

NURSING CARE OF PEOPLE IN PAIN

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KEY TERMS

acute pain 155
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LEARNING OUTCOMES

- Describe the neurophysiology and theories of pain.
- Compare and contrast definitions and characteristics of acute and chronic pain.
- Discuss factors affecting individualised responses to pain.
- Clarify myths and misconceptions about pain.
- Introduce interprofessional care for the person in pain, and discuss pharmacological and non-pharmacological treatment alternatives.
- Describe a framework for providing individualised nursing care for the person experiencing pain.

CLINICAL COMPETENCIES

- Assess pain intensity, quality, location, pattern, intensifiers and nullifiers, and side effects of analgesics.
- Assess the effect of pain on physical, psychological and social function, and on mood, and support for managing pain.
- Determine the person's desire and preference for pain management.
- Support the person with pharmacological and non-pharmacological methodologies. Administer medications knowledgeably and safely.
- Collaborate with the person, their family and significant others to plan effective pain control.
- Evaluate effectiveness of pain relief; re-treat or adjust doses of medication; and intervene as necessary.
- Revise plan of care according to the person's response to interventions and need for control.

The International Association for the Study of Pain (IASP) defines pain as ‘an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage’ (ANZCA, 2010). Pain is a subjective response, not always measurable or observable, to both physical and psychological stressors which all people experience at some point during their lives. Although pain is usually experienced as uncomfortable and unwelcome, it also serves a protective role; pain may also warn of potential health-threatening conditions. For this reason, pain needs to be assessed and considered as an essential vital sign.

Each individual pain event is a distinct personal experience. It is influenced by physiological, cognitive, psychological, sociocultural and spiritual factors. Pain is the symptom most associated with describing oneself as ill, and it is the most common reason for seeking healthcare (Merskey, 2014).

However, the inability to communicate pain does not imply the person does not need suitable pain-relieving treatment. The clinician must be vigilant in the assessment and management of any person’s pain (ANZCA, 2010). Linguistic and cultural familiarity do not guarantee effective communication of the complexities of pain (Hadjistavropoulos et al., 2011).

NEUROPHYSIOLOGY AND THEORIES OF PAIN

Neurophysiology

The peripheral nervous system is composed of two types of neurons: sensory and motor. Pain is perceived through the sensory neurons and responded to through the motor neurons. Connections or synapses occur within the spinal cord and again within the central nervous system (CNS), where cognitive analysis of the painful stimulus leads to a response.

Nerve receptors of pain are called **nociceptors** (see Figure 8.1). These are the nerve receptors that are sensitive to pain (noxious stimuli) and give an immediate response when stimulated. They are located at the ends of small afferent neurons and are woven throughout all tissues of the body, except the brain. Nociceptors are especially numerous in the skin and muscles. Pain occurs when biological, mechanical, thermal, electrical or chemical factors stimulate nociceptor activity to the spinal cord. The intensity and duration of the stimuli determines the sensation.

Reactions are caused either by persistent mechanical, chemical or thermal stimuli that create a cascade of chemical mediators which can act directly on the cell or via a messenger system to activate **nociception**. Bradykinin, a polypeptide

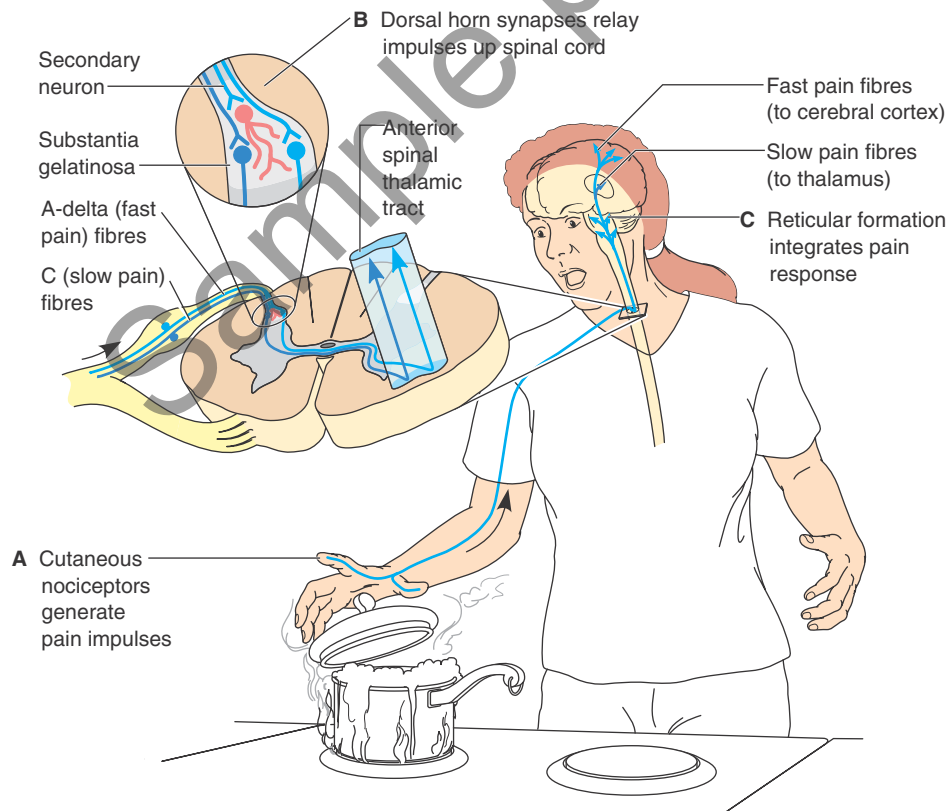


FIGURE 8.1 ■ *A*, Cutaneous nociceptors generate pain impulses that travel via A-delta and C fibres to the spinal cord’s dorsal horn. *B*, Secondary neurons in the dorsal horn pass impulses across the spinal cord to the anterior spinothalamic tract. *C*, Slow pain impulses ascend to the thalamus, while fast pain impulses ascend to the cerebral cortex. The reticular formation in the brainstem integrates the emotional, cognitive and autonomic responses to pain

element of the kinin protein system, is a pain-producing chemical; other biochemical sources of pain include prostaglandins, substance P, histamine, leukotriene B, hydrogen ions and serotonin (ANZCA, 2010; Crisp et al., 2016). These biochemicals are thought to bind to nociceptors in response to noxious stimuli, causing the nociceptors to initiate pain impulses.

Ascending pain pathways

The ascending pathways of pain are illustrated in Figure 8.1 and are summarised as follows:

1. Pain is perceived by the nociceptors in the periphery of the body—for example, in the skin or viscera. Cutaneous pain is transmitted through two types of nerve fibres that transmit signals:
 - A-delta fibres are medium-diameter, myelinated and respond primarily to high-intensity mechanical or heat stimuli, causing sharp, stabbing-like pain.
 - Smaller C nerve fibres are small-diameter, unmyelinated and respond to lower-intensity thermal, chemical or mechanical cold stimuli, resulting in a dull and aching type of pain. The pain from deep body structures (such as muscles and viscera) is primarily transmitted by C fibres and is commonly associated with persistent pain.

Both A-delta and C fibres are involved in most injuries. For example, if a person bangs their elbow, A-delta fibres transmit this pain stimulus within 0.1 second. The person feels this pain as a sharp, localised, smarting sensation. One or more seconds after the blow, the person experiences a duller, aching, diffuse sensation of pain impulses carried by the C fibres.

2. Second-order sensory neurons transmit the impulses from the afferent neurons (A-delta fibres and C fibres) through the dorsal horn of the spinal cord, where they synapse in the substantia gelatinosa. This first synapse is important for modulation input in the CNS. The impulses then cross over to the anterior and lateral spinothalamic tracts.
3. The impulses of the second-order neurons ascend via the anterior and lateral spinothalamic tracts and pass through the medulla and midbrain to the thalamus.
4. In the thalamus and cerebral cortex, the pain impulses are perceived, described, localised and interpreted, and a response is formulated. A noxious impulse becomes pain when the sensation reaches conscious levels and is perceived and evaluated by the person experiencing the sensation.

Some pain impulses ascend along the paleospinothalamic tract in the medial section of the spinal cord. These impulses enter the reticular formation and the limbic systems, which integrate emotional and cognitive responses to pain. Interconnections in the autonomic nervous system may also cause an autonomic response to the pain. In addition, deep nociceptors often converge on the same spinal neuron, resulting in pain that is experienced in a part of the body other than its origin.

Inhibitory mechanisms

Efferent fibres run from the reticular formation and midbrain to the substantia gelatinosa in the dorsal horns of the spinal cord. Along these fibres, pain may be inhibited or modulated. The analgesia system is a group of midbrain neurons that transmits impulses to the pons and medulla, which in turn stimulate a pain inhibitory centre in the dorsal horns of the spinal cord. The exact nature of this inhibitory mechanism is unknown.

The most clearly defined chemical inhibitory mechanism is fuelled by endorphins (endogenous morphines) which are naturally occurring opioid peptides present in neurons in the brain, spinal cord and gastrointestinal tract. Endorphins in the brain are released in response to afferent noxious stimuli, whereas endorphins in the spinal cord are released in response to efferent impulses. Endorphins work by binding with opiate receptors on the neurons to inhibit pain impulse transmission (see Figure 8.2).

Pain theories

Several theories attempt to explain the response to pain and the diversity of human experiences with pain. Specificity and pattern theories describe nerve impulses of varying intensity terminating in pain centres in the forebrain. These theories provide explanations of the neurophysiological basis of pain.

The gate-control theory

In 1965, Melzack and Wall postulated the gate-control theory (Perl, 2011). A gating mechanism exists at the spinal cord level where nerve transmission may be blocked by competing

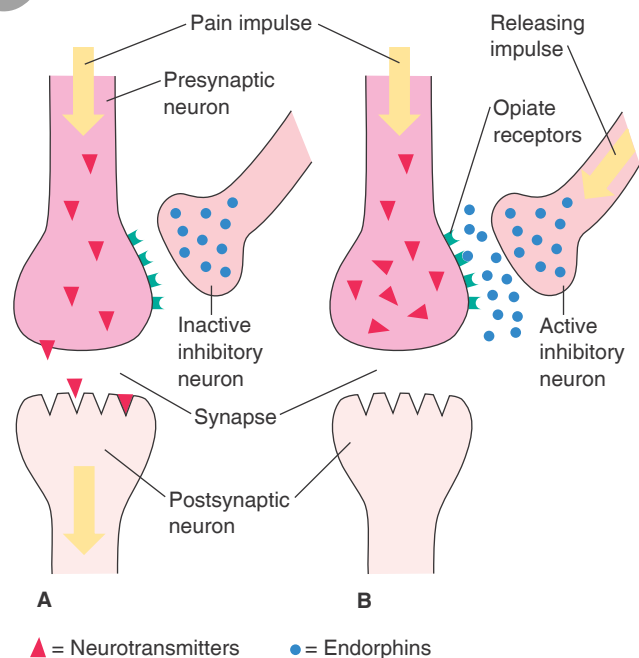


FIGURE 8.2 ■ *A*, Pain impulse causes presynaptic neuron to release burst of neurotransmitters across synapse. These bind to postsynaptic neuron and propagate impulse. *B*, Inhibitory neuron releases endorphins, which bind to presynaptic opiate receptors. Neuro-transmitter release is inhibited and pain impulse is interrupted

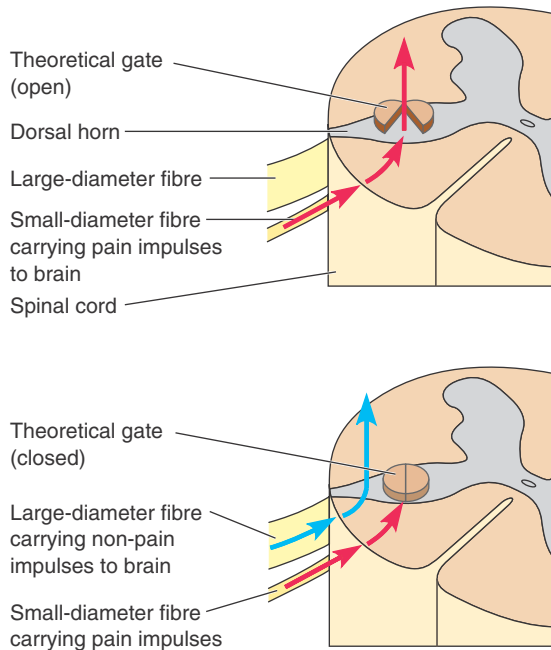


FIGURE 8.3 ■ The spinal cord component of the gate-control theory. Pain transmission by small-diameter fibres is blocked when large-diameter fibres carrying touch impulses dominate, closing the gate in the substantia gelatinosa

impulses. This explains the ability of even low-intensity stimulation such as light brushing of the skin to successfully block the experience of pain. Pain perception results from the interaction of two systems: the substantia gelatinosa in the dorsal horns of the spinal cord (see Figure 8.3), which regulates impulses entering or leaving the spinal cord; and an inhibitory system within the brainstem.

A-delta and C fibres in the spinal cord carry fast and slow pain impulses, while large-diameter A-beta fibres carry impulses for tactile stimulation from the skin. In the substantia gelatinosa, these impulses encounter a ‘gate’ thought to be opened and closed by the domination of either the large-diameter or the small-diameter fibres. If impulses along the small-diameter pain fibres outnumber impulses along the large-diameter touch fibres, the gate is open, and pain impulses travel unimpeded to the brain. If impulses from the touch fibres predominate, they will close the gate, and the pain impulses will be ‘turned away’ at the gate. This explains why light stimulation such as massaging a stubbed toe can reduce the intensity and duration of the pain.

The second system described by gate-control theory is the inhibitory system located in the brainstem. It is believed that cells in the midbrain, activated by a variety of stimuli such as opiates, psychological factors, or even simply the presence of pain itself, signal receptors in the medulla which in turn stimulate nerve fibres in the spinal cord to block the transmission of impulses from pain fibres. Ongoing research demonstrates that the control and modulation of pain is much more complex than the description supplied by gate-control theory, which served as a basis for further research about pain-modulating systems.

Ongoing theory development of the neuromatrix integrates cultural, genetic, attention, expectation, personality and stress factors with basic neurophysiological function (Perl, 2011). This neuromatrix is particularly useful to understand chronic pain and phantom limb pain, considering there is no defined relationship between tissue injury and the pain experience.

Central sensitisation

Another pain theory that is quite significant in clinical terms describes the effect of sensitising the central and peripheral nervous system to painful stimuli. Central sensitisation manifests as pain hypersensitivity. This theory suggests painful signals create a cascade of changes in the nervous system, which in turn increase the responsiveness of the peripheral and central neurons. These changes, in turn, amplify light touch and pressure, causing enhanced after sensations, increased temporal summation and response to future signals (IASP, 2010). Studies of infants undergoing painful procedures show that those who received analgesia experienced reduced sensitivity to future painful events, while those who did not receive analgesia experienced greater sensitivity (Shen & El-Chaar, 2015). Sensitisation occurs from nociceptive barrage as well as inflammation following an injury or incision. In adults this theory indicates the value of preventing sensitisation as well as treating perceived pain with multimodal pain therapy.

DEFINITIONS AND CHARACTERISTICS OF PAIN

Acute pain

Acute pain has a sudden onset, is usually temporary, is localised and is the common, everyday pain that most people know. Pain that lasts for less than 3 months and has an identified cause is classified as acute pain (Hague & Shenker, 2014). The onset is usually immediate, most often resulting from tissue injury from trauma, surgery or inflammation. The pain is often sharp and localised, although it may radiate. Acute pain warns of actual or potential injury to tissues. As a stressor, it initiates the fight-or-flight autonomic stress response. Characteristic physical responses include tachycardia, rapid and shallow respirations, increased blood pressure, dilated pupils, sweating, pallor and alterations to blood sugar levels. The three major types of acute pain are as follows:

1. *Somatic pain* arises from nerve receptors originating in the skin or close to the surface of the body. Somatic pain may be either sharp and localised, or dull and diffuse. It is often accompanied by nausea and vomiting.
2. *Visceral pain* arises from body organs, and is dull and poorly localised because of the low number of nociceptors. The viscera are sensitive to stretching, inflammation and ischaemia, but relatively insensitive to cutting and temperature extremes. Visceral pain is associated with nausea and vomiting, hypotension and restlessness. It often radiates or is referred; that is, perceived at a location other than that of the painful stimulus. It may be described as cramping, intermittent pain or colicky pain.

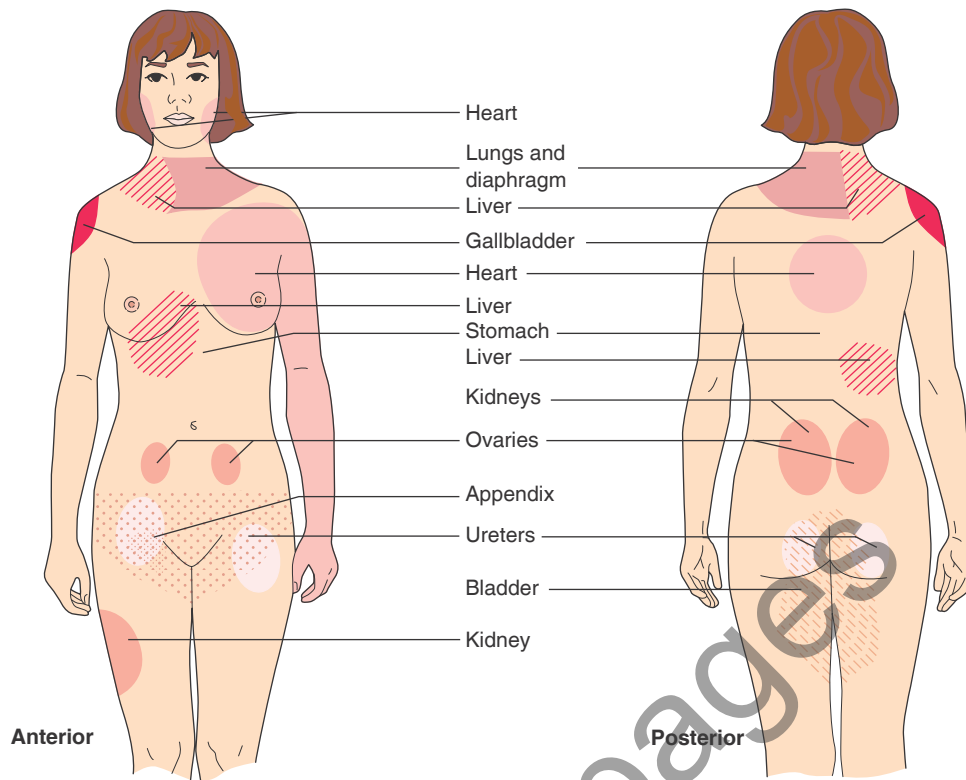


FIGURE 8.4 ■ Referred pain is the result of the convergence of sensory nerves from certain areas of the body before they enter the brain for interpretation. For example, a toothache may be felt in the ear, pain from inflammation of the diaphragm may be felt in the shoulder, and pain from ischaemia of the heart muscle (angina) may be felt in the left arm

3. *Referred pain* is perceived in an area distant from the site of the stimuli and commonly occurs with visceral pain. Visceral fibres synapse at the level of the spinal cord, close to fibres innervating other subcutaneous tissue areas of the body (see Figure 8.4). Pain in a spinal nerve may be felt over the skin in any body area innervated by sensory neurons that share that same spinal nerve route. Body areas defined by spinal nerve routes are called dermatomes (see Chapter 40).

Persistent (chronic) pain

Persistent (chronic) pain is ongoing and prolonged pain. It is not always associated with an identifiable cause but often arises from an acute situation such as post trauma, herpes zoster, acute back pain and postoperative surgical pain.

Predictive factors for chronic post-surgical pain include preoperative, intraoperative and postoperative factors:

- Preoperative considerations include moderate to severe pain lasting for more than one month, repeat surgery, psychological vulnerability (e.g. catastrophising), preoperative anxiety.
- Intraoperative considerations include a surgical approach with risk of nerve damage.
- Postoperative factors include pain (acute, moderate to severe), radiation to the area, depression and anxiety (adapted from ANZCA, 2010, p. 11).

Neurological changes that can occur with persistent pain are changes in perception. Physical changes that result are loss of muscle mass, deconditioning, postural changes, alterations in appetite and weight, constipation and sleep disturbances. Persistent pain is complex and is poorly understood. It is suggested that when persistent pain is present it can develop to an individual disease process because of the secondary changes that occur in the body (Cousins, 2012).

The ‘persistent (chronic) pain syndrome’ refers to the unspecific behaviours that can occur with persistent pain. Often a cycle of persistent pain and disability causes physical deconditioning, drug tolerance, reduced activity, passive treatments, distorted beliefs and social stresses such as financial pressures, altered gender roles and the destruction of intimate relationships. From a psychological perspective the person with persistent pain experiences anxiety, anger, hopelessness and frustration, which can result in the person becoming depressed, withdrawn and irritable (Hill, 2014). Although persistent pain may range from mild to severe, its unrelenting presence often results in the pain itself becoming a pathological process requiring intervention.

Breakthrough pain

Breakthrough and incident, or ‘procedural’, pain relates to how pain progresses through time. **Breakthrough pain** occurs between doses of analgesia; it can be prevented by giving

breakthrough analgesia more frequently, increasing the dose of the analgesia, or increasing the slow (continuous) release medication. **Procedural pain** occurs when procedures, dressings or activity increase the pain experience. Procedural pain can often be predicted and analgesia should be available and given prior to the activity commencing.

Neuropathic pain

Neuropathic pain may be acute or chronic resulting from injury or disease that affects the peripheral or central nervous systems. Acute neuropathic pain may result from lesions or entrapment of nerves (Brown et al., 2015; Taverner, 2014). Neuropathic pain can be caused by numerous factors such as trauma, surgery, inflammation, toxicity, and immunological and vascular changes affecting either the central nervous or the peripheral nervous systems of the body. Examples of neuropathic pain arising from the CNS are post-stroke pain and spinal cord injury. Peripheral causes of neuropathic pain are diabetic neuropathy, HIV-related neuropathies and tumours invading the nerve area and surgery.

Common surgical procedures associated with a higher incidence postoperatively of persistent neuropathic pain are amputation (phantom limb pain), thoracotomy, mastectomy, hernia repair and cholecystectomy (ANZCA, 2010). The person with neuropathic pain will often state their pain is burning, shooting or electric; they might comment on numbness in and around the area or the sensation of pins and needles. Diagnosis is usually made with a detailed history, personal description and pain assessment.

- *Complex regional pain syndrome (CRPS)* is neuropathic pain that results from nerve damage from either major or minor trauma (Birklein & Schlereth, 2015). CRPS is recognised as a persistent pain condition in which functional restoration by constant rehabilitation is the main goal (Pollard, 2013). Common features of CRPS are continuous, severe pain (usually burning or electric), trophic changes (hair and nails alter in growth), vasospasm changes (vasodilation causing the limb to become hot, red and swollen, followed by vasoconstriction) and limb immobility causing muscle wasting. It is common for CRPS to develop from minor injuries and research suggests that the pathophysiology is characterised by an 'aberrant host response to tissue injury' (Marinus et al., 2011, p. 637).
- *Neuralgias* are painful conditions that result from damage to a peripheral nerve caused by infection or disease. Post-herpetic neuralgia (following shingles) is an example occurring in 50% of those who are over 50 years and 75% of those who are over 75 years. Trigeminal neuralgia can occur as an acute exacerbation of neuropathic pain. Most causes are idiopathic and the main treatment is with carbamazepine (ANZCA, 2010).

Phantom pain

Phantom pain is a common condition among amputees. Phantom pain commonly resembles pre-injury pain (if it was present) and is exacerbated by stump problems, ill-fitting prostheses and back pain. Phantom pain also occurs in other parts of the

body after surgical removal (e.g. mastectomy, tongue). Phantom pain is *not* phantom sensation, which resolves over time as the sensation retreats into the stump and is a contributory mechanism to phantom pain development (ANZCA, 2010).

Central pain

Central pain is related to a lesion in the brain or spinal cord that may spontaneously produce a high-frequency burst of impulses from the ascending spinothalamic pathways; their relays or end stations in the brain or spinal cord create a sensation of pain. A vascular lesion, tumour, trauma or inflammation may also cause central pain. Thalamic pain is most common, severe, spontaneous and often continuous. Hyperaesthesia (an abnormal sensitivity to touch, pain or other sensory stimuli) may occur on the side of the body opposite the lesion in the thalamus. The perception of body position and movement may also be lost.

Cancer (palliative) pain

Cancer (palliative) pain is a common condition of those with advanced cancer. Cancer pain is often persistent, arising from a number of factors (e.g. the disease process, the prescribed treatment, resultant disability and subsequent comorbidity problems). Cancer pain can be a challenge to manage as curative opportunities have been ceased and death is inevitable. Cancer pain is often a mixture of nociceptive and neuropathic, having acute and persistent features with problems of breakthrough and procedural pain.

FACTORS AFFECTING RESPONSES TO PAIN

Physical response to pain involves specific and often predictable neurological changes. In fact, everyone has the same pain *threshold* and perceives pain stimuli at the same stimulus intensity. For example, heat is perceived as painful at 44°C to 46°C, the range at which it begins to damage tissue. What varies is *tolerance*, which is based on perception of, and reaction to, pain. When a person is described as highly sensitive to pain, this is a reference to their **pain tolerance**, which is the amount of pain a person can endure before outwardly responding to it. The ability to tolerate pain may be decreased by repeated

PATIENT SAFETY COMPETENCY FRAMEWORK

6 Evidence-based practice



The Patient Safety Competency Framework supports the effective and appropriate use of evidence-based practice. Pain management requires the nurse to explain how evidence-based practice influences the choice of interventions in pain assessment and management, and to routinely include the patient's values and preferences as valid sources of evidence history (Levett-Jones et al., 2017).

episodes of pain, fatigue, anger, anxiety and sleep deprivation. The use of such practices as heat/cold, position, relaxation, distraction, hypnosis, spiritual practices, medications and alcohol may increase pain tolerance. The individualised response to pain is shaped by multiple and interacting factors, including sociocultural influences, emotional status, past experiences with pain, the source and meaning of the pain, the person's knowledge base and their age.

Sociocultural influences

The findings of research so far suggest that cultural influences should be an important consideration when assessing and treating pain (Incajawa & Todd, 2013). A person's response to pain is strongly influenced by family, community and culture. Sociocultural influences affect the way in which a person tolerates pain, interprets the meaning of pain, and reacts verbally and non-verbally to the pain. For example, if a person comes from a social background where normative behaviour is that males should not cry and must tolerate pain stoically, rather than expressing his discomfort a male person may appear withdrawn and refuse pain medication. On the other hand, when open and intense emotional expression is accepted as the social norm, a person may demonstrate their discomfort clearly and be comfortable requesting pain medication.

Cultural norms also influence an individual's experience of pain, including how much pain to tolerate, what types of pain to report, who to report the pain to and what kind of treatment to seek. For example, some cultural norms place value on 'being a good patient', which may cause the person to avoid 'complaining' about their pain, whereas a person from another sociocultural background may value seeking information about pain, which may lead them to discuss their pain often and in detail. However, behaviours vary greatly within cultural and social groups, and from generation to generation. The nurse should approach each person as an individual, observing them carefully, taking the time to ask questions, and avoiding making assumptions.

The nurse also brings with them a set of personal sociocultural values, beliefs and experiences about pain. If these values, beliefs and experiences differ from those of the person, the assessment and management of pain may be based on the values of the nurse rather than on the needs of the person. It is not uncommon to hear staff compare their own personal experiences of pain with the person receiving care (e.g. 'When I had my appendix removed I had two paracetamol and I was fine; this person doesn't need a PCA [patient-controlled analgesia] machine.').

Psychological status

The person's psychological status influences the perception of pain. Remember the IASP's definition of pain as a *sensory and emotional experience*; therefore, how an individual feels psychologically and emotionally will influence their response to pain. Pain sensations may be blocked by intense concentration (e.g. during sports activities) or may be increased by anxiety or fear. Pain is often increased when it

occurs in conjunction with other illnesses or physical discomforts such as nausea or vomiting. The presence or absence of support people or caregivers who genuinely care about pain management may alter emotional status and the perception of pain.

Anxiety and depression may increase the perception of pain, and pain may in turn cause anxiety. Depression is clearly linked to pain and is generally associated with higher pain intensity (ANZCA, 2010). In addition, the muscle tension commonly found with anxiety can create its own source of pain. This association explains why non-pharmacological interventions such as relaxation or guided imagery are helpful in relieving or decreasing pain. Fatigue, lack of sleep and depression also are related to pain experiences. Pain interferes with a person's ability to fall asleep and stay asleep, and thus induces fatigue. In turn, fatigue can lower pain tolerance.

Past experiences with pain

Previous experiences with pain are likely to influence the person's response to a current pain episode. If supportive adults responded to childhood experiences with pain appropriately, the adult usually will have a healthy attitude to pain. If, however, the person's pain was responded to with exaggerated emotions or neglectful indifference, that person's future responses to pain may be exaggerated or denied.

The responses of healthcare providers to the person in pain can influence their response during the next pain episode. If providers respond to pain with effective strategies and a caring attitude, the person will remain more comfortable during any subsequent pain episode, and anxiety will be avoided. If, however, the pain is not adequately relieved, or if the person feels that empathetic care was not given, anxiety about the next pain episode sets up the person for a more complex and therefore more painful event.

Source and meaning

The meaning associated with the pain influences the experience of pain. For example, the pain of labour to deliver a baby is experienced differently from the pain following removal of a major organ for cancer. Because pain is the major signal for health problems, it is strongly linked to all associated meanings of health problems, such as disability, loss of role and death. For this reason, it is important to explain the aetiology and prognosis of pain to the person receiving care.

Knowledge

A lack of understanding of the source, outcome and meaning of pain can contribute negatively to the pain experience. The nurse needs to assess the person's readiness to learn, use methods of teaching that are effective for the person and family, and evaluate learning carefully. Teaching must include the process of the pain, its predictable course (if possible), and the proposed plan of care. In addition, nurses should discuss strategies for managing pain and encourage the person to communicate preferences for pain relief. Involving the person's significant others regarding the presence of pain and how they can help promote effective relief will assist in achieving a holistic approach to pain management.

TABLE 8.1 Physical changes related to ageing and their influence on drug requirements

| PHYSICAL CHANGE | EFFECT | OUTCOME |
|---------------------|---------------------------------|--|
| Cardiac output | Drug concentrations after bolus | Require smaller bolus dose |
| Muscle mass | Change in drug distribution | Potential for unwanted side effects |
| Liver function | Influences drug elimination | Drug accumulation |
| Renal function | Influences drug excretion | Drug accumulation |
| Cerebral blood flow | Alters response to analgesia | Unwanted and unexpected side effects can occur |

Sources: ANZCA (2010). *Acute pain management: Scientific evidence* (3rd ed.). Melbourne: Australian and New Zealand College of Anaesthetists; Fitzgerald, S., Tripp, H. & Halksworth-Smith, G. (2017). Assessment and management of acute pain in older people: Barriers and facilitators to nursing practice. *Australian Journal of Advanced Nursing*, 35(1), 48–57.

Age

Age influences a person's perception and expression of pain, and of the physical changes that will influence drug requirements (see Table 8.1). Dangerous misconceptions exist regarding the management of pain in older adults.

Misconceptions regarding ageing

Denny and Guido (2012) suggest there are several myths about the older adult and the process of ageing.

1. *Pain is expected in the older adult.* While the occurrence of pain is common in the older adult, it is often not recognised, or is undertreated (Tracy & Morrison, 2013); however, it is still an indicator of an underlying clinical issue. Often believing that pain is a part of growing older, the person may ignore pain or self-medicate with over-the-counter medications. Individuals in this age group may fail to acknowledge pain, believing that it is inevitable or fearing dependency if they alarm their loved ones (Gammons & Caswell, 2014).
2. *Pain perception decreases with age.* Age does not change the perception of acute pain. Stotts et al. (2007) investigated procedural pain in the hospitalised adult, and found that the younger group (18–64 years) and the older group (65+ years) experienced the same amount of procedural pain during wound care, wound drain removal, tracheal suctioning, turning, femoral sheath removal and central line insertion. However, it was interesting to note that the procedural *distress* was greater in the younger than the older patient (Stotts et al., 2007).
3. *When older adults report pain, they are attention seeking.* This is highly unlikely. Do not forget that some older people suffer mute myocardial infarction and experience painless peritonitis, pancreatitis and cholecystitis (Tracy & Morrison, 2013). The elderly are at a greater risk of mortality and morbidity if pain is not relieved.
4. *Opiates are dangerous in older adults.* When opiates are prescribed, the factors identified in Table 8.1 need to be considered.
5. *Opiate use causes addiction in older adults.* Older adults may hesitate to ask for pain medicine because they fear addiction and loss of independence (Brown et al., 2015).

FAST FACTS

- Older people have the highest rate of illness and surgical procedures associated with pain; they also have the highest rate of complications associated with surgical interventions.
- Persistent pain is common in older adults. For those over 70 years of age, 50% of those living in the community and 80% of those in residential care suffer persistent pain.
- Musculoskeletal pain affecting major joints and back, or neuropathic pain from diabetic neuropathy and post-herpetic neuralgia have an increased prevalence in the ageing population.
 - Concurrent illnesses are common in the elderly, making clinical presentation complex and sometimes difficult.
- Age and cognitive impairment enhance the risk of poor pain control, which will influence the individual's quality of life.

Sources: ANZCA (2010). *Acute pain management: Scientific evidence* (3rd ed.). Melbourne: Australian and New Zealand College of Anaesthetists; Prowse, M. (2005). Postoperative pain in older people: A review of the literature. *Journal of Clinical Nursing*, 16, 84–97.

Pain assessment in older adults may be difficult when the person is experiencing cognitive impairment and has difficulty communicating descriptions of pain. When discussing pain with the older person, it is often better to use the terms they use when self-reporting pain, such as 'aching' or 'soreness'. However, some adults with a cognitive impairment are able to describe current, usual or worse pain when a standardised pain scale is used, such as the verbal descriptor of 'mild, moderate or severe'.

A study of pain and associated behavioural and psychiatric symptoms of 2282 aged care residents was undertaken by Tosato et al. (2012). The study showed pain resulted in significant and positively associated (perceived) socially inappropriate behaviours such as wandering, resistance to care, abnormal thought processes and delusions. Treatment of pain needs to be an integral component of behavioural management in the aged care resident with dementia. Predictive pain tools such as the Abbey scale need to be utilised and others developed to accurately record the pain of the non-verbal person (Ersek, Polissar & Neradilek, 2011; Liu, Briggs & Closs, 2010).

Delirium in the person who is acutely ill or has dementia (occurring in approximately 30% of adults over the age of 85) is a barrier to assessing pain (Alzheimer's Australia, 2015). Recommended methods for pain assessment include: (1) behavioural observations for which no tool has been validated, (2) documenting baseline behaviours and activity patterns and monitoring changes that might indicate the need for further pain assessment, and (3) conducting an empirical analgesia trial.

Pain in the paediatric population

'Children must be assumed to experience pain from birth onwards' (American Medical Association, 2010). In the past, infants and young children have been assumed to have a lack of pain sensation; however, it is now known that due to a more robust inflammatory response and lack of central inhibitory influence, their response to pain may be even greater than that of adults.

Olmstead, Scott and Austin (2010) assert pain is often undermanaged in children due to:

- lack of assessment and reassessment of pain
- misunderstanding of how to quantify a subjective experience
- lack of knowledge in pain treatment
- the notion that addressing pain in children takes too much time
- fear of adverse effects of analgesic medications, including respiratory depression and addiction.

It is recommended that health professionals should anticipate painful experiences and monitor the condition of the child, and provide adequate information about what to expect and appropriate measures to reduce the distress to children and parents (Kozlowski & Monitto, 2013).

Optimal pain control can be achieved using a variety of techniques. These may range from deep sedation or anaesthesia to cognitive behavioural strategies such as imagery and relaxation. Whatever strategy is used, a quiet environment with calm parents and clear and confident instruction will assist the paediatric person experiencing pain (Truba & Hoyle, 2014).

Pain and cultural diversity

Research into pain and cultural diversity is needed to produce and refine multilingual pain-scoring charts. The nurse must try to be familiar with ethnic and cultural diversity in pain expression and management, and act in a culturally safe manner. Pain behaviours are not an objective indicator of the amount of pain present for any individual person. An accurate history is needed and if required, the use of a professional interpreter rather than family members is preferable to ensure accurate translation.

Patient-controlled analgesia devices may be used to provide efficient and effective analgesia (ANZCA, 2010). Nurses may underestimate the pain of those from a different cultural background or having a different language. In an American study, Asian patients received 24% lower doses of analgesics postoperatively than Caucasian people; however, both groups used similar amounts of opioid analgesia when using a PCA (Brown

et al., 2015). A thorough explanation of the PCA is needed, through an interpreter, to ensure this concept is understood and this form of analgesia is utilised.

Pain and Indigenous Australians

Significant disparities exist between the life expectancy at birth of the non-Indigenous population and that of Aboriginal and Torres Strait Islander Australians. In 2010–2012, life expectancy at birth for Aboriginal and Torres Strait Islander males was 69.1 years, 11.2 years less than that for non-Indigenous males (80.3 years). For Aboriginal and Torres Strait Islander females, life expectancy at birth was 10.7 years less than for non-Indigenous females (73.7 years and 84.4 years respectively). The lower life expectancy for Aboriginal and Torres Strait Islander people can be attributed to a higher infant mortality rate and a higher incidence of diseases such as diabetes mellitus, respiratory disorders, ear disease, eye disorders and some cancers (Australian Institute of Health and Welfare, 2017).

Indigenous Australians are therefore considered to be a particularly vulnerable group in relation to healthcare. Variations in pain behaviours, verbal and non-verbal communication, and the accuracy of standard pain assessment tools have been identified as specific challenges (Fenwick, 2006). A culturally safe assessment of the person is required, with sensitivity to pain tolerance, language barriers and tendencies to display a stoic attitude to pain demonstrated. Where possible, nurses should use interpreters, Indigenous health workers or liaison officers. Note that, like other high-risk patient groups, Indigenous Australians often have multiple comorbidities, which may influence the types of analgesics that may be prescribed.

MYTHS AND MISCONCEPTIONS ABOUT PAIN

Myths and misconceptions about pain and its management are common in both healthcare providers and the general population. Some of the most common misconceptions are:

- *Pain is a result, not a cause.* According to the traditional view of pain, it is only a symptom of a condition. However, it is now recognised that unrelieved or poorly relieved pain sets up further responses such as central sensitisation, amplifying pain sensations and delaying rehabilitation.
- *Persistent pain is really a masked form of depression.* Serotonin plays a chemical role in pain transmission and is also the major modulator of depression. Therefore, pain and depression are chemically related, not mutually exclusive. It is common to find them coexisting.
- *Opioid medication is too risky to be used to treat persistent pain.* This common misconception often deprives the person experiencing pain of the most effective source of pain relief. It is true that other methods should be tried first; however, if they prove ineffective, opioids should be considered as an appropriate alternative.
- *It is best to wait until the person has pain before giving medication.* It is now widely accepted that anticipating pain has a noticeable effect on the amount of pain a person experiences. Offering pain relief before a pain event is well

on its way can lessen the pain. Remember that agony is harder to manage.

- *Many people lie about the existence or severity of their pain.* The most reliable source of pain severity is the person's score, as they will rarely lie about their pain.
- *Postoperative pain is best treated with intramuscular injections.* The most commonly used postoperative pain relief for many years was morphine or pethidine given intramuscularly. However, both have adverse effects, such as late-onset respiratory depression, they are painful to give and they can irritate the tissues (causing tissue abscess). Pethidine is short acting and also produces norpethidine, a CNS stimulant that can cause seizures. Most experts now do not recommend pethidine to manage postoperative pain (Pandharipande & McGrane, 2017).
- *Pain relief interferes with diagnosis.* Pain is the single most common reason that people present to an emergency department (ED).
- A common misconception is that analgesia given prior to medical assessment will mask the pathology and therefore diagnosis. In the case of abdominal pain, research shows that pain relief will not interfere with the diagnostic process in adults and children (ANZCA, 2010). Despite a prevailing attitude that pain management is an essential part of quality medical care, pain management in the ED is difficult because of the short-term associations with the person, increased vigilance against drug abuse and the myth that diagnosis is impaired by pain relief. Nevertheless, 60% of people presenting to Australian EDs with abdominal pain are satisfied with their analgesia on discharge (ANZCA, 2010).

INTERPROFESSIONAL CARE AND PHARMACOLOGICAL/NON-PHARMACOLOGICAL TREATMENT ALTERNATIVES

Effective analgesia relief results from collaboration among healthcare providers, particularly nurses, as it is the nursing staff that most closely cares for the person 24 hours a day, especially in an acute situation. For those with more persistent pain problems, there are pain clinics staffed by teams of healthcare professionals who use a multidisciplinary approach to manage persistent pain. Therapies may include traditional pharmacological agents as well as psychotherapy, biofeedback, hypnosis, acupuncture, massage and other treatments. Hospices for palliation provide a multifaceted approach to pain management (see Chapter 4).

Non-pharmacological strategies to manage pain

KNOWLEDGE AND INFORMATION Knowledge and information will assist the person in managing their pain. Give direct, clear, concise information that the person understands, but do not make them more anxious and distressed. A clear, concise plan of action that has been discussed with the person will assist in effective pain management.

RELAXATION Relaxation involves learning activities that deeply relax the body and mind. Relaxation distracts the person, lessens the effects of stress from pain, increases pain tolerance, increases the effectiveness of other analgesic measures and increases perception of pain control. In addition, by teaching the person relaxation techniques, the nurse acknowledges the person's pain and provides reassurance that the person will receive help in managing the pain (Rejeh et al., 2013). Examples of relaxation activities include:

- *Diaphragmatic breathing* can relax muscles, improve oxygen levels and provide a feeling of release from tension. The technique for diaphragmatic breathing is described and illustrated in Chapter 3.
- *Progressive muscle relaxation* may be used alone or in conjunction with deep breathing to help manage pain. The person should be taught to tighten one group of muscles (such as those of the face), hold the tension for a few seconds, and then relax the muscle group completely. The person should repeat these actions for all parts of the body.
- *Guided imagery*, also called *creative visualisation*, is the use of the imaginative power of the mind to create a scene or sensory experience that relaxes the muscles and moves the attention of the mind away from the pain experience. To use guided imagery, the person must be able to concentrate, use their imagination and follow directions. The nurse can facilitate this technique by asking the person for some descriptions of what they find most relaxing. The nurse then speaks to the person in a calming, soothing voice about those places or situations. Audio recordings are available to assist with guided imagery.
- *Meditation and mindfulness* is a process whereby the person empties the mind of all sensory data and, typically, concentrates on a single object, word or idea. This activity produces a deeply relaxed state in which oxygen consumption decreases, muscles relax and endorphins are produced. At its deepest level, the meditative state may resemble a trance. Many books, apps and podcasts are available commercially.

DISTRACTION Distraction involves the redirection of the person's attention away from the pain and on to something that the person finds more pleasant. Examples of distracting activities are practising focused breathing, and listening to or doing some form of rhythmic activity to music.

Distraction may also involve the individual participating in an activity that promotes pleasure and stimulates laughter, as laughing for 20 minutes or more is known to produce an increase in endorphins that may continue to give pain relief even after the person stops laughing.

BIOFEEDBACK Biofeedback is an electronic method of measuring physiological responses, such as brain waves, muscle contraction and skin temperature, and then 'feeding' this information back to the person. Most biofeedback units consist of electrodes placed on the skin and an amplification unit that transforms data into visual cues, such as coloured lights. The person thus learns to recognise stress-related responses and to replace them with relaxation responses. Eventually, the person learns to repeat independently those actions that produce the desired brain wave effect.

Relaxation helps avoid the anxiety that often accompanies and complicates pain. Additionally, biofeedback gives the person a measure of control over the response to pain.

HYPNOSIS Hypnosis is a trance state in which the mind becomes extremely suggestible. To achieve hypnosis, the person sits or lies down in a dimly lit, quiet room. The therapist suggests that the person relax and fix attention on an object. The therapist then repeats, in a calming, soothing voice, simple phrases such as instructions to relax and listen to the therapist's voice. Eventually the person hears only the therapist's voice; during this state, the therapist may then make suggestions to encourage pain relief.

COGNITIVE BEHAVIOURAL THERAPY Cognitive behavioural therapy (CBT) is a proven psychosocial intervention in chronic pain, and is effective across the lifespan. CBT assists the patient in exploring pain beliefs and associated pain behaviours, aiming to reduce distress and develop positive, adaptive behaviours in association with pain (Ehde, Dillworth & Turner, 2014).

Manual therapies

PHYSIOTHERAPY Physiotherapy can offer a range of pain management strategies—for example, graded reactivation programs, therapeutic ultrasound and exercises to increase strength and flexibility to promote pre-injury functional status.

MASSAGE Massage has been shown to assist in post-surgical abdominal pain and thoracic surgery. Pain scores are not necessarily lowered, but there is a reduction in the unpleasantness of pain (ANZCA, 2010).

HEAT AND COLD THERAPY Heat and cold therapy are commonly used as strategies to relieve pain; however, evidence regarding their effectiveness is inconsistent.

ACUPUNCTURE Acupuncture is an ancient Chinese system involving the stimulation of certain specific points on the body to enhance the flow of vital energy (chi) along pathways called meridians. Acupuncture points can be stimulated by the insertion and withdrawing of needles, the application of heat, massage, laser, electrical stimulation or a combination of these methods. Only care providers with special training can use this method. The role of acupuncture in effective pain relief is a matter of ongoing scientific debate (Manheimer et al., 2010; Marcus, 2017) but it is widely available and used within the community.

TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION

A transcutaneous electrical nerve stimulation (TENS) unit consists of a low-voltage transmitter connected by wires to electrodes placed by the person as directed by the physical therapist (see Figure 8.5). The person experiences a gentle tapping or vibrating sensation over the electrodes. The person can adjust the voltage to achieve maximum pain relief. It is believed that TENS electrodes stimulate the large-diameter A-delta fibres, activating inhibitory networks in the dorsal horn, which reduces the nociceptive transmission of the C fibres.



FIGURE 8.5 ■ The TENS unit is believed to assist in pain management in the ways described in the gate-control theory. Electrodes that deliver low-voltage electrical stimuli are placed directly on the person over painful areas

Source: © Rob Byron/Shutterstock.com.

A TENS unit is most commonly used to relieve persistent benign pain. Thorough education is essential, including an explanation of the manufacturer's directions, instructions on where to place the electrodes and the importance of placing the electrodes on clean, unbroken skin. The clinical use of TENS has been extensively studied (Johnson, 2014). TENS offers several advantages: avoidance of drug side effects, person control and good interaction with other therapies. Disadvantages are its cost and the need for initial expert training. When choosing a TENS machine, make sure it is portable, has adjustable amplitude, can be managed by the user and has built-in output short-circuit protection. TENS should not be used by people with cardiac pacemakers and implanted defibrillators.

HYPERBARIC OXYGEN THERAPY This therapy is defined as the intermittent inhalation of 100% oxygen in a hyperbaric chamber at a pressure higher than 1 absolute atmosphere (1 ATA = 760 mmHg, the normal atmospheric pressure at sea level) (Sutherland et al., 2015).

Hyperbaric therapy is increasingly being tried and researched to manage neuropathic pain as well as headaches, cancer pain and postoperative pain. Initial animal studies relating to inflammation pain have been positive, with hyperbaric oxygen therapy successfully relieving neuropathic pain for an extended period (Thompson et al., 2010).

Pharmacological strategies for managing pain

MEDICATION Medications are the most common approach to pain management. A variety of drugs with many kinds of delivery systems are available. These drugs include simple analgesics, non-steroidal anti-inflammatory drugs (NSAIDs), opioids, antidepressants and local anaesthetic agents. In addition to administering the prescribed medications, the nurse may act independently in choosing the dosage and timing. The nurse is also responsible for assessing the side effects of the medications, evaluating their effectiveness, and providing education. The nurse's roles in pain relief are those of advocate, educator and direct caregiver.

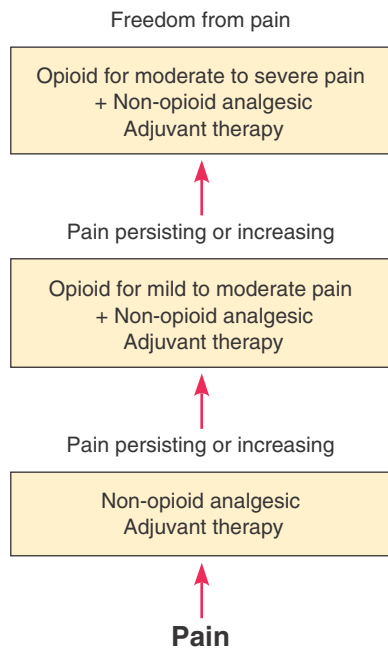


FIGURE 8.6 ■ The WHO analgesic ladder illustrates the process for selection of analgesic medications for pain management

Source: World Health Organization (1990). *Cancer pain relief and palliative care* (Technical Report Series, no. 804). Geneva: WHO. Reprinted by permission.

The World Health Organization (WHO) ‘ladder of analgesia’ effectively guides the use of medications (WHO, 1986/1990) (see Figure 8.6). Analgesics are used progressively until pain is reduced or relieved, reflecting the interactive nature of these types of medications. Initially a simple analgesic (e.g. paracetamol) is used. A person will then progress to NSAIDs and then to opioid medications. Box 8.1 describes terms associated with pain medication.

Simple analgesics Simple analgesics such as paracetamol produce analgesia and reduce fever. The exact mechanism of action is uncertain, but it is used to treat mild to moderate pain. It is absorbed rapidly in the small intestine after oral administration, having an effect in approximately 30 minutes.

BOX 8.1 Terms associated with pain medications (usually opioids)

- **Addiction:** a disease characterised by aberrant drug-seeking behaviour that includes compulsive use of a substance, cravings and loss of control despite the negative biopsychosocial consequences.
- **Substance abuse disorder:** the use of any chemical substance for other than a medical purpose that causes a disintegration of the person and their life commitments.
- **Physical drug dependence:** a physiological need for a substance that results in physical withdrawal symptoms if it is not supplied or the amount is reduced suddenly. Common withdrawal symptoms include agitation, insomnia, yawning, tachycardia, sneezing and diarrhoea.
- **Psychological drug dependence:** a psychological need for a substance. If the substance is not supplied, psychological withdrawal symptoms occur, including anxiety and irritability.
- **Drug tolerance:** the process by which the body requires a progressively greater amount of a drug to achieve the same results.
- **Equianalgesic:** having the same analgesic effect when administered to the same individual. Drug dosages are equianalgesic if they have the same effect as morphine sulfate 10 mg administered parenterally.
- **Pseudoaddiction:** behaviours resembling drug seeking; often as a result of receiving inadequate analgesia.

Paracetamol can be given rectally, though absorption is erratic; there is also an intravenous preparation giving analgesia in approximately 10 minutes. Paracetamol should be given with caution to children, and those who are underweight or have liver or renal dysfunction.

NSAIDs NSAIDs (non-steroidal anti-inflammatory drugs) act on peripheral nerve endings and minimise pain by interfering with prostaglandin synthesis. These medications



LINKS TO NATIONAL PATIENT SAFETY STANDARDS

NSQHS Standard 4: Medication Safety

The intention of this standard is to ‘ensure clinicians are competent to safely prescribe, dispense and administer appropriate medicines and to monitor medicine use’ and that ‘consumers are informed about medicines and understand their individual medicine needs and risks’ (Australian Commission on Safety and Quality in Health Care (ACSQHC), 2017, p. 30).

Medication safety is supported by a range of initiatives across interprofessional teams, including the implementation of a National Inpatient Medication Chart (NIMC), safe labelling practice, quality education and training, and accurate reconciliation and administration of medications (ACSQHC, 2017). Nurses play an integral role in the safe administration of medicines to an informed consumer.

Source: ACSQHC (2017). *National Safety and Quality Health Service Standards: Version 2*. Sydney: ACSQHC. © Australian Commission on Safety and Quality in Health Care.

provide analgesic effects by reducing inflammation and by perhaps blocking the generation of noxious impulses. Examples include aspirin, diclofenac and ibuprofen. The NSAIDs have anti-inflammatory, analgesic and antipyretic actions. NSAIDs are useful (providing renal function is adequate) for mild to moderate pain and continue to be effective when combined with opioids for moderate to severe pain. The cyclooxygenase-2 (COX-2) selective NSAIDs (celecoxib, parecoxib) are newer formulations; although less harmful to gastric mucosa, their usage has been questioned because of cardiac-associated adverse reactions and care must always be taken when prescribing regarding the person's renal function.

NSAIDs have minimal side effects if used on a short-term basis, but side effects can and do occur when used over a long period for persistent pain problems.

Tramadol Tramadol is a centrally acting synthetic analgesic that is used for moderate to severe pain. Tramadol has a three-way action, having some opioid activity and also inhibiting the re-uptake of noradrenaline and serotonin. Because it is not completely an opioid, tramadol has been

classified as a Schedule 4 medication. Its analgesic effect is comparable to that of codeine. It can be used for moderate to severe pain, though it is not as powerful as morphine. Tramadol is contraindicated in those with epilepsy, as seizures have been reported, but it causes less respiratory depression, gastric stasis and constipation than the opioids (Martinez, Guichard & Fletcher, 2015). Tramadol is available in oral (immediate and slow release) and intravenous preparations.

Opioids Opioids are derivatives of the opium plant. ('Opioid' is the preferred term as 'narcotic' has negative connotations.) These medications (and their synthetic forms) are the pharmacological treatment of choice for moderate to severe pain. Examples are morphine, codeine and fentanyl. Opioid analgesics produce analgesia by binding to opioid receptors both within and outside the CNS. A common myth among health-care professionals is that using opioids for analgesia poses a real threat of addiction. When opioids are used as recommended, there is little to no risk of addiction (see Box 8.2). Nursing implications for opioids are found in the 'Medication administration' box below.

BOX 8.2 Pain management and substance use history

The person with a substance use disorder often experiences sub-therapeutic dosing of opioid medications for pain. When providers suspect or learn of substance use, they tend to order lower doses than they would for a person of similar age and weight. Despite significant data showing very little addiction as the result of treating pain with adequate pain relief, prescribers still tend to under-treat pain in the person with a substance use disorder. When the person with a substance use disorder has an acute injury, they usually need greater doses of pain medication because of the tolerance they have developed from repeated exposure to opioids and other drugs. The person with chronic cancer or non-cancer pain can display opioid tolerance due to perioperative opioid administration, particularly opioids of high potency (ANZCA, 2010).

Cook, Sefcik and Stetina (2004) reported on a study comparing analgesic prescribing practices for those in acute pain with a history of substance use with those in acute pain who had not used illicit drugs. It was found that prescribing practices were significantly different for the two groups. All were prescribed the same selection of medication and dosages; however, those with a history of substance use were prescribed significantly more non-opioid analgesics. Furthermore, there was no significant difference in the dosages prescribed for the two groups, despite the risk of greater tolerance to opiates by the addicted person. The prescribers did not take into account dependent tolerance to opioid medications and the increased need for analgesia among those with a history of drug abuse. It was also pointed out that opioid analgesics were rationed in an effort to wean the person from

their addiction. This indicates how uninformed the prescribers were regarding the needs of a heroin-dependent person and their increased tolerance to opioids. The findings of this study have been supported by more recent research by Blay et al. (2012), who looked at pain management practices with patients who had a history of substance use, in the Australian context.

During the acute stress of injury or infection, withholding pain medication is an added stressor. Nurses attempting to advocate for the comfort needs of a person experiencing addiction may encounter resistance around this issue. This creates a potential ethical as well as a professional dilemma. Therefore, where possible, use a pain service to assist in a person's analgesic management.

Providing analgesics for a person with pain who has a history of or ongoing substance use can be challenging. It is important to clearly communicate all information about medications and accessibility to the providers. Giving appropriate analgesic relief will help prevent the person sourcing medications illegally. Dose escalation may be monitored with careful assessment and random urine screens if requested by medical staff.

When the person is discharged from hospital care, consideration must be given to exposing the community to opioid medications. If diversion of the drug or inappropriate use of the prescribed medication is suspected, then opioids can be prescribed with restrictions (e.g. collecting limited amounts at one time, or only after review by a medical practitioner). Detoxification is a matter for the person to determine when they are over their crisis.

MEDICATION ADMINISTRATION Opioid analgesics

Opioid analgesics are used to treat severe pain. The drugs in this category include morphine, codeine, opium derivatives, and synthetic substances. Morphine and codeine are pure chemical substances isolated from opium. These drugs decrease the awareness of the sensation of pain by binding to opiate receptors in the brain and spinal cord. It is also believed that they diminish the transmission of pain impulses by altering cell membrane permeability to sodium and by affecting the release of neurotransmitters for efferent nerves sensitive to noxious stimuli. People can develop a tolerance to opioids and they cause psychological and physical dependence. For the person who has had an acute painful assault and is now requiring slow-release preparations in the short term, ensure that there is a strategy to decrease their opioid consumption. For example, the person is given a written reduction plan to follow, a written reduction regimen is sent to their general practitioner, or the person is sent to a specialised pain medicine clinic to assist with opioid reduction.

NURSING RESPONSIBILITIES

- Opioids are regulated by individual state laws; the nurse and witness must record the date, time, person's name, type and amount of the drug used, and sign the entry in the Schedule 8 book (commonly known as the DD—Dangerous Drugs—Book). A witness must check the medication is given to the correct person. If the medication is disposed of after it is signed out, this must be recorded and witnessed in the Schedule 8 book.
- Keep an opioid antagonist, such as naloxone, immediately available to treat respiratory depression.

- Assess allergies or adverse effects from any opioids previously experienced by the person.
- Assess for any respiratory disease, such as asthma or sleep apnoea, that might increase the risk of respiratory depression.
- Assess the characteristics of the pain and the effectiveness of medications that have been previously used to treat pain.
- Take and record baseline vital signs before administering the medication.
- Administer the medication following established guidelines.
- Monitor vital signs, level of consciousness, papillary response, nausea, bowel function, urinary function and analgesic effectiveness.
- Use non-invasive methods of pain management and multi-modal analgesics in conjunction with opioid medications.

HEALTH EDUCATION FOR THE PERSON WITH PAIN, THEIR FAMILY AND SIGNIFICANT OTHERS

- The use of opioids to treat severe pain is unlikely to cause addiction.
- Do not drink alcohol.
- Do not take over-the-counter medications unless approved by the healthcare provider.
- Increase intake of fluids and fibre in the diet to prevent constipation.
- The drugs often cause dizziness, drowsiness and impaired thinking; use caution when driving or making critical decisions.

A summary of the common opioids, their preparations and the brand names available in Australia is shown in Table 8.2, and general adverse effects of opioids are listed in Box 8.3.

ADJUVANTS There are a number of drugs that are often used in pain management that assist with analgesia or control specific symptoms. These drugs are often referred to as the adjuvants or co-analgesics.

Antidepressants Tricyclic antidepressants within the tricyclic chemical group act on the production and retention of serotonin in the CNS, thus inhibiting pain sensation. They also promote normal sleeping patterns, further alleviating the suffering of the person in pain. They are useful with neuropathic pain. Common drugs used in this class are amitriptyline, nortriptyline and doxepin.

Anticonvulsant medications Anticonvulsant medications such as gabapentin (Neurontin), pregabalin (Lyrica) and carbamazepine (Tegretol) are useful with neuropathic pain, including phantom limb pain, shingles (herpes zoster), migraine headaches and diabetic neuropathic pain. These drugs reduce pain and sleep disruption. Although these drugs are primarily used to treat epilepsy (seizures), they are also used to treat

nerve pain conditions. Clinical studies have shown many anti-convulsant drugs to be effective.

Ketamine Ketamine is a dissociative anaesthetic and has the action of being an NMDA (N-methyl-D-aspartate) antagonist. Tissue damage that causes continual nociception or neuropathic pain activates NMDA, which subsequently produces sensitisation of the central nervous system. Low-dose ketamine calms down this NMDA reaction, and is used clinically for the person with persistent pain, opioid tolerance, substance abuse issues or a neuropathic pain state.

Nitrous oxide Nitrous oxide is useful for women in labour and for some dressings and procedures that are painful. Despite its analgesic and sedative effects, it has minimal cardiovascular or respiratory depressive effects. Neurological and bone marrow problems can develop with regular use, so relevant assessment should occur at regular intervals. To help prevent neurological problems, methionine, folic or folinic acid, and vitamin B12 should be prescribed (ANZCA, 2010).

Local anaesthetics Local anaesthetics block the initiation and transmission of nerve impulses in a local area, thus also blocking pain sensations. Common examples of these drugs are lignocaine, bupivacaine and ropivacaine.

TABLE 8.2 Common opioids available in Australia

| OPIOID | PREPARATION | BRAND NAME |
|---|--|--------------------------------|
| Morphine | Oral syrup (immediate release) | Ordine |
| | Oral tablet (immediate release) | Anamorph/Severdol |
| | Oral tablet/capsule (sustained release) | MSContin/Kapanol |
| | Injection (immediate release) | Morphine sulfate/Tartrate |
| Oxycodone | Oral tablet/capsule/elixir (immediate release) | Endone, Oxycodone, OxyNorm |
| | Oral tablet (sustained release) | Oxycontin |
| | Suppository (absorption uncertain) | Prolodone |
| | Injection (immediate release) | Oxycodone |
| Fentanyl | Lozenge (immediate release) | Atiq |
| | Transdermal patch (sustained release) | Durogesic |
| | Injection (immediate release) | Sublimaze |
| Hydromorphone | Oral liquid/tablet/injection (immediate release) | Dilaudid |
| | Oral (sustained release) | Junista |
| Methadone (absorption independently variable) | Oral syrup | Physeptone syrup/Biodone Forte |
| | Oral tablets | Physeptone |
| | Injection | Physeptone |
| Codeine | Oral tablet/linctus (immediate release) | Codeine phosphate |
| Pethidine | Injection (immediate release) | Pethidine |

BOX 8.3 General adverse effects of opioids

Neurological symptoms are often dose-dependent, and may include sedation, dysphoria, confusion, dizziness, mental cloudiness, euphoria, miosis, muscle rigidity and seizures. It is usually advised that people do not drive, work heavy machinery or make critical decisions when initially taking these medications.

Respiratory symptoms are often dose-related, and may include cough suppression, respiratory depression, bronchospasm and asthma.

Cardiovascular symptoms may include bradycardia, hypotension and vasodilation.

Gastrointestinal symptoms may include nausea, vomiting, constipation, loss of appetite and biliary colic.

Dermatological symptoms may include itch, sweating, flushing and rash.

Urinary symptoms may include urinary retention, and changes in bladder and sphincter tone.

Neuroendocrine symptoms tend to develop after long-term use. They include a reduction in some hypothalamic-releasing hormones, which affects the gonads, adrenal cortex and endorphins.

Opioid rotation is common, especially for persistent pain as different opioids act on different receptors. Therefore, often a specialist will rotate the person on to a different opioid in the hope of producing more effective pain relief at a reduced dose. Sometimes equianalgesic tables are used to aid this rotation process, but these must be used with caution as each individual has different tolerances and preferences.

Local anaesthetics can be delivered by a variety of methods—for example, a single-dose nerve injection, as wound infiltration, or via topical application. All have been shown to aid analgesia. Delivery can also be made directly to the sheath of a nerve through a peripheral nerve catheter offering a continuous nerve blockade when the catheter is connected to an ongoing local anaesthetic infusion. When this latter method is used, nurses must be competent in the delivery system and the hospital should have standard protocols and policies to manage this technique. Side effects can occur from receiving local anaesthetics, such as trauma to the anaesthetised area and local anaesthetic toxicity from accidental intravascular injection.

Bisphosphonates Bisphosphonates are medications that target malignant tumours growing in bone. Referred to as osseous metastases, these expanding, painful tumours impair function. Bisphosphonates stabilise bone, slowing or preventing the development of tumours, and have a pain-relieving benefit which exceeds that of steroids and NSAIDs. Disodium pamidronate (Aredia) is effective with breast cancer metastases and multiple myeloma. A newer generation bisphosphonate, zoledronic acid (Aclasta), is useful with bony metastases secondary to lung, prostate, renal cell and other solid tumours (Mathew & Brufsky, 2015).

Radiopharmaceuticals Radiopharmaceuticals are unsealed substances produced in a nuclear reactor that emit a beta particle or an electron. The radioactivity is particularly damaging to malignant cells and is a safe and effective treatment for bony metastases. Radiopharmaceuticals are particularly useful in the management of those with prostate cancer and painful osteoblastic metastases confirmed on bone scan. This treatment

coupled with external beam radiation therapy (EBRT) has been shown to provide symptomatic relief in 80% of this group (Goyal & Antonarakis, 2012). Negative effects may include severe renal dysfunction or severe bone marrow depression.

Treatments may be given intravenously or orally. Care of the person treated with radiopharmaceuticals must follow radiation precautions, disposing of all body fluids quickly and thoroughly. Urine excretion is essentially completed in the first 6 hours.

Duration of action

Each pharmacological agent has a unique absorption and duration of action. Remember that no drug will have a totally predictable course of action because each person absorbs, metabolises and excretes medications at different dosage levels. The only way to obtain reliable data about the effectiveness of the medication for the individual person is to assess how that person responds. Therefore, the best choice is to individualise the dosing schedule.

There are two major descriptors of dosing schedules. The first type is for medications prescribed ‘on a regular basis’, such as paracetamol, NSAIDs and slow-release opioid preparations. These medications are usually given regularly if the person experiences constant pain predictably during a 24-hour period. The second type of dosing schedule is ‘on an as-needed basis’ (prn)—meaning *pro re nata* (Latin for ‘as circumstances may require’)—whereby immediate-release opioid medications are commonly used. Note that prn medication should be administered:

- as soon as the pain begins or prior to onset
- when increased pain is anticipated, such as when an activity or procedure is planned (e.g. a dressing), or when the regular prescribed medication does not cover all the pain. This is often the case in treating cancer pain as breakthrough medications may be required.

Giving analgesics before the pain occurs or increases gives the person confidence in the certainty of pain relief and thereby avoids some of the untoward effects of pain. The benefits of a preventive approach can be summarised as follows:

- The person may spend less time in pain.
- Frequent analgesic administration may allow for smaller doses and less analgesic administration.
- Smaller doses will in turn mean fewer side effects.
- The person’s fear and anxiety about the return of pain will decrease.
- The person will probably be more physically active and avoid the difficulties caused by immobility.
- The swift and effective management of acute pain can prevent persistent pain states occurring.

The side effects of a medication can become difficult to manage if the dosage is too high, and the person may suffer unnecessary pain because of reluctance to endure side effects. The best formula for adequate dosage is a balance between effective analgesia and minimal side effects. Within prescribed limits, the nurse can choose the most appropriate dose according to the person’s response. It is also the role of the nurse to inform the doctor and request a review of their analgesics if the prescribed dosage does not meet the person’s needs.

Routes of administration

ORAL ROUTE The oral route is the simplest route for both person and nurse. Special nursing care is still required, because some medications must be given with food, some are irritating to the gastrointestinal system, and some people may have trouble swallowing pills. Liquids, elixirs, capsules, soluble preparations and slow-release formulations are available for special applications.

RECTAL ROUTE The rectal route is helpful for those who are unable to swallow; however, absorption is unpredictable. The rectal route is contraindicated in those with diarrhoea, those with neutropenia and those who have had rectal surgery.

TRANSDERMAL MEDICATION The **transdermal** or ‘patch’ form of medication is increasingly being used because it is simple, painless and delivers a continuous level of medication (see Figure 8.7). Transdermal medications are easy to store and apply. Reapplication depends on the type of patch used (every 72 hours for fentanyl patches or 7 days for buprenorphine). Additional short-acting medication is often needed for breakthrough pain. Over-dosage can occur; therefore, it is important to start with a low-dose patch and **titrate** (which means to increase or decrease the dose in small increments) to the effective level. Again, these patches are good for those who are not eating or drinking; however, for those who sweat profusely or have a fever or inflammation of the skin, expect an increased absorption rate. Exercise and use of electric blankets or heating pads may also accelerate absorption of the medication and cause respiratory depression. (Deaths have occurred in the United States because of this problem.)

To apply a medication transdermally, apply to a hairless area of skin that is not irritated or broken. The area of skin needs to be cleaned and then the patch applied. Apply the patch immediately upon opening the package, and ensure that the contact is complete, especially around the edges. The effectiveness of a patch is dependent on its absorption, and the next patch should always be applied to a different site. When first applying a



FIGURE 8.7 ■ The transdermal patch administers medication in predictable doses

transdermal medication, expect 12 to 24 hours (for fentanyl) and up to 3 days (for buprenorphine) until a therapeutic level is absorbed; also, when discontinuing expect a similar decline in level because of the medication reservoir in the skin. If the person complains of severe light-headedness, is pale, sweaty and weak, the medical officer needs to be informed immediately and the patch removed.

INTRAMUSCULAR INJECTION Intramuscular injection was once the most popular route for pain medication administration. Its disadvantages include uneven absorption from the muscle (resulting in delayed respiratory depression), discomfort on administration, and the time needed to prepare and administer the medication. It is also recognised that the quality of analgesia is inferior to that of intravenous patient-controlled analgesia.

INTRAVENOUS ROUTE The intravenous (IV) route provides the most rapid onset, usually ranging from 1 to 15 minutes. Medication can be given by drip, bolus or person-controlled analgesia (PCA)—a pump with a control mechanism that affords the person self-management of pain. The advantages of PCA are dose precision, timeliness and convenience. The person does not have to wait for a nurse to assess the need for pain medication, then procure and deliver the analgesia (Hicks, Hernandez & Wanzer, 2012). Respiratory depression and sedation are minimised when plasma levels of opioids are steady (Lehne, 2012). Several drugs are available for this route. The disadvantages are the nursing care needed for any intravenous line, the potential for infection, the cost of disposable supplies and ensuring that only the actual patient presses the PCA button. For this reason the PCA method of administration requires careful education coupled with close and attentive monitoring.

SUBCUTANEOUS ROUTE The subcutaneous (SC) route is accepted; its disadvantages are similar to those of the intramuscular route.

EPIDURAL ROUTE The epidural route is invasive and requires more extensive nursing care, but may provide better analgesia and postoperative recovery than intravenous delivery. When opioids are inserted into the epidural space they are usually combined with local anaesthetics. This mixture can be given as an infusion or as a ‘top-up’. When this combination of drugs is used the person experiences better analgesia, earlier bowel recovery, earlier mobility and a shorter length of hospital stay than with the intravenous route (ANZCA, 2010). See below for nursing implications for the person receiving PCA.

INTRATHECAL ROUTE The intrathecal route involves the placement of drugs (usually opioids, local anaesthetics or both) into the cerebrospinal fluid. When medication is inserted into the intrathecal space, it is usually as a single injection, and much smaller doses are required compared to the epidural route.

REGIONAL ANALGESIA Regional analgesia is commonly known as ‘a nerve block’. Nerve blocks use local anaesthetics (sometimes in combination with a steroidal drug, depending on the situation) injected into or near a nerve, usually in an area between the nociceptor and the dorsal root. In the postoperative

situation, nerve blocks can be either a single-shot injection or run as a continuous peripheral nerve block infusion (CPNB). When a CPNB is ordered, strict protocols, procedures and standards must be adhered to so as to ensure safety.

In the persistent-pain setting the procedure may be performed to determine the precise location of the source of the pain: pain relief indicates that the injection site is the source of the pain. Temporary nerve blocks may give the person enough relief to:

- develop a more hopeful attitude that pain relief is possible
- allow local procedures to be performed without causing discomfort
- exercise and move the affected part.

If the nerve block is successful, a permanent neurolytic agent can be used to give long-term analgesia.

SURGERY As an analgesic measure, surgery is usually performed only after all other methods have failed. Those who need this measure should understand possible risks such as reduced motor function or incontinences. Surgical procedures used to relieve pain are shown in Figure 8.8 and include the following:

- A *rhizotomy* is destruction of the dorsal spinal roots. It is most often performed to relieve back/neck pain. A rhizotomy can be performed by a spinal or neurosurgeon: the nerve fibres are surgically severed. Rhizotomies may also be performed by a pain specialist who injects a chemical, or uses a radiofrequency current or cryotherapy, to selectively destroy painful fibres. These types of rhizotomy are called percutaneous and usually offer temporary pain relief.

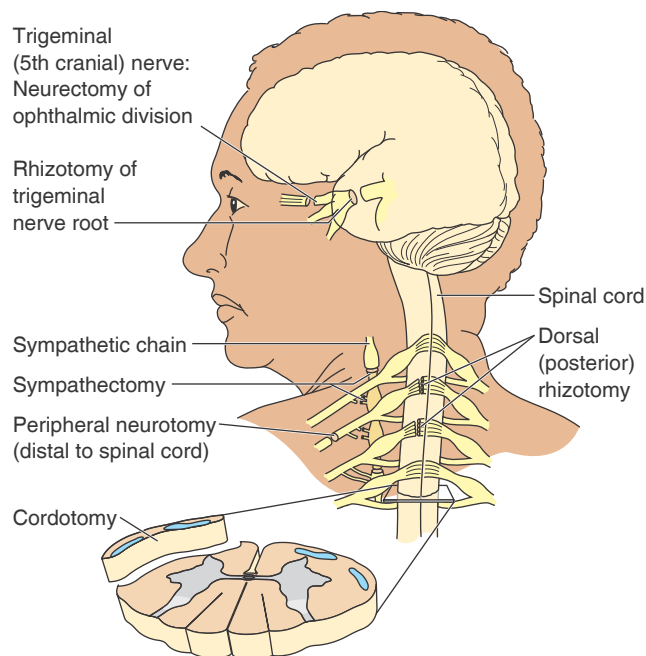


FIGURE 8.8 ■ Surgical procedures are used to treat severe pain that does not respond to other types of management. They include cordotomy, neurectomy, sympathectomy and rhizotomy

- A *sympathectomy* involves blocking the ganglia of sympathetic nerves, usually in the lumbar region, often with local anaesthetic or surgery. The sympathetic nerves play an important role in producing and transmitting the sensation of pain.
- A *cordotomy* is an incision into the anterolateral tracts of the spinal cord to interrupt the transmission of pain. Because it is difficult to isolate the nerves responsible for upper body pain, this surgery is most often performed for pain in the abdominal region and legs, including severe pain from terminal cancer. A percutaneous cordotomy produces lesions of the anterolateral surface of the spinal cord by means of a radiofrequency current.
- A *neurectomy* is the removal of a nerve. It is sometimes used for pain relief. A peripheral neurectomy is the severing of a nerve at any point distal to the spinal cord.



Nursing care

Assessment

Nursing assessment of the person with pain presents perhaps more of a challenge than almost any other type of illness or injury because of the subjectivity of pain and the effects it has on the individual.

A comprehensive approach to pain assessment is essential to ensure adequate and appropriate interventions. The five assessment areas are: (1) health history, (2) physiological response, (3) examination, (4) behavioural response, and (5) response to treatment.

1. Health history

Before commencing an in-depth assessment, discuss:

- The definition of the word 'pain' to ensure that the person and the nurse are communicating on the same level. It is often helpful to use the person's own words when describing the pain. For example, the person may talk about discomfort as opposed to pain.
- Explain that the report of pain is important for promoting recovery, not just for achieving temporary comfort.
- Ask the person to establish a comfort-function goal. This is a level of pain that does not interfere with or prevent the performance of essential activities of recovery or living. The person's history of the pain can be assessed by using the PQRST technique (Gregory, 2014):
 P = What precipitated (triggered, stimulated) the pain? Has anything relieved the pain? What is the pattern of the pain (constant, episodic)?
 Q = What are the qualities of the pain? How would you describe the pain (sharp, stabbing, aching, burning, stinging, deep, crushing, vice-like, gnawing)?
 R = What is the region (location) of the pain? Can you put your finger on where the pain is? Does the pain radiate to other areas of the body?
 S = What is the severity or intensity of the pain?
 T = What is the timing of the pain? When does it begin, how long does it last and how is it related to other events in the person's life?
- What precipitated (triggered, stimulated, makes it worse) the pain? What palliates (what makes it better, has anything relieved) the pain? What is the pattern of the pain?
- What are the quality and quantity of the pain? Is it sharp, stabbing, aching, burning, stinging, deep, crushing, vice-like, gnawing? A reliable indicator of the presence and degree of pain is the person's own statement about the pain. The McGill Pain Questionnaire is a useful tool in assessing

NURSING CARE PLAN A person receiving patient-controlled analgesia

Patient-controlled analgesia (PCA) is used to manage moderate to severe pain. Specialised lockable infusion pumps are used to control the delivery of intravenous analgesia, most commonly opioid medications such as morphine or fentanyl. A push button device is attached to the infusion pump that, when pressed by the patient, administers a prescribed bolus of medication. Alternatively, PCA pumps can be set to provide a continuous background infusion, with the bolus dose used (by the patient) as additional breakthrough analgesia.

PCA is frequently used in the management of acute and acute postoperative pain, but has also been used for short-term management of chronic pain. The use of this delivery method improves patient autonomy by giving the patient an element of control over the administration of analgesia, reducing waiting times for pain relief, but also, in many

instances, reducing the ultimate amount of analgesia used by the patient. A lockout timing mechanism is built into PCA protocols to reduce risk of harm, most specifically from over-use of the medications. The lockout mechanism prevents the patient from receiving a dose of medication within a specified timeframe from the last dose administered. As opioids are usually used, the medication order includes guidelines for the implementation of clinical review, or a rapid response review in the instance of an acute change in the patient's condition. Additionally, a standing order for the administration of naloxone (to reverse opioid overdose) is prescribed.

NURSING CARE

- Familiarise yourself with the appropriate facility policies, guidelines and documentation. This may include a requirement to complete a formal competency

(continued)

NURSING CARE PLAN A person receiving patient-controlled analgesia (continued)

- assessment before you are permitted to provide nursing care related to PCA.
- Assess the capacity of the patient to use PCA appropriately and effectively. Ensure the patient has:
 - the cognitive capacity to understand the correct use of PCA
 - the physical capacity to use PCA effectively
 - consented to use of PCA as a pain management approach.
- Ensure the medication order is correct, legible and includes all of the necessary details.
- Ensure the patient has patent and secure intravenous access.
- Provide appropriate supplemental oxygen therapy.
- Obtain and prepare medication (syringe or pre-mixed bag) as per facility policy.
- Provide patient education:
 - Explain the correct use of the PCA pump and familiarise the patient with the equipment.
 - Explain the in-built lockout period (and how this reduces the risk of accidental overdose), bolus dose mechanism and background infusion (if prescribed).
- Clearly explain that only the patient is to press the PCA button (to reduce risk of accidental opioid overdose).
- Discuss potential adverse effects of the medication/s, and signs and symptoms the patient must be aware of.
- Discuss general safety considerations associated with attachment to an intravenous pump; for example, restricted mobilisation.
- Explain the ongoing monitoring nursing staff will conduct.
- Conduct monitoring of the patient and the PCA infusion as per facility policy. This will commonly include hourly monitoring of respiratory status, pain score, sedation score, supplemental oxygen therapy rate, bolus doses attempted and delivered, background infusion (if applicable) and total amount of medication administered.
- Monitor for PCA need, and liaise with the multidisciplinary team for discontinuation of PCA when appropriate.



PCA units allow the person to self-manage severe pain. The units may be portable or mounted on intravenous poles

Source: Left, © Roy Ramsey/Pearson Education; right, courtesy and © Becton, Dickinson and Company.

the person's subjective experience of the pain. It asks the person to locate the pain, to describe the quality of the pain, to indicate how the pain changes with time and to rate the intensity of the pain. Several tools are available to assess specific pain qualities (Hjermstad et al., 2011; Lin et al., 2011) (see Table 8.3).

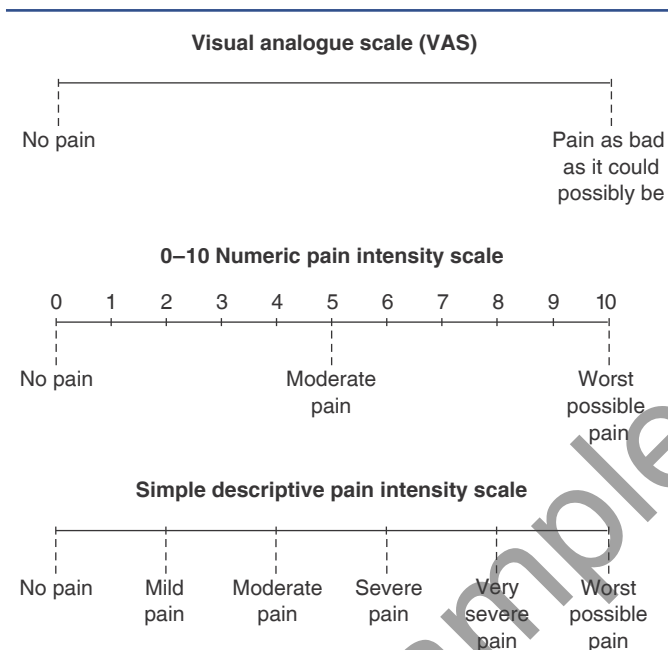
- What is the region (location) of the pain? Does the pain radiate to other areas of the body?
- What is the severity of the pain? The most common method to assess the severity of pain is a pain rating scale. Several scales are illustrated in Figure 8.9.
- If you are caring for the person with an established persistent pain condition in an acute care setting, remember to ask

what their normal pain score is when they are managing their life in the community. It is not unusual for those with a persistent pain condition to give higher pain scores.

- For the person who does not understand English or numerals, a scale using colours (e.g. light blue for no pain through to bright red for worst possible pain) or pictures may be helpful. Often pain assessment is made while a person is sedentary. In this state the person may experience less pain than when active and falsely estimate tolerable pain ratings. Provide guidelines for setting goals.
- What is the timing of the pain? When does it begin, how long does it last (continuous or intermittent), and how is it related to other events in the person's life?

TABLE 8.3. Pain questionnaires in common use

| PAIN QUESTIONNAIRE | FOCUS OF ASSESSMENT |
|--|---|
| McGill Pain Questionnaire (Melzack, 1975) | Subjective descriptors of pain |
| Quick Inventory of Pain Symptoms (QIPS) (Koenig et al., 2014) | Overview of a patient's pain experience for the preceding week |
| Revised Oswestry Disability Questionnaire (RODQ) (Page et al., 2001) | Assessment specific to back pain |
| Leeds Assessment of Neuropathic Symptoms and Signs (LANSS) (Bennett, 2001) | For use in patients with chronic persisting pain; allows for sensory descriptions of pain |
| Brief Pain Inventory (BPI) (Atkinson et al., 2011) | Focuses on patient outcomes related to pain intensity and pain interference |

**FIGURE 8.9** ■ Examples of commonly used pain scales

The following nursing interventions will help the nurse assess for pain using a pain rating scale:

- Ensure consistent communication. Explain the specific pain rating scale used. If a word descriptor scale is used, verify that the person can read the language being used. If a numerical scale is used, be sure the person can count to 10. If the person is not able to report pain because of communication difficulties, intubation, emotional disturbances or cognitive impairments, monitor the manifestations of pain by taking vital signs, assessing skin temperature and moisture, observing pupils, observing facial expressions, position in bed, guarding of body parts and restlessness. Autonomic responses to pain may result in increased blood pressure, tachycardia, rapid respirations and perspiration and dilated pupils. Other responses to pain include grimacing, clenching the hands, muscle rigidity, guarding, restlessness and nausea. The person with chronic pain may have a blunted affect.

- Be sure the person is able to report pain. Researchers have found that residents of aged care facilities with cognitive impairments can validly self-report pain (Chatterjee, 2012). The following nursing interventions will help the nurse assess for pain using other measures:
 - Look for indicators of pain, such as grimacing, restlessness, rubbing, stillness, verbal or non-verbal vocalisations, and holding on to an object tightly (Chatterjee, 2012).
 - Pain has been shown to increase adverse behaviours such as wandering, carer resistance, socially inappropriate behaviours and delusional thoughts. Ensure pain is considered as part of the assessment of all aged care residents (Tosato et al., 2012).
 - Ask a family member or caregiver, if they suspect the person has pain, to serve as a proxy pain rating.

2. Physiological response

When the body experiences acute pain, the stress response is initiated. This metabolic response releases neuroendocrine hormones systemically, and a local release of cytokines at the injury site. Surgical stimuli that cause pain can influence the sympathetic efferent nerves, causing an increase in myocardial oxygen demand, influencing heart rate and blood pressure. Gastric motility is often reduced, so the potential for a paralytic ileus can develop. Injury/surgery to the upper abdominal or the thoracic area can cause difficulty in coughing, which can result in reduced functional residual capacity. If this persists, then ventilation perfusion problems can occur.

For those suffering with persistent pain, loss of muscle mass and physical deconditioning can occur. As these symptoms continue, movement restrictions develop, and insomnia, fatigue and a change in appetite may occur.

3. Examination

Examination of the person should include observation, auscultation, palpation and percussion of the sensitive areas. The doctor will also undertake a physical assessment that does not cause any undue pain. Discuss the person's normal ability to perform activities of daily living and how this acute or chronic condition has affected this. Observe for pain behaviours and non-verbal clues such as facial expression and body language.

Assess the effect the pain has on the person's sleep pattern. Note any pre-existing medical or pain conditions that could influence the person's current condition. Investigations ordered by the medical staff should assist in confirming clinical impressions.

4. Behavioural response

It is essential to assess the person's response to any treatment given for pain. If you give a medication for pain relief, go back and *assess* its effectiveness, especially with respect to functional abilities. The person's satisfaction must also be noted in response to their pain treatments, whether a treatment helped, had no effect on, or increased their pain. Meticulous documentation is critical as future pain regimens may be based on this.

5. Responses to treatment

Some behaviours are so typical of people in pain that the behaviours are referred to as pain behaviours. They include bracing or guarding the painful part, taking medication, crying, moaning, grimacing, withdrawing from activity and socialisation, becoming immobile, talking about pain, holding the painful area, breathing with increased effort, exhibiting a sad facial expression and being restless.

Behavioural responses to pain may or may not coincide with the person's report of pain and are not reliable cues to the pain experience. For example, one person may rate pain at an 8 on a 0–10 scale (where 0 = no pain and 10 = worst imaginable) while laughing or walking down the hall, while another may deny pain completely but be reluctant to move and grimace or moan. Denial of pain may be for a variety of reasons, including fear of injections, fear of drug addiction, misinterpretation of terms (the person may not think that aching, soreness or discomfort qualify as pain), or the belief that healthcare providers alone decide when a person is experiencing pain. Some may deny pain as part of an attempt to deny that there is something wrong with them. Others, by contrast, may think that 'as-needed' medications will be given only if their pain rating is high. Discrepancies between the person's report of pain and behavioural responses may be influenced by certain factors—for example, sociocultural factors, emotional state, knowledge, past experiences and age, and relaxation or distraction techniques.

SELF-MANAGEMENT OF PAIN The person's attempts to manage pain are useful additions to the assessment database. This information is individualised and specific to each person; it includes many factors such as culture, age and knowledge. Obtain detailed descriptions of actions the person or significant others used, and when and how these measures were applied, and how well they worked.

CONSIDERATION FOR PRACTICE

Do not assume that the older person or the person with a cognitive impairment is not experiencing pain or is unable to identify its intensity.

Nursing diagnoses and interventions

Acute or persistent pain

Assess the characteristics of the pain by asking the person to:

- Point to the pain location, or mark the pain location on a figure drawing. *Pain location provides information about the aetiology of the pain and the type of pain being experienced.*
- Rate the intensity of the pain at rest and during movement by using a pain scale (1 to 10, with 10 being the worst pain ever experienced), a visual analogue scale (a scale on which pain is marked on a continuum from no pain to severe pain), or with word descriptors (such as the McGill Pain Questionnaire, and mild, moderate or severe). Use the same scale with each assessment. *The intensity of pain is a subjective experience. The perception of the intensity of pain is affected by the person's degree of concentration or distraction, state of consciousness and expectations.*
- Describe the quality of the pain. For example, say to the person: 'Describe what your pain feels like.' If necessary, provide word descriptors for the person to select from. *Descriptive terms provide insight into the nature and perception of the pain. In addition, the location and type of pain (e.g. acute versus persistent) affect the quality.*
- Describe the pattern of the pain, including time of onset, duration, persistence and times without pain. It is also important to ask whether the pain is worse at regular times of the day and whether it has any relationship to activity. *The pattern of pain provides clues about cause and location.*
- Describe any precipitating or relieving factors. *Precipitating factors include sleep deficits, anxiety, temperature extremes, excessive noise, anxiety, fear, depression and activity.*
- Describe the meaning of the pain, including its effects on lifestyle, self-concept, roles and relationships. *The person with acute pain may believe the pain is a normal response to injury, or that it signals serious illness and death. Pain is a stressor that may affect the person's ability to cope effectively. The person with persistent pain may have concerns about addiction to pain medication, cost, social interactions, sexual activity and relationships with significant others.*
- Monitor manifestations of pain by assessing skin temperature and moisture; observing pupils; observing facial expressions, position in bed and guarding of body parts; and noting restlessness. *Autonomic responses to pain may result in increased blood pressure, tachycardia, rapid respirations, perspiration and dilated pupils. Other responses to pain include grimacing, clenching the hands, muscle rigidity, guarding, restlessness and nausea. The person with persistent pain may have a blunted, flat affect with a tired facial appearance. (Remember, if the person has persistent pain, vital signs may not be increased.)*
- Acknowledge the person's pain by verbally recognising the presence of the pain, listen carefully to the description of pain, and act to help the person manage the pain. *Because pain is a personal, subjective experience, the nurse must convey belief in the person's pain. By doing so, the nurse*



TRANSLATION TO PRACTICE

Evidence-based practice for the person experiencing pain

Poor pain management is common. Despite having a wealth of evidence-based practice available, there is a gap between research and clinical practice. Observational studies of pain management are valuable because they are time-sensitive. Relying on nurses' self-report of pain management introduces bias and loses currency. Manias, Bucknall and Botti (2005) undertook an observational study that has continued relevance today. Nurses were observed in 2-hour periods, and examination of the collected observations by independent analysts revealed six categories of response to a person's pain. The pain was:

1. responded to effectively
2. prioritised as less important than completing medication administration, assessing vital signs, taking telephone calls or changing dressings
3. ignored because cues were missed
4. treated as part of the medication administration regimen and given or withheld according to schedule
5. prevented through comfort measures, medicating before pain was present or was going to occur as with dressing changes, teaching the importance of early communication about pain
6. was only addressed reactively, after the painful experience.

Because pain management is important, many hospitals employ acute, palliative and persistent pain services, with more attention being encouraged regarding listening to each person's self-reporting of pain. Communication among nurses, doctors and the person experiencing pain is key to pain relief. Knowledge of the pharmacodynamics and pharmacokinetics of analgesics needs to be taught and updated regularly. Environmental distractions and interruptions are

associated with less attention to pain management. Few conditions have higher priority for the person than pain relief, but the study revealed that nurses accept pain as a normal component of the postoperative surgery experience. Institutional culture needs to acknowledge the competing responsibilities that affect nurses' ability to provide effective pain management. These responsibilities include documentation, admitting new patients, and completing discharge education and arrangements. Pain management is an important component of professional nursing—nurses should be supported in their efforts to address pain with critical thinking, compassion and efficiency.

CRITICAL THINKING IN PERSON-CENTRED CARE

- 1 Reflect on your own experiences with pain. Evaluate how these experiences help or hinder your assessments and interventions for a person in pain.
- 2 You are caring for a young man who has multiple injuries from a motorcycle accident. He tells you his pain is so bad that he just wants to die. Describe and explain how you would respond, and why.
- 3 You are caring for an 80-year-old man with diabetes who has had his left foot amputated for gangrene. He is restless and moaning. Another nurse tells you to give only one-half of the ordered dose of opioids because 'he is old and there is a danger of respiratory depression'. Assess this nurse's suggested intervention and explain how you would handle this situation.
- 4 'Nurses tend to underestimate and under-medicate pain.' Discuss this statement using recent published research.

reduces the person's anxiety and thereby lessens their pain. See the 'Translation to practice' box above.

- Provide optimal pain relief with prescribed analgesics, determining the preferred route of administration. Provide pain-relieving measures for severe pain on a regular around-the-clock basis or by self-administration (such as with a PCA pump). *The person is part of the decision-making process and can exert some control over the situation by choosing the administration route. Analgesics are usually most effective when they are administered before pain occurs or becomes severe. Around-the-clock administration has been proven to provide better pain management for both acute and persistent pain. Do not crush or break, or allow the person to chew, controlled-release oral preparations; a dose meant to be slowly absorbed that is absorbed rapidly may lead to a toxic overdose and death.*
- Evaluate and monitor the effects of analgesics and other pain-relieving measures and teach family members or significant others to be alert for adverse reactions to pain medications. Sedation, constipation, nausea and dizziness are common side effects. *Excessive sedation can progress to significant respiratory depression. Oxygen saturation should be checked regularly. Protocols will vary within your institution. Prevent*

falls that may result from sedation or dizziness. If the person has symptoms of excessive opioid dosage, antidotes are available. Naloxone is used for opioid overdose. Titrate naloxone slowly. Never push an entire dose all at once. Administer only enough naloxone to eliminate adverse effects such as respiratory depression or excessive sedation. If excessive naloxone is administered, the person may experience acute withdrawal and will have no pain relief. It may take considerable time to re-establish a therapeutic comfort level.

- Determine the level of sedation the person will tolerate. *For those with persistent pain or cancer pain who need high doses of opioids, sedation may interfere with quality of life and neither the person nor the family want them to be sedated. Several classes of drugs can be used to counteract sedation. They are usually given in the morning so that they will not interfere with night sleep. Amphetamines, especially methylphenidate (Ritalin), is the most commonly used; modafinil (Modavigil) has been used for several years; and donepezil (Aricept), which is used for the symptoms of Alzheimer's disease, reduces sedation and fatigue (Caraceni et al., 2012).*
- Teach the person and family non-pharmacological methods of pain management, such as relaxation, distraction and

NURSING CARE PLAN A person with persistent pain

Susan Akers, aged 37, is currently being seen at an outpatient clinic for persistent non-malignant pain. She works at a local paper factory. She has a 3-year history of neck and shoulder pain that usually is accompanied by headaches. She believes the pain is related to lifting objects at work, but it is now precipitated by activities of daily living. Susan is absent from work approximately three times a month and states that the absences are due to her pain and headaches. She has been seeking care in the local emergency department on an average of twice monthly for injections for pain. She does not regularly use medications but does take Panadeine Forte and Valium as needed (usually 3 or 4 times a day). Susan is divorced and has two children. She states that she has several friends in the area, but her parents and siblings live interstate.

ASSESSMENT

During the nursing history, Susan rates her pain during an acute episode as a 7 on a 1 to 10 scale. She states that lifting objects and moving her hands and arms above shoulder level causes sharp pain. The pain never really goes away, but it does decrease with upper extremity rest. She says that when she lifts a lot at work, she has difficulty sleeping that night. She takes two Panadeine Forte tablets every 4 hours when the pain is severe, but does not get complete relief. The medical officer diagnoses muscular pain.

DIAGNOSIS

- *Persistent pain* related to muscle inflammation resulting from repetitive movement and lifting of heavy objects manifested by pain on movement that lessens at rest and in response to analgesia.

PLANNING

After negotiating expected outcomes and intervention techniques, opioid analgesia and distraction techniques are to be used during the acute phase of management. Non-opioid analgesia is to be used after the acute phase and review of the work environment is to be undertaken.

Expected outcomes

- Return for follow-up visits with a journal of activities and pain experiences.
- After 3 to 5 days on regularly scheduled doses of pain medication, report a decrease in the level of pain from 7 to 3 or 4 on a 1 to 10 scale.
- Decreased number of absences from work.

- Modify activities at work and at home, especially when pain is intense.

IMPLEMENTATION

- Encourage discussion of pain and acknowledge belief in Susan's report of pain.
- Consult with a doctor for a non-opioid analgesic with a minimum of side effects, and instruct in maintaining regular dosing schedules.
- For episodes of acute pain, take opioid analgesics as soon as the pain begins and every 4 hours, while continuing the dosage of non-opioid analgesic.
- Teach one relaxation technique that is personally useful.
- Explore distraction techniques such as listening to music, watching comedies or reading.
- Provide clinic phone number and instruct to call if pain is unrelieved with narcotic and non-opioid analgesics.

EVALUATION

Susan returns for scheduled follow-up visits with a completed journal of her activities and associated pain. She reports that taking oral opioid analgesics has relieved her pain and that within 3 weeks non-opioid analgesics have brought her pain under control. She also reports that her supervisor has reassigned her to a position that requires no lifting. She now rates her pain at 2 or 3 on a 1 to 10 scale. She has missed only 1 day of work in the last 3 months and reports that her children and friends have helped with her household tasks when she has requested they do so.

CRITICAL THINKING IN THE NURSING PROCESS

- 1 Describe three factors that support the statement 'Pain is a personal experience.'
- 2 Susan asks you how often she should take her pain medications. Do you tell her to (a) take them on a regular basis, or (b) wait until she experiences pain? Which action would you choose, and why?
- 3 Susan is at risk of constipation. Why, and what information would you provide?

REFLECTION ON THE NURSING PROCESS

- 1 What have you learned from the case study that you will apply to your clinical practice?
- 2 If someone is non-adherent with the negotiated care plan and returns to the pain clinic with continued discomfort, consider some of the reasons this non-adherence may have occurred.

cutaneous stimulation. *These techniques are especially useful when used in conjunction with pain medications and may also be useful in managing persistent pain.*

- Provide comfort measures, such as changing position, massage, oral care, skin care and changing bed linen. *Basic comfort measures for personal cleanliness, skin care and mobility promote physical and psychosocial wellbeing, lessening the perception of pain.*
- Provide person and family education, and make referrals if necessary to assist with coping, such as financial support

services and home care. *The person (and family) with pain requires information about medications, non-invasive techniques for pain management and sources of assistance with home-based care. The person with acute pain requires information about the expected course of pain resolution.*

Community-based care

Educate the person, family and significant others regarding:

- specific medications to be taken, including the frequency, potential side effects, possible interactions and any special

TABLE 8.4 Providing long-term analgesia at home

| ROUTE | DRUG | NURSING IMPLICATIONS |
|-------------|-----------|---|
| Oral | Oxycodone | Available in a slow-release formulation for 12-hour dosing (Oxycontin) and as fast-acting formulations (Endone or Endone elixir) for breakthrough pain. |
| Oral | Morphine | Formulated as slow-release particles in a capsule (Kapanol). If the person cannot swallow the capsule, it may be sprinkled over food or given by gastric tube. Morphine can also be given as a slow-release tablet (MsContin) or as immediate-release preparations either as a tablet (Anamorph) or capsule (Sevredol) or an elixir (Ordine). |
| Transdermal | Fentanyl | A patch absorbed slowly through the skin (Durogesic, Fenpatch, Denpax); allows 72-hour dose schedule. Takes up to 12 hours to achieve therapeutic level; when discontinued, therapeutic effect will decay slowly. A lozenge formulation fentanyl citrate (Actiq, Abstral) absorbed through the buccal cavity can be used to treat breakthrough cancer pain in opioid-tolerant people. |

precautions to be taken (such as taking with food or avoiding alcohol)

- how to take or administer the medication (see Table 8.4)
- the importance of taking analgesics before the pain becomes severe
- an explanation that the risk of addiction to analgesics is very small when they are used appropriately for pain relief
- the importance of scheduling periods of rest and sleep.

In addition, suggest the following resources:

- pain clinics
- community support groups
- International Association for the Study of Pain (IASP)
- Australian Pain Society (APS)
- Cancer Council Australia.



CHAPTER HIGHLIGHTS

- Pain is perceived in the central nervous system. Opioids, and other analgesics, block the perception of pain; NSAIDs and most non-pharmacological interventions block or decrease the transmission of pain from the periphery to the CNS. Measures to block the sensitisation of pain-transmitting fibres can be used prior to painful procedures.
- There are many types of pain, and treatment varies according to the type and combination of types. Acute pain usually decreases as healing progresses; persistent pain has acute exacerbations and compounds acute pain. Breakthrough pain is recognised as an increase in pain intensity that occurs when the peak and duration of medications are reached. Procedural pain occurs in relation to a change or increase in activity. Central pain results from CNS lesions. Phantom pain occurs after amputation, seeming to originate in the missing body part.
- Myths and misconceptions exist about pain and its management. The person's perceived cause of pain and the best self-care method to relieve pain provide pertinent assessment information.
- People's response to pain is influenced by their emotional state, past experiences with pain and the meaning they attribute to the experience of pain. The person with a diagnosis of malignancy or a poor prognosis may have an interpretation of pain that is significantly different from the person experiencing temporary states such as curative surgery, or labour and childbirth.
- Older adults perceive pain as intensely as younger adults. The amount of opioids they may need is variable, as older

adults may have difficulty metabolising or eliminating medications.

- Assertively assess pain in the older person. Older adults may hesitate to report pain for fear of losing independence or being considered a nuisance. Cognitive impairment following cardiovascular accident, dementia or delirium makes self-report of pain less available. Behavioural scales for assessing pain are useful when the person cannot give a self-report.
- Addiction is believed to be a neurophysiological disease, heavily influenced by social determinants of health. The person with addiction to opioids may need greater doses of opioids to control pain because of the tolerance they may have developed through usage.
- Pain management includes assessment, planning, intervention and evaluation. It is important to verify that interventions have been effective. If not, interventions must be identified that bring pain down to a level of intensity with which the person feels satisfied.

CONCEPT CHECK

- 1 Which of the following statements suggests a misconception of pain?
 - 1 It is best to wait until a person has pain before giving medication.
 - 2 Anxiety can cause pain and pain can cause anxiety.
 - 3 Pethidine is no longer recommended for postoperative pain.
 - 4 The rationale for use of a TENS unit is supported by the gate-control theory.

- 2 You are taking a health history for a person who has taken a NSAID for several years. What would be an appropriate question to ask?
- 1 'Do you understand what this drug could do to you?'
 - 2 'Have you ever vomited blood or had very dark stools?'
 - 3 'Do you know that you may become addicted to this drug?'
 - 4 'Have you noticed any problems with your breathing?'
- 3 You are replacing a transdermal analgesic patch. Where on the body would you place it?
- 1 on one side of the buttocks
 - 2 below the navel, midline on the abdomen
 - 3 on the anterior thigh
 - 4 on the upper torso
- 4 Which of the following statements would be most useful in determining the quality of a person's pain?
- 1 'Tell me where you hurt.'
 - 2 'Rate your pain on a scale of 0 to 10.'
 - 3 'Describe what your pain feels like.'
 - 4 'Tell me how this pain affects your sleep.'
- 5 The person has orders for intravenous patient-controlled analgesia (PCA). The following principles are true, except:
- 1 basal doses are continuous
 - 2 overdose cannot occur
 - 3 a 10-minute lockout each hour allows six bolus doses
 - 4 unused bolus doses cannot accumulate
- 6 The most common side effects of opioid analgesics are:
- 1 anuria, diplopia and cough
 - 2 constipation, nausea and sedation
 - 3 pruritus, constipation and hallucinations
 - 4 dysphagia, fever and gastritis
- 7 The preferred route of opioid administration for persistent pain is:
- 1 transdermal
 - 2 oral
 - 3 intravenous
 - 4 rectal
- 8 The equivalent dose of an oral drug compared to the intravenous preparation of the same drug:
- 1 is equal dosage
 - 2 is twice the intravenous dose
 - 3 varies according to the medication
 - 4 is one-half the intravenous dose
- 9 People treated for persistent pain may need additional pain management strategies for:
- 1 breakthrough pain
 - 2 acute pain
 - 3 end-of-dose pain
 - 4 all of the above

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