 1975 'Mini-mental state'. A practical method for grading the cognitive state of patients for the clinician. J Psychiatr Res 12:189–98.

Happell B 2009 Appreciating history: the Australian experience of direct-entry mental health nursing education in universities. Int J Ment Health Nurs 18(1):35–41.

Hill CE 2005 Therapist techniques, client involvement, and the therapeutic relationship: inextricably intertwined in the therapy process. Psychother Theory Res Pract Training 42(4):431–42.

Hirini P et al 2005 Frequency of traumatic events, psychological and physical health among Māori. N Z J Psychol 34(1):20–7.

Horsfall J et al 2010 Stigma in mental health: Clients and professionals. Issues Ment Health Nurs 31(7):450–5.

Jones M and Coffey M 2012 Voice hearing: A secondary analysis of talk by people who hear voices. Int J Ment Health Nurs 21(1):50–9.

Jugessur T, Iles IK 2009 Advocacy in mental health nursing: an integrative review of the literature. J Psychiatr Ment Health Nurs 16:187–95.

Koivu A 2011 Stress relief or practice development: varied reasons for attending clinical supervision. J of Nurs Management 19(5): 644–54.

Kravits K et al 2010 Self-care strategies for nurses: A psycho-educational intervention for stress reduction and the prevention of burnout. App Nurs Res 23(3):130–8.

MacInnes DL, Lewis M 2008 The evaluation of a short group programme to reduce self-stigma in people with serious and enduring mental health problems. J Psychiatr Ment Health Nurs 15(1):59–65.

Mental Health Services in Australia (MHSA) 2015 Australian Institute of Health and Welfare, Australian Government. Online. Available: mhsa.aihw.gov.au; accessed 5 Jan 2016.

Ministry of Health 2010 Drug use in New Zealand: key results of the 2007/08 New Zealand alcohol and drug use survey. Ministry of Health, Wellington.

Ministry of Health 2005 Te Tahuhu Improving mental health 2005–2015 The Second New Zealand Mental Health and Addiction Plan. Ministry of Health, Wellington.

Morrison P et al 2000 The use of the Liverpool University neuroleptic side-effect rating scale (LUNSERS) in clinical practice. Aust N Z J Ment Health Nurs 9(4):166–76.

Nursing Council of New Zealand (NCNZ) 2014 The New Zealand nursing workforce. A profile of nurse practitioners, registered nurses, and enrolled nurses 2012-2013. NCNZ, Wellington.

O'Brien AJ 2014 Every nurse is a mental health nurse. Nursing New Zealand (Wellington, NZ) 20(8):2-2.

O'Brien AJ 2013 Mental health promotion. In: Francis K et al (eds) Community as partner. Theory and practice in nursing, 3rd edn. Lippincott Williams & Wilkins, Sydney.

O'Brien AJ et al 2009 Providing culturally safe care. In: Barker P (ed) Psychiatric and mental health nursing. The craft of caring. Hodder Arnold, London.

Olson T 1996 Fundamental and special. The dilemma of psychiatric nursing. Arch Psychiatr Nurs 19(1):3–10.

Peplau HE 1952/1988 Interpersonal relations in nursing. A conceptual frame of reference for psychodynamic nursing. Macmillan Press, London.

Pike E 2010 Beyondblue: The National Depression Initiative. J Consumer Health on the Internet 14(3):285–93.

Prebble K 2008/09 Remembering 100 years of mental health nursing registration. Nurs N Z 14(12):26–7.

Prebble K 2001 On the brink of change? Implications of the review of undergraduate education in New Zealand for mental health nursing. Aust N Z J Ment Health Nurs 10:136–44.

Prochaska JO et al 1994 Stages of change and decisional balance for 12 problem behaviours. Health Psychol 13(1):39–46.

Sands NM 2009 Round the bend: a brief history of mental health nursing in Victoria, Australia 1848 to 1950s. Iss Ment Health Nurs 30(6):364–71.

Saunders JB et al 1993 Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption II. Addiction 88:791–804.

Scottish Recovery Network 2015 http://www.scottishrecovery.net/

Shorter E 1997 A history of psychiatry. From the era of the asylum to the age of Prozac. John Wiley & Sons, New York.

Temple B, Mordoch E 2012 Nursing student perceptions of disability and preparation to care for people with intellectual disabilities. The Journal of Nursing Education 51(7):407–10.

Te Ao Mararamatanga (New Zealand College of Mental Health Nurses) 2012 Standards of practice for mental health nursing in New Zealand. Te Ao Mararamatanga, Auckland.

Te Pou 2009 National guidelines for the professional supervision of mental health and addiction nurses. Te Pou: The National Centre of Mental Health Research, Information and Workforce Development, Auckland. Online. Available: www.tepou.co.nz/supporting-workforce/professional-supervision; accessed 13 Apr 2012.

Thornicroft C et al 2014 Impact of the 'Like Minds, Like Mine' anti-stigma and discrimination campaign in New Zealand on anticipated and experienced discrimination. Aust N Z J Psychiat 48(4):360–70.

Turner J 2010 The use of cognitive behavioural therapy in diabetes care: A review and case study. J Diabetes Nurs 14(3).

Wand T 2010 Mental health nursing from a solution focused perspective. Int J Ment Health Nurs 19:210–19.

World Health Organization (WHO) 2013 Mental Health Action Plan 2013–2020. WHO, Geneva.

Vukic A et al 2011 Aboriginal and Western conceptions of mental health and illness. Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health 9(1):65–86.

CHAPTER

41

Caring for the cancer survivor

Patsy Yates

Learning outcomes

Mastery of content will enable you to:

- discuss the concept of cancer survivorship
- describe the influence of cancer survivorship on clients' quality of life
- discuss the effects cancer has on the family
- explain the nursing implications related to cancer survivorship
- discuss the essential components of survivorship care.

KEY TERMS

Biological response modifiers (biotherapy), p. 1493
Cancer-related fatigue (CRF), p. 1493
Cancer survivor, p. 1491
Chemotherapy, p. 1493
Hormone therapy, p. 1491
Neuropathy, p. 1493
Post-traumatic stress disorder (PTSD), p. 1495
Radiation therapy, p. 1491

Introduction

There exists a population of clients that has not been recognised for the extent and nature of health problems that it experiences. At the end of 2009, a total of 370,470 people in Australia had been diagnosed with cancer at some time during the previous 5 years, representing 1.7% of the population. The 28-year prevalence of cancer was 861,057 (AIHWl 2014). Cancer survivors' healthcare problems have largely been ignored or misunderstood because of the belief that for those who receive treatment, survive and are given a 'clean bill of health', their health problems are over. Such is not the case. There are many different trajectories or courses for cancer survival (see Box 41-1). With the advances made in diagnosis and treatment, more clients are becoming long-term survivors of cancer, whereas others with cancers such as lymphoma control their disease with ongoing or periodic treatment. The major forms of cancer therapy – surgery, chemotherapy, **hormone therapy**, biotherapy and **radiation therapy** – often create unwanted, long-term effects on tissues and organ systems that impair a person's health and quality of life in small and large ways (Hewitt et al 2006). Thus, cancer survivorship has enormous implications for the way these individuals monitor and manage their health throughout their lives. As a nurse, you will care for these clients when they seek care for their cancer as well as when they seek care for other medical conditions.

A **cancer survivor** is defined as someone who is living with or beyond their cancer (Department of Health, Macmillan Cancer Support and NHS Improvement 2013). In Australia, the term cancer survivor is generally used to refer to people who have completed initial cancer treatments, who are apparently free from cancer (Jefford 2009). Consider that family members and friends are also survivors, because they experience the effects cancer has on their loved ones. Cancer truly is a life-changing event. Evidence shows that there is a neglected phase of cancer care: the period following first diagnosis and initial treatment and before the development of a recurrence of the initial cancer or death (Hewitt et al 2006, Lofti-Jam et al 2009). In this phase of their disease, survivors do not necessarily have consistent healthcare follow-up. Frequent contact with a cancer care provider often suddenly stops, and survivors' unique psychosocial needs often go unnoticed or untreated. Despite the incredible advances made in cancer care, there are many long-term survivors who suffer unnecessarily and experience increased morbidity or mortality from treatment-related chronic disease. Cancer survivors can also live knowing that their disease could recur.

As nurses, we have the responsibility to better understand the needs of cancer survivors and to provide the most current evidence-based approaches for managing late and long-term effects of cancer and cancer treatment. It is also important to understand disparities in survivorship outcomes. For example, 5-year prevalence rates are significantly lower among Indigenous Australians compared to non-Indigenous Australians (AIHW 2013). There are limited data on the needs of Aboriginal and Torres Strait Islander cancer survivors in Australia, although studies of adult cancer patients indicate that Aboriginal cancer patients have high levels of unmet supportive care needs especially in areas of psychological support and practical assistance (Garvey et al 2012). Studies from the United States similarly suggest that survivors among racial and ethnic minorities and other underserved populations have more post-treatment symptoms and poorer treatment outcomes than Caucasians (Centers for Disease Control and Prevention 2004). These disparities in health among ethnic groups are related to a complex interplay of economic, social and cultural factors, with poverty being a key factor (Hewitt et al 2006). Being able to provide comprehensive care to a cancer survivor begins with recognising the effects of cancer and its treatment and learning about the survivor's own meaning of health.

BOX 41-1 The seasons of cancer survival

Acute survival – starts with the diagnosis of cancer. Diagnostic and therapeutic efforts dominate. Fear and anxiety are constant elements of this phase.

Extended survival – period during which a client goes into remission or has ended the basic, rigorous course of treatment and enters a phase of watchful waiting. Client will undergo periodic examinations and/or intermittent therapy. Psychologically, the fear of recurrence is common. This is usually a period of physical limitations. Diminished strength, fatigue, pain, nausea, reduced tolerance for exercise or hair loss often occur in the acute phase, but clients now have to deal with cancer in the home, community and workplace.

Permanent survival – this phase is roughly equated with 'cure', but the experience permanently affects the survivor. Problems with employment and insurance are common. The long-term secondary effects of cancer treatment on health represent an area in which permanent survivors are at risk.

Adapted from Hewitt M, Greenfield S, Stoval E (eds) 2006 From cancer client to cancer survivor: lost in transition. Institute of Medicine and National Research Council. National Academies Press, Washington DC; Mullan F 1985 Seasons of survival: reflections of a physician with cancer. New Engl J Med 313(4):270–3.

The effects of cancer on quality of life

As people live longer after diagnosis and treatment for cancer, it becomes important to understand the types of distress many survivors experience and how it affects their quality of life (see Figure 41-1). Evidence shows that cancer survivors have a range of unmet health needs (see *Research highlight*). Cancer survivors often report a heightened sense of vulnerability, loneliness, worries about their health, concerns about burdening their loved ones and anxiety about the possibility of cancer recurrence (Boyes et al 2012). Quality of life in cancer survivorship means having a balance between the experience of increased dependence while seeking both independence and interdependence. Of course, there are always exceptions with regard to the level of distress survivors face. For some, cancer becomes an experience

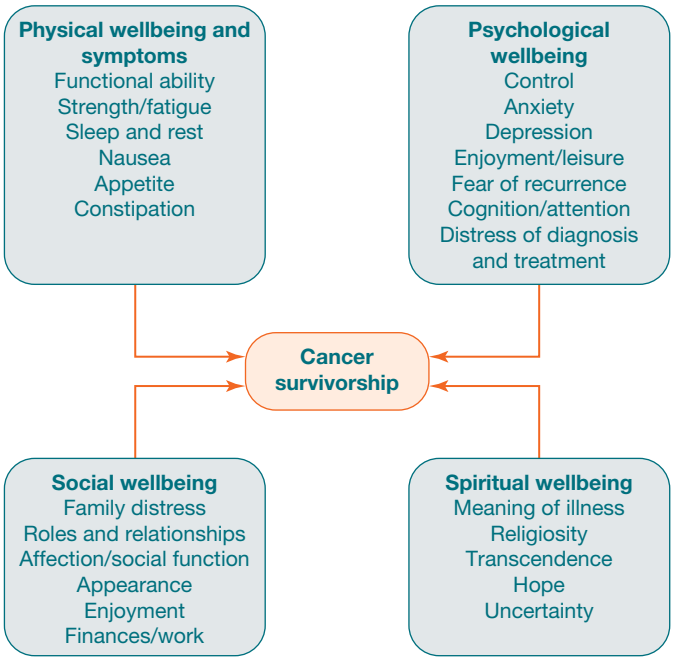

Figure 41-1 Dimensions of quality of life affected by cancer.

Cancer Survivorship. Survivorship Education. An NCI-Supported educational program at City of Hope in Duarte, California. Oncology Issues, July/August 2007.

RESEARCH HIGHLIGHT

Research focus

A group of researchers wanted to learn about the supportive care needs of cancer survivors. They studied more than 1323 cancer survivors from the New South Wales cancer registry. The study assessed unmet needs using a 34-item supportive care needs survey. The results of the study showed that 37% of cancer survivors had at least one 'moderate to high' level unmet need. The most commonly reported unmet needs were in psychological (25%) and physical aspects of daily living domains (20%). The most frequently reported unmet needs included worries of those close to them, fears about the cancer spreading, not being able to do the things they used to do, uncertainty about the future and lack of energy/tiredness.

Evidence-based practice

- As a nurse, learn to assess the many ways in which cancer affects the lives of clients who are survivors.
- Interventions which focus on reducing fears of recurrence and uncertainty are critical. These interventions need to consider the needs of family members.
- Support to address impacts on daily living and assist people to return to optimal functioning is needed.

Reference

Boyes A, Girgis A, D'este C, Zucca A 2012 Prevalence and correlates of cancer survivors' supportive care needs 6 months after diagnosis: a population based cross-sectional study. BMC Cancer 12:130.

that provides self-reflection and an enhanced sense of what life is about. Regardless of each survivor's journey with cancer, having cancer affects each person's physical, social, psychological and spiritual wellbeing.

Physical wellbeing and symptoms

Cancer survivors are at increased risk for cancer (either a recurrence of the cancer for which they were treated, or a second cancer) and for a wide range of treatment-related problems (Jefford 2009). The increased risk for developing a second cancer is due to cancer treatment, genetic or other susceptibility or an interaction between treatment and susceptibility. The risk for treatment-related problems is associated with the complexity of the cancer itself (e.g. type of tumour and stage of disease); the type, variety and intensity of treatments used; and the age and underlying health status of the client.

To respond effectively to cancer survivors' needs, it is important to appreciate the varying experiences and impacts on a person's health. The Australian Cancer Survivorship Centre website presents a number of stories from cancer survivors who come from a range of social and demographic backgrounds (see *Online resources*). An example of one survivor's story is provided below to illustrate how a cancer survivor's physical health problems can be complex and burdensome.

CLINICAL EXAMPLE

Susan was an army nurse, who learned 7 months after discharge from the army that she had Hodgkin's disease, a malignancy of lymphoid tissue. Susan received an aggressive course of treatment, including surgery, 6 months of chemotherapy and 3 months of total lymph-node irradiation. It took many months for her bone marrow to heal and blood values to return to normal. After a few years she had bilateral mastectomies for treatment-related breast cancer. She also received 3 years of immunotherapy for cancer in situ (tumour not metastasised) of the bladder. She continues to experience many non-cancer conditions: premature menopause, early osteoporosis, hypothyroidism, lung fibrosis and atrophy of neck and upper chest muscles.

Leigh S 2006 Cancer survivorship: a first-person perspective. Am J Nurs 106(3 suppl):12.

Stories like these highlight the long disease course some cancer survivors face. There are a number of tissues and body systems that are impaired as a result of cancer and its treatment (see Table 41-1). Late effects of **chemotherapy** include osteoporosis, congestive heart failure, diabetes, amenorrhea in women, sterility in men and women, gastrointestinal motility problems, abnormal liver function, impaired immune function, paraesthesias, hearing loss and problems with thinking and memory (Hewitt et al 2006). Treatment for cancer or the cancer itself often induces pain and **neuropathy** (Boyes, Hodkinson, Alderidge 2009). **Cancer-related fatigue (CRF)** and associated sleep disturbances are also frequent and disturbing complaints of people with cancer (Boyes, Hodkinson, Alderidge 2009). Certain conditions resolve over time, but irreversible tissue damage causes some conditions to progress and persist indefinitely. Healthcare professionals do not always recognise these conditions as delayed problems. Often conditions such as osteoporosis, hearing loss or change in memory are instead considered to be age-related. The problem is that, for many survivors, these conditions go undiagnosed and are never treated.

TABLE 41-1 Examples of late effects of surgery among adult cancer survivors

Procedure	Late effect
Any procedure	Pain, psychosocial distress, impaired wound healing
Surgery involving brain or spinal cord	Impaired cognitive function, motor sensory alterations, altered vision, swallowing, language, bowel and bladder control
Head and neck surgery	Difficulties with communication, swallowing and breathing
Abdominal surgery	Risk of intestinal obstruction, hernia, altered bowel function
Lung resection	Difficulty breathing, fatigue, generalised weakness
Prostatectomy	Urinary incontinence, sexual dysfunction, poor body image

Adapted from Hewitt M, Greenfield S, Stovall E (eds) 2006 From cancer client to cancer survivor: lost in transition. Committee on Cancer Survivorship: improving care and quality of life. Institute of Medicine and National Research Council. National Academies Press, Washington DC.

Cognitive changes are a set of physical symptoms that occur in some survivors as a result of their disease, treatment, the complications of treatment, underlying medical conditions and psychological responses to the diagnosis of cancer (Ahles et al 2012). Cognitive changes can occur during all phases of the cancer experience, from small deficits in information processing to acute delirium. Some survivors report attention problems, loss of memory and difficulty in recognising and solving problems. Studies show that when clients receive systemic cancer treatment, including chemotherapy or **biological response modifiers (biotherapy)**, there is a generalised, subtle effect on cognitive function. In addition, systemic treatment causes both short-term and persistent cognitive impairment in

a variety of cognitive domains. Researchers do not yet understand the effects of specific cognitive changes on survivors' daily lives (Correa & Ahles 2008), although impairments in memory, attention and concentration, speed of processing, and executive functioning are most common (Von Ah 2015).

Data from the Australian Institute of Health and Welfare (AIHW) indicate that most cancer survivors (54%) are over the age of 65 years (AIHW 2014). The most common cancers for this age group include cancer of the colon, breast, pancreas, prostate and lung. Often, healthcare providers wrongly attribute the symptoms of cancer or the symptoms from the side effects of treatment to ageing. This often leads to late diagnosis or a failure to provide aggressive and effective treatment of symptoms.

Cancer is a chronic disease because of the serious consequences and the persistent nature of some of cancer's late effects (Phillips & Currow 2010). Cancer survivors therefore also face many of the same health issues experienced by individuals with other chronic conditions. There is great diversity in the range of effects clients suffer. For example, a 41-year-old woman with early-stage melanoma on the right arm undergoes successful surgery and only has the effect of an inconspicuous scar. In contrast, Susan, the army nurse diagnosed with Hodgkin's disease, underwent intensive chemotherapy followed by an extended course of radiation. She faced serious and substantial long-term health problems from her treatment. Cancer clients present significant variations in the type of conditions they develop and the length of time the conditions persist.

There are numerous factors that contribute to survivors not receiving timely and appropriate treatment for the effects of their disease or treatment. Survivors can be reluctant to report symptoms because of a fear of cancer recurrence (Boyes, Hodkinson, Alderidge 2009). Survivors are not always aware that painful conditions or syndromes are common and believe that pain relief is not possible (see Box 41-2). Healthcare providers can have limited awareness of the prevalence and incidence of pain and other symptoms among survivors, and many have limited education in symptom management. Guidelines for managing pain during survivorship released by the National Comprehensive Cancer Network also highlight that there are a limited number of clinical trials for pain management in this population other than for neuropathy and phantom limb pain (Glare et al 2014). There are few healthcare settings that track the health-related quality of life and symptomatology of clients over time. Work to improve survivorship care in Australia is gaining momentum; however, efforts remain patchy (Jefford et al 2013). Thus there is limited evidence about the long-term patterns of symptoms most commonly associated with certain forms of cancer and its treatment.

BOX 41-2 Examples of chronic pain syndromes associated with cancer treatments

Postoperative pain syndromes
- Post-mastectomy syndrome
- Post-radical neck dissection pain
- Post-amputation pain

Post-radiation pain syndromes
- Myelopathy
- Enteritis or proctitis
- Lymphoedema
- Brachial or lumbosacral plexopathy

Post-chemotherapy pain syndromes
- Peripheral neuropathy
- Osteonecrosis
- Arthralgia

Hormonal therapy
- Arthralgia
- Muscle cramps/spasms
- Carpal tunnel syndrome

Adapted from Glare P et al 2014 Pain in cancer survivors. J Clin Oncol Jun 1,1739–47.

Many of the issues experienced by cancer survivors, such as fatigue and fear of recurrence, are common to all cancers; other concerns are tumour-specific. Research involving breast cancer survivors is extensive. Women with a history of breast cancer are the largest group of cancer survivors (Hewitt et al 2006). After their primary treatment for breast cancer, women can experience significant physical impairments, such as fatigue, pain, postsurgical and persistent upper-quadrant issues, chemotherapy-induced peripheral neuropathy, lymphedema, cardiotoxic effects of chemotherapy and radiotherapy, weight gain, bone health challenges, and arthralgias (Schmitz et al 2012). An Australian study of 5332 colorectal cancer patients with an ostomy identified that painful or irritated peristomal skin and odour and noise from the appliance were the most commonly reported stoma-related difficulties for this group of survivors (Lynch et al 2008).

Psychological wellbeing

The physical effects of cancer and its treatment sometimes extend to cause serious psychological distress (see Chapter 37). In the context of cancer, *distress* is defined

as a multifactorial unpleasant emotional experience of a psychological, social and/or spiritual nature (see Chapter 25) that interferes with the ability to cope effectively with cancer, its symptoms and its treatment (National Comprehensive Cancer Network 2013). Survivors' feelings of distress range along a continuum from sadness to disabling depression (Vachon 2006). Estimates of the prevalence of psychological morbidity experienced by cancer survivors vary; however, distress is most common in the acute survival phase and declines over time from diagnosis (Boyes, Hodkinson, Alderidge 2009). One Australian study indicated that long-term survivors of cancer have levels of psychological wellbeing that match or exceed population levels (Boyes, Girgis, Zucca 2009).

Another psychological problem for some survivors is **post-traumatic stress disorder (PTSD)**. PTSD is a psychiatric disorder characterised by an acute emotional response to a traumatic event or situation. Cancer survivors experience symptoms of PTSD (e.g. grief, nightmares, panic attacks or fear). One recent study of non-Hodgkin's lymphoma survivors who were a median of 12.9 years following treatment identified that more than one-third (37%) reported persistent or worsening of PTSD symptoms over 5 years (Smith et al 2011). Being female, younger, less educated and having a lower income and less social and emotional support increases the risk for PTSD. Studies of clients with PTSD suggest that the stress response of the hypothalamus–pituitary–adrenal system is abnormal (see Chapter 42). This same negative feedback inhibition of cortisol resulting in cortisol alterations also occurs in cancer (Yehuda 2003).

The disabling effects of chronic cancer symptoms disrupt family and personal relationships, impair individuals' work performance and often isolate survivors from normal social activities. Such changes in lifestyle create serious implications for a survivor's psychological wellbeing. When cancer changes a client's body image or alters sexual function, the survivor frequently experiences significant anxiety and depression in interpersonal relationships. In the case of breast cancer survivors, studies show that poorer self-ratings of quality of life are associated with poor body image, coping strategies and a lack of social support (Hewitt et al 2006).

The risk for a cancer survivor having psychological problems is high because of a complex set of factors. Anderson et al (1993) developed a model for predicting the psychological wellbeing in women with gynaecological cancer (see Figure 41-2). The model has applications for

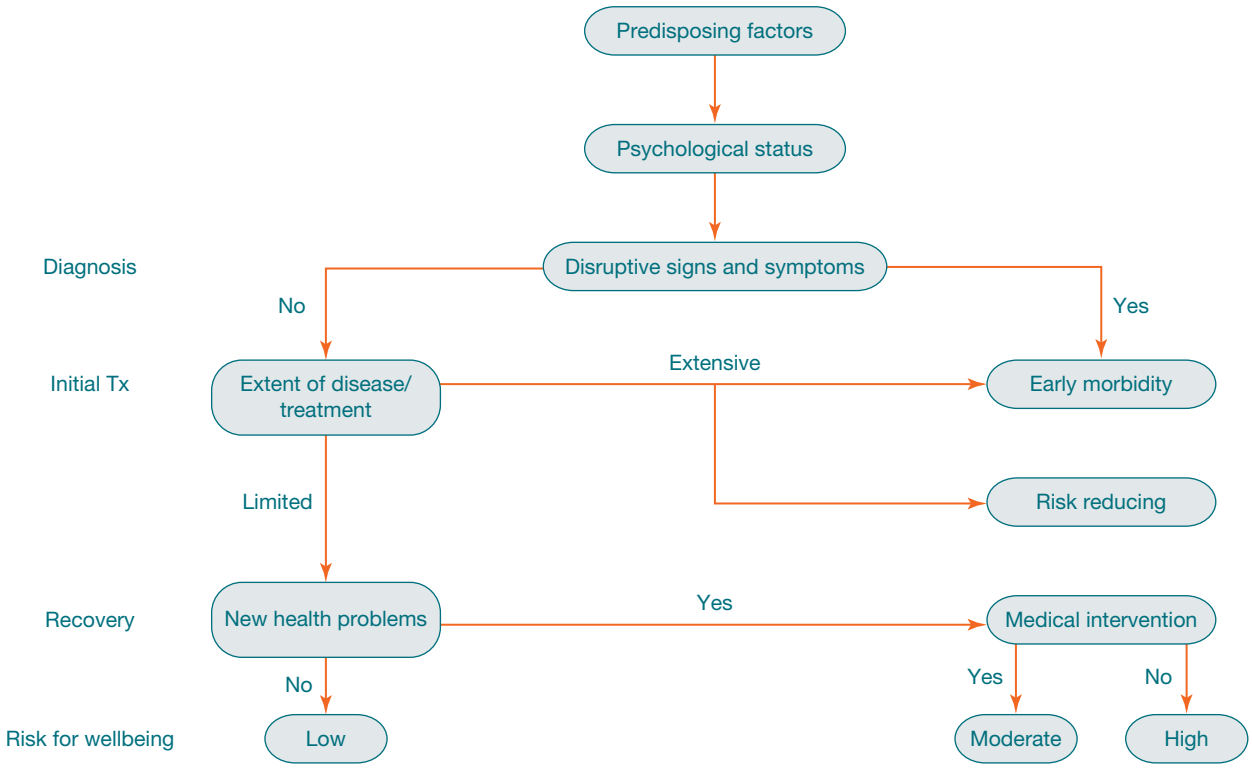

Figure 41-2 Predicting psychological wellbeing.

Modified from Andersen BL 1993 Predicting sexual and psychologic morbidity and improving the quality of life for women with gynaecologic cancer. Cancer 71(4 suppl):1678. © 1996 American Cancer Society. This material is reproduced with permission of Wiley Liss, Inc., a subsidiary of John Wiley & Sons, Inc.

other client groups as well. How well a survivor adapts to the cancer experience depends upon predisposing factors (e.g. age, gender, race, income, prior psychiatric disorder, marital status, coping style and social support), their current psychological status and the presence of disruptive signs and symptoms. When a client has few disruptive signs and symptoms and the cancer is less extensive, the risk of poor psychological wellbeing is low. In contrast, the risk of psychological distress is high in a client who has numerous disruptive signs and symptoms, an advanced stage of cancer, and other health problems.

There are factors that help ease the psychological stress associated with having cancer. A survivor's appraisal of the cancer experience makes a difference. A survivor who sees cancer as a challenging experience and a controllable threat will have less stress (Jacobsen 2006). Clients who use problem-oriented, active and emotionally expressive coping processes also manage stress well (see Chapter 37). Survivors who have social and emotional support systems and maintain open communication with their treatment providers are also likely to have less psychological distress (Jacobsen 2006).

Social wellbeing

Cancer affects any age group (see Figure 41-3). The developmental effects of cancer are perhaps best seen in the social impact that occurs across the life span. For adolescents and young adults, cancer seriously alters a young person's social skills, sexual development, body image and the ability to think about and plan for the future. Cancer interrupts their lives, causing young survivors to either feel out of touch with the interests of their peers or to perceive interests as superficial (Blum 2006). In addition, because cancer makes them feel different, young survivors, out of fear of rejection, have problems developing new relationships. Often the course of cancer or its treatment causes young adults to delay leaving their parents. The natural separation that occurs when young adults finish school and look to start their careers is postponed or stopped. Often a young adult then feels ill-equipped to take on the real world. As a result of these impacts on social wellbeing, adolescent and young adult cancer survivors are more likely to have worse or impaired quality of life compared with the general population, regardless of other demographic factors (Quinn et al 2015).

Adults (ages 30–59 years) who have cancer also experience significant changes in their families. Once a member of the family is diagnosed with cancer, every family member's role, plans and abilities change (Blum 2006). The healthy spouse often takes on added job responsibilities to provide additional income for the family. A spouse, sibling, grandparent or child often has to assume caregiving responsibilities for the cancer client. Clients who experience changes in sexuality, intimacy and fertility will see their marriages affected, too often resulting in divorce.

Studies in the United States and Australia suggest that a history of cancer significantly affects employment opportunities and the ability of a survivor to obtain and retain health and life insurance (Hewitt et al 2006, Knott et al 2014). Often a survivor experiences health-related work limitations (see Table 41-2) that require a reduced work schedule or a complete change in employment. However, most cancer survivors who worked before their diagnosis return to work following their treatment. The problem is that employers and supervisors often assume that people with cancer are not able to perform job



Figure 41-3 A family representing young and old.

iStockphoto/iofoto.

TABLE 41-2 Limitations imposed by cancer and its treatment as reported by survivors

Area of limitation	Survey percentage (%)
Physical tasks	18
Lifting heavy loads	26
Stooping, kneeling, crouching	14
Concentrating for long periods	12
Analysing data	11
Keeping pace with others	22
Learning new things	14

Adapted from Bradley CJ, Bednarek HL 2002 Employment patterns of long-term cancer survivors. Psycho-Oncology 11:188.

responsibilities as well as they did before their diagnosis or co-workers may not know how to provide support. Cancer survivors report problems in the workplace, including dismissal, failure to hire, demotion and denial of promotion. The Cancer Council Australia has developed a resource *Working with cancer* in association with employers and with people diagnosed with cancer to provide guidance for employers and co-workers of people who have been treated for cancer (Cancer Council Australia 2015).

The economic burden of cancer is enormous. If a survivor's illness affects their ability to work, less income goes to the individual and family. Also, there is likely to be an increase in out-of-pocket expenses for prescription drugs and medical devices and supplies. Older adults face numerous social concerns as a result of cancer. The disease can cause a survivor to retire prematurely. Older adults also face a high level of disability as a result of cancer and cancer treatment. Older adults with cancer report a higher incidence of limitations in activities of daily living (ADLs) than older adults without cancer (Hewitt et al 2006). As a result, many older cancer survivors require ongoing caregiving support from either family members or professional caregivers.

Spiritual wellbeing

The experience of cancer challenges a person's spiritual wellbeing (see Chapter 14). Key features of spiritual wellbeing include a harmonious interconnectedness, creative energy and a faith in a higher power or life force (Brown-Saltzman 2006). Cancer and its treatment create physical and psychological changes that cause survivors to question 'Why me?' and to wonder if perhaps their disease is some form of punishment. Survivors often experience a level of spiritual distress, a disruption in a person's spirit or life principle. Survivors most at risk for spiritual distress are those with energy-consuming anxiety, an inability to forgive, low self-esteem, maturational losses and mental illness (Brown-Saltzman 2006). Additional risk factors include poor relationships and situational losses (see Chapter 14).

Relationships are critical for cancer survivors: relationships with a god, a higher power, nature, family or community. Cancer can threaten relationships because it makes it difficult for survivors to maintain a connection and a sense of belonging with what is important to them. Cancer can isolate survivors from meaningful interaction and support, which then threatens their ability to maintain hope. The long courses of treatment, the recurrence of cancer and the lingering side effects of treatment all create a level of uncertainty for survivors.

Cancer and families

A survivor's family takes different forms: the traditional nuclear family, extended family, single-parent family, close friends and blended families (see Chapter 18). Once cancer affects a member of the family, it affects all other members as well. It is usually a member of the family who becomes the client's caregiver. Family caregiving is a stressful experience, depending on the relationship between client and caregiver and the nature and extent of the client's disease. For members of the 'sandwich generation', caregivers who are 30–50 years old are often caught in the middle of caring for their own immediate family as well as a parent with cancer. The demands are many, from providing ongoing encouragement and support and assisting with household chores to providing hands-on physical care (e.g. bathing, assisting with toileting or changing a dressing) when cancer is advanced. Caregiving also involves the psychological demands of communicating, problem-solving and decision-making; social demands of remaining active in the community and work; and economic demands of meeting financial obligations.

Family distress

Relationships between cancer survivors and family members can become difficult to maintain because family members often do not know, do not understand or report not having the skills or confidence to support the survivor's reactions to cancer. Differing priorities can result in tensions in relationships, with the cancer survivor being expected to 'move forward' and to 'get back to normal' (Boyes, Hodkinson, Alderidge 2009). These responses can also reflect the family member's desire to avoid contemplating an uncertain future (Boyes, Hodkinson, Alderidge 2009).

Mellon et al (2006) interviewed cancer survivors and their family caregivers, finding that among the strongest predictors for cancer survivors' quality of life were family stressors and social support. In their study, family caregivers reported a lower quality of life than that of their family members. The researchers also noted that ongoing concerns and problems facing survivors and their family are important determinants of adjustment and quality of life. Families generally find themselves ill-prepared to deal with cancer. Cancer survivorship has not yet become a distinct phase of cancer care; thus professional caregivers often fail to inform and educate clients and their families about what to expect during the cancer experience.

Couples who experience the acute phase of breast cancer treatment often function in a survival mode, during

which time-competing demands from jobs or other family members distract them from attending to each other's needs, thoughts and feelings (Lewis 2006). Often couples struggle with interpersonal problem-solving because they do not have the communication or problem-solving skills to understand one another's views, concerns or fears. We know less about what happens to family relationships in long-term survivorship. Lewis (2006) suggests two possible outcomes: benefit-finding behaviour (identifying positive aspects in the cancer experience) or heightened interpersonal tension.

Families struggle to maintain core functions when one of their members is a cancer survivor. Core family functions include maintaining an emotionally and physically safe environment, interpreting and reducing the threat of stressful events (including the cancer) for family members and nurturing and supporting the development of individual family members (Lewis 2006). In childrearing families, this means providing an attentive parenting environment for children and providing information and support to children when their sense of wellbeing becomes threatened. When a member of the family has cancer, these core functions become threatened. Spouses often do not know what to do to support the survivor, and they struggle with how to help. In the end, family functions become fragmented and family members develop an uncertainty about their roles.

Implications for nursing

The National Cancer Survivorship Initiative in the UK sets out a framework for responding to the unique needs of cancer survivors. The framework sets out the following key strategies:

- Providing information and support from the point of diagnosis, including the importance of specialist nurses in this area.
- Promoting recovery, including providing support relevant to the individual's particular needs, and which promotes healthy lifestyles and independence.
- Sustaining recovery, including offering tailored follow-up and stratifying for follow-up according to the individual's risk.
- Managing consequences of treatment, including assessment and monitoring for consequences of treatment during the active treatment phase, and for as long as necessary.
- Supporting people with active and advanced disease, acknowledging that the key principles of survivorship are equally important to individuals with advanced disease.

Four key areas of focus are proposed to improve outcomes for cancer survivors, including:

- ensuring all cancer patients have access to holistic needs assessment, treatment summary, cancer care review and a patient education and support event – the 'Recovery Package'
- developing and commissioning risk stratified pathways of post-treatment management
- promoting health and wellbeing, including physical activity
- understanding and commissioning for improved management of the consequences of treatment.

These focus areas have important implications for nursing. As a profession, nursing has to take a lead in helping survivors plan for optimal lifelong health. Much needs to be done in conducting nursing research to find appropriate interventions for the effects of cancer and its treatment. Nurses are in a strong position to take the lead in improving public health efforts to manage the long-term consequences of cancer. Improvement is also necessary in the education of nurses and survivors about the phenomenon of survivorship. As a nursing student, you too can make a difference. This section will address approaches to incorporate cancer survivorship into your nursing practice.

Survivor assessment

Knowing that there are many cancer survivors in the healthcare system, consider how to assess those clients who report a history of cancer. It is important to make assessment of cancer survivors' needs a standard part of your practice. The UK National Cancer Survivorship Initiative recommends assessment tools to ensure that care plans are based on a holistic assessment of a patient's needs (National Cancer Survival Initiative 2013). When you are collecting a nursing history (see Chapter 23), explore with your clients their history of cancer, including the diagnosis and type of treatment they are either undergoing or have received in the past. Be aware that some clients do not always report that they have had cancer. So, when a client tells you they have had surgery, ask if it was cancer-related. When a client reveals a history of chemotherapy, radiation, biotherapy or hormone therapy, you need to refer to resources to help you understand how those therapies typically affect clients in both the short term and the long term. Once you do so, extend your assessment to determine if these treatment effects exist for your client. Remember that you need to consider not only the effects of the cancer and its treatment, but also how it will affect any other medical condition. For example, if a client also

has heart disease, how will fatigue related to chemotherapy affect this individual?

Understanding the cancer experience comes from a client's own story. Asking a general question about the client being a cancer survivor will coach the client into revealing their story. For example, you might ask, 'Having cancer is a journey for many. How does the disease most affect you right now?' or 'What is the biggest problem that you are experiencing from cancer?' This type of question will help you focus on the area that is most important to the client. Communicate to clients your interest in their situation. Show a caring approach so that clients know their story will be accepted. You might further ask, 'What can I do to help you at this point?'

Symptom management is an ongoing problem for many cancer survivors. If cancer is their primary diagnosis, it will be natural for you to explore any presenting symptoms. Be sure to learn specifically how any symptoms are affecting the client. For example, is pain also causing fatigue, or is a neuropathy causing the client to walk with an abnormal gait? If cancer is secondary, you do not want important symptoms to go unrecognised. Ask the client, 'Since your diagnosis and treatment of cancer, what physical changes or symptoms have you had?' and 'Tell me how these changes affect you now'. Depending on the symptoms a client identifies, you will explore each one in order to gain a complete picture of the client's health status (Table 41-3). Remember that some clients are reluctant to report or discuss their symptoms. Be patient, and once you identify a symptom, explore the extent to which the symptom is currently affecting the client.

Because you know that cancer affects a client's quality of life in many ways, be sure to explore the client's psychological, social and spiritual needs and resources. Sometimes you will not be able to conduct a thorough assessment when you perform an initial nursing history. If this is the case, incorporate your assessment into your ongoing client care. Observe your client's interactions with family members and friends. When you are administering care to clients, talk about their daily lives and determine the extent to which cancer has changed their lifestyle.

One area that is often difficult for nurses to assess well is a client's sexuality. Sexuality is more than simply the physical ability to perform a sex act or conceive a child. It also includes a person's body image, sexual response (e.g. interest and satisfaction), and sexual roles and relationships (see Chapter 24). Surgery for many cancers is disfiguring, and chemotherapy and radiation often alter a client's sexual response. Cancer therapies have the potential to cause fatigue, apathy, nausea, vomiting, malaise and sleep disturbances, all of which may interfere with a client's libido. It is important to realise that cancer often does influence the client's sexuality. It helps to develop a comfort level in acknowledging with clients that sexual changes are common at any age level. Ask a client, 'Since your diagnosis and treatment of cancer, has your ability or interest in sexual activity changed? If so, how?' Clients will appreciate your sensitivity and interest in their wellbeing. When clients begin to discuss their sexual problems, know the expert resources in your institution (e.g. psychologist or social worker) available for client referral.

TABLE 41-3 Assessment questions for cancer survivors

Category	Examples of questions
Symptoms	Have you had any pain or discomfort in the area where you had surgery or radiation? discomfort, pain or unusual sensations in your hands or feet? weakness in your legs or arms? or problems moving around?
	Are you experiencing fatigue, sleeplessness, shortness of breath? If so, please describe.
	Sometimes people feel as if they are starting to have problems after chemotherapy such as paying attention, remembering things, finding words. Have you noticed any changes like these?
Psychosocial problems	How distressed are you feeling at this point on a scale of 0 to 10 with 10 being the worst distress that you could imagine?
	How do you think your family is coping with your cancer?
	What do you see in your family members' responses to your cancer that is a concern for you?
Sexuality problems	If you have had changes relating to sex, what strategies have you tried to make things better? Have these strategies worked?
	Would you be open to a healthcare provider who knows how to help you?
	Since your cancer, do you see yourself differently as a person?

• CRITICAL REFLECTION POINT

Do you have a friend or family member who has cancer and is willing to talk about it? If so, ask the individual to tell you what the experience has been like and what they would recommend to help you provide better care for survivors.

Client education

It is nursing's responsibility to educate survivors and their families about the consequences of cancer and cancer treatment. This means that when you care for

a cancer survivor you need to understand the nature of the client's particular disease and know the effects of each therapy a client receives and the short- and long-term consequences. You will play a key role in preparing a cancer survivor with the knowledge and resources needed for ongoing self-management. In the context of cancer, self-management programs have been defined as 'awareness and active participation by the person in their recovery, recuperation, and rehabilitation to minimise the consequences of treatment, promote survival, health and wellbeing' (National Cancer Survivorship Initiative 2015). In designing education that promotes self-management in caregiving, plan activities on the basis of the caregiver's and cancer survivor's perceived disease-related problems, and assist them with problem-solving and gaining the self-efficacy or confidence to deal with these problems. Client education will help survivors assume healthier lifestyle behaviours that will then give them control of some aspects of their health and improve outcomes from cancer and chronic illness. The concept of self-management programs is increasingly being incorporated into programs in Australia to optimise health and wellbeing for cancer survivors (Turner 2015).

When caring for clients with an initial diagnosis of cancer, reinforce their healthcare provider's explanations of the risks related to their cancer and treatment, what they need to self-monitor (e.g. appetite and weight, and effects of fatigue and sleeplessness) and what to discuss with healthcare providers in the future. If you teach clients about the potential for treatment effects such as pain, neuropathy or cognitive change, they are more likely to report their symptoms. Survivors need to learn how to manage problems related to persistent symptoms. For example, survivors with neuropathy need to learn how to protect the hands and feet, prevent falls and avoid accidental burns.

Because survivors have an increased risk for developing a second cancer and/or chronic illness, it is important to educate them about lifestyle behaviours that will improve the quality of their lives. Health promotion education is timely after an initial cancer diagnosis, when many survivors become motivated to change their behaviour. A recent Australian study identified that a range of factors needs to be considered when planning health promotion activities for cancer survivors, including pre-cancer diagnosis health behaviours, the disabilities resulting from cancer treatments, perceptions of risk, and the nature of participants' social support (McCarthy et al 2013). Many survivors become interested in learning more about dietary supplements and nutritional complementary therapies to manage disease symptoms (Hewitt et al 2006). Scientific evidence shows that there are several health promotion areas of interest to cancer survivors: smoking cessation, physical activity, diet and nutrition. You will teach clients useful strategies to promote their health. More than 70 intervention trials of physical activity for cancer survivors have been published, mostly focusing on breast cancer and colorectal cancer survivors. Overall, these studies suggest that physical activity interventions implemented during or following treatment may improve cardiorespiratory fitness; body composition (i.e. muscle mass and bone health); immune function; strength and flexibility; body image; self-esteem and mood; chemotherapy completion rates; and may allow for better adjustment to illness (Pollard et al 2009).

• CRITICAL REFLECTION POINT

Ms Ritter is a 32-year-old woman who has been receiving chemotherapy to treat breast cancer. She tells her nurse, 'This chemotherapy has made me feel so tired, and there are many nights I cannot sleep very well. I am looking forward to this going away.' What is an appropriate response the nurse might give Ms Ritter?

Providing resources

Numerous organisations and agencies provide resources to cancer survivors. The problem is that many survivors do not receive timely and appropriate referral to these resources. As a nurse, you will find that many people (e.g. friends, neighbours and family members) come to you for advice about health care before they actually become a client. It is important to know that cancer-related hospital and ambulatory care is not standardised. For example, when a client with cancer is hospitalised, the availability of ancillary services for long-term care will vary by care setting. Your role is to tell clients about the different resources available so that clients are able to make informed choices. There is a wealth of cancer-related community support services available to survivors through voluntary organisations (see Table 41-4). Most offer their services at no cost. Many supportive services offer call centres and web-based information and discussion boards in addition to direct service delivery. Healthcare professionals are not consistent in referring clients to these valuable services. In addition, although community-based services help most survivors, there are gaps in service provision for assistance with transportation, home care, childcare and financial assistance. Become knowledgeable about the services within your community. The Cancer Council in each state and territory of Australia and the Cancer Society in New Zealand provide comprehensive information and support services for people at all stages of their cancer journey, including cancer survivorship.

TABLE 41-4 Selected community-based survivor resources

Program name	Services
Cancer Australia	Online best practice information for consumers and healthcare professionals
Australian Cancer Survivorship Centre www.petermac.org/CancerSurvivorship	Online information for consumers and healthcare professionals
Cancer Council Australia (and member organisations in each state and territory) www.cancer.org.au	*The Cancer Council Helpline:* a confidential telephone support and counselling service *State and territory Cancer Councils:* Counselling services Support groups and networks Education, programs and information Practical assistance Accommodation
Cancer Society of New Zealand www.cancernz.org.nz	Online information for consumers and healthcare professionals
Leukaemia Foundation http://leukaemia.org.au	Emotional support/counselling Accommodation Transport Practical assistance Includes internet discussion forum: Talking Blood Cancer

Components of survivorship care

Once a cancer client's primary treatment ends, healthcare professionals need to develop an organised plan for survivorship care. This does not always occur because of inadequacies in the healthcare system, including a lack of any one healthcare provider assuming responsibility for coordinating care, fragmentation of care between specialists and general practitioners, and a lack of guidance on how survivors can improve their health outcomes (Hewitt et al 2006). Cancer clients may neglect non-cancer care (e.g. care for diabetes or heart conditions) when their cancer diagnosis shifts attention away from care that is routine but necessary. There is also poor follow-up of cancer care even though recommended guidelines exist. For example, some women with a history of breast cancer do not get regular mammograms, and some clients with colorectal cancer do not have regular colorectal exams. The Institute of Medicine (Hewitt et al 2006) has made recommendations for four essential components of survivorship care:

1. Prevention and detection of new cancers and recurrent cancer.
2. Surveillance for cancer spread, recurrence or second cancers.
3. Intervention for consequences of cancer and its treatment (e.g. medical problems, symptoms and psychological distress).
4. Coordination between specialists and primary care providers.

BOX 41-3 Victorian cancer survivorship program

The Victorian Cancer Survivorship Plan (VCSP) aims to develop sustainable models of post-treatment survivorship care. The VCSP objectives are to:

- trial cancer survivorship post-treatment shared models of care across the acute and primary care sectors accessing existing services and funding streams (e.g. Medicare Benefits Scheme Chronic Disease Management items)
- evaluate cancer survivorship models and interventions in terms of their effectiveness, sustainability and transferability across settings
- develop resources (for both patients and service providers) and recommendations for future improvements in follow-up care
- improve understanding of the specific survivorship care needs of different groupings
- facilitate cancer survivor involvement and self-management.

Resources and tools developed by these projects are available via the Cancer Survivorship Collaborative Workspace at www.petermac.org/education/survivorship-education/implementing-survivorship-care

In Australia, many state cancer plans include consideration of improved post-treatment care (Jefford et al 2013). The Victorian Government implemented a Cancer Survivorship program in 2011 supporting a range of survivorship interventions (Box 41-3). In addition, the clinical practice guidelines for management of various cancer types, developed by groups such as the Cancer Council Australia and the National Health and Medical Research Council, provide specific evidence-based recommendations for surveillance and follow-up following completion of treatment for different cancers (see *Online resources*).

Survivorship care plan

If healthcare professionals succeed in improving cancer survivorship care, a strategy is needed for survivors' ongoing clinical care. The IOM (2006) in the United States made several recommendations for improving survivorship care. One recommendation was the pro-

vision of a 'survivorship care plan' written by the principal provider that coordinated the client's oncology treatment. Ideally, you would review a survivorship care plan with a client at the time they are formally discharged from a treatment program. The plan would become a guide for any future cancer or cancer-related care. Healthcare providers would use the plan as a guide for client education. Survivors would use the plan to raise questions with doctors to prompt appropriate care during follow-up visits. Box 41-4 highlights the components of a survivorship care plan.

• CRITICAL REFLECTION POINT

Ms Ritter visits the medical outpatient clinic for her final course of chemotherapy to treat the breast cancer. She is married and has one child, a daughter, who is 6 years old. She and her husband had hoped to have another child in the near future, but now wonder if that will be possible. Ms Ritter has shared with the nursing staff her concerns about the future and how cancer will affect her and her family. Her cancer nurse coordinator talks with her about a survivorship care plan before discharge from the clinic.

Identify two follow-up care plan components that would be important when considering Ms Ritter's role as a wife and a parent.

There are currently no clear guidelines in Australia or New Zealand regarding who should be responsible for providing survivorship care or what service model is the best to support it. Thus nurses and other healthcare providers need to become more vigilant in recognising cancer survivors and attempting to link them with the support and resources they require. Nurses can make a difference in considering the long-term issues cancer survivors face after their time of diagnosis and in contributing to solutions to manage or relieve cancer-associated health problems. A strong multidisciplinary approach is necessary, including nurses, oncology specialists, dietitians, social workers, pastoral care and rehabilitation professionals. Together, an interdisciplinary team will provide a plan of care that addresses treatment-related problems and future health risks and offers a wellness focus to give clients a sense of hope as they enter their survivor experience.

BOX 41-4 A survivorship care plan

Upon discharge from cancer treatment, every client and their primary healthcare provider should receive a record of all care received and a follow-up plan incorporating available evidence-based standards of care.

Care summary

- Diagnostic tests performed and results
- Tumour characteristics (e.g. site, stage, grade)
- Dates when treatment started and stopped
- Surgery, chemotherapy, radiotherapy, transplant, hormonal therapy or gene therapy provided, including the specific agents used
- Psychosocial, nutritional and other supportive services provided
- Full contact information for treating organisations and key providers
- Identification of a key point of contact and coordinator of care

Follow-up plan

- Likely course of recovery
- Description of recommended cancer screening and other periodic testing/examinations
- Information on possible late and long-term effects of treatment and symptoms of such effects
- Information on possible signs of recurrence and second tumours
- Information on the possible effects of cancer on marital/partner relationships, sexual functioning, work and parenting
- Information on the potential insurance, employment and financial consequences of cancer and, as necessary, referral to counselling, legal aid and financial assistance
- Specific recommendations for healthy behaviours
- Information on genetic counselling and testing as appropriate
- Information on known effective chemoprevention strategies for secondary prevention
- Referrals to specific follow-up care providers
- A listing of cancer-related resources and information

Modified from the President's Cancer Panel 2004 and Hewitt M, Greenfield S, Stovall E (eds) 2006 From cancer client to cancer survivor: lost in transition. Committee on Cancer Survivorship: improving care and quality of life. Institute of Medicine and National Research Council. National Academies Press, Washington DC.

Implications for people with active and advanced disease

This chapter began with an overview of the promising statistics about survival from cancer today. For some individuals, however, the cancer will recur and some may develop a second primary cancer. These individuals are considered to have secondary or advanced cancer, although many will continue to consider themselves to be cancer survivors. Individuals living with secondary or advanced cancer will continue to have many of the same health and support needs described earlier in this

chapter, although the person's experience will differ in some important ways. These differences reflect the fact that the progression of the disease can alter the symptom experience as the tumour spreads and affects a range of body systems. Additionally, the recurrence of cancer typically reflects a change in treatment goals from cure to control or palliation of disease. Nurses need to understand changing goals of care, and respond with appropriate information and support as recurrence of a cancer is often associated with significant uncertainty and distress. For some, referral to palliative care may also be considered where the individual's physical, psychological, social or spiritual needs require specialised intervention.

Summary

The number of people living with and beyond cancer continues to increase. The nature of cancer and its treatments means that these individuals have unique health and support needs that can create a significant burden for individuals, families and healthcare systems if not addressed. In recent years, a number of frameworks have been developed to guide the implementation of services for this population of cancer survivors. Nurses are central to implementing these frameworks, as the core elements of care focus on assessment, client education and supported self-management, and facilitating of linkages across the person's journey.

Key concepts

- The healthcare system has largely ignored or misunderstood cancer survivors' healthcare problems.
- The definition of cancer survivor also includes family members, friends and caregivers who are affected by survivorship.
- The majority of cancer survivors have serious health deficits that are related to their treatments.
- Evidence shows that cancer survivors have poorer health outcomes than similar individuals without cancer.
- Survivors are often reluctant to report symptoms because of a fear of being perceived as ungrateful for being disease-free or a fear of cancer recurrence.
- How well a survivor adapts to the cancer experience psychologically depends upon predisposing factors, the person's current psychological status, the extent of their disease and the presence of disruptive signs and symptoms.
- The developmental effects of cancer have a social impact that occurs across the life span.
- Relationships between cancer survivors and family members become difficult to maintain because family members often do not know, understand and report not having the skills or confidence to support the survivor's reactions to cancer.
- As a nursing student, incorporate cancer survivorship care into your nursing practice through client assessment, education and referral of clients to available resources.
- Because survivors are at an increased risk for developing a second cancer and/or chronic illness, it is important to educate them about lifestyle behaviours that will improve the quality of their lives.
- Once a cancer client's primary treatment ends, healthcare professionals should develop an organised plan for survivorship care.
- A client's principal healthcare provider should write a survivorship care plan that coordinates the client's oncology treatment.
- Ideally, you would review a survivorship care plan with a client at the time they are formally discharged from a treatment program, and it would become a guide for any future cancer or cancer-related care.

Online resources

Australian Cancer Survivorship Centre provides a range of information, publications, networking opportunities and continuing education for health professionals, https://www.petermac.org/

Cancer Australia provides a range of evidence-based health professional and consumer resources related to cancer, cancer treatment and cancer service delivering. As the lead national cancer control agency, Cancer Australia also makes recommendations to the Australian Government about cancer policy and priorities, www.canceraustralia.gov.au

Cancer Council Australia advises the Australian Government and other bodies on practices and policies to help prevent, detect and treat cancer, www.cancer.org.au

Cancer Society of New Zealand; online information for consumers and healthcare professionals, www.cancernz.org.nz

Leukaemia Foundation; organisation dedicated to the care and cure of patients and families living with leukaemias, lymphomas, myeloma and related blood disorders, http://leukaemia.org.au

National Health and Medical Research Council; research information and guidelines, www.nhmrc.gov.au

References

Ahles T, Root JC, Ryan EL 2012 Cancer and cancer treatment associated cognitive change: an update on the state of the science. J Clin Oncol 30:3675–86.

Andersen BL 1993 Predicting sexual and psychologic morbidity and improving the quality of life for women with gynaecologic cancer. Cancer 71(4 suppl):1678.

Australian Institute of Health and Welfare (AIHW) 2014 Cancer in Australia: an overview 2014. Cancer series. No 90. Cat. no. CAN 88. AIHW, Canberra.

Australian Institute of Health and Welfare (AIHW) and Cancer Australia 2013 Cancer in Aboriginal and Torres Strait Islander peoples of Australia: an overview. Cancer series no. 78. Cat. no. CAN 75. AIHW, Canberra.

Blum D 2006 State of the science: social well-being and survivorship. Presentation at Survivorship Education for Quality Cancer Care meeting, Pasadena, CA, July 2006.

Boyes A, Girgis A, D'este C, Zucca A 2012 Prevalence and correlates of cancer survivors' supportive care needs 6 months after diagnosis: a population based cross-sectional study. BMC Cancer 12:130.

Boyes AW, Girgis A, Zucca AC et al 2009 Anxiety and depression among long-term survivors of cancer in Australia: results of a population based survey. Med J Aust 190:S94–8.

Boyes A, Hodkinson K, Aldridge L et al 2009 Overview: improving outcomes for cancer survivors in Australia. Cancer Forum 33(3):164–7.

Brown-Saltzman K 2006 Spiritual well-being and survivorship. Presentation at Survivorship Education for Quality Cancer Care meeting, Pasadena, CA, July 2006.

Cancer Council Australia 2015 Working with cncer. Online. Available: http://www.cancer.org.au/about-cancer/patient-support/working-with-cancer.html; accessed 20 July 2015.

Centers for Disease Control and Prevention (CDC) 2004 A national action plan for cancer survivorship: advancing public health strategies. CDC, Washington DC. Online. Available: www.cdc.gov/cancer/survivorship/pdf/plan.pdf; accessed 20 July 2015.

Correa DD, Ahles TA 2008 Neurocognitive changes in cancer survivors. Cancer J 14(6):396–400.

Garvey G et al 2012 What are the supportive care needs of Indigenous cancer patients in Queensland? Asia Pac J Clin Oncol 8(Suppl.3):212.

Glare P et al 2014 Pain in cancer survivors. J Clin Oncol Jun:1739–47. doi: 10.1200/JCO.2013.52.4629.

Hewitt M, Greenfield S, Stovall E (eds) 2006 From cancer patient to cancer survivor: lost in transition. Institute of Medicine (IOM) and National Research Council. National Academies Press, Washington DC.

Jacobsen P 2006 State of science: psychological well-being and survivorship. Presentation at Survivorship Education for Quality Cancer Care meeting, Pasadena, CA, July 2006.

Jefford M et al 2013 Implementing improved post-treatment care for cancer survivors in England, with reflections from Australia, Canada and the USA. British Journal of Cancer 108:14–20.

Jefford M 2009 Overview: improving outcomes for cancer survivors in Australia. Cancer Forum 33(3):159–63.

Knott V et al 2014 Returning to work following curative chemotherapy: a qualitative study of return to work barriers and preferences for intervention. Support Care Cancer 22(12):3263–73. doi: 10.1007/s00520-014-2324-y.

Lewis FM 2006 The effects of cancer survivorship on families and caregivers. Am J Nurs 106(3 suppl):20.

Lofti-Jam K et al 2009 What constitutes ideal survivorship care. Cancer Forum 33(3):171–4.

Lynch BM et al 2008 Stoma surgery for colorectal cancer: a population-based study of patient concerns. J Wound Ostomy Cont Nurs 35(4):424–8.

McCarthy A et al 2013 Factors influencing health behaviours of younger women after menopause-inducing cancer treatment. Public Health Nursing 30:106–16.

Mellon S et al 2006 A population-based study of the quality of life of cancer survivors and their family caregivers. Cancer Nurs 29(2):120.

National Cancer Survivorship Initiative 2015 Supported Self-Management. Online. Available: www.ncsi.org.uk/what-we-are-doing/supported-self-management/; accessed 20 July 2015.

National Cancer Survival Initiative (NCSI) 2013 Living with and beyond cancer. Taking action to improve outcomes. Online. Available: www.ncsi.org.uk/wp-content/uploads/Living-with-and-beyond-2013.pdf; accessed 22 Feb 2016.

National Comprehensive Cancer Network 2013 Clinical practice guidelines in oncology: distress management. Online. Available: www.nccn.org/store/login/login.aspx?ReturnURL=http://www.nccn.org/professionals/physician_gls/pdf/distress.pdf; accessed 20 July 2015.

Phillips JL, Currow DC 2010 Cancer as a chronic disease. Collegian 17:47–50.

Pollard A et al 2009 Health behaviour interventions for cancer survivors: an overview of the evidence and contemporary Australian trials. Cancer Forum 33:(3).

Quinn G et al 2015 Quality of life in adolescent and young adult cancer patients: a systematic review. Patient Related Outcome Measures 6:19-51.

Schmitz K et al 2012 Prospective evaluation of physical rehabilitation needs in breast cancer survivors. Cancer 118:2187–90.

Smith S et al 2011 Post-traumatic stress symptoms in long term non-Hodgkins lymphoma survivors. Does time heal? J Clin Oncol 29:4526–33.

Turner J 2015 Engaging patients in survivorship care planning after completion of treatment for head and neck cancer. Cancer Forum, 39:101–4.

Vachon M 2006 Psychosocial distress and coping after cancer treatment. Am J Nurs 106(3 suppl):26–31.

Von Ah D 2015 Cognitive changes associated with cancer and cancer treatment. State of the science. Clinical Journal of Oncology Nursing 19:1–10.

Yehuda R 2003 Hypothalamic-pituitary-adrenal alterations in PTSD: are they relevant to understanding cortisol alterations in cancer? Brain Behav Immun 17(Suppl 1):S73.

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deWit S 2009 Fundamental concepts and skills for nursing, 3rd edn. Saunders, Philadelphia
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Lewis S et al 2011 Medical–surgical nursing: assessment and management of clinical problems, 8th edn. Mosby, St Louis
Skill 39-2 Step 5D(5), 5F(3).

Potter PA, Perry AG 2013 Fundamentals of nursing, 8th edn. Mosby, St Louis
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Potter PA, Perry AG 2004 Fundamentals of nursing, 6th edn. Mosby, St Louis
Skill 32-2 Equipment, Step 18; Skill 32-3 Step 30c, 30d, 31b(2), 31b(3); Skill 35-3 Step 13, 15A(1), 15B(1); Skill 35-5 Step 5; Skill 35-7 Step 5a, 5b, 7c(1), 7c(2), 7c(3), 7d(1), 7g, 7j; Skill 39-2 Step 5A(3), 5B(4).

Potter PA, Perry AG 2011 Mosby pocket guide to nursing skills and procedures. Mosby, St Louis
Skill 35-3 C.

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Skill 27-1 Step 7g.

Tai SM, Buddhdev P, Baskaradas A et al 2013 Venous thromboembolism in the trauma patient. Orthopaedics and Trauma, 27(6):379–92. Copyright © 2013 Elsevier Ltd
Skill 28-1 C.

Van Wicklin SA 2011 Implementing AORN recommended practices for prevention of deep vein thrombosis. AORN Journal 94(5):443–54. Copyright © 2011 AORN, Inc www.aornjournal.org/article/S0001-2092(11)00879-9/abstract
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