

Pain and Its Management

5 contact hours: \$35

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Course Summary: The prevalence of pain led the Joint Commission to spell out regulations for pain management in U.S. healthcare. This course is a thorough review of acute vs. chronic pain, physiology of pain, common source, and effective tools for assessment. It continues with the role of opioids, the psychosocial aspects of pain management, and nondrug treatment of pain and concludes with pain management in special populations.

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This course will be reviewed every two years. It will be updated or discontinued on Mar 1, 2012.

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Target Audience: Occupational Therapists, OTAs

Instructional Level: Intermediate

Content Focus:

- Category 1 - Domain of OT, Client Factors
- Category 2 - Occupational Therapy Process, Outcomes

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 - B. Evaluation Learning Activity
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Course Objectives

When you finish this course, you will be able to:

- Discuss the prevalence of pain in the United States.
- Spell out the Joint Commission regulations for pain management in U.S. healthcare organizations.
- Distinguish between acute and chronic pain.
- Explain the physiology of pain and trace its pathways in the nervous system.
- Describe common sources of pain, including low back pain, post surgical pain, cancer pain, and arthritis.
- Outline effective tools for the assessment and documentation of pain.
- Identify the main principles of analgesic pain management.
- Explain the role of opioids in pain management and define the Central Principle of Balance.
- Describe psychosocial aspects of pain management including the role of the caregiver.
- List common cognitive and physical modalities used in the nondrug treatment of pain.
- Summarize pain management in special populations, including children, adolescents, older adults, and those at the end of life.

Dealing with Pain Management

Pain is an unpleasant fact of daily life for many people and it is costly—estimated at \$80 billion annually in the United States alone. **Pain** is defined as a sensory and emotional experience associated with actual or potential tissue damage. Its perception is influenced by physiologic, psychological, and social factors. Some patients may have, in addition to the persistent pain, overriding affective components and learned responses that can lead to severe psychological disability and a pattern of repeated and often frustrating interaction with the healthcare system (VA/DOD, 2003).

In the United States, 3 out of 4 people report that they, or a close friend or family member, experience recurrent or chronic pain. About 20% report that they have had to make major lifestyle changes in employment, living situation, or mobility as a result of persistent pain (Research!America, 2003). A 2003 telephone survey of 1,004 people by Hart Research Associates found:

- Chronic pain affects every age group—young and old.
- Traditional medicine is viewed as having limited success in helping people deal with pain.
- Many people feel that pain is a sign of weakness that should be “toughed out.”
- Nearly 60% of Americans would be willing to pay \$1 more per week in taxes to fund pain research (Research!America, 2003).

Pain is one of the most common reasons for a person to seek medical care, it is one of the most common physical complaints of people being admitted into the healthcare system, and untreated and unrelieved pain is a serious public health problem. This issue is particularly important for children, elders, minorities, patients with developmental disabilities, and those with active addiction or a history of substance abuse, as well as for those with serious diseases such as cancer, HIV/AIDS, or sickle-cell anemia. Clinical experience has demonstrated that adequate pain management leads to enhanced functioning and an improved quality of life, while uncontrolled chronic pain contributes to disability and despair (Pain and Policy Study Group, 2008b).

According to a 2006 National Health Interview Survey, during the previous year 27% of adults had experienced pain in the lower back, 15% had experienced a migraine or severe headache, 14% had experienced pain in the neck area, and 5% had experienced pain in the face or jaw. Women were more likely to experience pain than men, and were twice as likely as men to experience migraines, severe headaches, or pain in the face/jaw (USDHHS, 2007).

Undertreatment of Pain

The undertreatment of pain was first documented in a landmark study by Marks and Sachar in 1973. These researchers found that 73% of hospitalized medical patients had moderate to severe pain. Thirty years later, in 2003, Apfelbaum and others found that 80% of surgical patients experienced acute pain after surgery, and 86% of those had moderate to extreme pain (AHRQ, 2008).

The undertreatment of pain continues. Of 1,308 outpatients with metastatic cancer from 54 cancer treatment centers, 67% reported pain. Of those who had pain, 62% had pain severe enough to impair their ability to function, and 42% were not given adequate analgesic therapy. It is estimated that 45% to 80% of patients in nursing homes have substantial pain that is undertreated. These studies and others suggested that when patients had moderate to severe pain, they had only about a 50% chance of obtaining adequate pain relief (AHRQ, 2008).

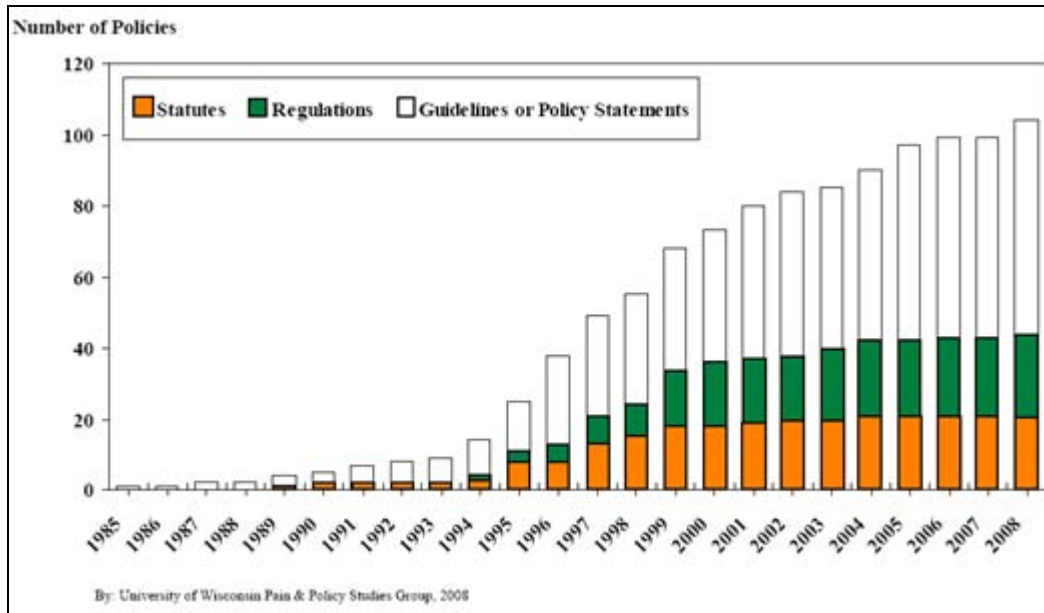
Inadequate pain management can impair all aspects of life; at worst, it can lead to desire for relief through death. Sufficient pain alleviation can result in improved quality of living for people with chronic pain and can decrease suffering for people at the end of life (Pain and Policies Study Group, 2008a).

International organizations have provided valuable guidance with regard to the policy implications of healthcare. In 1966 the United Nations General Assembly's International Covenant on Civil and Political Rights recognized that every person has a right to the highest attainable standard of physical and mental health. In more recent years, several international authorities, including the UN Economic and Social Council (ECOSOC), the World Health Organization (WHO), the World Health Assembly, and the Council of Europe have recognized pain relief as an important public health issue and, indeed, a universal human right (Pain and Policies Study Group, 2008a).

Reforming Pain Treatment Policy

In the last two decades, efforts by a variety of individuals; state pain, cancer, and end-of-life care initiatives; patient groups; and state agencies have begun to reform pain policy. The following chart illustrates the growing number of states with pain-specific policies, such as medical board guidelines and intractable pain treatment acts (IPTAs). Policy reform often produces more balanced state policies, but in some cases can also create additional restrictions and requirements that have the potential to impede pain management (Pain and Policies Study Group, 2008a).

Recent Trends in State Pain-Specific Policy



Source: Pain and Policy Studies Group, 2008a.

Controlled Substances

Controlled substances and medical and pharmacy practice policies enacted to govern opioid medications and prevent abuse and diversion for illicit use come into play when healthcare practitioners prescribe, dispense, or administer opioids to relieve pain. These policies should be based on what is known as the **Central Principle of Balance**. It represents a government's dual obligation to establish a system of drug controls that will prevent abuse and diversion and also to ensure the adequate medical availability of needed medications (Pain and Policies Study Group, 2008b).

Over the last decade, states have made considerable progress in achieving and maintaining more balanced policies. Healthcare regulatory boards in many states have used templates to create policies designed to reassure licensees that the mere act of prescribing or dispensing opioids for a legitimate medical purpose such as pain management will not result in disciplinary sanction. Such policy development is an effort on the part of healthcare licensing agencies to recognize practitioners' long-held concerns about regulatory scrutiny, which can make them reluctant to consider opioids as a viable treatment option (Pain and Policies Study Group, 2008b).

Most, if not all, states have policies recognizing that pain management and the use of controlled substances is part of quality medical practice. Now, state regulations are requiring healthcare facilities, such as hospitals, nursing homes, and hospices, to make pain assessment and treatment an expected element of patient care. Some states—but far from all—have adopted policies recognizing that medical education should address pain management and palliative care. Finally, the laws establishing many recent prescription monitoring programs, often a state's primary diversion control mechanism, are explicitly recognizing that the program's objective is to reduce abuse and diversion while avoiding hampering medication availability and patient care; such language directly conforms to the Central Principle of Balance (Pain and Policies Study Group, 2008b).

State policies aimed at preventing drug abuse, regulating professional practice, and improving patient care can either enhance or interfere with pain management. Five evaluations over an 8-year period by the University of Wisconsin Pain and Policy Studies Group show continuous improvement in state policies governing the medical use of opioid medications. Kansas, Michigan, Oregon, Virginia, and Wisconsin were recognized as having the most balanced pain policies in the country (Pain and Policies Study Group, 2008b).

Improving state policy by itself is not usually sufficient to accomplish effective pain relief, but it is a necessary component to achieving a positive professional practice and regulatory environment for treating pain. Policy will have an impact only to the extent that it is communicated and implemented. Even the most positive policy, with no implementation, will have little practical value. To be most effective, a new state policy should be disseminated widely and repeatedly to licensees and the public (Pain and Policies Study Group, 2008a).

Medical Use of Marijuana

State laws in Oregon, Alaska, Hawaii, and California allow medical use of marijuana under specified conditions, including pain management; these state laws are not recognized by the federal government. All four states require a patient to have a physician's recommendation before being considered eligible to use medical marijuana legally.

Alaska, Hawaii, and Oregon have established state-run registries for patients and caregivers to document their eligibility to engage in medical marijuana use; these states require physician documentation of a person's debilitating condition to register. Laws in these three states also establish maximum allowable amounts of marijuana for medical purposes (GAO, 2002).

A relatively small number of people are registered as medical marijuana users in the three states where it is currently legal. Most registrants are over 40 years of age. Severe pain and muscle spasticity were the most common medical conditions for which marijuana was recommended in the states where data was gathered (GAO, 2002).

Joint Commission Standards

In 2001 The Joint Commission (TJC), in collaboration with the medical school of the University of Wisconsin, Madison, developed pain management standards for hospitals and other healthcare settings that state "Every patient has a right to have his or her pain assessed and treated" and "A comprehensive pain assessment would be conducted consistent with the scope of care, treatment, and services and the patient's condition" (Joint Commission, 2008). These pain standards establish that all patients have the right to effective pain management and that pain must be routinely assessed for all patients.

Pain is now considered a fifth vital sign, to be assessed along with temperature, pulse, respiration, and blood pressure. Choice of a pain assessment tool is left to the discretion of individual healthcare facilities, but the Commission encourages a simple 0 to 10 pain scale. Clinicians must address the needs of noncommunicative patients, including those with dementia, by using an alternative means of assessment such as the Wong-Baker Faces Pain Scale, which shows a range of expression from smiling to crying. The Joint Commission also recognized that patients' psychosocial, spiritual, and cultural values affect their response to care.

Highlights of The Joint Commission's pain guidelines include:

- Clinicians must be competent in the assessment and management of pain.
- All patients must be routinely assessed for pain.
- Patients and family members must be educated about the importance of pain management as a part of care.
- Pain should not interfere with optimal level of function or rehabilitation.
- Pain and symptom management must be included in discharge planning.

Poor pain management may put clinicians at risk for legal action. Current standards for pain management, such as those outlined by The Joint Commission, require that pain be promptly addressed and managed. There is an increased risk of legal action against clinicians and institutions that have poor pain management practices and there are instances of lawsuits filed against physicians for poor pain management. Nurses and other practitioners, as part of the collaborative team responsible for managing pain during hospitalization, also may be liable for legal action (AHRQ, 2008).

Hospitals stand to lose reputation as well as profit if pain is poorly managed. Patients' satisfaction with care is strongly tied to their experiences with pain during hospitalization. Evidence indicates that higher levels of pain and depression are linked to poor satisfaction with care in ambulatory settings. Report cards for hospitals are becoming more prevalent, and performance on pain management is likely to be one of the indicators reported (AHRQ, 2008).

Categories of Pain

As is the case for most diseases, clinical pain conditions range in severity, extent, and effect. The overwhelming majority of patients encountered in the primary care setting have episodic or acute pain, which usually improves with a wide range of treatments. On the other hand, the pain experienced by patients in the non-primary care environment is usually chronic, persistent, and unresponsive to a multitude of treatments (NIH, 2003b).

Four pathophysiologic types of persistent pain are described by the American Geriatrics Society and others:

- Nociceptive pain—caused by stimulation of pain receptors
- Neuropathic pain, arising from damage to the peripheral or central nervous system (CNS)
- Mixed or unspecified pain
- Psychogenic pain—caused or exacerbated by psychiatric disorders (AGS, 2002)

Acute vs. Chronic Pain

While acute pain is a normal sensation triggered in the nervous system to alert you to possible injury, chronic pain persists or progresses over time, causing pain signals to continue firing for weeks, months, and even years. Common chronic pain complaints include headache, low back pain, cancer pain, arthritis pain, neurogenic pain, and psychogenic pain (NINDS, 2008).

The sensation of **acute pain** has two components, corresponding to the two major fiber types: myelinated and unmyelinated. The first sensation, sometimes termed *fast pain*, is a sharp pricking similar to a pin stick. The second sensation, *slow pain*, follows fast pain and has a burning quality; an example of this is incisional pain after surgery. An important characteristic of this type of pain is that it tends to improve over time, and being reminded of this is often reassuring to the patient.

Slow pain typically has a suffering quality associated with it, and is often described using sensory words like aching, throbbing, or radiating. This is the pain characteristic of a toothache. In contrast, prolonged and sustained pain often induces the **affective dimension of pain**, which is made up of feelings of unpleasantness and emotions associated with future implications (Price, 2000). This is expressed by descriptors that include tiring, exhausting, frightening, and fearful (NIH, 2003b).

Chronic pain (non-cancer pain) is often caused by conditions that are difficult to diagnose and treat, and may take a long time to reverse. *Chronic* generally refers to pain that exists for three or more months and does not resolve in response to treatment. There may be variations in that time frame because some conditions may become chronic in as little as a month, while some pain specialists adhere to the 6-month pain duration criteria employed in the past. It is important to note that women are overrepresented among patients with chronic pain and prevalence rates are higher for subjects of reproductive age than subjects in postmenopausal years for many pain conditions (NIH, 2003c).

One aspect of chronic pain is that pathways may continue to transmit the sensation of pain even though the underlying condition or injury that originally caused the pain has healed. In such situations, the pain itself may need to be managed separately from the underlying condition.

There can be a lack of distinction between acute and chronic pain during its management. Acute pain is easier to treat and lends itself to mild pain medications, environmental changes (ergonomics, education, body mechanics), and effective treatment programs such as physical therapy modalities, massage therapy, acupuncture, and active movement programs like yoga and Feldenkrais.

Clinicians are less successful when treating chronic pain, which by definition does not resolve quickly and requires stronger medications. Often narcotics or sedatives—with their attendant adverse consequences—are needed, which creates a more complex clinician-patient relationship. If the pain persists for a long time, psychological factors such as anxiety, depression, and anger at treatment failures emerge. Because medical practitioners often approach chronic pain management from a medication perspective, effective modalities that lack evidence-based studies are sometimes overlooked.

Chronic vs. Psychogenic Pain

Perhaps no other issue has done as much damage to individuals with chronic pain as that of psychogenic pain. Many healthcare professionals fail to recognize the complexity of pain and believe that it can be categorized based on the presence or absence of physical findings, secondary gain, or prior emotional problems. As a result, countless individuals have been informed that the pain “is all in your head.” And if these same individuals react with anger and hurt, we are ready to compound the problem by labeling the individual as hostile, demanding, or aggressive (Dept of Veterans Affairs, 2007).

Actually, the correspondence between physical findings (eg, MRI, CT, x-ray) and pain complaints is fairly low (generally, 40–60%). Individuals may have abnormal tests (MRI shows a bulging disk or herniation) with no pain, or substantial pain with negative results. This is because chronic pain can develop in the absence of the gross skeletal changes detectable with current technology (Dept of Veterans Affairs, 2007).

Muscle strain and inflammation are common causes of chronic pain, yet may be extremely difficult to detect. Other conditions that may cause chronic pain include systemic problems (HIV-related pain, sickle-cell pain), trauma to nerves (post thoracotomy pain), circulatory difficulties (diabetic neuropathy), CNS dysfunction (central pain syndromes), and many others. Yet, in each of these cases we may be unable to "see" the cause of the problem. Instead, we have to rely on the person's report of their pain, coupled with behavioral observations and indirect medical data. This does not mean that the pain is psychogenic. Rather, it means that we are less able to detect or understand its cause (Dept of Veterans Affairs, 2007).

In terms of underlying mechanisms, is there one kind of pain or many? This is one of the most controversial issues in pain research and will remain so until more types of pain have been rigorously studied with many classes of analgesics. There are distinct pain mechanisms with different patterns of responses to drugs, but these mechanisms may cross the borders of conventional disease-based diagnoses. Clinical pain research is a challenge because, by definition, subjects must be put into pain to study the mechanism of pain. This requires uncomfortable sensory testing that does not necessarily equate with pain caused by other mechanisms (NIH, 2003a).

For the large majority of patients, simple measures such as questionnaires that evaluate pain quality, along with standard bedside sensory examinations, are the main source of information about a patient's pain, but these are only indirect assessments. Furthermore, if some mechanisms are common to many pain syndromes, differences in drug response may be modest. The standard sample size for clinical trials is often too small, so large multi-center analgesic trials will probably be needed to uncover differential responses to treatment due to differences in pain mechanisms (NIH, 2003a).

Physiology of Pain

Pain Pathways

A stimulus that injures tissue, or has that potential, excites sensory receptors called **nociceptors**, which are found in the skin, muscles, tendons, joints, and bones. Painful sensations are transmitted along nerve pathways located in the anterolateral quadrant of the spinal cord, then to the brainstem, and finally to the brain for processing. This classic pain pathway follows three types of neurons to transmit nociceptive information:

- A primary sensory (afferent) neuron in the peripheral nervous system conducts nociceptive information from the periphery to the CNS.
- A secondary sensory neuron in the spinal cord or brain stem transmits the information to the thalamus.
- A tertiary sensory neuron conveys the nociceptive information from the thalamus to the cerebral cortex. (NIH, 2003c)

The most important pain pathway, and the one most studied, is the **spinothalamic tract** (originating in the spinal cord and extending into the thalamus of the brain), which transmits sensory information about pain, temperature, itch, and crude touch (NIH, 2003c). This is illustrated in the figures that follow.

Lumbar Vertebra with Sensory Nerves



A section of a lumbar vertebrae showing the sensory nerves (in yellow) entering the dorsal part of the spinal cord. Sensory information from peripheral sensory receptors enters the spinal cord and travels up the cord to the brainstem and the thalamus. Source: Zygote Media.

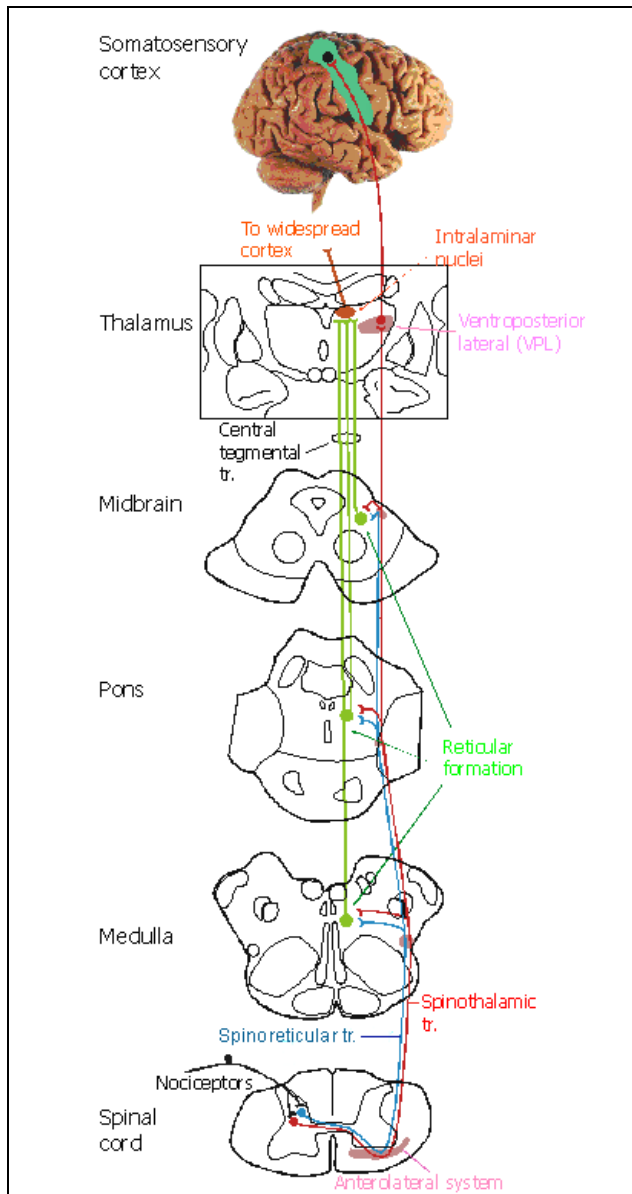
Spinothalamic Path to the Thalamus



The thalamus (in blue) is the destination of spinothalamic tract—the sensory pathway responsible for processing pain, temperature, and crude touch. Source: Zygote Media.

Two Major Pain Pathways

Another prominent pathway involved in nociceptive processing is the **spinoreticular tract**. This pathway is similar to the spinothalamic tract in that it is excited by similar sensory fibers and its axons course the anterolateral region of the spinal white matter. Rather than ascend to the thalamus, spinoreticular neurons terminate at all levels of the brainstem reticular formation (see following figure) (NIH, 2003c).



Projections of the two major components of the anterolateral system, the spinothalamic and spinoreticular tracts. Source: NIH.

Spinal Cord, Brainstem, and Thalamus



The spinal cord (bottom, in yellow) and the brainstem (in green) topped by the egg-shaped thalamus (also in green). The brainstem reticular formation forms a diffuse, central core within the brainstem and is the destination of the spinoreticular tract. Source: Zygote media.

Pain receptors respond to mechanical, chemical, and thermal stressors. Pain of mechanical origin (acute trauma, injury, overuse) can be constant, variable, or intermittent, and is affected by movement and position. Mechanical pain often responds to gentle low-grade movements, positioning, rest, and therapy. Pain of chemical or inflammatory origin (arthritis, inflammatory disorders) can be constant and also responds to positioning, therapy, rest, and gentle movement, but medications should be part of the management regimen. Pain of thermal origin is the result of excessive heat or cold.

The initial sensation of pain acts as a protective mechanism—it is a warning to stop the activity provoking the pain. This initial stage is characterized by increased alertness; focused attention; the suppression of feeding, sleep, and reproduction; and increased vascular tone, respiration, and blood sugar levels. Persistent or chronic pain can even change the circuitry in the CNS via a series of events involving alterations in early, intermediate, and late gene expressions (NIH, 2003b).

Musculoskeletal pain can be *delocalized* (may not correspond exactly to the area of injury). Generally, the deeper the pain, the more likely it is that the pain occurs in a “referred” or “radiating” pattern, following the distribution of the nerve. Localized pain arising from stimulation of the skin is usually described as sharp or localized, while deep somatic pain is often described as aching or dull.

Physiologic Effects of Unrelieved Pain

Unrelieved pain may be unsafe. It has negative effects on the endocrine/metabolic, cardiovascular, gastrointestinal, and immune systems, not to mention the potential for future pain. Pain causes stress. The endocrine system reacts by releasing an excessive amount of hormones, ultimately resulting in carbohydrate, protein, and fat catabolism, poor glucose utilization, and other harmful effects. This reaction combined with inflammatory processes can produce weight loss, tachycardia, increased respiratory rate, fever, shock, and death. Unrelieved pain prolongs the stress response, adversely affecting the patient's recovery (AHRQ, 2008).

The cardiovascular system responds to the stress of pain by activating the sympathetic nervous system, which produces a variety of unwanted effects. Following a surgical procedure, these include hypercoagulation, plus increased heart rate, blood pressure, cardiac workload, and oxygen demand. Aggressive pain control is required to reduce these effects and prevent thromboembolic complications. Cardiac morbidity is the primary cause of death after anesthesia and surgery (AHRQ, 2008).

Since the stress response causes an increase in sympathetic nervous system activity, intestinal secretions and smooth muscle sphincter tone increase, and gastric emptying and intestinal motility decrease. This response can cause temporary impairment of gastrointestinal function and increase the risk of ileus (intestinal obstruction) (AHRQ, 2008).

Unrelieved pain may be especially harmful for patients with metastatic cancers. Stress and pain can suppress immune functions, including the natural killer (NK) cells that play a role in preventing tumor growth and controlling metastasis. Further, management of perioperative pain is probably a critical factor in preventing a surgery-induced decrease in resistance to metastasis (AHRQ, 2008).

Unrelieved acute pain can result in chronic pain eventually; thus, pain now can cause pain later. If acute shingles pain is not treated aggressively, it is believed to increase the risk of post herpetic neuralgia. A survey of post surgical patients found a high prevalence of chronic pain in patients whose acute pain was inadequately managed (AHRQ, 2008).

Common Sources of Pain

Despite the difficulty in classifying and understanding different mechanisms of pain, certain pain syndromes are pervasive in the clinical setting. Low back pain, post surgical pain, cancer pain, and pain associated with arthritis are common reasons patients seek medical care.

Low Back Pain

More than 85% of low back pain patients who present to primary care have pain that cannot be reliably attributed to a specific disease or spinal abnormality. The term *nonspecific low back pain* is often used in these cases. Attempts to identify specific anatomic sources of low back pain in such patients have not been validated in rigorous studies and classification schemes frequently conflict with one another (VA/DOD, 2008).

No evidence suggests that labeling most patients with low back pain by using specific anatomic diagnoses improves outcomes. However, in a minority of patients presenting for initial evaluation in a primary care setting, low back pain is caused by a specific disorder:

- Compression fracture (4%)
- Spinal stenosis and symptomatic herniated disc (3% and 4%, respectively)
- Ankylosing spondylitis (0.3–5.0%)
- Cancer (0.7%)
- Cauda equina syndrome (0.04%)
- Spinal infection (0.01%) (VA/DOD, 2008)

A practical approach is to determine the likelihood of specific underlying conditions and measure the presence and level of neurologic involvement. Such an approach facilitates classification of patients into 1 of 3 broad categories:

- Nonspecific low back pain
- Back pain potentially associated with radiculopathy or spinal stenosis (suggested by the presence of sciatica or pseudoclaudication)
- Back pain potentially associated with another specific spinal cause (VA/DOD, 2008)

The last category includes the small percentage of patients with serious or progressive neurologic deficits or underlying conditions requiring prompt evaluation (tumor, infection, cauda equina syndrome), as well as patients with other conditions that may respond to specific treatments (ankylosing spondylitis, vertebral compression fracture) (VA/DOD, 2008).

Post Surgical Pain

Pain is common and expected after surgery. Effective post surgical pain management is associated with patient satisfaction, earlier mobilization, shortened hospital stays, and reduced costs. Despite these benefits, there are substantial numbers of patients who suffer from post surgical pain.

The goal of pain management following a surgical procedure is to prevent and control pain. Post surgical pain, like cancer pain, is expected to be present continuously during the first 24 to 48 hours after surgery, with spikes of increased pain with movement, deep breathing and coughing, and ambulation. Around-the-clock dosing is recommended during this early post surgical period to prevent severe pain and control continuous pain (AHRQ, 2008).

Of the almost 35 million patients discharged from U.S. hospitals in 2004, 46% had a surgical procedure and 16% had one or more diagnostic procedures. Recent data suggest 80% of patients experience post surgical pain—and between 11% and 20% experience severe pain. Despite the availability of analgesics (particularly opioids) and national guidelines to manage pain, the incidence of post surgical pain has remained stable over the past decade. Thus, acute pain associated with surgical and diagnostic procedures is a common occurrence in U.S. hospitals and remains inadequately managed for many patients (AHRQ, 2008).

Considering the type of surgery and understanding the range of available interventions are essential to safe and effective pain management. Post surgical pain management should be multimodal (use of a combination of pain control strategies including opioids, nonsteroidal anti-inflammatory drugs (NSAIDs), nonpharmacologic interventions) and designed for the particular patient, operation, and circumstances. Pain management requires systematic patient assessment post surgically, at scheduled intervals, in response to new pain, and prior to discharge (VA/DOD, 2002a).

Multimodal pain management is the use of a combination of pain control strategies, including opioids, NSAIDs, and nonpharmacologic interventions, designed for the particular patient, surgical procedure, and circumstances.

A series of three systematic reviews has been published in the past five years examining the efficacy, safety, and side-effect profile of opioids used to manage post surgical pain. The first review concluded that patient-controlled analgesia (PCA) and epidural routes of administration were superior to intramuscular (IM) injections when pain intensity and relief were considered (AHRQ, 2008). This series of systematic reviews suggests the IM route of administration produces the poorest outcomes. The use of intravenous PCA was associated with the highest levels of nausea and sedation, whereas epidural analgesia was associated with the highest rate of urinary retention.

The safety of opioids used to control post surgical pain was examined for hypotension and respiratory depression; observed rates were less than 5% for hypotension and less than 1% for respiratory depression. The most common opioid side effects included:

- Nausea (25%)
- Mild sedation (23.9%)
- Urinary retention (23%)
- Vomiting (20%)
- Pruritus (14.7%)
- Excessive sedation (2.6%) (AHRQ, 2008)

Approximately 1 in every 4 patients will experience common opioid side effects; however, the rates of excessive sedation, respiratory depression, and hypotension related to opioids are low in the post surgical population (AHRQ, 2008).

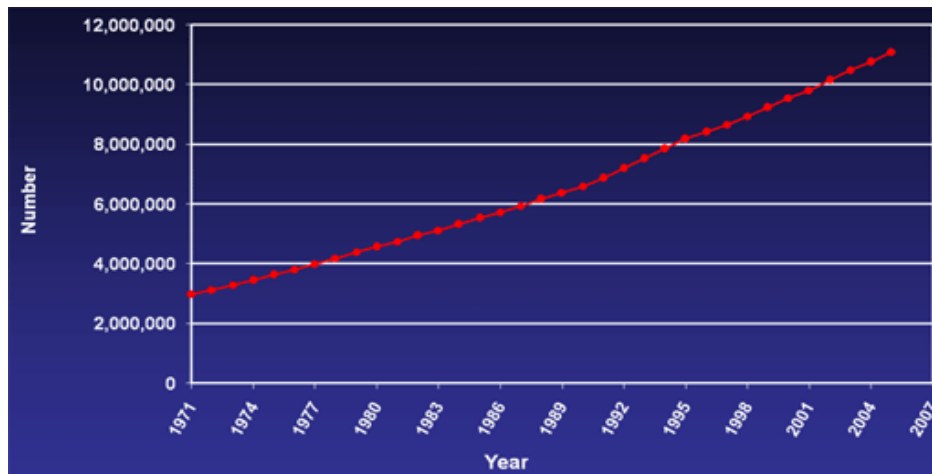
Cancer Pain

Cancer pain is composed of acute pain, chronic pain, tumor-specific pain, and treatment-related pain, combined with ongoing psychological responses of distress and suffering. Pain from cancer tends to increase in severity as the cancer advances. Patients with cancer often experience pain at multiple sites concurrently, through multiple mechanisms, and with distinct patterns, such as continuous pain, movement-related pain, and spontaneous breakthrough pain. Addressing only one source and type of pain may be inadequate (National Library of Medicine, 2001).

Clinicians have identified a number of cancer pain syndromes, some of which are tumor-specific patterns of local or distant metastasis, whereas others reflect diffuse neuropathies from tumors or chemotherapy. In addition, the nervous system itself may become dysfunctional as a result of cancer. Tumor-related cognitive impairment can interfere with pain assessment and confound analgesic titration (NLM, 2001).

Most common cancers are female breast (22%), prostate (19%), colorectal (10%), and gynecologic (9%). As of January 1, 2004, it is estimated that there are 10.8 million cancer survivors in the United States—approximately 3.7% of the population (see following figure). Sixty percent of cancer survivors are currently 65 years of age and older. Approximately 14% of cancer survivors were diagnosed more than twenty years ago (National Cancer Institute, 2007).

Cancer Survivors in the United States, 1971–2005



Source: November 2007 SEER data submission, posted to the SEER website in 2008.

Inadequately controlled pain has been and continues to be a problem for adults and children with cancer. Pain affects as many as 50% of patients in various stages of cancer and 75% of those in the terminal stages. The treatment of cancer pain is a complex problem that has led to many of the recent changes in the use of narcotics for pain control. Cancer pain can come from many sources, including direct pressure from a tumor, anticancer treatments, physiologic changes, and post surgical pain (USDHHS, 2007).

Although slight improvements in the treatment of pain in cancer patients have been noted in recent years—particularly in industrialized countries—nearly 1 in 2 patients with cancer still receives inadequate treatment for pain (Deandrea et al., 2008). Several trends in the treatment of cancer pain have been noted:

- Wealthier health systems can sustain and encourage better pain management.
- Settings not specific for cancer patients had a higher percentage of undertreated patients.
- Patients who were rated less ill and at an early stage of the disease (no distant metastasis) were more likely to receive inadequate analgesia (Deandrea et al., 2008).

The discrepancy between the physician's and patient's estimate of the severity of pain suggest that a failure in physician-patient communication may play a role in undertreatment of cancer pain (Deandrea et al., 2008).

Arthritis

Osteoarthritis, the most common form of arthritis, is a chronic condition involving degeneration of cartilage in the joints. It is the number one cause of chronic pain and is associated with substantial disability and reduced quality of life. About 6% of U.S. adults age 30 or older have symptomatic osteoarthritis of the knee, and 3% have symptomatic osteoarthritis of the hip. Osteoarthritis increases with age: the incidence and prevalence increase two- to tenfold from age 30 to 65 and continue to increase after age 65. The total costs for arthritis, including osteoarthritis, may be greater than 2% of the gross domestic product, with more than half of these costs related to work loss (AHRQ, 2006a).

Rheumatoid and psoriatic arthritis are among the most disabling forms of arthritis. Rheumatoid arthritis (RA), which affects 1% of the U.S. adult population (about 2 million people), is an autoimmune disease that involves inflammation of the synovium (a thin layer of tissue lining a joint space) with progressive erosion of bone, leading in most cases to misalignment of the joint, loss of function, and disability. Rheumatoid arthritis tends to affect the small joints of the hands and feet in a symmetric pattern, but other joint patterns are often seen. The diagnosis is based primarily on clinical history and physical examination (AHRQ, 2007).

Psoriatic arthritis (PsA) affects fewer people in the United States than RA (about 1 million people). PsA is associated with the skin disease psoriasis. It has a highly variable presentation, which generally involves pain and inflammation in joints and progressive joint involvement and damage. Like RA, PsA can be disabling (AHRQ, 2007).

Assessment and Documentation of Pain

Because pain is a subjective experience, the patient is the only person who can accurately characterize it. Margo McCaffrey proposed in 1968 that pain is “whatever the experiencing person says it is, existing whenever he says it does” (Himmelreich et al., 2007). In practice, assessing pain is a little more complicated. We need to know that each staff member is assessing pain in the same way—that we are speaking the same language. We need to be able to document the level of pain easily and to assess and record the effectiveness of pain-relieving measures.

Assessment of pain is a critical step in providing good pain management. To effectively assist patients with the management of pain, healthcare professionals are encouraged, within their scope of practice, to routinely assess all patients for pain. Pain complaints should be evaluated with a complete history and physical examination, with laboratory and diagnostic tests when indicated. Clinicians should refer patients to and consult with specialists as necessary (Pain and Policies Study Group, 2008).

In a sampling of physicians and nurses, Anderson and colleagues found lack of pain assessment to be one of the most problematic barriers to achieving good pain control. There are many recommendations and guidelines for what constitutes an adequate pain assessment and clinicians must select the appropriate elements of assessment for their current clinical situation (AHRQ, 2008).

The most critical aspect of pain assessment is that it be done on a regular basis using a standard format. Standardized tools enable us to do this. Hospital, unit, or clinic policies and procedures should explicitly direct a tool’s assessment parameters. To meet patients’ needs, pain should be re-assessed after each intervention to evaluate the effect and determine whether modification is needed. The time frame for re-assessment also should be directed by hospital or unit policies and procedures (AHRQ, 2008).

Initial assessment should include a detailed history, physical examination, psychosocial assessment, and diagnostic evaluation. Assessment should occur:

- At regular intervals after initiation of treatment
- At each new report of pain
- At a suitable interval after pharmacologic or nonpharmacologic intervention (for example, 15 to 30 minutes after parenteral drug therapy and 1 hour after oral administration) (NCI, 2008)

The mainstay of pain assessment is the patient self-report; however, family caregivers are often used as proxies for patient reports, especially in situations in which communication barriers exist, such as cognitive impairment or language difficulties. Family members who act as proxies typically, as a group, report higher levels of pain than patient self-reports, but there is individual variation (NCI, 2008).

Pain History

In the pain history, the clinician identifies the patient's attitudes, beliefs, level of knowledge, and previous experiences with pain. This comprehensive pain history lays the foundation for the plan for pain management, which is completed collaboratively by the clinicians, the patient, and family members. Expectations of patient and family members for pain control may uncover unrealistic expectations that can be addressed (AHRQ, 2008).

The pain history should include:

- Significant previous or ongoing instances of pain and its effect on the patient
- Previously used methods for pain control that the patient has found either helpful or unhelpful
- The patient's attitude toward and use of opioids, anxiolytics, or other medications, including any history of substance abuse
- The patient's typical coping response for stress or pain, including the presence or absence of psychiatric disorders such as depression, anxiety, or psychosis
- Family expectations and beliefs concerning pain, stress, and postoperative care
- Ways the patient describes or shows pain
- The patient's knowledge, expectations, and preferences for pain management methods and for receiving information about pain management (Hughes, 2008)

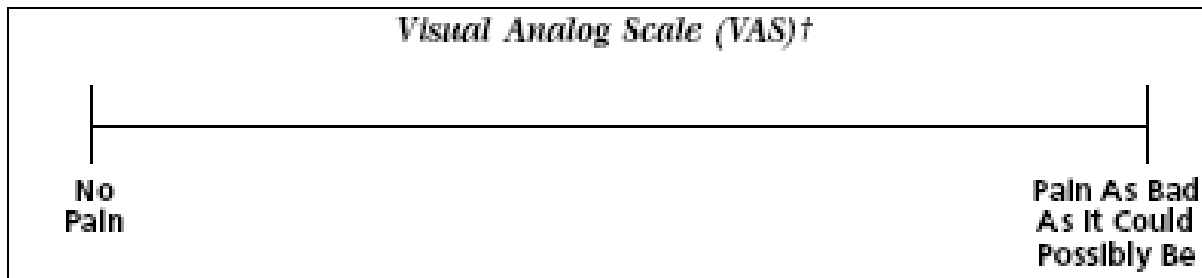
Pain Assessment Tools

The first step in safely relieving pain is to ensure that patients are properly assessed for pain so that appropriate pain relief measures can be implemented. Otherwise, pain may go unnoticed by clinicians or may be undertreated. Self-report is the most reliable way to assess pain intensity. When the patient is able to report pain, the patient's behavior or vital signs should never be used in lieu of self-report (AHRQ, 2008).

A standardized tool with established validity should be used to assess the intensity of pain. Because choice of intervention, including type of analgesic and dosing, is made based upon intensity, every pain assessment should include this type of measure. The Joint Commission requires that hospitals select and use the same pain assessment tools across all departments (AHRQ, 2008).

Numerous pain intensity measures have been developed and validated. Some tools—such as the visual analogue scale (VAS) and the numeric rating scale (NRS)—provide a numeric rating of pain intensity (see following figures).

Visual Analog Scale

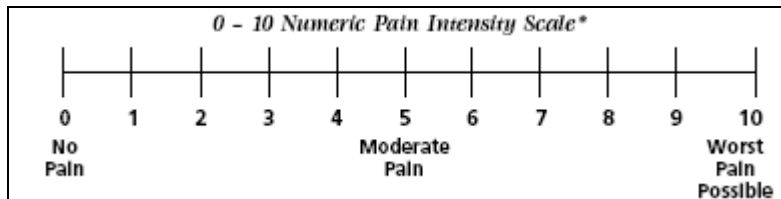


The left side corresponds to "no pain" and the upper VAS endpoint (100) is defined as "pain as intense as it can be."

† A 10-cm baseline is recommended for VAS scales.

Source: Adapted from Acute Pain Management Guideline Panel, 1992 (AHCPR, 1994).

Numeric Rating Scale



Indicated for adults and children (>9 years old) who are able to use numbers to rate the intensity of their pain. The scale consists of a straight horizontal line numbered at equal intervals from 0 to 10 with anchor words of "no pain," "moderate pain," and "worst pain" (NIH, 2003). Source: Adapted from Acute Pain Management Guideline Panel, 1992 (AHCPR, 1994).

Simpler tools such as the verbal rating scale (VRS), which classifies pain as mild, moderate, or severe, are also commonly used. Studies indicate that older adults prefer to characterize their pain using the VRS. The description can be translated to a number for charting (see following table). This method works well as long as everyone on your unit uses the same scale.

Verbal Rating Scale (VRS)

| Description | Points assigned |
|-------------|-----------------|
| No pain | 0 |
| Mild pain | 2 |
| Moderate | 5 |
| Severe | 10 |

For patients with limited cognitive ability, scales with drawings or pictures, such as the Wong-Baker faces scale, are useful. Patients with advanced dementia may require behavioral observation to determine the presence of pain; tools such as the PAIN-AD are available for this patient population (AHRQ, 2008).

Selecting the pain assessment tool should be a collaborative decision between patient and healthcare provider to ensure that the patient is familiar with the scale. If the clinician selects the tool, consideration should be given to the patient’s age; physical, emotional, and cognitive status; and personal preferences. We tend to think of these intensity scales as verbal, but patients who are alert but unable to talk (intubated, aphasic) may be able to point to a number or a face to report their pain. The pain tool selected should be used on a regular basis to assess pain and the effect of interventions; it should not, however, be used as the sole measure of pain (AHRQ, 2008).

Pain intensity scales measure only one aspect of pain; a useful mnemonic to ensure that you collect all the descriptors of a patient’s pain is illustrated in the following table.

PQRSTU Mnemonic

| Keyword | What to ask |
|---------------------------------|--|
| P: provokes or palliates | Ask what makes the pain better and what makes it worse. |
| Q: quality | Is the pain sharp, burning, dull? |
| R: region | Where is the pain located? Ask the patient to use a finger to draw a circle around the pain. |
| S: severity | Use a standard intensity scale. |
| T: timing | When does the pain occur and how long does it last? |
| U: “uther” | Are there other symptoms that accompany the pain, such as nausea? |

Location and **quality** of pain are additional assessment elements useful in selecting interventions to manage pain. Since patients may experience pain in more than one area, location of pain using a body drawing or verbal report provides useful information. The pain experienced may be chronic (headache, low-back pain) or it may be related to the positioning and padding used during a procedure (AHRQ, 2008).

Another pain assessment tool—the McGill Pain Questionnaire—asks patients to describe subjective psychological feelings of pain. The questionnaire contains a variety of verbal descriptors that help distinguish between musculoskeletal and nerve-related pain. Pain descriptors such as pulsing, shooting, stabbing, burning, grueling, radiating, and agonizing (and more than seventy other descriptors) are grouped together in an attempt to convey a patient’s pain response. Typically, patients describe deep-tissue pain as dull, aching, and cramping, while nerve-related pain tends to be more sporadic, shooting, or burning (AHRQ, 2008).

The Brief Pain Inventory, developed by the World Health Organization, also uses the questionnaire format to measure pain. Pain interferes with many daily activities, and one of the goals of acute pain management is to reduce the effect of pain on patient function and quality of life. The ability to resume activity, maintain a positive affect or mood, and sleep are relevant functions for patients. The Brief Pain Inventory includes four items that may be useful in assessing this aspect of the pain experience. Using the numeric rating scale format, assessment of interference (1) with ability to walk, (2) general activity, (3) mood, and (4) sleep will assist in selecting interventions to enhance function and quality of life (AHRQ, 2008).

The final elements of pain perceptions involve determining current aggravating and alleviating factors. **Aggravating factors** may be as simple as patient position, a full bladder, or temperature of the room. **Alleviating factors** include the interventions (eg, analgesics) and cognitive strategies used to control pain. The pain history will provide insight into the coping strategies previously used by the patient and their effectiveness in previous painful episodes (AHRQ, 2008).

In addition to self-reported pain perceptions, a comprehensive assessment of pain includes both **physiologic responses** and **behavioral responses** to pain, particularly following surgery. Physiologic responses of sympathetic activation (tachycardia, increased respiratory rate, and hypertension) may indicate pain is present. Behaviors that may indicate pain include splinting, grimacing, moaning or grunting, distorted posture, and reluctance to move. While these nonverbal methods of assessment provide useful information, self-report of pain is the most accurate. A lack of physiologic responses or an absence of behaviors indicating pain may not mean the patient is not experiencing pain (AHRQ, 2008).

Documentation of pain assessment and the effect of interventions is essential to allow communication among clinicians about the current status of the patient's pain and responses to the plan of care. The Joint Commission requires documentation of pain to facilitate re-assessment and follow-up and the use of pain as the fifth vital sign as a means of prompting nurses to re-assess and document pain whenever vital signs are obtained. Documentation is also important as a means of monitoring the quality of pain management within the institution (AHRQ, 2008).

Cognitively Intact Adults

For the cognitively intact adult, assessment of pain intensity in the clinical setting is most often done by using the 0 to 10 numeric rating scale or the 0 to 5 Wong-Baker faces scale, or the VRS. Once the patient knows how to use a pain intensity scale, the patient should be taught how to establish a **comfort-function goal**. It is important that the patient set this goal with the nurse's assistance. This is the pain intensity at which the patient is easily able to perform necessary activities, such as ambulating after surgery or being able to concentrate on job-related activities, with the fewest side effects. For example, a patient on morphine may report a pain level of zero but be unable to stay awake enough to talk with her family. The patient must decide how much discomfort she can tolerate and still do what is important to her. Interventions are implemented to achieve and maintain this pain rating as much of the time as possible (AHRQ, 2008).

Differences in clinician assessment of pain intensity are significant. A retrospective review of 41 patient charts using pain ratings of palliative care consultants as the gold standard found high agreement with assessments performed by bedside nurses (RNs) and clinical nurse assistants (CNAs) when pain was not present or was mild, but poor agreement for moderate or severe pain (NCI, 2008).

Cognitively Impaired Adults

The assessment of pain in communication-impaired patients, such as those with severe cognitive impairment, represents one of the most significant challenges in the field of pain management. Caregivers have difficulty knowing when these patients are in pain and when they are experiencing pain relief. This makes the patient vulnerable to both undertreatment and overtreatment.

People with severe cognitive impairment tend to report fewer complaints; failure to report pain should not be assumed to mean the absence of pain. Although there are a number of assessment tools currently in use, there are no established, reliable, and valid measures for assessment of pain in these patients. One tool in use is the PAIN-AD (see Resources), where the caregiver observes and records behaviors that might indicate the person is uncomfortable.

People who are cognitively impaired may become agitated or manifest unusual behaviors when they are in pain. If a person with cognitive impairment has a sudden change in behavior, consider pain as a possible cause. In the case of JG (see below), pain medication administered for an acute condition changed his behavior, indicating that he was probably expressing his pain by becoming agitated.

CASE

JG is an 80-year-old man with Alzheimer's disease. He has a long-term indwelling catheter because of urinary retention caused by benign prostatic hypertrophy. For the past week he has been fighting off his caregivers, hitting, and attempting to bite them when they try to bathe and dress him. He refuses to swallow medications. When prescribed a fentanyl patch for a painful medical procedure, he suddenly became docile and cooperative. The patch was continued long-term and JG remained calm.

Preliminary data suggest that mild degrees of cognitive impairment are associated with self-report of increased intensity of pain in older cancer patients who are receiving hospice care. In contrast, cognitively impaired nursing home residents are less likely to report pain (NCI, 2008).

When the patient is unable to report pain, other less reliable measures must be used to identify the existence of pain and estimate its probable intensity. These assessment measures form a hierarchy, arranged in order of probable importance:

- Conditions (eg, surgery) or procedures (eg, wound care) that are likely to cause pain.
- Patient behaviors that are likely to indicate pain. A behavioral assessment tool may be used. Whenever possible, a pain behavior scale should be chosen that has been researched for reliability and validity in the clinical setting.
- Information from others who know the patient, such as family members or caregivers. They should be asked if they see behaviors that may indicate pain or if they know of pre-existing conditions, such as arthritis, that cause pain. (Hughes, 2008)

If any of the above suggests pain is present, the clinician may assume pain is present. If appropriate, a trial dose of analgesic should be given and the patient's behavior observed before and after this intervention. Begin by administering PRN (as needed) pain medications currently ordered. If the behavior improves or subsides, this may indicate that the patient does have pain and that the analgesic should be continued. If there is no change in behavior, a stronger dose of analgesic may be indicated (AHRQ, 2008). Notify the physician or other prescribing practitioner for additional orders.

Behavioral assessment tools are helpful in identifying the existence of pain and evaluating interventions. These scales are of two types: (1) pain behavior scales, and (2) pain behavior checklists. Some of these scales are scored by identifying the number or intensity of behaviors. However, this score is not a pain intensity score. No research as yet confirms that a pain behavior score is a pain intensity score. Therefore, it is unsafe to use pain behavior scores as pain intensity scores. A patient with only a few behaviors may have as much pain as a patient with many more behaviors (AHRQ, 2008).

An example of a behavioral assessment tool is the Behavioral Pain Scale (BPS), developed for use with critically ill patients in the ICU. It evaluates and scores three categories of behavior (see box).

Behavioral Pain Scale (BPS)

1. Facial expression—scores range from 1 for relaxed to 4 for grimacing.
2. Upper-limb movement—scores range from 1 for no movement to 4 for permanently retracted.
3. Ventilator compliance—scores range from 1 for tolerating ventilator to 4 for unable to control ventilation. (Hughes, 2008)

A score above 3 may indicate pain is present and the score can be used to evaluate intervention, but cannot be interpreted to mean pain intensity. For a pain behavior scale to be useful, the patient must be able to respond in all categories of behavior. For example, the BPS would be useless in a patient who is receiving a neuromuscular blocking agent (AHRQ, 2008).

Behavior checklists differ from pain behavior scales in that they do not evaluate the degree of an observed behavior and do not require a patient to demonstrate all of the behaviors specified, although the patient must be responsive enough to demonstrate some of the behaviors. These checklists are useful in identifying a patient's "pain signature"—the pain behaviors unique to that individual (AHRQ, 2008).

An example of a pain behavior checklist is the Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACSLAC). The PACSLAC evaluates sixty behaviors such as facial expressions, activities, and mood. A check mark is made next to any behavior the patient exhibits. The total number of behaviors may be scored but, again, this cannot be equated with a pain intensity score. It is unknown if a high score represents more pain than a low score. In other words, a patient who scores 10 out of 60 behaviors does not necessarily have less pain than a patient who scores 20. However, in an individual patient, a change in the total pain score may suggest more or less pain (AHRQ, 2008).

If advanced dementia is present, an assessment tool called the Pain Assessment in Advanced Dementia Scale (PAIN-AD) can be used. This assessment tool was developed by a team of clinicians at the E.N. Rogers Memorial VA Hospital in Bedford, Massachusetts and involves the assessment of breathing, negative vocalization, facial expression, body language, and consolability. Behaviors to be assessed include labored breathing, calling out or moaning, crying, facial grimacing, rigidity, clenched fists, striking out, and inability to be consoled or reassured (Frampton, 2004).

Management of Pain

The goal of pain management is to improve function, enabling individuals to work, attend school, or participate in other day-to-day activities. Patients and their healthcare practitioners have a number of options for pain treatment; some are more effective than others. In general, pain is inadequately treated. For example, 40% of Americans with cancer are in serious pain their final three days of life. Additionally, 26% of nursing home residents report daily pain due to noncancer diagnoses and 25% of these residents had no order for pain medications (AHRQ, 2008).

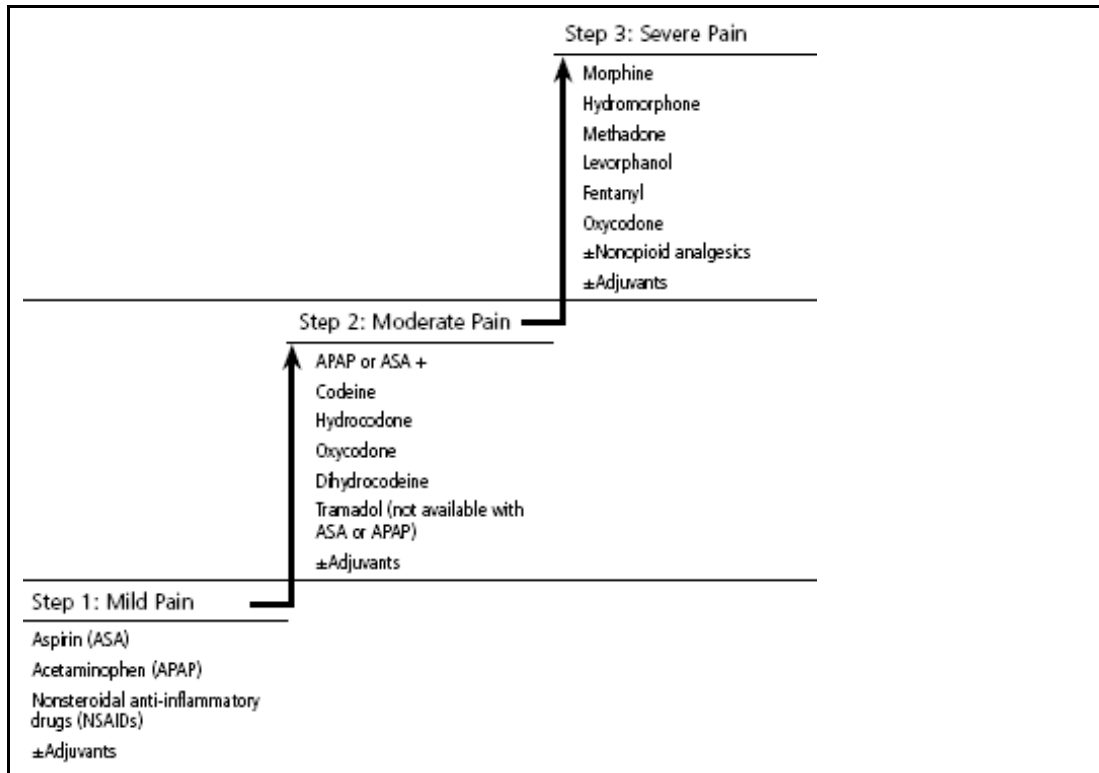
Effective management of pain and suffering involves a multi-disciplinary team, which develops and implements a comprehensive treatment plan utilizing appropriate pharmacologic and non-pharmacologic interventions. Each member of the team should regularly re-evaluate the effectiveness of the treatment plan, adjust as needed, and treat side effects. There has been increased emphasis on documentation, which should include a complete assessment and a plan of care that is written in a clear, consistent, and accurate manner (Pain and Policies Study Group, 2008).

Clinicians are learning more about the issues relating to the use of narcotics for the treatment of pain and the risk of addiction. They should be mindful of the risks of addiction and diversion of controlled substances for other uses. These risks can be minimized by creating an opioid treatment plan. Recognize that people with chemical dependency also deserve to have pain effectively treated and that opioids may be a part of treatment (Pain and Policies Study Group, 2008).

Principle of Analgesic Treatment

Analgesics, particularly opioids, are the primary treatment for acute pain. It is estimated that up to 90% of cancer pain can be adequately managed with analgesics using the WHO analgesic ladder (see figure below). Although no evidence exists to measure adequacy of managing acute pain, it appears that the vast majority of post surgical pain can be well managed with analgesics. While there are many factors that contribute to poor pain management, lack of assessment and inadequate or inappropriate use of analgesics are the primary, and modifiable, factors (AHRQ, 2008).

World Health Organization Analgesic Ladder



Source: Adapted from WHO, 1986.

Analgesics are usually divided into three categories: (1) nonopioids, which include acetaminophen and NSAIDs, (2) opioids, which include morphine-like drugs, and (3) adjuvant analgesics, which include local anesthetics and anticonvulsants.

Using an analgesic from each one of the three groups, referred to as balanced or multi-modal analgesia, may improve the safety of analgesic therapy. When more than one analgesic is used, the same level of pain relief may be achieved with a lower dose of each analgesic. For example, use of a local anesthetic along with an opioid usually allows reduction of the opioid dose needed for adequate pain control (AHRQ, 2008).

Evidence and clinical practice have revealed several principles of analgesic management for preventing moderate to severe pain:

- When continuous pain is anticipated, a fixed-dose schedule (around the clock) should be used.
- A PRN order of a rapid-onset analgesic may be necessary to control activity-related (breakthrough) pain.
- To ensure opioids are safely administered, begin with a low dose and titrate to comfort.
- Modification in analgesic administration is based upon assessment of the effect of the previous dose, including change in pain intensity, relief, and side effects experienced.
- Patients respond differently to various opioid and nonopioid analgesics; therefore, if one drug is not providing adequate pain relief, another in the same class may result in better pain control.
- Assessment of effect should be based upon the onset of action of the drug administered; for example, IV opioids are re-assessed in 15 to 30 minutes, whereas oral opioids and nonopioids are re-assessed 45 to 60 minutes after administration. (AHRQ, 2008)

It is the responsibility of the clinician to be knowledgeable about the analgesics used to treat pain, including onset, peak action, and duration of the drugs administered; common side effects; and methods of managing side effects. Easy access to an equianalgesic table assists in providing good pain control when switching from one opioid to another and from one route to another. This approach is particularly important when preparing the post surgical patient for discharge with an oral analgesic (AHRQ, 2008).

The objective for post surgical and procedural pain is to prevent and control it. This does not mean that patients will be pain free, a misconception that some patients and families have when entering the hospital. This misconception is best addressed during the preoperative pain assessment by collaboratively setting goals for pain control and function (AHRQ, 2008).

A multi-modal approach (balanced analgesia), which includes opioids, non-opioids such as NSAIDs, and adjuvant medications such as anticonvulsants, is recommended. Follow WHO's analgesic ladder for control of cancer pain and use NSAIDs for mild to moderate pain, with the addition of opioids for moderate to severe pain (AHRQ, 2008).

Lack of adequate assessment and inappropriate treatment remain the major factors in undertreatment of pain. There is ample evidence that the appropriate use of analgesics—the right drug at the right interval—can provide good pain relief for the majority of patients. Thus, institutions should place their money and effort on improving these provider behaviors (assessment, prescription, and administration of analgesics) (AHRQ, 2008).

The use of nondrug therapies is recommended in most pain guidelines; however, the evidence for their consistent benefit in terms of pain intensity, relief, or improved function is weak at best. This result does not mean a nondrug technique—or several techniques provided cafeteria style—may not improve a patient outcome. The clinician who uses these techniques should be aware that the effect is not predictable (AHRQ, 2008).

Ensuring Patient Safety

There are some patient safety issues that relate to pain management. When administering sedatives, consider the patient's physical safety—use bed rails, fall precautions, and assistance with ambulation. Eliminate errors related to PCA infusions—improper dose/quantity, wrong drug, or drug omission—by using systems to double-check drug and dose. Eliminate errors and complications related to catheter administration by using initial dose testing, monitoring the catheter, and monitoring the patient's response to medication. Nondrug techniques have minimal adverse events and do not pose safety issues; however, make sure to protect skin when applying heat or cold (AHRQ, 2008).

Barriers to Pain Management

Many factors contribute to the prevalence of unrelieved pain in the United States, including characteristics of the healthcare system, healthcare professionals, and patients (see box below). Most studies have focused on issues in the clinical domain, such as:

- Knowledge and attitudes of healthcare professionals about the legitimate use of opioids
- The inadequate clinical use of opioids in certain patient populations
- Patient and family perceptions about the use of opioids for pain relief

In addition, certain patients may be given low priority and the cost of a specific treatment may be a consideration. Restrictive drug-related public policies, as well as concerns about regulatory scrutiny when prescribing controlled substances, have also been recognized as significant impediments to pain relief (Pain and Policies Study Group, 2008a).

Patient barriers can contribute to the prevalence of unrelieved pain (see box below). Some patients believe that pain is a normal consequence of aging while others fail to report pain symptoms adequately. Patients may be hesitant to express dissatisfaction with care or there may be poor adherence to pain management regimens and measures. As with clinicians, patients may fear the stigma and side effects of opioids or other analgesics. They may fear that medications will be reduced without their knowledge or that staff will punish them in other ways (eg, by avoidance). Cultural beliefs about pain also play a role.

Barriers to Pain Management

Problems related to the healthcare system

- Low priority given to cancer and AIDS pain treatment
- Inadequate reimbursement
- The most appropriate treatment may not be reimbursed or may be too costly for patients and families
- Restrictive regulation of controlled substances
- Problems of availability of treatment or access to it

Problems related to healthcare professionals

- Poor assessment of pain
- Inadequate knowledge of pain management
- Concern about regulation of controlled substances
- Fear of patient addiction
- Concern about side effects of analgesics
- Concern about patients becoming tolerant to analgesics

Problems related to patients

- Reluctance to report pain
- Concern about distracting physicians from treatment of underlying disease
- Fear that pain means disease is worse
- Concern about not being a good patient
- Reluctance to take pain medications
- Fear of addiction, or of being seen as an addict
- Worries about unmanageable side effects
- Concern about becoming tolerant to pain medications

Source: HRSA, 2005.

Monitoring Quality of Management

Establishing and maintaining an institutional pain performance improvement plan is a Joint Commission requirement. Institutions should develop interdisciplinary approaches to acute pain management with clear lines of responsibility for achieving good acute pain control. This interdisciplinary approach includes an individualized plan of care for pain control, developed in collaboration with the patient and family (AHRQ, 2008).

One of the first quality improvement programs for pain management was developed by the American Pain Society (APS) in 1995. The APS quality improvement guideline was refined and expanded in 2005 based upon a systematic review of pain quality improvement studies conducted over the previous ten years. During that period the emphasis shifted from processes to outcomes:

- Recognize and treat pain promptly.
- Involve patients and families in pain management plan.
- Improve treatment patterns.
- Reassess and adjust pain management plan as needed.
- Monitor processes and outcomes of pain management. (AHRQ, 2008)

There should be systems in place to alert the clinician when pain is poorly managed. For example, in institutions with computerized documentation systems, an alert may pop up when a patient's pain exceeds a threshold. The threshold may be set individually by patient and clinician or institutionally. A reasonable threshold might be moderate to severe pain, which means a pain score of greater than 4 on a 0 to 10 scale. The plan of care provides the basis for monitoring the quality of acute pain management provided (AHRQ, 2008).

Quality indicators for pain management focus on appropriate use of analgesics and outcomes:

- Intensity of pain is documented using a numeric (0 to 10) or descriptive (mild, moderate, severe) rating scale.
- Pain intensity is documented at frequent intervals.
- Pain is treated by a route other than intramuscular.
- Pain is treated with regularly administered analgesics and, when possible, a multi-modal approach is used. (A multi-modal approach includes a combination of pain control strategies such as opioids, NSAIDS, and nonpharmacologic interventions.)
- Pain is prevented and controlled to a degree that facilitates function and quality of life.
- Patients are adequately informed and knowledgeable about pain management. (AHRQ, 2008)

To efficiently monitor quality indicators, patient records should contain documentation of:

- Pain intensity (0 to 10 or mild, moderate, severe).
- Analgesics prescribed and administered, including drug, route, and dosing.
- Impact of pain on function and quality of life (eg, ability to walk, general activity, mood, sleep).
- Pain education for patient and family. (AHRQ, 2008)

Patient Satisfaction

Although satisfaction with pain management currently is used as a measure of institutional quality, it is no longer recommended as a quality indicator for pain control. This is because patient satisfaction findings are difficult to interpret. In their review of twenty quality improvement studies conducted between 1992 and 2001, Gordon and colleagues noted fifteen studies reported high satisfaction with pain management despite many patients experiencing moderate to severe pain during hospitalization. Thus, patient satisfaction data should be cautiously interpreted and used in conjunction with other quality indicators. Because of the current focus on report cards for healthcare organizations, patient satisfaction data are routinely collected and easily obtained for review (AHRQ, 2008).

Many institutions use commercial patient satisfaction surveys to monitor satisfaction with care. Most of these surveys have at least one item on satisfaction with pain management. Institutions also may use generic health status or quality of life surveys to monitor patient outcomes. Most of these surveys include one or more questions on pain experienced. Regular review of patient satisfaction data can be used as a quick measure of quality of pain care. If satisfaction scores on pain management dip, a more thorough investigation of pain management processes is warranted (AHRQ, 2008).

Use of an interdisciplinary team to monitor current pain practice, identify areas for improvement, and oversee quality improvement plans is consistently recommended in clinical practice guidelines. To effectively monitor pain practice within a hospital, electronic systems are needed to capture and collate data on the indicators in a readily available form. One method of changing clinician behavior is through the use of feedback on performance; thus the reports generated for interdisciplinary committee review may also be used to assist clinicians to review and adjust their performance (AHRQ, 2008).

Opioid Analgesics

Opioids are derived from the poppy plant and are one of humankind's oldest known drugs. Pain specialists recommend using the term *opioid* and avoiding the term *narcotic* because of the latter's negative connotations and its use as a legal and regulatory term. Opioids include codeine, and perhaps the best-known narcotic of all: morphine. Opioids have a narcotic effect, that is, they induce sedation as well as pain relief.

Because some patients may become physically dependent upon opioids they should be monitored carefully; in some cases stimulants may be prescribed to counteract the sedative side effects. In addition to drowsiness, other common side effects include constipation, nausea, and vomiting (CDC, 2008).

Studies have shown that properly managed medical use of opioid analgesic compounds is safe, manages pain effectively, and rarely causes addiction. Among the compounds that fall within this class are hydrocodone, oxycodone, morphine, fentanyl, codeine, and related medications. Morphine and fentanyl are often used to alleviate severe pain, while codeine is used for milder pain. Other examples of opioids that can be prescribed to relieve pain include propoxyphene (Darvon); hydromorphone (Dilaudid); and meperidine (Demerol), which is used less often because of its side effects. In addition to their effective pain-relieving properties, some of these medications can be used to relieve severe diarrhea (eg, Lomotil, also known as diphenoxylate) or severe coughs (codeine) (National Institute on Drug Abuse, 2008).

One barrier to the use of opioids is confusion between physical dependence and addiction. Fear of addiction prevents health professionals from providing appropriate pain control and prevents patients from using opioids. While opioids are characterized by tolerance and cause physical dependence, true addiction is a rare consequence of opioid use.

To understand this confusion, we need to understand the differences among tolerance, dependence, and addiction. **Tolerance** is a state of adaptation in which exposure to a drug results in a diminution of the drug's effects over time (NIDA, 2000). An example of tolerance is a person who takes hydrocodone/acetaminophen every day for pain but needs increasing dosage of the drug, or a more potent medication, to get the same effect as initially.

Dependence is a state of adaptation that is manifested by a withdrawal syndrome unique to a specific class of medications that is precipitated by abrupt cessation, rapid dose reduction, or the administration of an antagonist (NIDA, 2000). An example of dependence is a patient who is on morphine for several months for chronic back pain. If she discontinues the morphine all at once, she will develop a flu-like syndrome, with nausea, stomach pains, and malaise. These symptoms of physical dependence will disappear if the morphine is resumed. Once a person has been on opioids for a period of time, the medication will need to be tapered off to avoid withdrawal symptoms. The dose is gradually decreased while monitoring the patient for symptoms.

By contrast, **addiction** is a neurobiologic disease, influenced by genetic, psychosocial, and environmental factors. It is characterized by impaired control over drug use, compulsive use, continued use despite harm, and/or craving (NIDA, 2000). Addiction is a chronic, relapsing disease and requires treatment by specialized personnel.

Several issues associated with the use of opioids may either enhance or impede their use for pain management. Issues and beliefs that *enhance* the practice of pain management include:

- Pain management is part of medical practice and should be encouraged.
- Controlled substances are necessary for public health.
- Opioids are part of professional practice.
- Fear of regulatory scrutiny must be addressed.
- Prescription amount alone does not determine legitimacy.
- Physical dependence or analgesic tolerance should not be confused with addiction. (Pain and Policies Study Group, 2008)

Issues and beliefs that may *impede* the use of opioids for pain management include:

- They should only be used as a last resort.
- They are not part of professional practice.
- Physical dependence or analgesic tolerance is confused with addiction.
- Medical decisions and length of prescription validity are restricted.
- There are undue prescription requirements.
- There are ambiguous provisions around the use of opioids. (Pain and Policies Study Group, 2008)

A Note about Propoxyphene (Darvon)

On January 30, 2009 a Food and Drug Administration advisory committee confirmed that the risks of propoxyphene (Darvon) outweigh its benefits. The committee recommended that Darvon be pulled from the market. According to information from the Federal Drug Abuse Warning Network (DAWN), in 2007 medical examiners determined that propoxyphene was involved in the deaths of 503 people in the United States and has been related to more than 2,000 accidental deaths since 1981. The majority of the deaths were likely caused by adverse cardiac events such as slowed heartbeats, a decreased cardiac contractility, and the interruption of electrical impulses transmitted in the heart. Propoxyphene can result in accidental overdose, especially in older patients who might already be suffering from respiratory or cardiac conditions (Public Citizen, 2009).

The Central Principle of Balance

The Central Principle of Balance guides the evaluation of pain policies that influence pain management. The main idea is that drug control and professional practice policies and their implementation should be balanced so that efforts to prevent diversion and abuse do not interfere in the medical use of opioid analgesics for patient care. The Central Principle of Balance represents a dual obligation of governments to establish a system of controls to prevent abuse, trafficking, and diversion of narcotic drugs while, at the same time, ensuring their medical availability (Pain and Policies Study Group, 2008b).

Because opioid analgesics have a potential for abuse, their prescribing, dispensing, and availability is governed by a combination of policies, including international treaties and U.S. federal and state laws and regulations. The main purpose of these policies is drug control—to prevent diversion and abuse of prescription medications. However, international and federal policies also express an important need: **availability**. They recognize that opioids are necessary for pain relief and that governments must ensure their availability for medical and scientific purposes. When both control and availability are appropriately recognized in public policy and implemented in everyday practice, this is referred to as a balanced approach (Pain and Policies Study Group, 2008).

Controlled Substances Act

The federal Controlled Substances Act (CSA) establishes a system of drug control that also ensures the availability of controlled substances through a set of laws and regulations that governs drug importation, manufacture, and distribution. Under the CSA, licensed and registered professionals may prescribe, dispense, and administer controlled drugs for legitimate medical purposes in the course of professional practice (Pain and Policies Study Group, 2008).

To prevent diversion, the Controlled Substances Act establishes a closed system of licensing, security, record keeping, monitoring, and penalties. For example, Schedule II drugs require a written prescription and cannot be refilled; however, there are no federal statutory restrictions on dosages or quantities of drugs prescribed. Federal controlled-substances law recognizes that many controlled substances are necessary to maintain health and establishes a procedure for ensuring that these medications are available to satisfy prescription demand (Pain and Policies Study Group, 2008).

The Controlled Substances Act is not intended to interfere with medical practice or with the availability of controlled substances approved under the Federal Food, Drug, and Cosmetic Act for legitimate medical purposes. The CSA does, however, contain an archaic definition of addiction, but the definition has little potential to confuse patients using opioids for pain treatment with persons who compulsively use opioids nonmedically due to an addictive disease, and is not considered a potential barrier to adequate pain relief (Pain and Policies Study Group, 2008).

Adverse Effects

There are a number of adverse effects associated with the use of opioids for pain management. They can produce drowsiness, constipation, and, depending upon the amount taken, depress breathing (see following table). Taking a large single dose could cause severe respiratory depression or death. Opioids usually cause drowsiness in the first 24 to 36 hours and patients should be advised that this will resolve. Use a low dose to initiate therapy but be prepared to increase the dose over the next 48 hours based on the patient’s pain scores. Nausea is a common side effect in the first few days and can be treated with an anti-emetic such as prochlorperazine or lorazepam.

The most common side effect of opioids is constipation. All opioids slow bowel motility because they affect the receptors in the gut that guide peristalsis. Patients should be given a bowel stimulant the entire time they are on the opioid because the body does not develop a resistance to this effect as it does with other effects such as drowsiness. One protocol to avoid constipation is to administer senna 8.6 mg orally with each dose of pain medication.

Prolonged sleeping after the initial dosing may simply reflect the need for rest, which has not been possible because of the pain. If side effects are pronounced over a longer period, it is best to talk with the patient about what else is going on, and it may be useful to discuss analgesic use with a pain specialist and involve other team members (HRSA, 2005).

Common Side Effects of Opioid Analgesics

| Side effect | Description |
|-------------------|---|
| Constipation | Requires prescription of bowel stimulant at the time of prescribing opioid; tolerance does not develop. |
| Drowsiness | Resolves after 24 to 36 hr; extended sleeping can be from exhaustion; may need psychostimulant (eg, methylphenidate). |
| Nausea | Prescribe anti-emetic with first prescription; resolves in several days; may need around-the-clock dosing. |
| Urinary retention | Uncommon side effect; change opioids or adjuvants. |
| Itching/twitching | May indicate toxic levels due to decreased elimination; lengthen interval; rotate opioids. |

Source: HRSA, 2005.

Safe Use of Opioids

Intramuscular (IM) administration of opioids is not recommended for pain management. It is painful and it has unreliable absorption with a 30- to 60-minute lag time to peak effect and a rapid drop in action. In addition to being ineffective, the IM route is dangerous because patients are often alone at the time of peak effect and can become excessively sedated, vomit, and aspirate. A better alternative is the intravenous (IV) route of administration (AHRQ, 2008).

Of all the analgesics used in pain control, the most safety issues arise with the use of those referred to as mu (μ) opioids, or morphine-like drugs such as morphine, hydromorphone (Dilaudid), and fentanyl. Clinicians fear causing harm with these analgesics by administering too much and causing life-threatening respiratory depression. Sometimes this fear results in undertreatment of pain. Clinicians need to be educated about effective methods of preventing respiratory depression and appropriate use of naloxone (Narcan) if respiratory depression does occur (AHRQ, 2008).

Opioid-induced respiratory depression is preceded by an increasing level of sedation. An alert patient will not suddenly succumb to respiratory depression. Consequently, respiratory depression can be prevented by observing sedation levels and decreasing the opioid before respiratory depression occurs.

Clinicians can use a sedation scale such as the POSS (see table below) at regular intervals to monitor patients receiving opioids. This scale should be used for all opioid-naïve patients with moderate to severe pain when opioid dosing is initiated. These patients should be monitored at least every 2 hours during the first 24 hours of opioid therapy. Using a sedation scale, the clinician knows when it is safe to administer additional opioid and when the opioid dose should be decreased or stopped (AHRQ, 2008).

Pasero Opioid-Induced Sedation Scale (POSS) with Interventions

| Level | State | Dosing guidance |
|-------|---|--|
| S | Sleep, easy to arouse | Acceptable; no action necessary; may increase opioid dose if needed |
| 1 | Awake and alert | Acceptable; no action necessary; may increase opioid dose if needed |
| 2 | Slightly drowsy, easily aroused | Acceptable; no action necessary; may increase opioid dose if needed |
| 3 | Frequently drowsy, arousable, drifts off to sleep during conversation | Unacceptable; decrease opioid dose 25% to 50% or notify primary MD or anesthesiologist for orders; administer a non-sedating, opioid-sparing nonopioid, such as acetaminophen or an NSAID; monitor respiratory status and sedation level closely until sedation level is less than 3 and respiratory status is satisfactory. |
| 4 | Somnolent, minimal to no response to physical stimulation | Unacceptable; stop opioid; consider administering naloxone; notify primary MD or anesthesiologist; monitor respiratory status and sedation level closely until sedation level is less than 3 and respiratory status is satisfactory. |

Source: Pasero, 1994. Reprinted by permission.

Monitoring of sedation levels and respiratory status is more appropriate for preventing opioid-induced respiratory depression than relying on pulse oximetry or apnea monitoring, which can give a false sense of security. Further, decreased oxygen saturation is a later sign of impending respiratory depression. Capnography may more accurately detect respiratory depression and apnea; however, further research is required to recommend widespread use of the method outside of the operating room or post anesthesia care unit. The use of mechanical monitoring is recommended if a patient has a pre-existing condition that requires it, such as sleep apnea or chronic obstructive pulmonary disease (COPD) (AHRQ, 2008).

If needed, naloxone must be titrated carefully. Giving too much naloxone or giving it too fast can precipitate severe pain and increase sympathetic activity leading to hypertension, tachycardia, ventricular dysrhythmias, pulmonary edema, and cardiac arrest (AHRQ, 2008).

Opioid Abuse

About 70% of Americans—approximately 191 million people—visit a healthcare provider, such as a primary care physician, at least once every two years. Thus, healthcare providers are in a unique position not only to prescribe needed medications appropriately but also to identify prescription drug abuse when it exists and help the patient recognize the problem, set goals for recovery, and seek appropriate treatment when necessary. Screening for any type of substance abuse should be incorporated into routine history taking with questions about what prescriptions and over-the-counter (OTC) medicines the patient is taking and why. Screening also can be performed if a patient presents with specific symptoms associated with problem use of a substance (NIDA, 2008c).

The risk for addiction to prescription drugs increases when the drugs are used in ways other than for those prescribed. Healthcare providers, primary care physicians, and pharmacists, as well as patients themselves, all can play a role in identifying and preventing prescription drug abuse. Many opioids and narcotics are abused or used for nonmedical reasons (see table below). Opioid medications can be taken orally or crushed and the powder snorted or injected. A number of overdose deaths have resulted from the latter routes of administration, particularly with the drug OxyContin, which was designed to be a slow-release formulation. Snorting or injecting opioids results in a rapid release of the drug into the bloodstream, exposing the person to high doses and causing many of the reported overdose reactions (NIDA, 2008a).

Over time, providers should note any rapid increases in the amount of a medication needed—which may indicate the development of tolerance—or frequent requests for refills before the quantity prescribed should have been used. They should also be aware that those addicted to prescription medications may engage in doctor shopping, moving from provider to provider in an effort to get multiple prescriptions for the drug they abuse (NIDA, 2008c).

Preventing or stopping prescription drug abuse is an important part of patient care. However, healthcare providers should not avoid prescribing or administering strong CNS depressants and painkillers, if they are needed (NIDA, 2008c).

Commonly Abused Narcotic Drugs

| Opioids and Morphine Derivatives | | | |
|---|--|-------------------------------------|--|
| Substance Category and Name | Examples of Commercial and Street Names | DEA Schedule/How Administered | Pain relief, euphoria, drowsiness/nausea, constipation, confusion, sedation, respiratory depression and arrest, tolerance, addiction, unconsciousness, coma, death |
| Codeine | Empirin with Codeine, Fiorinal with Codeine, Robitussin A-C, Tylenol with Codeine: Captain Cody, schoolboy; (with glutethimide) doors & fours, loads, pancakes and syrup | II, III, IV, V/injected, swallowed | |
| Fentanyl and fentanyl analogs | Actiq, Duragesic, Sublimaze: Apache, China girl, China white, dance fever, friend, goodfella, jackpot, murder 8, TNT, Tango and Cash | I, II/injected, smoked, snorted | Also, for codeine—less analgesia, sedation, and respiratory depression than morphine |
| Heroin | diacetyl-morphine: brown sugar, dope, H, horse, junk, skag, skunk, smack, white horse | I/injected, smoked, snorted | For heroin—staggering gait |
| Morphine | Roxanol, Duramorph: M, Miss Emma, monkey, white stuff | II, III/injected, swallowed, smoked | |
| Opium | Laudanum, paregoric: big O, black stuff, block, gum, hop | II, III, V/swallowed, smoked | |
| Oxycodone HCL | OxyContin: Oxy, O.C., killer | II/swallowed, snorted, injected | |
| Hydrocodone bitartrate, acetaminophen | Vicodin: vike, Watson-387 | II/swallowed | |

Source: NIDA, 2008b

Trends in Prescription Drug Abuse

Several indicators suggest that prescription drug abuse is on the rise in the United States. According to the 2003 National Survey on Drug Use and Health (NSDUH), an estimated 4.7 million Americans used prescription drugs for nonmedical purposes for the first time in 2002. The survey found that:

- 2.5 million used pain relievers
- 1.2 million used tranquilizers
- 761,000 used stimulants
- 225,000 used sedatives

The Drug Abuse Warning Network (DAWN), which monitors medications and illicit drugs reported in emergency departments (EDs) in the United States, recently found that two of the most frequently reported prescription medications in drug abuse–related cases are benzodiazepines (diazepam, alprazolam, clonazepam, lorazepam) and opioid pain relievers (oxycodone, hydrocodone, morphine, methadone, and combinations that include these drugs).

In 2002 benzodiazepines accounted for 100,784 mentions that were classified as drug abuse cases, and opioid pain relievers accounted for more than 119,000 ED mentions. From 1994 to 2002, ED mentions of hydrocodone and oxycodone increased by 170% and 450%, respectively. While ED visits attributed to drug addiction and drug-taking for psychoactive effects have been increasing, intentional overdose visits have remained stable since 1995 (NIDA, 2008c).

Gender Differences

Overall, adult men and women have roughly similar rates of nonmedical use of prescription drugs although studies suggest that women are more likely than men to be prescribed an abusable prescription drug, particularly narcotics and anti-anxiety drugs. Among 12- to 17-year-olds, females are more likely than males to use psychotherapeutic drugs nonmedically. In addition, research has shown that women are at increased risk for nonmedical use of narcotic analgesics and tranquilizers (eg, benzodiazepines).

Older Adults

Older Adults also are at risk for prescription drug abuse—intentionally taking medications that are not medically necessary. In addition to prescription medications, a large percentage of older adults also use OTC medicines and dietary supplements. Because of their high rates of co-morbid illnesses, changes in drug metabolism with age, and the potential for drug interactions, prescription and OTC drug abuse and misuse can have more adverse health consequences among older adults than among younger populations. Older adults who take benzodiazepines are at increased risk for transient cognitive impairment associated with benzodiazepine use, leading to possible falls, as well as for vehicle accidents (NIDA, 2008c).

Adolescents and Young Adults

Data from the 2003 NSDUH indicate that 4% of youth ages 12 to 17 reported nonmedical use of prescription medications in the past month. Rates of abuse were highest among the 18 to 25 age group (6%). Among the youngest group surveyed, ages 12 to 13, a higher percentage reported using psychotherapeutics (1.8%) than marijuana (1%) (NIDA, 2008c).

The NIDA Monitoring the Future Survey of eighth-, tenth-, and twelfth-graders found that the nonmedical use of opioids, tranquilizers, sedatives/barbiturates, and amphetamines was unchanged between 2003 and 2004. The survey found that 5% of twelfth-graders reported using OxyContin without a prescription in the past year, and 9.3% reported using Vicodin, making Vicodin one of the most commonly abused prescription drugs in this population.

Nonmedical use of tranquilizers (Valium, Xanax) in 2004 was 2.5% for eighth-graders, 5.1% for tenth-graders, and 7.3% for twelfth-graders. Also within that year, 6.5% of twelfth-graders used sedatives/ barbiturates (eg, Amytal, Nembutal) nonmedically, and 10% used amphetamines (eg, Ritalin, Benzedrine) (NIDA, 2008c).

Young people who use other drugs are more likely to abuse prescription medications. According to the 2001 NSDUH, 63% of youth who, in the past year, had used prescription drugs nonmedically and also used marijuana, compared with 17% of youth who had used marijuana but not prescription drugs (NIDA, 2008c).

History of Substance Abuse

When treating someone for pain who has previously abused drugs (or is doing so currently), it is useful to discuss the full plan ahead of time. Patients should understand that this is a two-way interaction and that they must be truthful about their pain and its severity and relief as the clinician works to control the pain. Most people with an addiction history who have legitimate pain are thankful to have it dealt with in an adult manner and understand that this is not a time to engage in manipulative behavior. In fact, many are afraid to take narcotics for fear of relapse (HRSA, 2005).

Seeking a higher dose of drug does not necessarily mean that the patient is drug-seeking. Losing or forging prescriptions, stealing from or having them stolen by others, visiting multiple providers for duplicate prescriptions, and injecting oral formulations are signs that the patient may not be using the medication appropriately. Patients must understand that they will be given adequate drug to last for a clearly described interval, they cannot obtain refills on weekends, and there is only one provider who can write their prescriptions. Situations that involve tampering with prescriptions or selling medication should be turned over to legal authorities and patients must understand this will sever the patient-provider supply of medication. Written contracts are used in some clinics but a well-documented discussion in the medical record is adequate (HRSA, 2005).

Women with a history of substance abuse are often poorly defended emotionally and may have inadequate coping skills for even minor frustrations. Low self-esteem and little self-confidence can impact pain and make it worse. Breitbart noted that pain in women is more intense and that those with a history of opportunistic infections or IV drug use are "more likely to experience pain" (HRSA, 2005).

Management of pain is not easy and requires a great degree of trust on both sides. Being consistent, open, and fair are important attributes for the provider to model. Providing positive feedback, reducing harm through education, and attempting to understand individual circumstances are most helpful to the patient. Clearly, as a patient approaches the end of life, old habits and fears often resurface and, at this time, the patient may need more support than usual (HRSA, 2005).

Treatments for Opioid Addiction

Opioid medications can affect regions of the brain that mediate what one perceives as pleasure, resulting in the initial euphoria (sense of well-being) that many opioids produce. Repeated abuse of opioids can lead to addiction—a chronic, relapsing disease, characterized by compulsive drug seeking and abuse despite its known harmful consequences (NIDA, 2008a). Addiction is a psychological craving, and the use of drugs despite personal harm should not be confused with tolerance.

Individuals who abuse or are addicted to prescription opioid medications can be treated. Initially, they may need to undergo medically supervised detoxification to help reduce withdrawal symptoms. Options for effectively treating addiction to prescription opioids are drawn from research on treating heroin addiction. Behavioral treatments combined with medications have proven effective (NIDA, 2008a).

Medications currently used to treat opioid addiction are:

- **Methadone**, a synthetic opioid that eliminates withdrawal symptoms and relieves craving, has been used for more than thirty years to successfully treat people addicted to heroin.
- **Buprenorphine**, another synthetic opioid, is a more recently approved medication for treating addiction to heroin and other opiates. It can be prescribed in a physician's office and has a better safety profile than methadone.
- **Naltrexone**, a long-acting opioid receptor blocker that can be employed to help prevent relapse. It is not widely used (because of poor compliance) except in highly motivated individuals (eg, physicians at risk of losing their medical license). Note that this medication can only be used for someone who has already been detoxified, since it can produce severe withdrawal symptoms in a person continuing to abuse opioids.
- **Naloxone** is a short-acting opioid receptor blocker that counteracts the effects of opioids and can be used to treat overdoses (NIDA, 2008a).

Individuals taking prescribed opioid medications should be given these medications under appropriate medical supervision and should be medically supervised when stopping use in order to reduce or avoid withdrawal symptoms. Symptoms of withdrawal can include restlessness, muscle and bone pain, insomnia, diarrhea, vomiting, cold flashes with goose bumps ("cold turkey"), and involuntary leg movements (NIDA, 2008a).

Psychosocial Aspects of Pain Management

Continuous, unrelieved pain affects the psychological state of the patient and family members. Common psychological responses to pain include anxiety and depression. The inability to escape from pain may create a sense of helplessness and even hopelessness, which may predispose the patient to a more chronic depression. Patients who have experienced inadequate pain management may be reluctant to seek medical care for other health problems (AHRQ, 2008).

Patients suffer from pain in many ways—it robs them of their lives and they may become depressed or anxious or even want to end their lives. Patients are sometimes unable to do many of the things they did without pain, and this state of living in pain affects their relationships with others and sometimes their ability to maintain employment (AHRQ, 2008).

One of the difficulties with managing pain is a lack of distinction between chronic and acute pain. Medical professionals trained to address acute pain complaints are often confused when faced with a patient with a chronic pain disorder. Chronic pain causes changes in lifestyle and can lead to anxiety, anger, and depression. Chronic anxiety and depression can cause heightened irritability and an overreaction to stimuli. Changes affect both the patient and the family and often center on the pain behavior (CMDT, 2007).

Effect on Family and Caregivers

Pain management is an intractable problem that results in substantial caregiver distress as they assist with pain management strategies. Caregivers spend a substantial amount of time interacting with their care recipients and clinicians have a limited view of this interaction. Family caregivers often feel unprepared to provide care, have inadequate knowledge about proper care, and receive little guidance from formal healthcare providers.

Health professionals' lack of explicit attention to caregivers is a serious gap in healthcare in light of the more than two decades of research that documents the potential hazards of family caregiving. Caregivers are hidden patients themselves, with serious adverse physical and mental health consequences from their physically and emotionally demanding work as caregivers and reduced attention to their own health and healthcare needs (AHRQ, 2008).

Caregiver Medication Errors

Caregivers need education to help them recognize both classic and atypical adverse drug effects that they may see in their family member. They may also need to be taught the critical thinking skills to enable them to manage these potential problems.

Despite the overall lack of interventional research with caregivers, there is some evidence that interventions designed to improve specific caregiving tasks are helpful. For example, Ferrell and colleagues examined the impact of pain education on family caregivers who were providing care to older adults with cancer. The pain education program included pain assessment, pharmacologic interventions, and nonpharmacologic interventions. The pain education program helped improve caregivers' knowledge and attitudes about managing their family members' pain (AHRQ, 2008).

Communication

Communication is crucial across settings. Clinicians need to communicate effectively with clients and caregivers to develop cost-effective plans of care and achieve positive client outcomes. It is important to provide information in a clear, understandable way through verbal, written, and electronic methods. Caregivers want concrete information about medications, tests, treatments, and resources. They also want time to have their questions answered (AHRQ, 2008). Teaching caregivers how to manage pain and other symptoms benefits both the patient and the caregiver. Caregivers who report more confidence in managing symptoms report less depression, anxiety, and fatigue (AHRQ, 2008).

Burdened caregivers can successfully support their family member, but they may need help to bolster their sense of self-esteem. They want to be part of the decision-making team. Clinicians in all practice settings need to partner with patients and their families to move from the traditional medical context to more collaborative relationships. Clinicians may need to “enact more empowering partnering approaches” and “reframe their professional image, role, and values” to accomplish this. Listening skills and the ability to interpret body language and verbal communication are essential competencies in all encounters with patients and their family members (AHRQ, 2008).

Patient and Family Education

Patient and family education is a central part of acute pain management. The essential elements of pain education include telling the patient the following:

- Preventing and controlling pain is important to your care.
- There are many interventions available to manage pain; analgesics (opioid and nonopioid) are the most effective in managing acute pain.
- Some people are afraid of using opioids because of the side effects and risk of addiction. Side effects can be managed effectively with medication. The risk of addiction when using opioids to control acute pain is extremely low.
- Your responsibility in achieving good pain control is to tell us when you are experiencing pain or when the nature or level of pain changes.
- Complete pain relief usually is not achievable; however, we will work with you to keep pain at a level that allows you to engage in activities necessary to recover and return home. (AHRQ, 2008)

This last comment flows directly into a discussion about goals for pain management during the hospitalization. This goal is set in light of the functional requirements (when ambulation will begin, need for deep breathing) to promote recovery. Thus, the patient, family members, and healthcare provider collaboratively set a tolerable or satisfactory level of pain and function during the hospitalization, which is documented either in the patient’s room or record so that all clinicians are working toward the same goals for pain control (AHRQ, 2008).

Shared goal setting is one dimension of relational coordination associated with adequate pain management. Information obtained from the pain history, such as previous experience with pain (what helped or didn’t) and typical coping strategies used, will assist in developing a plan of care that incorporates the patient’s preferences (AHRQ, 2008).

Patient-Clinician Interactions

Skilled communication allows nurses and other practitioners to determine the patient's needs. While administering analgesics may be the most appropriate way to meet the patient's needs, clinicians may uncover other factors contributing to discomfort, such as uncomfortable position, thirst, or the need to urinate. Addressing these needs will improve patient comfort and communicate the clinician's desire to promote comfort. The time spent with the patient to communicate concern and caring may go a long way in providing patient comfort (AHRQ, 2008).

A 5-minute conversation could include the following:

- Listening to patient concerns.
- Communicating the desire to help the patient become more comfortable.
- Determining strategies that might achieve more comfort.

Communication with patients is one of the core dimensions of relational coordination, an approach examined in the orthopedic surgical population. In a cross-sectional study of nine hospitals, Gittell and colleagues found that the better the relational coordination, the better the post surgical pain relief. Of note, four dimensions—frequent communication, shared goals, shared knowledge, and mutual respect among clinicians—were associated with this improvement in pain control. Thus, this study suggested that communication, goal setting, and patient education contributed to better pain outcome (AHRQ, 2008).

Nondrug Techniques to Manage Pain

Clinicians, patients, and family members have used nondrug techniques for years to help patients manage pain. **Cognitive techniques** focus primarily on mental functions that require some degree of attention. Distraction (focusing attention away from the pain) may be one of the primary mechanisms resulting in pain relief. Relaxation and music are included in this cognitive category. **Physical techniques** focus on altering a physiologic process in order to reduce pain. Massage and the application of heat and cold are included in this category. One possible mechanism of action for massage and heat/cold therapy is the stimulation of the large-diameter fibers, which are hypothesized to reduce central pain transmission. Reducing muscle tension, which may contribute to pain transmission, is another possible mechanism of action (AHRQ, 2008).

During episodes of acute pain, patients may rely on these previously used and “proven” methods. For example, one study found that women recovering from breast and gynecologic surgery used a variety of nondrug techniques in addition to analgesics to relieve pain at home. Although the techniques varied, methods to increase relaxation such as breathing, meditation, imagery, and music were common (AHRQ, 2008).

Hospitalized patients also may use techniques that have worked for them in the past. In a study of nondrug techniques to manage post surgical pain, researchers reported that between 19% and 28% of patients used nondrug techniques during the first 3 days after surgery. Thus, patients in pain may spontaneously use a wide variety of nondrug methods to control their pain (AHRQ, 2008).

Before suggesting or instructing patients in the use of nondrug techniques, clinicians need to be aware of the methods used effectively and preferred by the patient. For example, in a trial of five cognitive-behavioral techniques to manage cancer pain in ambulatory patients, researchers noted that a number of patients had difficulty using their assigned technique because it did not match their usual coping style. In addition to applying the wrong technique, instructing patients in the use of a specific technique, such as imagery, may undermine their confidence in the techniques they typically use to control pain (AHRQ, 2008).

Nevertheless, non-drug interventions are an important part of a multi-modal, balanced approach to pain management. They help patients obtain a sense of control and develop coping skills to deal with the disease and its symptoms. Guidelines by a National Institutes of Health (NIH) assessment panel recommend integration of pharmacologic and behavioral approaches for treatment of pain and insomnia. Recent studies suggest that behavioral interventions targeted to specific symptoms, such as pain and fatigue, can significantly reduce symptom burden and improve the quality of life for patients with cancer (NCI, 2008).

Realistic expectations are needed for delivery of non-drug interventions for pain management. Interventions introduced early in the course of illness are more likely to succeed because they can be learned and practiced by patients while they have sufficient strength and energy. Patients and their families should be given information about and encouraged to try several strategies, and to select one or more of these cognitive-behavioral techniques for regular use (NCI, 2008).

Complementary and Alternative Medicine

Complementary and alternative medicine (CAM) covers a variety of practices and products from ancient to new-age that are used to manage pain. Although a growing number of Americans are using CAM, it is not considered part of conventional medicine because there is insufficient proof that CAM practices are safe and effective. Common CAM therapies include acupuncture, chiropractic and naturopathic medicine, deep-breathing exercises, meditation, yoga, massage, and diet-based therapies. CAM is most often used to treat back pain, head or chest colds, neck pain, joint pain or stiffness, and anxiety or depression. CAM is also used to treat or provide symptom relief for cancer, cardiovascular diseases, and lung diseases (Barnes et al., 2008).

A number of studies have shown that patients frequently do not report the use of complementary and alternatives therapies to their healthcare provider (Menefee & Monti, 2005).

Cognitive Modalities

Cognitive modalities require that patients understand the information and instructions involved in the use of various treatments. These modalities are not appropriate for use with patients who have significant cognitive impairment and are unable to comprehend the information ((eg, comatose patients, certain stroke patients, patients who have difficulty with the language of the person offering the treatment)). Cognitive therapies require cooperation and practice. These interventions would be contraindicated for use with patients who are uncooperative, unable, or unwilling to practice the necessary behaviors required for their successful use (VA/DOD, 2002b).

Relaxation

Relaxation techniques have been widely evaluated and do not have to be complex to be effective, though some require initial training and practice; for example, progressive muscle relaxation, systematic relaxation, and autogenic training are skills that require some practice. Simpler forms of relaxation, which may be more suitable during an acute pain episode, include jaw dropping and rhythmic breathing (AHRQ, 2008).

Biofeedback-assisted relaxation uses an external device to help the patient learn to relax specific muscle groups. Biofeedback training requires special equipment and clinician training. Relaxation techniques (with or without biofeedback) may prove beneficial by reducing muscular arousal and distracting the patient from painful sensations. They also reduce anxiety and increase the patient's sense of control. Distraction skills and relaxation techniques can be practiced at home and used in any clinical setting (VA/DOD, 2002b).

Some strategies, such as breathing techniques, can be taught in only 10 to 15 minutes, but do require periodic social reinforcement through encouragement and coaching. These strategies are appropriate for most patients but may be of special use in the following situations:

- Patients who expresses interest in learning them
- Those with anxiety
- Patients who express a wish to reduce or limit analgesic medications
- Patients who need to learn skills in anticipation of prolonged pain (VA/DOD, 2002b)

Reviews on the effectiveness of relaxation for pain relief have arrived at different and often opposite conclusions. This is not surprising because of the wide variety of techniques that were used as well as the small number of studies published (11 to 12 in the most recent reviews). The recent randomized clinical trials also contribute to this inconsistency. Therefore, the current evidence does not support a consistent, predictable effect of relaxation on pain (AHRQ, 2008).

Hypnosis

Hypnosis is a state of focused attention with a reduction of external awareness and a suspension of critical judgment. Contrary to popular belief, hypnosis does not imply suggestibility but rather the ability to focus attention to the exclusion of other stimuli. It may take seconds to minutes to achieve entrance to a hypnotic state. There are several mechanisms on which hypnosis is thought to have its beneficial effect. Hypnosis may:

- Decrease perioperative pain
- Reduce analgesic and sedative requirements
- Decrease postoperative anxiety
- Improve patient satisfaction

The use of hypnosis requires a trained professional and it may not work for all patients; also, a social stigma may be associated with its use. Most data on hypnosis for perioperative pain come from case reports. The few randomized controlled trials show conflicting results on efficacy, though risks associated with its use appear to be minimal. In at least one well-designed randomized, placebo-controlled trial, hypnosis was associated with improvements in pain and anxiety, reduction in analgesic requirements, and greater patient satisfaction (VA/DOD, 2002b).

Music

Sedating or soothing music is instrumental, rhythmic, and 60 to 80 beats per minute. In much of the research, musical pieces are selected from five types of music identified by Good and colleagues: synthesizer, harp, piano, orchestral, or slow jazz. The intervention is delivered via audiotape and headphones. The duration is typically 20 to 30 minutes and may involve a single or multiple exposures (AHRQ, 2008).

Recently published studies, all conducted on patients undergoing cardiovascular procedures, found significant short-term reductions in pain, distress, or anxiety after exposure to music. In each of these studies, music was used during an episode of increased pain (eg, getting up from a chair). While these studies hold promise, currently the evidence for the effectiveness of music in reducing acute pain is weak to moderate (AHRQ, 2008).

Physical Modalities

Physical modalities include hands-on techniques such as acupuncture, electrical stimulation, ice, heat, exercise, and massage.

Acupuncture

Acupuncture is among the oldest healing practices in the world. As part of traditional Chinese medicine (TCM), acupuncture aims to restore and maintain health through the stimulation of specific points on the body. In the United States, where practitioners incorporate healing traditions from China, Japan, Korea, and other countries, acupuncture is considered part of complementary and alternative medicine (NIAMS, 2005).

The term *acupuncture* describes a family of procedures involving the stimulation of anatomic points on the body using a variety of techniques. The acupuncture technique most often studied scientifically involves penetrating the skin with thin, solid, metallic needles that are manipulated by the hands or by electrical stimulation.

In one study of 92 cancer patients, an intervention of acupuncture for one to two weeks achieved pain relief for one month in all patients with mild to moderate pain and 72% with severe pain. Among 183 cancer patients in another study, 48% had pain relief for three days or more or experienced an increase in mobility after a treatment of acupuncture one to four times weekly. Conversely, a randomized controlled study of 239 HIV-positive patients found no statistically significant differences in pain reporting between groups (Lorenz et al., 2004).

Transcutaneous Electrical Nerve Stimulation

Transcutaneous electrical nerve stimulation (TENS) is provided by a small device that sends electrical impulses to certain parts of the body to block pain signals. Small electrodes are placed on the location of the pain, producing a mild electric current that is thought to prevent pain messages from being transmitted to the brain. Pain relief can last for several hours (National Institute of Arthritis and Musculoskeletal and Skin Diseases, 2005). Studies are inconclusive, having produced varying results (Lorenz et al., 2004).

Heat/Cold Therapy

The application of heat and ice to reduce pain or promote comfort is a common intervention. Despite its common use in the medical setting, there are few studies investigating the impact of heat or cold on pain or function. A meta-analysis of heat and cold for low-back pain concluded that continued use of heat (over a 5-day period) reduced pain intensity and improved function. Few studies on the use of heat for post surgical pain have been done and the findings from these were inconclusive. Cold applications for low-back pain have limited evidence to support their use (AHRQ, 2008).

Cold therapy includes cold packs, cold baths, vapo-coolant sprays, cold compression, continuous-flow cold therapy, and ice massage. Cold alters the pain threshold, reduces local swelling, decreases tissue metabolism and bleeding, and decreases muscle spasm and spasticity. Prolonged exposure to cold may cause discomfort or even injury.

Cold therapy should be used with caution in patients with sensory deficit—such as neuropathy or spinal cord injury—or those who have low levels of consciousness. Cold may be contraindicated in patients who are hypersensitive to cold (as in Raynaud's phenomenon), have marked hypertension, have arteriosclerosis, or have diminished circulation (VA/DOD, 2002a).

Cold therapy has been investigated in patients undergoing orthopedic surgeries (primarily total-knee arthroplasty) and has been found to reduce pain and improve range of motion and function. However, a study by Smith and others found that pain was similar when comparing the cryo pad (a new technology to deliver cold therapy) and the compression bandage applied by the surgeon at the end of surgery; in addition, the cold therapy increased the cost of care and took more nursing time. Thus, using cold therapy via the cryo pad provides no benefit over compression bandages after knee replacement and is less cost-efficient (AHRQ, 2008).

Heat can usually be initiated 48 hours following an operation or injury, and is commonly used in combination with other treatments. Thermal agents are used to apply heat superficially or as deep-heating applications. Superficial methods include hot packs, warm whirlpools, and paraffin. Deep heat, such as ultrasound, can increase the temperature of the tissues 3 to 5 centimeters in depth. Heat has the advantage of inducing relaxation, and decreases joint stiffness, muscle spasm, and guarding. It assists in increasing range of motion and increases superficial circulation (VA/DOD, 2002a).

Heat can cause increased swelling or bleeding at the surgical site and prolonged exposure may cause injury or burns. It is important to monitor the patient's physical response and use with caution in patients with sensory deficit. Heat is contraindicated in the following situations:

- Decreased level of consciousness
- Inability to provide feedback about tissue temperature
- Acute injuries of less than 2 days duration
- Inflammation
- Superficial or skin infection
- Hemorrhage
- Over site of malignancy (VA/DOD, 2002a)

Exercise

Exercise may include active or passive range of motion, continuous passive-motion machine (CPM), active exercise, bed mobility, or ambulation. Exercise can increase or maintain range of motion, increase blood flow, and prevent muscle guarding, spasms, and contractures. Exercise assists with edema management and reduces risk of venous thrombosis after surgery. It usually requires patient education and instruction by skilled staff and may require the use of assistive devices such as walkers or crutches.

Massage

Massage is effective in general pain management and mechanically assists in venous and lymphatic flow, improves skin integrity and mobility, desensitizes tissue, and provides comfort and psychological support. Massage may be used to stretch muscles and is usually used in combination with other treatments. Massage should be used with caution and may be contraindicated with the following conditions:

- Skin graft
- Hematoma
- Infection
- Malignancy
- Pleural effusion
- Liver or kidney disease
- Congestive heart failure
- Carotid disease
- Deep vein thrombosis (VA/DOD, 2002a)

Reviews of the literature on massage conclude it has a beneficial effect on anxiety and tension, depression, and stress hormones (cortisol and catecholamines). The evidence for the effect of massage on reducing pain is positive, but it involves few studies, so that firm conclusions cannot be drawn. More recent studies produced inconsistent findings, particularly in terms of the effect of massage on pain control. As with the relaxation and music literature, studies of the effect of massage suffer from methodologic problems that produce unstable or biased results (AHRQ, 2008).

Use of Multiple Nondrug Therapies

A variety of nondrug techniques may be used to better meet patients' needs. Two recent studies examined the effect on post surgical pain of providing multiple nondrug techniques (eg, cafeteria style). In both studies, the interventions were developed to allow the patient maximum control and to require minimal nursing time. Common techniques used in both studies included relaxation, music, and massage. While it is too early to determine if providing a pain "tool kit" will benefit post surgical patients, researchers demonstrated the feasibility of implementing such a program in a busy intensive care unit (AHRQ, 2008).

The evidence base for the use of nondrug therapies to manage acute pain requires further development; current studies do not report consistent outcomes from these therapies. Lack of standardization of nondrug therapies is one of the drawbacks of the current literature (AHRQ, 2008).

Pain in Special Populations

Clinicians need to give special attention to the assessment and treatment of pain in all special populations, including patients who are very old, very young, or at the end of life.

End of Life

For individuals living with advanced chronic disease, neither prevention nor cure is ordinarily possible. Such people have complicated priorities. Their priorities may include living well as long as possible without undue suffering and being close to and cared for by family without imposing a burden on family members.

During this phase of life, care must serve multiple and complex goals, and that care is affected by patients, caregivers, and healthcare systems. Understanding the experience of patients living with advanced illness and that of their caregivers requires considering a range of conceptually overlapping measures including satisfaction, quality of care, quality of dying, and quality of life (Lorenz et al., 2004).

Expert opinion plus research on the end-of-life experiences of patients, caregivers, and providers have provided a description of the major domains for evaluating the end-of-life experience. These core considerations arise from the experience of both patients and caregivers and include:

- Pain and other symptom prevention and treatment
- Adequate support for families and caregivers, including bereavement
- Continuity of healthcare
- Treatment consistent with patient and family preferences and medical knowledge
- Effective, empathic communication about diagnoses, prognosis, and care plans
- Well-being, including addressing existential and spiritual concerns
- Function and self-determination
- Length of illness (Lorenz et al., 2004)

When a person is living with advanced illness and coming to the end of life, effectively preventing and relieving symptoms becomes a high priority. Symptoms are subjective indicators of distress and the primary reason patients seek care, and they remain important even as the underlying causes of illness become increasingly difficult to modify (Lorenz et al., 2004).

Effective pain management is a palliative focus for many conditions, and pain is among the most debilitating and feared symptoms that patients and families face. Studies demonstrate a pain prevalence of 70% to 100% among cancer patients, and an Institute of Medicine conference recently named pain in advanced cancer as one of five high-leverage targets for national reform. Undertreatment and inequitable access to pain treatment have been described among many cancer patients presenting with pain. Pain is also prevalent among patients with advanced health conditions other than cancer, underscoring the importance of evaluating the scientific evidence relevant to pain in both cancer and noncancer conditions (Lorenz et al., 2004).

The American College of Physicians has published clinical practice guidelines for pain management with the following strong recommendations for patients with serious illness at the end of life:

- Clinicians should regularly assess patients for pain, dyspnea, and depression.
- Clinicians should use therapies of proven effectiveness to manage pain. For patients with cancer, this includes NSAIDs, opioids, and bisphosphonates. (Qaseem et al., 2008)

Patients at the end of life present many of the same issues as any other patient population. Assessment is critical, as is involving the patient and family in establishing goals for palliative pain management. Patients and family members should be educated about dosing, compliance, addiction, tolerance, and side effects. Barriers to good pain management at the end of life include discounting the patient's subjective measure of pain, difficulty in assessing patients with cognitive impairment, myths about opioid therapy, and fear of addiction and hastening death (Institute for Clinical Systems Improvement, 2008).

Older Adults

People age 65 and older comprise only 13% of the population, yet account for approximately 33% of all medications prescribed in the United States. Older patients are more likely to be prescribed long-term and multiple prescriptions, which could lead to unintentional misuse (NIDA, 2008c). The majority of hospitalized older patients suffer from acute or chronic pain.

Pain is the number one complaint of older adults, and 1 in 5 takes a painkiller regularly. Older adults are also more vulnerable to adverse drug reactions and drug-drug interactions. Those with cognitive impairment still experience pain but are often unable to express their feelings of pain clearly. In those cases, clinicians must monitor nonverbal and behavioral signs that may indicate the presence or intensity of pain. As with other patient populations, no test can accurately signify the amount of pain a person is feeling—self-report is the gold standard for pain assessment.

The American Geriatrics Society (AGS) has issued guidelines for the management of pain in older people that include the incorporation of several nondrug approaches in patients' treatment plans. AGS panel members recommend that, whenever possible, patients use alternatives to aspirin, ibuprofen, and other NSAIDs because of the drugs' side effects, including stomach irritation and gastrointestinal bleeding. For older adults, acetaminophen is the first-line treatment for mild-to-moderate pain, according to the guidelines. More serious chronic pain conditions may require opioids, including codeine or morphine, for relief of pain (NINDS, 2001).

Additional strategies for management of pain in older adults include:

- Assess pain regularly and frequently to facilitate appropriate treatment.
- Anticipate and aggressively treat for pain before, during, and after painful diagnostic or therapeutic treatments.
- Educate patients, families, and other clinicians to use analgesic medications prophylactically before and after painful procedures.
- Educate patients and families about pain medications, their side effects and adverse effects, and issues of addiction, dependence, and tolerance.
- Educate patients to take medications for pain on a regular basis and to avoid allowing pain to escalate.
- Educate patients, families, and other clinicians to use nonpharmacologic strategies to manage pain, including relaxation, massage, and heat/cold (Horgas & Yoon, 2008).

Children and Adolescents

Pain in younger patients requires special attention, particularly because young children are not always able to describe the degree of pain they are experiencing. Although treating pain in pediatric patients poses a special challenge to physicians and parents alike, pediatric patients should never be undertreated. Special tools for measuring pain in children have been developed that, when combined with cues used by parents, help physicians select the most effective treatments. Nonsteroidal agents, and especially acetaminophen, are most often prescribed for control of pain in children. In the case of severe pain or pain following surgery, acetaminophen may be combined with codeine (NINDS, 2001).

There are three ways pain can be measured in children:

- Self-reporting—what a child is saying using age-appropriate numeric scales, pictorial scales, or verbal scales.
- Behavioral measures—what a child is doing using motor response, behavioral responses, facial expression, crying, sleep patterns, decreased activity or eating
- Physiologic measures—how the body is reacting using changes in heart rate, blood pressure, oxygen saturation, and palm sweating

Healthcare providers play a key role in successful pain management, especially among pediatric patients unable to describe pain verbally. Astute assessment skills are required to intervene successfully and relieve discomfort (AHRQ, 2008). There is a substantial gap between evidence and practice and some authors suggest that pediatric nursing, rooted deeply in tradition and ritual, is particularly resistant to evidence-based practice changes. Pain management in infants and children is an example of the influence of tradition, personal bias, the persistence of myths, and resistance to change (AHRQ, 2008).

Safe pediatric prescribing requires accurate weight, proper conversion of pounds to kilograms, and the choice of an appropriate preparation and concentration. An AHRQ study found that about 1 in 7 (15%) new prescriptions written for children during outpatient visits were potentially for the wrong dose. Eight percent were potential overdoses and 7% were potential underdoses (AHRQ, 2006b).

Among children weighing less than 35 kg, only 67% of medications were dispensed within recommended dosing ranges, which are based on weight for children. Pain relievers were the class of medications most likely to be potentially overdosed (15%), whereas anti-epileptics were the class of medications most likely to be potentially underdosed (20%) (AHRQ, 2006b).

One of every five children younger than 4 years receiving any medication, 1 in 5 children receiving a PRN medication, and 1 in 6 receiving an analgesic, received a potentially improper dose. Young and medically complex children, who are most vulnerable to potentially serious adverse drug events, were most likely to be dispensed potential drug overdoses (AHRQ, 2006b).

Conclusion

The evidence base supporting the use of analgesics to manage acute pain is strong and clear: analgesics, particularly opioids, are effective in controlling acute pain. Undertreatment of acute pain is prevalent, however, despite the availability of analgesics and guidelines. Undertreatment is attributed to clinician behaviors—lack of adequate pain assessment and inadequate prescription and administration of analgesics—that are modifiable. Effort needs to be directed toward effective strategies for changing clinician attitudes and behaviors that will result in better pain management for patients (AHRQ, 2008).

Education about safe pain management will help prevent undertreatment of pain and the resulting harmful effects. Safety includes the use of appropriate tools for assessing pain in both cognitively intact and cognitively impaired adults. Otherwise pain may be unrecognized or underestimated. Safe use of analgesics is promoted by utilizing a multi-modal approach, using more than one type of analgesic to treat the individual's pain. Opioid use is often avoided or inadequately dosed for fear of causing life-threatening respiratory depression. While nondrug techniques pose minimal safety issues, current evidence does not indicate that these techniques produce consistent, predictable pain management outcomes (AHRQ, 2008).

Resources

Health Care Association of New Jersey Pain Management Guideline. (2006). Applicable to pain management in acute care and long-term-care nursing facilities.

http://www.guidelines.gov/summary/summary.aspx?doc_id=5526&nbr=003757&string=pain+and+assessment+and+nursing.

Geriatric Nursing Protocols for Best Practice: Pain Management. (2003). Addresses pain in older adults, assessment strategies, and nursing interventions to control pain. Pharmacologic and nonpharmacologic interventions are included.

http://www.guidelines.gov/summary/summary.aspx?doc_id=3514&nbr=002740&string=pain+and+assessment+and+nursing.

American Society of Perianesthesia Nurses: ASPAN Pain and Comfort Clinical Guideline.

(2003). Provides direction for assessment, interventions, and expected outcomes for the preoperative and postoperative phases of treatment. Use of pharmacologic and nonpharmacologic interventions is endorsed.

http://www.guidelines.gov/summary/summary.aspx?doc_id=5526&nbr=003757&string=pain+and+assessment+and+nursing.

Veterans Health Administration Clinical Practice Guideline for the Management of

Postoperative Pain. (2002). Addresses the preoperative and postoperative phases and includes discharge planning. Emphasis is placed upon reassessment and modification of the treatment plan. Opioid side effects and interventions to reduce them are included in the guideline.

http://www.guidelines.gov/summary/summary.aspx?doc_id=3284&nbr=002510&string=pain+and+assessment+and+nursing.

The American Society of Pain Management Nursing has published two position statements on pain management issues that pose difficulty ethically and in practice. Practice recommendations based upon research and clinical expertise are included in both position statements:

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The Hartford Institute for Geriatric Nursing.

Try This and How to Try This series. Assessment Tools on the Care of Older Adults.

<http://www.hartfordign.org/trythis>.

PAINAD: Pain Assessment Tool Guidelines. The Pain Assessment in Advanced Dementia (PAINAD) tool was developed to assess pain in patients who are cognitively impaired, noncommunicative, or suffering from dementia and unable to self-report pain.

http://www2.massgeneral.org/painrelief/PCS_Pain_Files/PAINAD.pdf.

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Post Test

Record your answers on the Answer Sheet following the post test.

1. Pain is defined as:
 - a) A sensory experience that is usually not associated with actual or potential damage.
 - b) A sensory and emotional experience associated with actual or potential tissue damage.
 - c) An emotional response to a learned behavior.
 - d) An emotional response to a physical stimulus.

2. Chronic pain:
 - a) Is often a sign of weakness.
 - b) Has been treated very successfully by traditional medicine.
 - c) Is frequently undertreated in older adults.
 - d) Is rarely seen in young children.

3. The Central Principle of Balance addresses:
 - a) The need to balance the amount of opioid with the patient's tolerance.
 - b) The ability of individuals to maintain their balance while under the influence of narcotics.
 - c) Supporting the public health by ensuring medication availability for legitimate use while protecting public safety through drug control measures.
 - d) Ensuring that an opioid dosage is kept within a strict therapeutic range.

4. The Joint Commission published pain management standards, which state that:
 - a) Clinicians should not administer pain medication unless they think a patient is truly in pain.
 - b) Opioids can only be given to those able to express their level of pain on a numeric scale.
 - c) Opioids should be prescribed sparingly to prevent patients from becoming addicted.
 - d) Clinicians must address the needs of noncommunicative patients by using an alternative means of assessment.

5. All of the following is included in The Joint Commission's guidelines **except**:
 - a) Only patients who are complaining of pain must be assessed for pain.
 - b) Clinicians must be competent in the assessment and management of pain.
 - c) Pain should not interfere with optimal level of function or rehabilitation.
 - d) Pain and symptom management must be included in discharge planning.

6. Pain arising from damage to the peripheral or central nervous system is called:
 - a) Nociceptive pain.
 - b) Chronic pain.
 - c) Neuropathic pain.
 - d) Mixed or unspecified pain.

7. Pain that is a normal sensation triggered in the nervous system to alert you to possible injury is:
 - a) Chronic pain.
 - b) Psychogenic pain.
 - c) Acute pain.
 - d) Nociceptive pain.

8. Pain that exists for three or more months and does not resolve in response to treatment is known as:
- Acute pain.
 - Fast pain.
 - Slow pain.
 - Chronic pain.
9. Chronic pain can develop in the absence of the gross skeletal changes we are able to detect with current technology.
- True
 - False
10. Sensory receptors that are found in the skin, muscles, tendons, joints, and bones are called:
- Afferent neurons.
 - Nociceptors.
 - The spinothalamic tract.
 - Tertiary sensory neurons.
11. Pain of mechanical origin:
- Responds only to medication.
 - Is the result of excessive heat or cold.
 - Can be constant, variable or intermittent and is affected by movement and position.
 - Is also known as chronic pain.
12. Unrelieved pain can cause:
- Increased intestinal motility and diarrhea.
 - Decreased recovery time following surgery.
 - Increased heart rate, blood pressure, and hypercoagulation.
 - Increase in the natural killer cells that help prevent tumor growth and metastasis.
13. Low back pain:
- Cannot be attributed to a specific disease or abnormality in 85% of cases.
 - Is most often caused by compression fractures.
 - Is often a complaint used in drug-seeking behaviors.
 - Is most often caused by spinal stenosis or a herniated disc.
14. The use of a combination of pain control strategies is called:
- Multi-modal pain management.
 - Multi-disciplinary treatment.
 - Nociceptive stimulus.
 - Complementary medicine.

15. Pain from cancer:
- a) Tends to decrease in severity as the cancer progresses.
 - b) Is likely to be undertreated in the early stages.
 - c) Is usually treated adequately in settings not specific for cancer patients.
 - d) Is caused exclusively by pressure from the tumor.
16. The most critical aspect of pain assessment is:
- a) Interviewing family to find if the patient is accurately reporting the level of pain.
 - b) Eliciting and documenting the duration and character of the pain.
 - c) That it is done regularly with reassessment after each intervention.
 - d) Making certain that the patient is not overly sedated.
17. Pain intensity scales:
- a) Must be adjusted to meet the needs of the different hospital departments.
 - b) Should reflect the patient's appearance and vital signs, not only what the patient says.
 - c) Should be used as the sole measure of pain perception.
 - d) Must be the same across all departments in a particular hospital.
18. Interventions and cognitive strategies used to control pain are called:
- a) Aggravating factors.
 - b) Alleviating factors.
 - c) Physiologic responses.
 - d) Behavioral responses.
19. The most accurate method of determining pain is:
- a) Patient self-reporting.
 - b) Nonverbal cues such as splinting, distorted posture, and reluctance to move.
 - c) Physiologic responses such as tachycardia and hypertension.
 - d) Diaphoresis with nausea and vomiting.
20. When a patient is unable to self-report pain:
- a) Pain medications should not be administered.
 - b) The clinician must rely on the patient's condition, behaviors, and others who know the patient.
 - c) Only non-opioids should be used.
 - d) Sedation with Ativan or Valium is recommended.
21. Research has confirmed that pain behavior scores are the same as pain intensity scores.
- a) True
 - b) False

22. A multi-modal or balanced analgesia approach to pain control:
- Begins with large doses that are titrated down to the minimum necessary to relieve pain.
 - Uses a combination of non-narcotic pain medications.
 - Utilizes a multi-disciplinary team for pharmacologic and non-pharmacologic interventions.
 - Has been shown to be ineffective in controlling pain in cancer patients.
23. All of the following can create barriers to pain management **except**:
- Treatment that is too costly for patients and families.
 - Concerns by caregivers that patients may become tolerant or addicted to analgesics.
 - A patient's fear that pain means the disease is worse.
 - Knowledge of pain management and the side effects of analgesics.
24. The Joint Commission's individualized pain control plan, developed with the patient and family, is called:
- A patient satisfaction survey.
 - The multi-modal pain plan.
 - The visual-analog scale.
 - A pain performance improvement plan.
25. Opioids:
- Include drugs such as aspirin and acetaminophen.
 - Frequently cause side effects such as increased blood pressure and diarrhea.
 - Have been shown to be safe and effective and rarely cause addiction when properly managed.
 - Are used for their anti-inflammatory properties in autoimmune diseases such as rheumatoid arthritis.
26. A belief that may enhance the practice of pain management is:
- Opioids should be used only as a last resort.
 - Opioids have no place in professional practice.
 - Opioids commonly result in narcotic addiction when used for pain control.
 - Physical dependence or analgesic tolerance should not be confused with addiction.
27. When control and availability of opioid analgesics are recognized in public policy and implemented in everyday practice, it is called a:
- Balanced approach.
 - Multi-modal approach.
 - Pain performance improvement plan.
 - Controlled Substances Act.
28. Side effects of opioid analgesics include:
- Diarrhea.
 - Increased respiratory rate.
 - Drowsiness that usually resolves after 24 to 36 hours.
 - Difficulty sleeping.

29. Administration of opioids such as morphine:
- Is safest via the intramuscular route.
 - Should be done while the patient is connected to an apnea monitor.
 - Must be followed by the monitoring of sedation levels and respiratory status.
 - Should be followed by the rapid administration of naloxone if respiratory depression is noted.
30. Prescription drugs most often abused in the United States are:
- Opioids and benzodiazepines.
 - Acetaminophen and ibuprofen.
 - Amphetamines.
 - Psychiatric medications.
31. When treating pain in a patient who has a history of substance abuse:
- Remember that a request for an increase in dose is a sign of drug-seeking behavior.
 - Opioids must be avoided.
 - A police report must be filed prior to prescribing any narcotics.
 - Discuss the full plan ahead of time and ensure that patients are truthful about their pain, its severity, and relief.
32. Overuse of opioids can lead to a chronic relapsing disease characterized by compulsive drug-seeking known as:
- Addiction.
 - Physical dependence.
 - Tolerance.
 - Detoxification.
33. Strengthening competence and confidence increases a caregiver's feeling of control and leads to:
- Communication.
 - Coping.
 - Nurturing.
 - Mastery.
34. It is important to inform caregivers and the patient:
- That complete pain control can usually be achieved.
 - That to prevent addiction, opioids will be used only as a last resort.
 - About test results, medications, and resources, and provide guidance to caregivers.
 - That pain control strategies can only be shared with the patient due to confidentiality.
35. The use of complementary and alternative medicine practices:
- Is illegal in the United States.
 - Has been shown to be harmful when used for back pain.
 - Has been proven to be safe and effective.
 - Includes acupuncture, chiropractic, and naturopathic medicine.

36. Non-drug techniques that require some degree of attention are called:
- CAM therapies.
 - Mastery.
 - Cognitive techniques.
 - Physical techniques.
37. An example of a cognitive modality for pain control is:
- Hypnosis.
 - Acupuncture.
 - Transcutaneous electrical nerve stimulation.
 - Heat/cold therapy.
38. Heat and cold therapies include use of:
- Heat for immediate application in acute injuries.
 - Cold to replace compression bandages after knee replacement.
 - Heat for relaxation, decreased joint stiffness, and muscle spasm.
 - Cold for use in patients with Raynaud's phenomenon.
39. Physical modalities for pain control:
- Cannot be used in patients with dementia.
 - Include hypnosis.
 - Include heat, which should not be used over the site of a malignancy.
 - Include relaxation techniques.
40. Pain management at the end of life:
- Should not include opioids because they may increase confusion and falls in debilitated patients.
 - Should include NSAIDs, opioids, and bisphosphonates in cancer patients.
 - Must be focused on treating the underlying cause of the disease that is causing the pain.
 - Is best accomplished with only high doses of opioids.
41. Pain is the number one complaint in older adults. It is recommended that:
- Patients take pain medication preventively.
 - Aspirin or ibuprofen be used for mild to moderate pain relief.
 - Acetaminophen is the first-line treatment.
 - Codeine not be used because it causes constipation.
42. Pediatric pain presents special challenges, including:
- Children must not take opioids because they have a high risk of addiction.
 - Children grow rapidly and thus may not receive enough medication.
 - Infants often spit out medications, so it is hard to know how much was ingested.
 - Pediatric dosing is often inaccurate being based on accurate weight, proper conversion of pounds to kilograms, and appropriate preparation and concentration.

(Answer Sheet on next page)

Answer Sheet

Pain and Its Management

Name (Please print your name): _____

Date: _____

Passing score is 80%

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Course Evaluation

Please use this scale for your course evaluation. Items with asterisks (*) are required.

- 5 = Strongly agree
- 4 = Agree
- 3 = Neutral
- 2 = Disagree
- 1 = Strongly disagree

*1. Upon completion of the course, I was able to:

a. Discuss the prevalence of pain in the United States.

5 4 3 2 1

b. Spell out the Joint Commission regulations for pain management in U.S. healthcare organizations.

5 4 3 2 1

c. Distinguish between acute and chronic pain.

5 4 3 2 1

d. Explain the physiology of pain and trace its pathways in the nervous system.

5 4 3 2 1

e. Describe common sources of pain, including low back pain, post surgical pain, cancer pain, and arthritis.

5 4 3 2 1

f. Outline effective tools for the assessment and documentation of pain.

5 4 3 2 1

g. Identify the main principles of analgesic pain management.

5 4 3 2 1

h. Explain the role of opioids in pain management and define the Central Principle of Balance.

5 4 3 2 1

i. Describe psychosocial aspects of pain management including the role of the caregiver.

5 4 3 2 1

j. List common cognitive and physical modalities used in the nondrug treatment of pain.

5 4 3 2 1

k. Summarize pain management in special populations, including children, adolescents, older adults, and those at the end of life.

5 4 3 2 1

*2. The course was written in a way that facilitated my learning.

5 4 3 2 1

*3. This course was free from commercial bias.

5 4 3 2 1

*4. The course met my continuing education needs.

5 4 3 2 1

*5. The material presented was supported by evidence.

5 4 3 2 1

*6. The author avoided the use of anecdotal information as the main source of material.

5 4 3 2 1

*7. The course was free of product promotion.

Yes No**

** If you answered no, please answer #8.

8. Was product promotion the sole purpose of the presentation?

Yes No

* 9. It took me 60 minutes per contact hour to complete the course, test, and evaluation.

- Yes No**

** If your answer was no, how long did it take? _____

10. My professional educational level is (check one):

Nursing

- Nurse Aide LVN/LPN RN (diploma) RN (AD)
 BSN MSN Nurse Practitioner / Advanced Practice Nurse
 PhD / DNSc

Therapy

- OT Aide COTA OT MOT OTD
 PT Aide PTA PT MPT MSPT DPT PhD

Other (please specify): _____

11. I heard about ATrain Education from:

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 Friend Publication (Magazine, etc.)
 Other _____

12. I found the ATrainCEU.com website easy to use:

- Yes No

13. Comments or suggestions (optional):

(Registration information on next page)

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- * City: _____ State: _____ Zip: _____
- * Phone: _____
- * Professional Designation: _____
- * License Number and State: _____

Please email my certificate: Yes No

Email (required if you want your certificate sent by email): _____

(If you request an email certificate we will **not** send a copy of the certificate by US Mail.)

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You may pay by credit card or by check.

Fill out this section only if you are **paying by credit card**.

5 contact hours: \$35

Credit card information:

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Address (if different from above): _____

City: _____ State: _____ Zip: _____

Card type: Visa MC American Express Discover

Card number _____ CVS # _____

Expiration date _____

Test Completion and Mailing Instructions

1. Complete all forms:

- Answer Sheet
- Evaluation Learning Activity
- Registration Form (this page)

2. If you are **paying by check**, prepare a check for \$35 made out to ATrain Education, Inc.

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When we receive your forms and payment, we will mail (or email, if you request it) your certificate of completion. If you have any questions or concerns, please call or contact us at Sharon@ATrainCEU.com. And thanks for taking the ATrain!