CHAPTER 9 Nursing Care of Clients Experiencing Pain

LEARNING OUTCOMES

- Describe the neurophysiology of pain.
- Compare and contrast definitions and characteristics of acute, chronic, breakthrough, central, phantom, and psychogenic pain.
- Discuss factors affecting individualized responses to pain.
- Clarify myths and misconceptions about pain.
- Discuss interdisciplinary care for the client in pain, including medications, surgery, transcutaneous electrical nerve stimulation, and complementary therapies.
- Use the nursing process as a framework for providing individualized nursing care for clients experiencing pain.

CLINICAL COMPETENCIES

- Assess client's pain intensity; quality; location; pattern; intensifiers; nullifiers; side effects of analgesics; effect on physical, psychologic, and social function, mood, and support for managing pain.
- Determine client's desire and preference for pain management.
- Intervene with client-approved pharmacologic and nonpharmacologic methodologies. Administer medications knowledgeably and safely.
- Utilize equianalgesia tables for transitioning among opioid analgesics. Match continuous pain with around-the-clock, long-acting dosing and intermittent pain with short-acting medications.
- Provide client and family teaching about effective pain control.
- Evaluate effectiveness of interventions to relieve pain; retreat or adjust doses of medication and interventions as necessary.
- Revise plan of care according to client's response to interventions and need for control.

MEDIALINK

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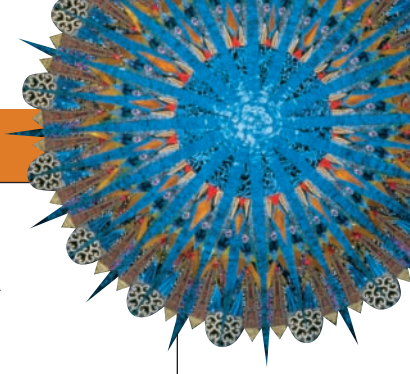

KEY TERMS

acute pain, *173*
addiction, *175*
analgesic, *174*
breakthrough pain, *174*
central pain, *174*
chronic pain, *174*
incident pain, *174*
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Pain is a subjective response to both physical and psychologic stressors. All people experience pain at some point during their lives. Although pain usually is experienced as uncomfortable and unwelcome, it also serves a protective role, warning of potentially health-threatening conditions. For this reason, pain is increasingly referred to as the *fifth vital sign*, with recommendations to assess pain with each vital sign assessment. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) (2001) has established pain standards that identify the relief of pain as a client right and requires healthcare facilities to implement specific procedures for, and provider education on, pain assessment and management.

Each individual pain event is a distinct and personal experience influenced by physiologic, psychologic, cognitive, sociocultural, and spiritual factors. Pain is the symptom most associated with describing oneself as ill, and it is the most common reason for seeking health care. The International Association for the Study of Pain defines pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. Although there are many definitions and descriptors of pain, the one most relevant is that pain is "whatever the person experiencing it says it is, and existing whenever the person says it does" (McCaffery, 1979, p. 11). This definition acknowledges the client as the only person who can accurately define and describe his or her own pain and serves as the basis for nursing assessment and care of clients in pain. It also supports the values and beliefs about pain necessary for holistic nursing care, including the following:

- Only the person affected can experience pain; that is, pain has a personal meaning.
- If the client says he or she has pain, the client is in pain. All pain is real.
- Pain has physical, emotional, cognitive, sociocultural, and spiritual dimensions.
- Pain affects the whole body, usually negatively.
- Pain may serve as both a response to and a warning of actual or potential trauma.

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. A highly intense pain may prompt an immediate reflex response that precedes awareness of the pain.

Nerve receptors for pain are called **nociceptors** (Figure 9–1 ■). 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 biologic, mechanical, thermal, electrical, or chemical factors stimulate nociceptors (Table 9–1). The intensity and duration of the stimuli determine the sensation. Long-lasting, intense stimulation produces greater pain than brief, mild stimulation.

Nociceptors are stimulated either by persistent mechanical, chemical, or thermal stimuli to the cell or by the local release of biochemicals secondary to cell injury. *Bradykinin,* a polypeptide element of the kinin protein system (McCance & Huether, 2002), appears to be the most abundant and potent pain-producing chemical; other biochemical sources of pain include prostaglandins, histamine, hydrogen ions, and potassium ions. These biochemicals are thought to bind to nociceptors in response to noxious stimuli, causing the nociceptors to initiate pain impulses.

TABLE 9–1 **Pain Stimuli**

CAUSATIVE FACTOR	EXAMPLE
Microorganisms (e.g., bacteria, viruses)	Meningitis
Inflammation	Sore throat
Impaired blood flow	Angina
Invasive tumor	Colon cancer
Radiation	Therapy for cancer
Heat	Sunburn
Obstruction	Kidney stone
Spasm	Colon cramping
Compression	Carpal tunnel syndrome
Decreased movement	Pain after cast removal
Stretching or straining	Sprained ankle
Fractures	Fractured hip
Swelling	Arthritis
Deposits of foreign tissue	Endometriosis
Chemicals	Skin rash
Electricity	Electrical burn
Conflict, difficulty in life	Psychogenic pain

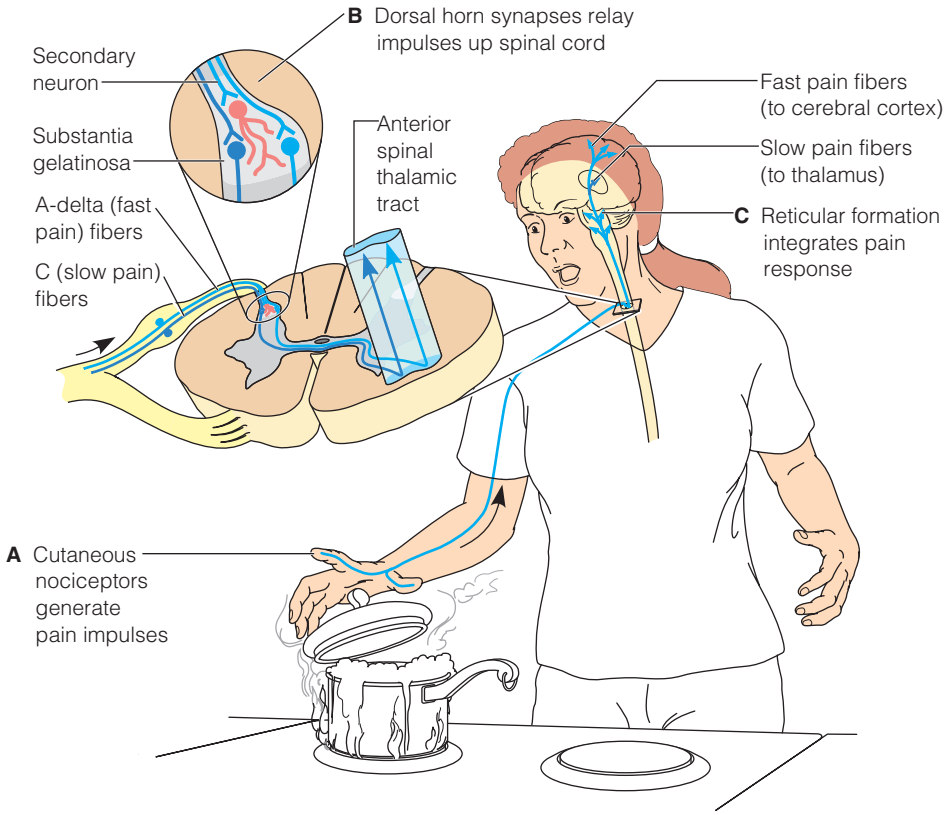


Figure 9–1 ■ *A*, Cutaneous nociceptors generate pain impulses that travel via A-delta and C fibers to the spinal cord's dorsal horn. *B*, Secondary neurons in dorsal horn pass impulses across spinal cord to anterior spinothalamic tract. *C*, Slow pain impulses ascend to the thalamus, while fast pain impulses ascend to the cerebral cortex. The reticular formation in the brainstem integrates the emotional, cognitive, and autonomic responses to pain.

Pain Pathway

The neural pathway of pain is illustrated in Figure 9–1 and is summarized 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 small afferent A-delta and even smaller C nerve fibers to the spinal cord. A-delta fibers are myelinated and transmit impulses rapidly. They produce sharp, well-defined pain sensations, such as those that result from cuts, electric shocks, or the impact of a blow. A-delta fibers are associated with acute pain. C fibers are not myelinated and thus transmit pain impulses more slowly. The pain from deep body structures (such as muscles and viscera) is primarily transmitted by C fibers, producing diffuse burning or aching sensations. C fibers are associated with chronic pain. Both A-delta and C fibers are involved in most injuries. For example, if a person bangs the elbow, A-delta fibers transmit this pain stimulus within 0.1 second. The person feels this pain as a sharp, localized, smarting sensation. One or more seconds after the blow, the person experiences a duller, aching, diffuse sensation of pain impulses carried by the C fibers.
2. Secondary neurons transmit the impulses from the afferent neurons through the dorsal horn of the spinal cord, where they synapse in the substantia gelatinosa. The impulses then cross over to the anterior and lateral spinothalamic tracts.
3. The impulses ascend 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, localized, 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 fibers run from the reticular formation and midbrain to the substantia gelatinosa in the dorsal horns of the spinal cord. Along these fibers, 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 center 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 fueled by *endorphins* (endogenous morphines), 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 (Figure 9–2 ■).

Pain Theories

Several theories explain the response to pain and the diversity of human experiences with pain. The meaning or perception of pain can be modified by past experiences, motivation, attention, personality, and culture. Specificity and pattern theories describe nerve impulses of varying intensity terminating in pain centers in the forebrain. These theories provide explanations of the neurophysiologic basis of pain. In 1965, Melzack and Wall postulated gate-control theory (Porth, 2005). A gating mechanism exists at the spinal cord level where nerve transmission may be blocked by competing impulses. This explains the ability for 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 (Figure 9–3 ■), which regulates impulses entering or leaving the spinal cord, and an inhibitory system within the brain stem.

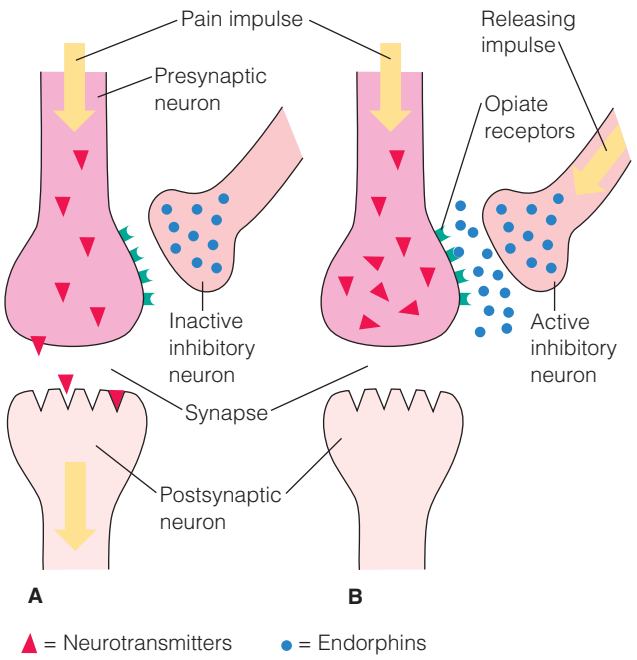


Figure 9–2 ■ *A*, Pain impulse causes presynaptic neuron to release burst of neurotransmitters across synapse. These bind to postsynaptic neuron and propagate impulse. *B*, Inhibitory neuron releases endorphins, which bind to presynaptic opiate receptors. Neurotransmitter release is inhibited, and pain impulse is interrupted.

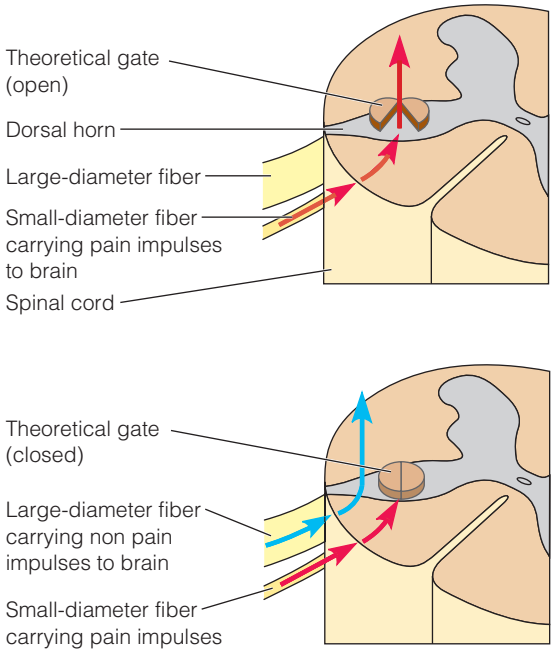


Figure 9–3 ■ The spinal cord component of the gate-control theory. Pain transmission by small-diameter fibers is blocked when large-diameter fibers carrying touch impulses dominate, closing the gate in the substantia gelatinosa.

Small-diameter A-delta and C fibers in the spinal cord carry fast and slow pain impulses. In addition, large-diameter A-beta fibers 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 touch fibers or the small-diameter pain fibers. If impulses along the small-diameter pain fibers outnumber impulses along the large-diameter touch fibers, the gate is open, and pain impulses travel unimpeded to the brain. If impulses from the touch fibers 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, the inhibitory system, is thought to be located in the brain stem. It is believed that cells in the midbrain, activated by a variety of stimuli such as opiates, psychologic factors, or even simply the presence of pain itself, signal receptors in the medulla. These receptors in turn stimulate nerve fibers in the spinal cord to block the transmission of impulses from pain fibers.

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. Tactile information is now known to be transmitted by both large- and small-diameter fibers, and interactions between sensory neurons is known to occur at multiple levels of the CNS. Melzack subsequently developed the neuromatrix theory of pain to integrate cultural and genetic factors with basic neurophysiologic function (Porth, 2005).

One pain theory that is quite significant in clinical terms describes the effect of sensitizing the central and peripheral nervous system to painful stimuli. According to this theory, 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, increase the response to future signals and amplify pain (Dahl & Møiniche, 2004). 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 (Taddio & Katz, 2005). Sensitization occurs from nociceptive barrage as well as inflammation that follows the injury or incision. In adults this theory indicates the value of preventing sensitization as well as treating perceived pain with multi-modal pain therapy. Local and regional anesthesia used in combination with central anesthesia prior to incision to diminish sensitization of these pathways results in significantly reduced consumption of intravenous morphine by patient-controlled analgesia in the 5 days following surgery (Hartrick, 2004).

TYPES AND CHARACTERISTICS OF PAIN

Acute Pain

Acute pain has a sudden onset, is usually temporary, and is localized. Pain that lasts for less than 6 months and has an identified cause is classified as acute pain. The onset is usually sudden, most often resulting from tissue injury from trauma, surgery, or inflammation. The pain is usually sharp and localized, although it may radiate. The three major types of acute pain are as follows:

- *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 well localized, or dull and diffuse. It is often accompanied by nausea and vomiting.
- *Visceral pain* arises from body organs. Visceral pain is dull and poorly localized because of the low number of nociceptors. The viscera are sensitive to stretching, inflammation, and ischemia 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. It may be described as cramping, intermittent pain, or colicky pain.
- *Referred pain* is pain that is perceived in an area distant from the site of the stimuli. It commonly occurs with visceral pain as visceral fibers synapse at the level of the spinal cord, close to fibers innervating other subcutaneous tissue areas of the body (Figure 9–4 ■). 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 43 ∞).

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,

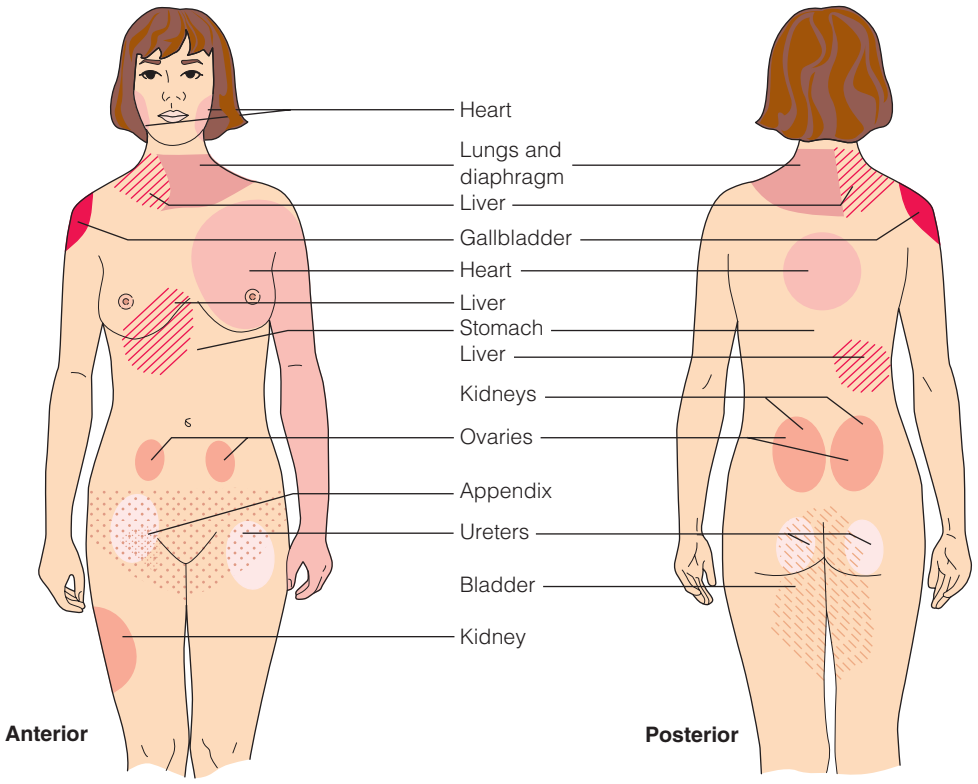


Figure 9–4 ■ Referred pain is the result of the convergence of sensory nerves from certain areas of the body before they enter the brain for interpretation. For example, a toothache may be felt in the ear, pain from inflammation of the diaphragm may be felt in the shoulder, and pain from ischemia of the heart muscle (angina) may be felt in the left arm.

sweating, and pallor. The person experiencing the pain responds to this threat with anxiety and fear. This psychologic response may further increase the physical responses to acute pain.

Chronic Pain

Chronic pain is prolonged pain, usually lasting longer than 6 months. It is not always associated with an identifiable cause. The heart rate and blood pressure may fall within normal ranges due to physiologic adaptation, but hormonal stress responses to pain persist. Chronic pain lowers the pain threshold as a result of the depletion of serotonin and endorphin levels in the neurons; this leads to depression and irritability (Schaffer & Yucha, 2004). Unlike acute pain, chronic pain has a much more complex and poorly understood purpose.

Chronic pain can be subdivided into four categories:

- *Recurrent acute pain* is characterized by relatively well-defined episodes of pain interspersed with pain-free episodes. Examples of recurrent acute pain include migraine headaches and sickle cell crises.
- *Ongoing time-limited pain* is identified by a defined time period. Some examples are cancer pain, which ends with control of the disease or death, and burn pain, which ends with rehabilitation or death.
- *Chronic nonmalignant pain* is non–life-threatening pain that nevertheless persists beyond the expected time for healing. Chronic lower back pain falls into this category.
- *Chronic intractable nonmalignant pain syndrome* is similar to simple chronic nonmalignant pain but is characterized by the person's inability to cope well with the pain and sometimes by physical, social, and/or psychologic disability resulting from the pain.

The client with chronic pain often is depressed, withdrawn, immobile, irritable, and/or controlling. Although chronic pain may range from mild to severe and may be continuous or intermittent, the unrelenting presence of the pain often results in the pain itself becoming the pathologic process requiring intervention. The most common chronic pain condition is lower back pain. Other common chronic pain conditions include the following (McCance & Huether, 2002):

- *Neuralgias* are painful conditions that result from damage to a peripheral nerve caused by infection or disease. Postherpetic neuralgia (following shingles) is an example.
- *Complex regional pain syndrome* is a neuropathic pain that results from nerve damage. It is characterized by continuous severe, burning pain. These conditions follow peripheral nerve damage and present the symptoms of pain, vasospasm, muscle wasting, and vasomotor changes (vasodilation followed by vasoconstriction). Phantom limb pain is an example (Porth, 2005).
- *Hyperesthesias or hyperalgesias* are conditions of oversensitivity to tactile and painful stimuli. Hyperesthesias result in diffuse pain that is usually increased by fatigue and emotional lability.
- *Myofascial pain syndrome* is a common condition marked by injury to or disease of muscle and fascial tissue. Pain results from muscle spasm, stiffness, and collection of lactic acid in the muscle. Fibromyalgia is an example.
- Cancer often produces chronic pain, usually due to factors associated with the advancing disease. These factors include a growing tumor that presses on nerves or other structures, stretching of viscera, obstruction of ducts, or metastasis to bones. The malignant tumor also may mechanically stimulate pain or the production of biochemicals that cause pain. Pain also may be associated with treatments such as chemotherapy and radiation therapy.
- Chronic postoperative pain is rare but may occur following incisions in the chest wall, radical mastectomy, radical neck dissection, and surgical amputation.
- Clients with chronic pain may also suffer from breakthrough pain, incident pain, end-of-dose pain, and acute pain. Breakthrough and incident pain, discussed next, are associated with coughing or activity but may be spontaneous without an identifiable cause. End-of-dose pain refers to an increasing awareness of pain prior to the next scheduled dose of controlled-release analgesia.

Breakthrough Pain

Breakthrough pain is pain that exceeds baseline treated or untreated pain (Svendsen et al., 2005). It is often described as a sudden flare that exceeds the analgesic effect of long-acting pain medications; it is sometimes associated with end of dose of an **analgesic**. Whether the pain is **malignant** or nonmalignant in origin, treated or untreated, breakthrough pain is temporary and often debilitating. An increase in the baseline dose of analgesic to prevent breakthrough or administration of doses timed in relation to patterns of breakthrough may be needed.

Incident pain is a subtype of breakthrough pain. It is predictable pain precipitated by an event or activity such as coughing, changing position, or being touched. Clients at rest sometimes report their pain to the prescriber as very tolerable only to cry out in pain when subsequently attempting to change positions in bed or stand. The pain is experienced when an activity is commenced.

Central Pain

Central pain is related to a lesion in the brain that may spontaneously produce high-frequency bursts of impulses that are perceived as pain. A vascular lesion, tumor, trauma, or inflammation may cause central pain. Thalamic pain is one of the most common types. Thalamic pain is severe, spontaneous, and often continuous. Hyperesthesia (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.

Phantom Pain

Phantom pain is a syndrome that occurs following amputation of a body part. The client experiences pain in the missing body part even though he or she is completely mentally aware that it is gone. This pain may include itching, tingling, or pressure sensations, or it may be more severe, including burning or stabbing sensations. In some cases, the client may describe a sensation that an amputated limb is twisted or cramped. It is thought that this type of pain may be due to stimulation of the

severed nerves at the site of the amputation. Treatment is complex and often unsuccessful.

Psychogenic Pain

Psychogenic pain is experienced in the absence of any diagnosed physiologic cause or event. Typically psychogenic pain involves a long history of severe pain. It is thought that the client's emotional needs prompt the pain sensations. Psychogenic pain is real, and may in turn lead to physiologic changes, such as muscle tension, which may produce further pain. This condition may result from interpersonal conflicts, a need for support from others, or a desire to avoid a stressful or traumatic situation. Depression is often present.

FACTORS AFFECTING RESPONSES TO PAIN

Physical response to pain involves specific and often predictable neurologic 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° to 46° C, the range at which it begins to damage tissue. What varies is the person's *tolerance,* which is based on perception of and reaction to pain. The individualized response to pain is shaped by multiple and interacting factors, including age, sociocultural influences, emotional status, past experiences with pain, the source and meaning of the pain, and the client's knowledge base.

When one describes a person as highly sensitive to pain, one is referring to the person's **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 episodes of pain, fatigue, anger, anxiety, and sleep deprivation. Medications, alcohol, hypnosis, warmth, distraction, and spiritual practices may increase pain tolerance.

Age

Age influences a person's perception and expression of pain. Dangerous misconceptions exist regarding the management of pain in older adults. The foremost misconception is that normal aging decreases neurophysiologic sensitivity to pain. There is no evidence that **nociception** is altered by age. Studies of elderly nursing home residents found daily, persistent pain among them, with 40% of those who reported pain on the first assessment still in pain 60 to 180 days later (Teno et al., 2002). There is evidence of decreased glomerular filtration and decreased activity of the cytochrome P450 system responsible for the activation and metabolism of many opioids (Yarbro et al., 2005). Individual opioids have differing patterns of metabolism, and doses need to be adjusted to accommodate the decline in glomerular filtration rate and specific metabolisms. This response is different from concluding that older adult patients do not perceive pain and therefore have no need for pain medications.

The second and equally damaging belief is one held by nurses. This is the belief that opioids cause excessive respiratory depression in older adults and that pain and discomfort are unavoidable aspects of aging (Closs, 1996). While peripheral vascular disease or diabetes may lead to neuropathy and interfere with normal nerve impulse transmission, neuropathy can manifest as hyperesthesias as well as hypoesthesias. Both of these manifestations cause discomfort. Individuals in this age group may fail to acknowledge pain, believing that pain is inevitable or fearing dependency if they alarm their loved ones (Sheehan & Schirm, 2003).

Often believing that pain is a part of growing older, the client may ignore pain or self-medicate with over-the-counter medications. As a result of these behaviors, the older adult is at increased risk of injury or serious illness. Table 9–2 lists some age-related changes and their effects on pain. Despite the changes, older adults need and tolerate the same dosing formula for intravenous morphine as younger patients without greater adverse effects or sedation (Loran et al., 2005).

Older adult clients may hesitate to ask for pain medicine because they fear narcotic **addiction** and loss of independence. They may not understand the burden of untreated pain and the benefits of regular analgesia (Brown, 2004). Furthermore, assessment of pain in older adults may be difficult when the client is cognitively impaired and has difficulty communicating descriptions of pain. Nurse researchers have found, however, that even some adults with cognitive impairments were able to describe current, usual, or worse pain when a standardized pain scale was used. The MDS pain assessment scale is reportedly easier to administer to older clients than the visual analog scale (Fries et al., 2001).

Delirium in the acutely ill patient and dementia, which occurs in approximately 50% of adults over age 85, are barriers

TABLE 9–2 **Nursing Care of the Older Adult: Age-Related Changes and Their Effects on Pain**

FACTORS RELATED TO AGING	EFFECTS	OUTCOMES
Decreased blood flow	Ischemia, decreases in brain function	Client forgets to take medication
Changes in neurotransmitters related to sleep and mood	Decreased sleep resulting in vulnerability to pain	Greater risk of chronic pain, fatigue, increased withdrawal
Reduced levels of norepinephrine	Lowered transmission of pain	Less likely to notice an injury
Changes in sensory interpretation	Lowered pain sensation	Client may not take appropriate protective action
Decreased peripheral nerve conduction	Lowered response to pain	Not seeking appropriate care
Slowed reaction time	Slower avoidance response	Client receives more serious injury
Reduced movement	Increased risk for muscle wasting	May cause immobility

to assessing pain. Recommended methods for pain assessment include (1) behavioral observations for which no tool has been validated, (2) documenting baseline behavior and activity patterns and monitoring changes that might indicate further pain assessment, and (3) conducting an empiric analgesia trial. The analgesia trial is made in relation to potentially painful procedures or in the presence of known pathology, or when pain is suspected. Acetaminophen 500 mg is administered three to four times daily. A decrease in pain-related behaviors or resumption of usual patterns of activity could suggest that pain is being controlled and that the client may need around-the-clock analgesic administration (Herr, 2002).

Sociocultural Influences

Ethnopharmacology, a developing science, focuses on the effects of ethnicity (the combination of genetics and culture) on drug absorption, metabolism, distribution, and excretion (Munoz & Hilgenberg, 2005). It is important to consider cultural influences in order to effectively assess and treat clients in pain.

Each person's response to pain is strongly influenced by the family, community, and culture. Sociocultural influences affect the way in which a person tolerates pain, interprets the meaning of pain, and reacts verbally and nonverbally to the pain. For example, if the client's family believes that males should not cry and must tolerate pain stoically, the male client often will appear withdrawn and refuse pain medication. If a family encourages open and intense emotional expression, the client may cry freely and appear comfortable requesting pain medication.

Cultural standards also teach an individual how much pain to tolerate, what types of pain to report, to whom to report the pain, and what kind of treatment to seek. For example, clients of northern European ancestry may value "being a good patient," which may cause them to avoid "complaining" about their pain, whereas clients of Jewish ancestry may value seeking information about their pain, which may cause them to discuss their pain often and in detail. Note, however, that behaviors vary greatly within a culture and from generation to generation. The nurse should approach each client as an individual, observing the client carefully, taking the time to ask questions, and avoiding assumptions.

The nurse also has a set of sociocultural values and beliefs about pain. If these values and beliefs differ from those of the client, the assessment and management of pain may be based on the values of the nurse rather than on the needs of the client. The nurse must be familiar with ethnic and cultural diversity in pain expression and management and respect cultural differences. It is particularly important to remember that pain behaviors are not an objective indicator of the amount of pain present for any individual client. Finally, most experts agree that cultural differences in the expression of, response to, and interpretation of the meaning of pain need further research.

Emotional Status

Emotional status influences the pain perception. The sensation of pain may be blocked by intense concentration (during sports activities, for example) or may be increased by anxiety or fear. Pain often is 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 that genuinely care about pain management also may alter emotional status and the perception of pain.

Anxiety may increase the perception of pain, and pain may in turn cause anxiety. In addition, the muscle tension common with anxiety can create its own source of pain. This association explains why nonpharmacologic 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. Depression is clearly linked to pain: Serotonin, a neurotransmitter, is involved in the modulation of pain in the CNS. In clinically depressed people, serotonin is decreased, leading to an increase in pain sensations. The reverse is also true: In the presence of pain, depression is common.

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 the person's response during the next pain episode. If providers respond to pain with effective strategies and a caring attitude, the client 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 client feels that empathetic care was not given, anxiety about the next pain episode sets up the client 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 labor 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 to clients the etiology and prognosis for the pain assessed.

If the client perceives the pain as deserved (e.g., "just punishment for sins"), the client may actually feel relief that the "punishment" has commenced. If the client believes that the pain will relieve him or her from an unrewarding job, dangerous military service, or even stressful social obligations, there may similarly be a feeling of relief. In contrast, pain that is perceived as meaningless—for example, chronic low back pain or the unrelieved pain of arthritis—can cause anxiety and depression.

Knowledge

A lack of understanding of the source, outcome, and meaning of the pain can contribute negatively to the pain experience. The nurse needs to assess the client's readiness to learn, use methods of teaching that are effective for the client 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, encourage clients to communicate preferences for pain relief. Learning how to let significant others know of the presence of pain and how to use their help can also promote effective pain management.

MYTHS AND MISCONCEPTIONS ABOUT PAIN

Myths and misconceptions about pain and its management are common in both healthcare providers and clients. Some of the most common of these myths are included here:

- *Pain is a result, not a cause.* According to the traditional view of pain, pain is only a symptom of a condition. However, it is now recognized that unrelieved or poorly relieved pain itself sets up further responses, such as immobility, anger, and anxiety; pain may also delay healing and rehabilitation.
- *Chronic 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.
- *Narcotic medication is too risky to be used to treat chronic pain.* This common misconception often deprives clients of the most effective source of pain relief. It is true that other methods should be tried first; if, however, they prove ineffective, narcotics should be considered as an appropriate alternative.
- *It is best to wait until a client has pain before giving medication.* It is now widely accepted that anticipating pain has a noticeable effect on the amount of pain a client experiences. Offering pain relief before a pain event is well on its way can lessen the pain.
- *Many clients lie about the existence or severity of their pain.* Very few clients lie about their pain.
- *Postoperative pain is best treated with intramuscular injections.* The most commonly used postoperative pain relief for many years was meperidine (Demerol) given intramuscularly. However, meperidine has many adverse effects, such as irritating tissues and producing the CNS stimulant normeperidine. In addition, meperidine is short acting. Most contemporary experts do not recommend its use to manage postoperative pain (Cohen & Schecter, 2005).
- *Pain relief interferes with diagnosis.* There is a prevailing attitude in the emergency department (ED) that pain relief can interfere with diagnosis. Research about treating pain with analgesics in the ED consistently shows no impact on physical assessment findings or diagnosis (Pasero, 2003). 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 clients, increased vigilance against drug abuse, and the myth that diagnosis is impaired by pain relief.

INTERDISCIPLINARY CARE

Effective pain relief results from collaboration among healthcare providers. Pain clinics are centers staffed by a team of healthcare professionals who use a multidisciplinary approach to managing chronic pain. Therapies may include traditional pharmacologic agents as well as herbs, vitamins, and other dietary supplements; nutritional counseling; psychotherapy; biofeedback; hypnosis; acupuncture; massage; and other treatments. Hospices for dying clients also provide a multifaceted approach to pain management. Chapter 5 provides information about pain management during end-of-life care.

Medications

Medication is the most common approach to pain management. A variety of drugs with many kinds of delivery systems are available. These drugs include nonnarcotic analgesics, nonsteroidal anti-inflammatory drugs (NSAIDs), narcotics, synthetic narcotics, antidepressants, and local anesthetic 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 the medication's effectiveness, and providing client teaching. The nurse's roles in pain relief are those of client advocate and direct caregiver.

The World Health Organization (WHO) "ladder of analgesia" effectively guides the use of medications (WHO, 1986/1990) (Figure 9–5 ■). NSAIDs and narcotic pain medications are used progressively until pain is relieved, reflecting

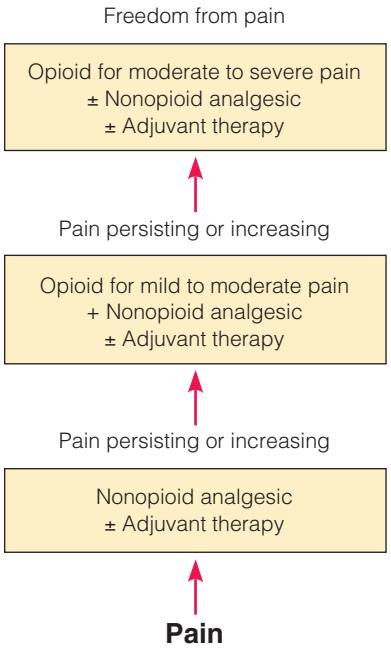


Figure 9–5 ■ The WHO analgesic ladder illustrates the process for selection of analgesic medications for pain management.

From *Cancer Pain Relief and Palliative Care* by World Health Organization, 1990 (Technical Report Series, no. 804) Geneva: WHO. Reprinted by permission.

the interactive nature of these two types of analgesics. Box 9–1 describes terms associated with pain medication.

NONNARCOTIC ANALGESICS Nonnarcotic analgesics such as acetaminophen (Tylenol) produce analgesia and reduce fever. The exaction mechanism of action is unknown. They are used to treat mild to moderate pain. A newer class of centrally acting nonopioid analgesics is used for moderate to moderately severe pain. Included in this class is the widely used tramadol (Ultram). Its analgesic effect is comparable to that of codeine, yet is less powerful than that of morphine. Serious side effects are rare, but do include seizures (Lehne, 2004).

NSAIDS NSAIDs act on peripheral nerve endings and minimize pain by interfering with prostaglandin synthesis. Examples include aspirin and ibuprofen. The NSAIDs have anti-inflammatory, analgesic, and antipyretic actions. NSAIDs are the treatment of choice for mild to moderate pain and continue to be effective when combined with narcotics for moderate to severe pain. Examples of NSAIDs and factors to consider when selecting an NSAID are provided in Table 9–3. The cyclooxygenase-2 (COX-2) selective NSAIDs are newer formulations; although less harmful to gastric mucosa, their usage has been questioned because of cardiac-associated adverse reactions and some have been taken off the market. Nursing implications for NSAIDs are found in the Medication Administration box on the next page.

NARCOTICS (OPIOIDS) Narcotics, or opioids, are derivatives of the opium plant. These drugs (and their synthetic forms) are

TABLE 9–3 **Factors to Consider When Selecting an NSAID**

CHEMICAL CLASS	HALF LIFE (HOURS)	ONSET OF ACTION (HOURS)	USUAL DOSING INTERVAL (TIMES PER DAY)	USUAL DAILY DOSE (MG)
Salicylates				
Acetylated				
Aspirin	0.25	0.25–0.50	4–6	325–1000
Aspirin, buffered				
Aspirin, enteric coated				
Aspirin, sustained release				
Nonacetylated				
Choline salicylate (Arthropan)		1–2	2–4	1200
Choline magnesium trisalicylate (Trilisate)	2–19	2	2–4	1200
Diflunisal (Dolobid)	8–12	2–3	2–3	250–500
Salsalate (Disalcid)	2–19	—	2–3	325–3000
Magnesium salicylate		—	3–4	Various
Sodium salicylate			4–6	Various
Propionic Acids				
Fenoprofen (Nalfon)	2–3	—	3–4	300–600
Flurbiprofen (Ansaid)	5.7	—	2–3	100
Ibuprofen (Motrin, others)	2	0.5	3–4	300–800
Ketoprofen (Orudis)	1.6–4	—	3–4	25–75
Ketoprofen SR (Oruvail)		—	1	200
Naproxen (Naprosyn)	13	1	2	250–500
Naproxen sodium (Anaprox)	13–15	1–2	2	250–500
Oxaprozin (Daypro)	21–25	1–2	1–2	600
Acetic Acids				
Diclofenac sodium (Voltaren)	1.2–2	0.5	3	50
Etodolac (Lodine)	6–7	0.5	3	200–400
Indomethacin (Indocin)	4–6	0.5	2–4	25–50
Indomethacin SR (Indocin SR)	—	2–4		150
Ketoralac (Toradol)	4–6	0.5–1	4–6	10–30
Sulindac (Clinoril, others)	8	—	2	150–200
Tolmetin (Tolectin)	5	—	3	400
Fenamates (Anthranilic Acids)				
Meclofenamate (Meclomen)	2–3	—	3–4	50
Mefenamic acid (Ponstel)	2	—	4	250
Oxicams				
Piroxicam (Feldene)	24	2–4	1–2	10–20
Nonacidic (Naphthylkanone)				
Nabumetone (Relafen)	22	—	1–2	500–1000
Pyrazolones				
Phenylbutazone (Butazolidin)	40–60	0.5–1	3–4	100–600

BOX 9–1 Terms Associated with Pain Medication

- *Addiction:* The compulsive use of a substance despite negative consequences, such as health threats or legal problems.
- *Drug abuse:* The use of any chemical substance for other than a medical purpose.
- *Physical drug dependence:* A biologic need for a substance. If the substance is not supplied, physical withdrawal symptoms occur.
- *Psychologic drug dependence:* A psychologic need for a substance. If the substance is not supplied, psychologic withdrawal symptoms occur.
- *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 pain-killing effect when administered to the same individual. Drug dosages are equianalgesic if they have the same effect as morphine sulfate 10 mg administered intramuscularly.
- *Pseudoaddiction:* Behavior involving drug seeking; a result of receiving inadequate pain relief.

the pharmacologic treatment of choice for moderate to severe pain. Examples are morphine, codeine, and fentanyl (Duragesic, Actiq). Narcotic analgesics produce analgesia by binding to opioid receptors both within and outside the CNS. A summary of narcotic drugs, their usual dosages, peak effect, and nursing implications is provided in Table 9–4.

A common myth among healthcare professionals is that using narcotics for pain treatment poses a real threat of addiction. Actually, when the medications are used as recommended, there is little to no risk of addiction. Rather, if pain is not adequately treated, the client may seek more and more narcotic relief, thus increasing the risk of an adversarial relationship with the provider and a weakening of the trust relationship between client and provider (Trame, 2002) (Box 9–2). Nursing implications for narcotics are found in the Medication Administration box on page 182.

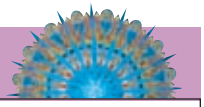
ANTIDEPRESSANTS Antidepressants within the tricyclic and related chemical groups act on the production and retention of serotonin in the CNS, thus inhibiting pain sensation. They also promote normal sleeping patterns, further alleviating the suffering of the client in pain. They are useful with neuropathic pain.

ANTICONVULSANTS Similar to antidepressants, some seizure medications such as gabapentin (Neurontin) and carbamazepine (Tegretol) are useful with neuropathic pain, including shingles (herpes zoster), migraine headaches, and diabetic neuropathic pain. These drugs reduce pain and sleep disruption. Drugs that are primarily used to treat epilepsy (seizures) have been used to treat nerve pain conditions and migraine headache for several decades. Many anticonvulsant drugs have been shown in clinical studies to be effective.

LOCAL ANESTHETICS Drugs such as benzocaine and xylocaine are part of a large group of substances that block the initiation and transmission of nerve impulses in a local area, thus blocking pain as well. They are sometimes used to enable a client to begin moving and using a painful area to diminish long-term pain.

Local anesthetics can be delivered by a variety of methods. Delivery can be made directly to the sheath of a nerve through a peripheral nerve catheter. During surgery, a soaker-type catheter can be inserted along a surgical incision to deliver local relief; this method may decrease the need for opioids and allow the client to resume activity sooner (D'Arcy, 2005).

MEDICATION ADMINISTRATION Nonsteroidal Anti-Inflammatory Drugs



Examples of NSAIDs are:
aspirin (acetylsalicylic acid)
fenoprofen calcium (Nalfon)
ibuprofen (Motrin)
rofecoxib (Vioxx)
diflunisal (Dolobid)
ketorolac tromethamine (Toradol)
naproxen (Naprosyn)
indomethacin (Indocin)

The NSAIDs have anti-inflammatory, analgesic, and antipyretic effects. It is believed that they inhibit the enzyme cyclooxygenase, thereby decreasing synthesis of prostaglandins. These drugs provide analgesic effects by reducing inflammation and by perhaps blocking the generation of noxious impulses.

Nursing Responsibilities

- Do not administer aspirin with other NSAIDs.
- Assess and document if the client is taking a hypoglycemic agent or insulin; the NSAIDs may increase the hypoglycemic effect.
- Administer with meals, milk, or a full glass of water to decrease gastric irritation.
- Assess clients who are also taking anticoagulants for bleeding; the NSAIDs increase this risk.

Health Education for the Client and Family

- Drugs may cause gastrointestinal bleeding (report nausea, vomiting of blood, dark stools), visual disturbances (report blurred or diminished vision), hearing problems, dizziness, skin rash, and renal problems (report weight gain or edema).
- Take medications with meals to decrease gastric irritation.
- Avoid drinking alcohol or taking any over-the-counter drug unless approved by the healthcare provider.
- The desired effects may not appear for 3–5 days, and the full effects may not appear for 2–4 weeks.
- Maintain regular healthcare appointments.

TABLE 9–4 **Equianalgesic Drug Chart**

ANALGESIC	DOSAGE (MG)	PEAK (MIN)	DURATION (H)	NURSING CONSIDERATIONS
Morphine sulfate	10 IM 30–60 PO	30–60 IM 60–120 PO	4–5 IM 4–5 PO	PO dose is 3–6 times the IM dose. A lower dose may be appropriate for older clients with chronic pain. Contraindicated in clients with acute bronchial asthma or upper airway obstruction.
Butorphanol tartrate (Stadol)	2 IM N/A PO	30–60 IM	3–4 IM	May cause withdrawal in clients physically dependent on narcotics. May cause hallucinations. Increases cardiac workload. Contraindicated in clients with myocardial infarction.
Codeine	130 IM 200 PO	30–60 IM 60–120 PO	4 IM 4 PO	PO dose is about 1.5 times the IM dose. Often given synergistically with aspirin or acetaminophen for best effect. More toxic in high doses than morphine. Causes more nausea and vomiting than morphine and is constipating.
Hydromorphone HCl (Dilaudid)	1.5 IM 7.5 PO	15–30 IM 30 PO	4 IM 4 PO	PO dose is 5 times IM dose. Shorter acting than morphine. May cause loss of appetite. Contraindicated in clients with increased intracranial pressure or status asthmaticus.
Levorphanol tartrate (Levo-Dromoran)	2 IM 4 PO	60 IM 90–120 PO	4–5 IM 4–5 PO	Longer acting than morphine when given in repeated, regular doses. Accumulates, so analgesic effect may increase. SC recommended over IM route. Warn client drug has bitter taste. Contraindicated in clients with respiratory depression, asthma, alcoholism, or increased intracranial pressure.
Meperidine HCl (Demerol)	75 IM 300 PO	30–50 IM 60–90 PO	2–4 IM 2–4 PO	Metabolized to normeperidine, a toxic CNS stimulant that may cause CNS hyperexcitability. Normeperidine's effects increased, not reversed, by naloxone. Use with caution in clients with renal disease. PO dose of 300 not recommended.
Methadone HCl (Dolophine)	10 IM 20 PO	60–120 IM 90–120 PO	4–6 IM 4–6 PO	Initial PO dose is twice IM dose. Accumulates, so analgesic effect may increase. Warn client drug has bitter taste. Also used for heroin detoxification and temporary maintenance. Oral liquid form is legally required in maintenance programs.
Nalbuphine HCl (Nubain)	10 IM N/A PO	30–60 IM	3–6 IM	Longer acting and less likely to cause hypotension than morphine. Respiratory depression does not increase with increased dosages as compared to morphine. Similar to butorphanol, but does not increase cardiac workload.
Oxycodone HCl	N/A IM 30 PO	60 PO	3–6 PO	Available as a single-entity product in tablet or liquid form. Also available in 5-mg dose in drugs such as Percodan and Percocet. Has faster onset and higher peak effect than most PO narcotics.
Oxymorphone HCl (Numorphan)	1–1.5 IM N/A PO	30–60 IM	3–6 IM	Also available as rectal suppository (10 mg equianalgesic), but more effective if given IM.
Pentazocine HCl	60 IM 180 PO	30–60 IM 30–90 PO	3–4 IM 3–4 PO	PO dose is 3 times IM dose. May produce withdrawal in clients physically dependent on narcotics. May cause confusion, hallucinations, anxiety. Contraindicated in clients with head injury or increased intracranial pressure. Use with caution in clients with cardiac problems.
Propoxyphene HCl (Darvon)	N/A IM 500 PO	120 PO	4–6 PO	Available only in oral form in United States. Never give as much as 500 mg PO. PO dose of 65–130 mg recommended. Used for mild to moderate pain. May cause false decreases in urinary steroid excretion tests. Report suspected propoxyphene abuse; propoxyphene in excessive doses ranks second to barbiturates as a cause of drug-related deaths.

Note: Morphine sulfate 10 mg IM is the analgesic dose to which all other IM and PO doses in this table are considered equianalgesic.

BOX 9–2 Pain Management and Drug Abuse History

Clients addicted to pain relievers often experience inadequate dosing of medications for pain. When providers suspect or learn of drug abuse, they tend to order lower doses than they would for a person of similar size and injury. Despite significant data showing very little addiction as the result of treating pain with adequate analgesia, prescribers still undertreat pain in clients with addictions. Addiction is a neurophysiologic disease; when clients with addiction have injuries they usually need greater doses of pain medication because of the tolerance they have developed from repeated exposure to opioids. Even clients without an addiction may exhibit behaviors suggesting addiction when pain is undertreated (Trame, 2002).

Cook et al. (2004) report an experiment to evaluate provider attitudes about prescribing analgesics for those in acute pain with a history of drug abuse. They sent questionnaires to 745 physicians in one county and received 120 responses. Sixty-six of the responders received the case of a seriously burned client with no mention of addiction; 54 responders received the case of an acutely burned client with heroin addiction. The physicians were provided the same selection of analgesics and dosages for both clients in the case studies. The physicians' prescribing practices were significantly different for the two clients; the client with heroin addiction was prescribed significantly more nonopioid analgesics than the nonaddicted client. Furthermore, there was no significant difference in the dosages prescribed for the two clients despite the risk for greater tolerance to opiates by the heroin-addicted client. The authors suggest that prescribers may be uninformed about the pathophysiology of addiction and increased need for analgesia in addiction. They also observe that analgesics may be rationed to addicted persons in an effort to wean them from their addiction. During the acute stress of injury or infection, however, withholding pain medication is an added stressor. The client will benefit from detoxification and recovery management after the acute phase is over. Nurses attempting to advocate for the comfort needs of an addicted client may encounter increased resistance without good explanations. This creates an ethical as well as a professional dilemma.

Providing analgesics for a client with chronic pain who has a history of addiction or ongoing addiction may be even more challenging. Clients may be fearful that their pain will be undertreated or that addiction will return or increase if the pain is treated with opioids (Compton & Athanasos, 2003). It is important to clearly communicate all needed information about medications and accessibility to providers. Dose escalation may be monitored with careful assessment and random urine screens. Treatment for addiction should be included in the care plan to minimize the risk of addiction or relapse.

BISPHOSPHONATES AND RADIOPHARMACEUTICALS These medications target malignant tumors growing in bone. Referred to as *osseous metastases*, these expanding, painful tumors impair function. Bisphosphonates stabilize bone, slowing or preventing the development of tumors, and have a pain-relieving benefit which exceeds that of steroids and NSAIDs. Pamidronate is effective with breast cancer metastases and multiple myeloma; a newer generation bisphosphonate, zoledronic acid, is useful with bony metastases secondary to lung, prostate, renal cell, and other solid tumors (Cahill, 2005).

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. The most commonly used is samarium-153 (Quadramet). A flare reaction may follow administration; it is a temporary increase in bony pain prior to the therapeutic response. More serious side effects include myelosuppression from radiation of adjacent bone marrow and disseminated intravascular coagulation (DIC) (Silberstein et al., 2001). These treatments may be given intravenously or orally. Care of clients treated with radiopharmaceuticals must follow radiation precautions, disposing of all body fluids quickly and thoroughly.

DURATION OF ACTION Each of the pharmacologic agents has a unique absorption and duration of action. The nurse caring for the client in pain must understand that no drug will have a totally predictable course of action, because each person absorbs, metabolizes, and excretes medications at different dosage levels. The only way to obtain reliable data about the effectiveness of the medication for the individual client is to assess how that client responds. Therefore, the best choice is to individualize the dosing schedule.

The two major descriptors of dosing schedules are around-the-clock (ATC) or as necessary (PRN), meaning *pro re nata*, Latin for "as circumstances may require.") ATC administration is appropriate if the client experiences pain constantly and predictably during a 24-hour period. In contrast, prn administration is appropriate for pain that is not predictable or constant. 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 is planned. PRN dosing is also appropriate when the expected direction of ATC doses falls short. Dosing with short-acting opioids for this type of pain should be administered as needed in addition to the ATC dose for chronic, persistent pain (Ferrell, 2000).

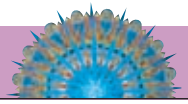
Giving analgesics before the pain occurs or increases gives the client confidence in the certainty of pain relief and thereby avoids some of the untoward effects of pain. The benefits of a preventive approach can be summarized as follows:

- The client 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 client's fear and anxiety about the return of pain will decrease.
- The client will probably be more physically active and avoid the difficulties caused by immobility.

The side effects of a drug can become difficult to manage if the dosage is too high, and clients may suffer unnecessary pain because of reluctance to endure side effects. The best formula for adequate dosage is a balance between effective pain relief

MEDIALINK Morphine Animation

MEDICATION ADMINISTRATION Narcotic Analgesics



Examples of narcotic analgesics are:
buprenorphine HCl (Buprenex)
codeine
hydromorphone HCl (Dilaudid)
meperidine HCl (Demerol)
morphine sulfate
nalbuphine HCl (Nubain)
oxycodone
oxymorphone HCl (Numorphan)
pentazocine (Talwin)
propoxyphene napsylate (Darvocet-N)

Narcotic analgesics are used to treat severe pain. The drugs in this category include opium 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. Narcotic analgesics affect the central nervous system, causing analgesia, euphoria, drowsiness, mental clouding, and lethargy. They also have various other effects: Depending on the drug used, the narcotics depress respirations, stimulate the vomiting center, depress the cough reflex, induce peripheral vasodilatation (resulting in hypotension), constrict the pupil, and decrease intestinal peristalsis. The narcotics are addictive, causing psychologic and physical dependence.

NURSING RESPONSIBILITIES

- Narcotics are regulated by federal law; the nurse must record the date, time, client name, type and amount of the drug used, and sign the entry in a narcotic inventory sheet. If the drug must be wasted after it is signed out, the act must be witnessed and the narcotic sheet signed by the nurse and the witness. Computerized narcotic documentation methods are also available.
- Keep a narcotic antagonist, such as naloxone, immediately available to treat respiratory depression.
- Assess allergies or adverse effects from narcotics previously experienced by the client.
- Meperidine (Demerol) is associated with CNS toxicity and thus involves significant patient risk. For any client who is receiving more than one dose, monitor for nervousness, restlessness, tremors, twitching, shakiness, myoclonic jerks, diaphoresis, changes in level of awareness, agitation, disorientation, confusion, delirium, hallucinations, violent shivering, and/or seizures. This toxicity can occur with any route of administration or any dosing regimen. This risk is increased with oral administration and in clients with decreased renal function (including normal changes with aging). Report these manifestations to the physician.
- Assess for any respiratory disease, such as asthma, that might increase the risk of respiratory depression.
- Assess the characteristics of the pain and the effectiveness of drugs that have been previously used to treat the pain.
- Take and record baseline vital signs before administering the drug.
- Administer the drugs, following established guidelines.
- Monitor vital signs, level of consciousness, papillary response, nausea, bowel function, urinary function, and effectiveness of pain management.
- Teach noninvasive methods of pain management for use in conjunction with narcotic analgesics.
- Provide for client safety.

HEALTH EDUCATION FOR THE CLIENT AND FAMILY

- The use of narcotics 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 fiber in the diet to prevent constipation.
- The drugs often cause dizziness, drowsiness, and impaired thinking; use caution when driving or making decisions.
- Report decreasing effectiveness or the appearance of side effects to the physician.

and minimal side effects. Within prescribed limits, the nurse can choose the correct dose according to the client's response. It is also the role of the nurse to inform the physician if the prescribed dosage does not meet the client's needs.

ROUTES OF ADMINISTRATION The route of administration significantly affects how much of the medication is needed to relieve pain. For example, oral doses of some narcotics must be up to five times greater than parenteral doses to achieve the same degree of pain relief. Different narcotics have different recommended dosages. Consulting an equianalgesic dosage chart helps ensure that dosages of different narcotics administered by different routes will have the same analgesic effect when administered to the same client. Dosage for transitioning from intravenous or oral analgesia to transdermal application is determined by using equianalgesic data. These charts are based on a comparison of an analgesic to 10 mg (IM) of morphine. Table 9–4 is an example of an equianalgesic chart.

Oral The simplest route for both client and nurse is the oral (PO) route. Special nursing care is still required, because some medications must be given with food, some are irritating to the gastrointestinal system, and some clients have trouble swallowing pills. Liquid and timed-release forms are available for special applications.

Rectal The rectal route is helpful for clients who are unable to swallow. Several of the opioid narcotics are available in this form. The rectal route is effective and simple, but the client and family may not accept it. To be effective, any rectal medication must be placed above the rectal sphincter.

Transdermal The **transdermal**, or "patch," form of medication is increasingly being used because it is simple, painless,

Figure 9–6 ■ The transdermal patch administers medication in predictable doses.

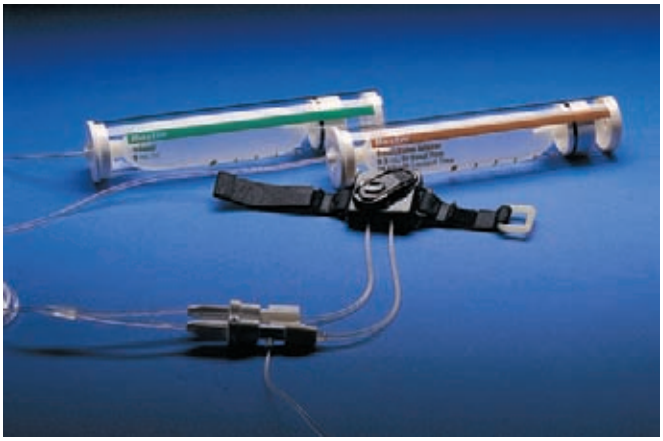


Figure 9–7 ■ PCA units allow the client to self-manage severe pain. The units may be portable or mounted on intravenous poles.
Courtesy of Baxter Healthcare Corporation.

and delivers a continuous level of medication (Figure 9–6 ■). Transdermal medications are easy to store and apply. Reapplication every 72 hours enhances compliance. Additional short-acting medication is often needed for breakthrough pain. Overdosage can occur as well with this route. It is important to start with a low dose and **titrate** (which means to increase or decrease dose in small increments) to the effective level. It is lipid soluble and may be stored in fat cells longer than expected. Monitor level of sedation and respiratory effort.

To apply a medication transdermally, the nurse or client must clip any hair from the area, clean the site (which should be on the upper torso) with clear water, dry the cleansed area, apply the patch immediately upon opening the package, and ensure that the contact is complete, especially around the edges. The effectiveness of a patch lasts about 72 hours, and the next patch should be applied on a different site. When first applying a transdermal medication, expect 12 to 24 hours until therapeutic level is absorbed; similarly, when discontinuing expect a gradual decline in level because of medication reservoir in the skin. When the client has fever or inflammation of the skin, expect increased rate of absorption. Exercise and use of electric blankets or heating pads also may accelerate absorption.

Intramuscular Once the most popular route for pain medication administration, the intramuscular (IM) route is being reconsidered. Its disadvantages include uneven absorption from the muscle, discomfort on administration, and time consumed to prepare and administer the medication.

Intravenous The intravenous (IV) route provides the most rapid onset, usually ranging from 1 to 15 minutes. Medication can be given by drip, bolus, or patient-controlled analgesia (PCA), a pump with a control mechanism that affords the client self-management of pain (Figure 9–7 ■). The advantages of PCA are dose precision, timeliness, and convenience. The patient does not have to wait for a nurse to assess the need for pain medication, then procure and deliver the analgesia (Strassels et al., 2005). Respiratory depression and sedation are minimized when plasma levels of opioids are steady (Lehne, 2004). PCA, especially with basal dosing (continuous infusion of a very small dose), facilitates frequent small dosing. Several drugs are available for this route. The disadvantages are the nursing care needed for any intravenous line, the potential for infection, and the cost of disposable supplies. The PCA method of administration requires careful client teaching and monitoring.

Subcutaneous The subcutaneous (SC) route is accepted, but it is less commonly used than other methods. Its advantages and disadvantages are similar to those of the intramuscular route.

Epidural The epidural route is invasive and requires more extensive nursing care but may provide better analgesia and postoperative recovery than intravenous delivery. When a combination of local anesthetics and opioids is infused by the epidural route, patients experience better pain relief, earlier bowel recovery, earlier mobility, and decreased length of hospital stay than with the intravenous route (Mann et al., 2003). See page 184 for nursing implications for clients receiving epidural analgesia.

Nerve Blocks In a nerve block, anesthetics, sometimes in combination with steroidal anti-inflammatory drugs, are injected by a physician or nurse anesthetist into or near a nerve, usually in an area between the nociceptor and the dorsal root. 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 site of the source of the pain.

Temporary (local) nerve blocks may give the client enough relief to (1) develop a more hopeful attitude that pain relief is possible, (2) allow local procedures to be performed without causing discomfort, or (3) exercise and move the affected part. Nerve blocks may also be performed to predict the results of neurosurgery. For long-term pain relief, a permanent neurolytic agent is used. Neurolytic blocks usually are reserved for terminally ill clients because of the risks of weakness, paralysis, and bowel and bladder dysfunction.

Surgery

As a pain relief measure, surgery usually is performed only after all other methods have failed. Clients need thorough knowledge of the implications of the use of surgery for pain relief. For

NURSING CARE OF THE CLIENT Receiving Intraspinal Analgesia

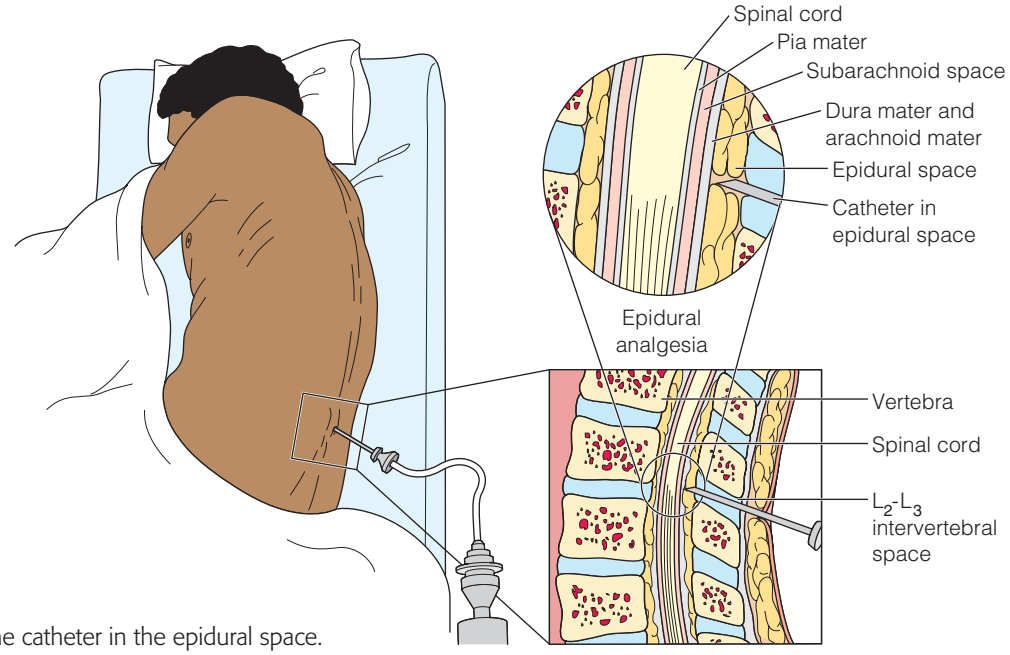
Intraspinal analgesia is used to manage chronic and intractable cancer and severe postoperative pain. The intraspinal route may be either intrathecal (into the subarachnoid space) or epidural (into the epidural space). With the infusion of a narcotic into these spaces, there is a direct effect on the opiate receptors in the dorsal horn of the spinal cord; the narcotics are also absorbed systemically and affect the brain. This method provides complete pain relief but has some potentially dangerous side effects.

PROCEDURE

The physician places a catheter into the epidural space. Tubing is attached to an infusion pump, and the prescribed medication is administered. A portable or implantable pump may be used for narcotic administration that lasts more than a few days.

NURSING CARE

- Monitor vital signs every 15 minutes for the first 2–3 hours and every hour for the first 24 hours; the client is at risk for respiratory depression, which may not manifest itself for several hours.
- Ensure that naloxone, a narcotic antagonist, is immediately available to reverse respiratory depression.
- Monitor the effectiveness of the pain management.
- Monitor intake and output. Intraspinal narcotics may block the micturition reflex, causing urinary retention and necessitating the insertion of a Foley catheter.
- Use sterile technique to care for the catheter.



Placement of the catheter in the epidural space.

example, motor function loss is an unwelcome side effect of some surgeries. Surgical procedures used to relieve pain are shown in Figure 9–8 ■ and include the following:

CORDOTOMY 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 radio-frequency current.

NEURECTOMY 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.

SYMPATHECTOMY The sympathetic nerves play an important role in producing and transmitting the sensation of pain. A *sympathectomy* involves destruction by injection or incision of the ganglia of sympathetic nerves, usually in the lumbar region or the cervicodorsal region at the base of the neck.

RHIZOTOMY A *rhizotomy* is surgical severing of the dorsal spinal roots. It is most often performed to relieve the pain of cancer of the head, neck, or lungs. A rhizotomy may be performed not only by surgically cutting the nerve fibers but also by injecting a chemical such as alcohol or phenol into the subarachnoid space or by using a radio-frequency current to selectively destroy pain fibers.

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 client as directed by the physical therapist (Figure 9–9 ■). The client experiences a gentle tapping or vi-

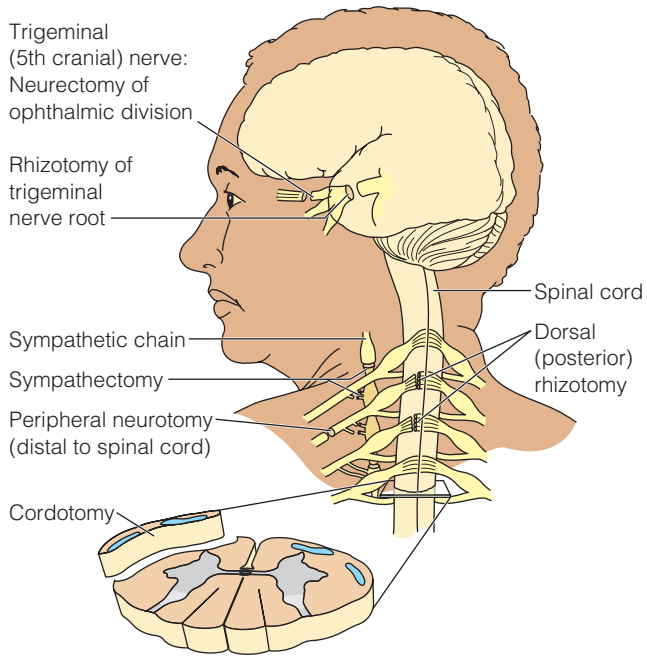


Figure 9–8 ■ Surgical procedures are used to treat severe pain that does not respond to other types of management. They include cordotomy, neurectomy, sympathectomy, and rhizotomy.

brating sensation over the electrodes. The client can adjust the voltage to achieve maximum pain relief.

The gate-control theory clarifies how TENS works. It is believed that TENS electrodes stimulate the large-diameter A-beta touch fibers to close the gate in the substantia gelatinosa. It is also theorized that TENS stimulates endorphin release by inhibitory neurons.

A TENS unit is most commonly used to relieve chronic benign pain and acute postoperative pain. In either case, thorough client teaching is essential, including an explanation of manufacturer's directions, instructions on where to place the electrodes, and the importance of placing the electrodes on clean, unbroken skin. The client should assess the skin daily for signs of irritation.

TENS offers several advantages: avoidance of drug side effects, client control, and good interaction with other therapies. Disadvantages are its cost and the need for expert training for initiation.

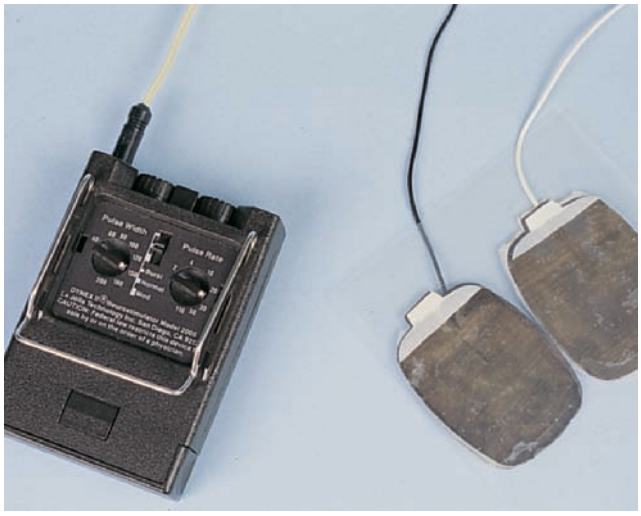


Figure 9–9 ■ The TENS unit is believed to assist in pain management through the gate-control theory. Electrodes that deliver low-voltage electrical stimuli are placed directly on the client over painful areas.

Source: Rehabilicare, Inc./Complex Technologies.

Complementary Therapies

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. Acupuncture is becoming a more widely accepted therapy, especially for the treatment of pain.

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

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

HYPNOTISM Hypnosis is a trance state in which the mind becomes extremely suggestible. To achieve hypnosis, the client sits or lies down in a dimly lit, quiet room. The therapist suggests that the client relax and fix attention on an object. The therapist then repeats in a calm, soothing voice simple phrases, such as instructions to relax and listen to the therapist's voice. The client gradually becomes more and more relaxed and falls into a trance in which the client is no longer aware of the physical environment and hears only the therapist's voice. During this state, the therapist may make suggestions to encourage pain relief. It is possible to achieve complete anesthesia or to modify pain in a variety of ways through hypnotism. For the technique to work, however, the client must be fully relaxed and must want to be hypnotized.

Advantages include client control and lack of side effects. Disadvantages include the need for a skilled practitioner. However, some clients can learn to hypnotize themselves to achieve pain relief.

RELAXATION Relaxation involves learning activities that deeply relax the body and mind. Relaxation distracts the client, lessens the effects of stress from pain, increases pain tolerance, increases the effectiveness of other pain relief measures, and increases perception of pain control. In addition, by teaching the client relaxation techniques, the nurse acknowledges the client's pain and provides reassurance that the client will receive help in

managing the pain (Schaffer & Yucha, 2004). Examples of relaxation activities include:

- *Diaphragmatic breathing* can relax muscles, improve oxygen levels, and provide a feeling of release from tension. The use of diaphragmatic breathing is more effective when the client either lies down or sits comfortably, remains in a quiet environment, and keeps the eyelids closed. Inhaling and exhaling slowly and regularly are also helpful. The technique for diaphragmatic breathing is described and illustrated in Chapter 4 ∞.
- *Progressive muscle relaxation* may be used alone or in conjunction with deep breathing to help manage pain. The client 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 client should repeat these actions for all parts of the body. This method is also more effective when the client lies or sits comfortably, is in a quiet environment, and keeps the eyelids closed. Tapes are available to help the client with this relaxation process.
- *Guided imagery*, also called creative visualization, 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 client must be able to concentrate, use the imagination, and follow directions. The nurse can facilitate this technique by asking the client for some descriptions of what the client finds most relaxing. The nurse then speaks to the client in a calm, soothing voice about those places or situations. The client usually must close the eyes to reduce visual stimulation so that the mind can picture the situation in as much detail as possible. Tapes are available to assist the client with guided imagery.
- *Meditation* is a process whereby the client 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. A variety of exercises can induce the meditative state, and all are relatively easy to learn. Many books and tapes are available commercially.

DISTRACTION Distraction involves the redirection of the client's attention away from the pain and onto something that the client finds more pleasant. Examples of distracting activities are practicing focused breathing, listening to music, or doing some form of rhythmic activity to music. For example, the client using recorded music for distraction may sing along with the song, tap out the rhythm with the fingers or foot, clap to the music, conduct the music, or add harmony. Full participation in the music is key to pain relief.

Participating in an activity that promotes laughter, such as reading a joke book or viewing a comedy, has been found to be highly effective in pain relief. Laughing for 20 minutes or more is known to produce an increase in endorphins that may continue pain relief even after the client stops laughing.

CUTANEOUS STIMULATION It is believed that stimulation of the skin is effective in relieving pain because it prompts closure of the gate in the substantia gelatinosa. Cutaneous stimulation may be accomplished by massage, vibration, application of heat and cold, and therapeutic touch.

MEDIALINK Case Study: Assessing the Client in Pain

NURSING CARE

Nursing care of the client with pain presents perhaps more of a challenge than almost any other type of illness or injury. Regardless of the type of pain, the goal of nursing care is to assist the client to achieve optimal control of the pain. See the Nursing Care Plan: A Client with Chronic Pain on page 191.

Assessment

A comprehensive approach to pain assessment is essential to ensure adequate and appropriate interventions. The four assessment areas are client perceptions, physiologic responses, behavioral responses, and the client's attempts to self-manage the pain.

Client Perceptions

The most reliable indicator of the presence and degree of pain is the client's own statement about the pain. The McGill Pain Questionnaire is a useful tool in assessing the client's subjective experience of the pain. It asks the client 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 (Figure 9–10 ■). Several tools are available to assess specific pain qualities (Brunton, 2004; Jensen, 2006).

The client's perception of the pain can also be assessed by using the PQRST technique (Jimenez, 1998):

- P = What precipitated (triggered, stimulated) the pain? Has anything relieved the pain? What is the pattern of the pain?
- Q = What are the quality and quantity of the pain? Is it sharp, stabbing, aching, burning, stinging, deep, crushing, viselike, gnawing?
- R = What is the region (location) of the pain? Does the pain radiate to other areas of the body?
- S = What is the severity 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 client's life?

The most common method to assess the severity of pain is a pain rating scale. Several scales are illustrated in Figure 9–11 ■. For clients who do not understand English or numerals, a scale using colors (e.g., light blue for no pain through bright red for worst possible pain) or pictures may be helpful. The following nursing interventions will help the nurse use a pain rating scale to achieve optimal results:

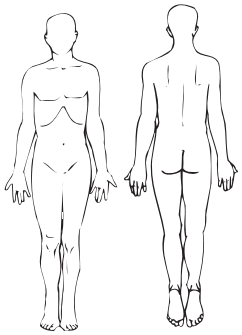
- To ensure consistent communication, explain the specific pain rating scale being used. If a word descriptor scale is used, verify that the client can read the language being used. If a numerical scale is used, be sure the client can count to 10. If the client is not able to report pain because of communication difficulties, intubation, emotional disturbances, or cognitive impairments, follow these guidelines (Pasero & McCaffery, 2000):
  - Be sure the client is unable to report pain. Researchers have found that even nursing home residents with cognitive impairments can validly self-report pain (Horgas & Elliott, 2004).
  - Consider pathologic conditions and procedures that might cause pain and treat the client for pain.

McGill Pain Questionnaire

Client's Name _____ Date _____ Time _____ AM/PM

PRI: S _____ (1–10) A _____ (11–15) E _____ (16) _____ (17–20) PRI(T) _____ (1–20) PPI _____

1	Flickering Quivering Pulsing Throbbing Beating Pounding	11	Tiring Exhausting	Brief Momentary Transient	Rhythmic Periodic Intermittent	Continuous Steady Constant
2	Jumping Flashing Shooting	12	Sickening Suffocating			
3	Pricking Boring Drilling Stabbing Lancinating	13	Fearful Frightful Terrifying			
4	Sharp Cutting Lacerating	14	Punishing Grueling Cruel Vicious Killing			
5	Pinching Pressing Gnawing Cramping Crushing	15	Wretched Blinding			
6	Tugging Pulling Wrenching	16	Annoying Troublesome Miserable Intense Unbearable			
7	Hot Burning Scalding Searing	17	Spreading Radiating Penetrating Piercing			
8	Tingling Itchy Smarting Stinging	18	Tight Numb Drawing Squeezing Tearing			
9	Dull Sore Hurting Aching Heavy	19	Cool Cold Freezing			
10	Tender Taut Rasping Splitting	20	Nagging Nauseating Agonizing Dreadful Torturing			
		PPI 0 No Pain 1 Mild 2 Discomforting 3 Distressing 4 Horrible 5 Excruciating				



E = External
I = Internal

Comments:

Figure 9–10 ■ The McGill Pain Questionnaire.

From *Pain Measurement and Assessment* by R. Melzack, 1983, New York: Raven. Reprinted by permission.

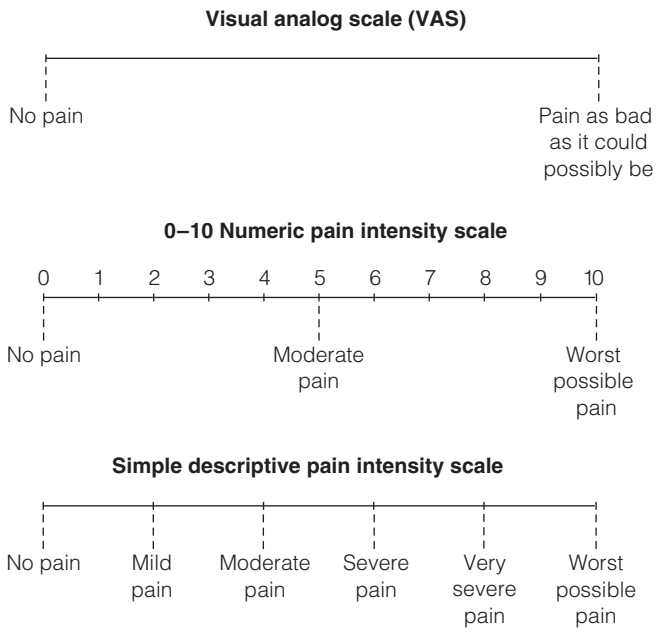


Figure 9–11 ■ Examples of commonly used pain scales.

- Look for indicators of pain, such as grimacing, restlessness, stillness, verbal or nonverbal vocalizations, and holding on to an object tightly (Horgas & Elliott, 2004).
- Ask a family member or caretaker if they suspect the client is having pain to serve as a proxy pain rating.

- Discuss the definition of the word *pain* to ensure that the client and the provider are communicating on the same level. It is often helpful to use the client's own words when describing the pain.
- Explain that the report of pain is important for promoting recovery, not just for achieving temporary comfort.
- Ask the client 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. Often, pain assessment is made while a client is sedentary. In this state the client may experience less pain than when active and falsely estimate tolerable pain ratings. Provide guidelines for setting goals. Researchers found that pain ratings higher than 3 (scale of 0–10) interfered significantly with patients' activities, and scores of 6 and 7 decrease quality of their life (Slaughter et al., 2002).

MEDIALINK Care Plan Activity: The Client in Pain

Physiologic Responses

Predictable physiologic changes occur in the presence of acute pain. These may include muscle tension; tachycardia; rapid, shallow respirations; increased blood pressure; dilated pupils; sweating; and pallor. Over time, however, the body adapts to the pain stimulus, and these physiologic changes may be extinguished in clients with chronic pain.

Behavioral Responses

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

Behavioral responses to pain may or may not coincide with the client's report of pain and are not very reliable cues to the pain experience. For example, one client may rate pain at an 8 on a 1–10 scale while laughing or walking down the hall; another may deny pain completely while tachycardic, hypertensive, and grimacing. Discrepancies between the client's report of pain and behavioral responses may be the result of cultural factors, coping skills, fear, denial, or the utilization of relaxation or distraction techniques.

Clients may deny pain for a variety of reasons, including fear of injections, fear of drug/narcotic addiction, misinterpretation of terms (the client may not think that aching, soreness, or discomfort qualify as pain), or the misconception that healthcare providers know when clients experience pain. Some clients may deny pain as part of an attempt to deny that there is something wrong with them. Other clients, by contrast, may think that "as-needed" medications will be given only if their pain rating is high. Clients may also use pain as a mechanism to gain attention from family and healthcare providers.

Self-Management of Pain

The client's attempts to manage pain are useful additions to the assessment database. This information is individualized and client specific, including many factors such as culture, age, and client knowledge. Get detailed descriptions of actions the client or significant others took, when and how these measures were applied, and how well they worked.

Nursing Diagnoses and Interventions

The primary nursing diagnoses for clients in pain are acute pain and chronic pain. The interventions for these diagnoses are combined in this discussion.

Acute Pain or Chronic Pain

- Assess the characteristics of the pain by asking the client to:
  - Point to the pain location or mark the pain location on a figure drawing. *Pain location provides information about the etiology of the pain and the type of pain being experienced.*
  - Rate the intensity of the pain by using a pain scale (1 to 10, with 10 being the worst pain ever experienced), a visual analog 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). 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 client's degree of concentration or distraction, state of consciousness, and expectations. Some body tissues are more sensitive than others.*

PRACTICE ALERT
Do not assume that the older client or the client with a cognitive impairment is not having pain or is unable to identify its intensity.

  - Describe the quality of the pain, saying, for example, "Describe what your pain feels like." If necessary, provide word descriptors for the client to select. *Descriptive terms provide insight into the nature and perception of the pain. In addition, the location and type of pain (for example, acute versus chronic) 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. *Clients 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 ability of the client to cope effectively. The client with chronic pain often has concerns about addiction to pain medication, costs, social interactions, sexual activities, and relationships with significant others.*
  - Monitor 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 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 client with chronic pain may have an unexpressive, tired facial appearance.*

PRACTICE ALERT
Consider pain the fifth vital sign and assess clients for pain every time you check temperature, pulse, respirations, and blood pressure.

- Communicate belief in the client's pain by verbally acknowledging the presence of the pain, listening carefully to the description of pain, and acting to help the client manage the pain. *Because pain is a personal, subjective experience, the nurse must convey belief in the client's pain. By conveying belief in the client's pain, the nurse reduces anxiety and thereby lessens pain.* See the Nursing Research box on the following page.
- Provide optimal pain relief with prescribed analgesics, determining the preferred route of administration. Provide

NURSING RESEARCH Evidence-Based Practice for the Client Experiencing Pain

Pain that is not adequately managed is the focus of regulatory agencies, professional healthcare organizations, and consumer groups. Despite well-defined guidelines for pain management, there is a gap between guideline standards of care and implementation of care. 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. In the study by Manias et al. (2005) nurses were observed in 2-hour periods of high environmental, patient, and nursing activity. Examination of the collected observations by independent analysts revealed six categories of response to patients' pain. The pain was (1) responded to effectively; (2) prioritized as less important than completing medication administration, vital sign assessment, taking telephone calls, or dressing changes; (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; and (6) was only addressed reactively, after the painful experience.

Because pain management is mandatory with regulatory agencies such as JCAHO, attention to patients' self-reported pain scores is increasing. It is valuable to have the informative detail this study provides. Communication among nurses, physicians, and clients is key to pain relief. Knowledge of pharmacology and the nonpharmacology of pain relief needs to be taught and reviewed regularly. Environmental distractions and interruptions are associated with less attention to pain management. Few conditions have higher priority for the client than pain relief, but the study revealed that nurses accept pain as a normal component of the postoperative surgery experience. Administrators need to be aware that competing responsibilities impact nurses' ability to provide effective pain management. Those responsibilities include documentation, admitting new patients, and completing discharge teaching and arrangements. Pain management is an important component of professional nursing; nurses should be supported in their efforts to address pain with compassion and efficiency.

CRITICAL THINKING IN CLIENT CARE

1. Reflect on your own experiences with pain. Will those experiences facilitate or hinder your assessments and interventions for clients 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." How would you respond?
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 only give one-half of the ordered dose of narcotics because "he is old and there is a danger of respiratory depression." What would you do?
4. Why do you think nurses tend to underestimate and undermedicate pain?

pain-relieving measures for severe pain on a regular around-the-clock basis or by self-administration (such as with a PCA pump). *The client 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 chronic pain. Do not crush or break or allow patients 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. Capsules containing pellets for controlled-release medications can be opened and sprinkled over soft foods; the pellets should not be crushed, chewed, or dissolved (Vallerand, 2003).*

- 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 (Pasero & McCaffery, 2002). Check oxygen saturation q2 at the beginning of opioid therapy and after increasing dosage (Pasero & McCaffery, 2002). Prevent falls that may result from sedation or dizziness. If the client has symptoms of excessive opioid dosage, antidotes are available. Narcan (naloxone) is used for morphine overdose. Use caution to titrate Narcan slowly. Never push an entire dose all at once. Administer only enough Narcan to eliminate adverse effects such as respiratory depression or excessive sedation. If excessive Narcan is administered, the client may experience acute withdrawal and will have no pain relief. It may take considerable time to reestablish a therapeutic comfort level.*
- Determine the level of sedation the client with tolerate. *For clients with chronic pain or cancer pain who need high doses of opioids, sedation may interfere with quality of life and neither the client nor the family want the client so sedated.* Several classes of drugs are being used to counteract sedation. They are usually given in the morning so they will not interfere with sleep throughout the night. Amphetamines, especially methylphenidate (Ritalin), are the most commonly used; modafinil (Provigil) has been used for several years, and donepezil (Aricept), which is used for the symptoms of Alzheimer's disease, reduces sedation and fatigue (Bourdeanu et al., 2005).
- Teach the client and family nonpharmacologic methods of pain management, such as relaxation, distraction, and cutaneous stimulation. *These techniques are especially useful when used in conjunction with pain medications and may also be useful in managing chronic pain.*
- Provide comfort measures, such as changing positions, back massage, oral care, skin care, and changing bed linens. *Basic comfort measures for personal cleanliness, skin care, and mobility promote physical and psychosocial well-being, lessening the perception of pain.*

- Provide client and family teaching, and make referrals if necessary to assist with coping, financial resources, and home care. *The client (and family) with pain requires information about medications, noninvasive techniques for pain management, and sources of assistance with home-based care. The client with acute pain requires information about the expected course of pain resolution.*

Using NANDA, NIC, and NOC

Linkages between NANDA, NIC, and NOC when caring for the client in pain are illustrated in Chart 9–1.

Community-Based Care

Teaching of the client and family includes:

- Specific drugs to be taken, including the frequency, potential side effects, possible drug interactions, and any special precautions to be taken (such as taking with food or avoiding alcohol)
- How to take or administer the drugs (Box 9–3)
- The importance of taking pain medications before the pain becomes severe
- An explanation that the risk of addiction to pain medications is very small when they are used for pain relief and management
- The importance of scheduling periods of rest and sleep.

In addition, suggest the following resources:

- Pain clinics
- Community support groups
  - American Cancer Society
  - American Pain Society.

NANDA, NIC, and NOC Linkages

CHART 9–1 **The Client with Chronic Pain**

NANDA

Chronic Pain

↓

NIC

Medication Administration

Pain Management

Meditation Facilitation

Cutaneous Stimulation

↓

NOC

Comfort Level

Pain Control

Pain: Disruptive Effects

Depression Level

Data from *NANDA's Nursing Diagnoses: Definitions & Classification 2005–2006* by NANDA International (2005), Philadelphia; *Nursing Interventions Classification (NIC)* (4th ed.) by J. M. Dochterman & G. M. Bulechek (2004), St. Louis, MO: Mosby; and *Nursing Outcomes Classification (NOC)* (3rd ed.) by S. Moorhead, M. Johnson, and M. Maas (2004), St. Louis, MO: Mosby.

BOX 9–3 **Providing Long-Term Analgesia at Home**

ROUTE	DRUG	NURSING IMPLICATIONS
Oral	Oxycodone (OxyContin)	Available in a timed-release formulation for 12-hour dosing and as fast-acting formulations (OxyIR, OxyFAST) for breakthrough pain.
Oral	Morphine (Kadian)	Formulated of timed-release particles in a capsule. If client can't swallow the capsule, may be sprinkled over food or given by nasogastric or gastric tube.
Transdermal	Fentanyl (Duragesic)	Absorbed slowly through the skin; allows 72-hour dose schedule. Up to 14 hours to achieve therapeutic level; when discontinued therapeutic effect will decay slowly.
Transdermal	Lidocaine (Lidoderm)	Effective for 12 hours for various neuropathic pains. Monitor clients also taking Class 1 antiarrhythmic drugs for increased effects.
Transmucosal	Fentanyl citrate (Actiq)	A lozenge formulation used to treat breakthrough cancer pain in opioid-tolerant clients.

MEDIALINK Pain Resources

NURSING CARE PLAN A Client with Chronic Pain

Susan Akers, age 37, is currently being seen at an outpatient clinic for chronic nonmalignant 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 the average of twice monthly for injections for pain. She does not regularly use medications but does take Darvocet-N 100 and Valium as needed (usually two to three times a day). Ms. Akers is divorced and has two children. She states that she has several friends in the area, but her parents and siblings live in another part of the United States.

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 precipitate 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 Darvocet-N 100 tablets every 4 hours when the pain is severe, but does not get complete relief.

DIAGNOSIS

- *Chronic Pain* related to muscle inflammation

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.
- Decrease number of absences from work.
- Modify activities at work and at home, especially when pain is intense.

PLANNING AND IMPLEMENTATION

- Encourage discussion of pain, and acknowledge belief in Susan's report of pain.
- Consult with a physician for a nonnarcotic analgesic with a minimum of side effects, and instruct in maintaining regular dosing schedules.
- For episodes of acute pain, take narcotic analgesics as soon as the pain begins and every 4 hours; while continuing the dosage of nonnarcotic 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 nonnarcotic analgesics.

EVALUATION

Susan returns for scheduled follow-up visits with a completed journal of her activities and associated pain. She reports that taking oral narcotic analgesics has relieved her pain and that within 3 weeks nonnarcotic analgesics 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. 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. Develop a care plan for Susan for the nursing diagnosis of *Risk for Constipation*. Why is this necessary?

See Evaluating Your Response in Appendix C.

EXPLORE MEDIALINK

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Epidural Placement
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Audio Glossary
NCLEX-RN® Review
Care Plan Activity: The Client in Pain
Case Study: Assessing the Client in Pain
MediaLink Applications
Links to Resources

CHAPTER HIGHLIGHTS

- Pain is perceived in the central nervous system. Opioids and other analgesics block the perception of pain; NSAIDs and most nonpharmacologic interventions block or decrease the transmission of pain from the periphery to the CNS. Measures to block the sensitization of pain-transmitting fibers are being used prior to painful procedures and incision in surgery.
- There are many types of pain, and treatment varies according to the type and combination of types. Acute pain usually decreases as healing progresses; chronic pain has acute exacerbations and compounds acute pain. Breakthrough pain is recognized as an increase in pain intensity that occurs when the peak and duration of medications are reached. Incident pain occurs in relation to a change or increase in activity. Central pain results from CNS lesions. Phantom pain occurs after amputations, seeming to originate in the missing limb. Psychogenic pain has no identifiable physiologic origin.
- Ethnicity (genetics and culture) and gender impact pain perception and behavior. Behavioral assessment of pain intensity is less accurate than a client's report of pain intensity.
- Myths and misconceptions exist about pain and its management; the client's perceived cause of pain and the best self-care method to relieve pain provide pertinent assessment information.
- Clients also respond to pain on the basis of their emotional state, past experiences with pain, and the meaning of the painful experience. Clients with malignant diagnoses may have significantly different interpretations of pain than clients with benign disease.
- Older adult clients perceive pain as intensely as younger adults. They need the same amount of opioids in the immediate postoperative period but may have difficulty metabolizing or eliminating medications.
- Assertively assess pain in older clients. Older clients may hesitate to report pain for fear of losing independence or being considered a bother. Cognitive impairment following CVA, dementia, or delirium makes self-report of pain less reliable. Behavioral scales for assessing pain are useful when clients cannot give self-reports.
- Addiction is a neurophysiologic disease. Clients with addiction to opioids may need greater doses of opioids to control pain because of the tolerance they may have developed through usage.
- Emergency department physicians and nurses are constrained in the prescription of opioids by the risk of overmedicating clients who are drug seeking and by the myth that pain management interferes with diagnosis.
- Pain management includes assessment, 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 client feels satisfied.

TEST YOURSELF NCLEX-RN® REVIEW

1 Your neighbor has had lower back pain for 9 months. How would this pain be categorized?
   1. acute pain
   2. chronic pain
   3. referred pain
   4. somatic pain

2 Which of the following statements is a pain myth?
   1. It is best to wait until a client has pain before giving medication.
   2. Anxiety can cause pain; pain can cause anxiety.
   3. Meperidine (Demerol) is no longer recommended for postoperative pain.
   4. The rationale for use of a TENS unit is supported by the gate-control theory.

3 You are taking a health history for a client 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?"

4 You are replacing a transdermal pain medication. 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

5 Which of the following statements would be most useful in determining the *quality* of a client'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."

6 The client 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.

7 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.

8 The preferred route of opioid administration for chronic pain is:
   1. transdermal.
   2. oral.
   3. intravenous.
   4. rectal.

9 The equivalent dose of an oral drug compared to the intravenous preparation of the same drug is:
   1. equal dosage.
   2. twice the intravenous dose.
   3. varies according to the drug but usually greater.
   4. one-half the intravenous dose.

10 Clients treated for chronic pain may need additional pain management strategies for:
   1. breakthrough pain.
   2. acute pain.
   3. end-of-dose pain.
   4. all of the above.

See Test Yourself answers in Appendix C.

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