

CONTINUING EDUCATION

EDUCATIONAL OBJECTIVES

After participating in this activity, clinicians should be better able to

- Describe how to assess a patient's pain
- Understand the difference between somatic pain and visceral pain
- Describe five guiding principles for developing an effective approach to pain management

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Pain management in patients receiving palliative care

Barbara St. Marie, PhD, ANP-BC, GNP-BC, ACHPN

STATEMENT OF NEED/PROGRAM OVERVIEW

Poorly managed pain produces negative physical effects in patients, including sodium and water retention, increased incidence of thromboembolic events, and impaired pulmonary status and immune system. Nurses need to review their assessment skills and knowledge of pharmacologic and nonpharmacologic interventions for pain management. In addition, nurses should know the common descriptors patients use for pain to accurately assess their patients' pain.

CE INFORMATION

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Target audience: This activity has been designed to meet the educational needs of registered nurses and nurse practitioners involved in the management of patients with cancer.

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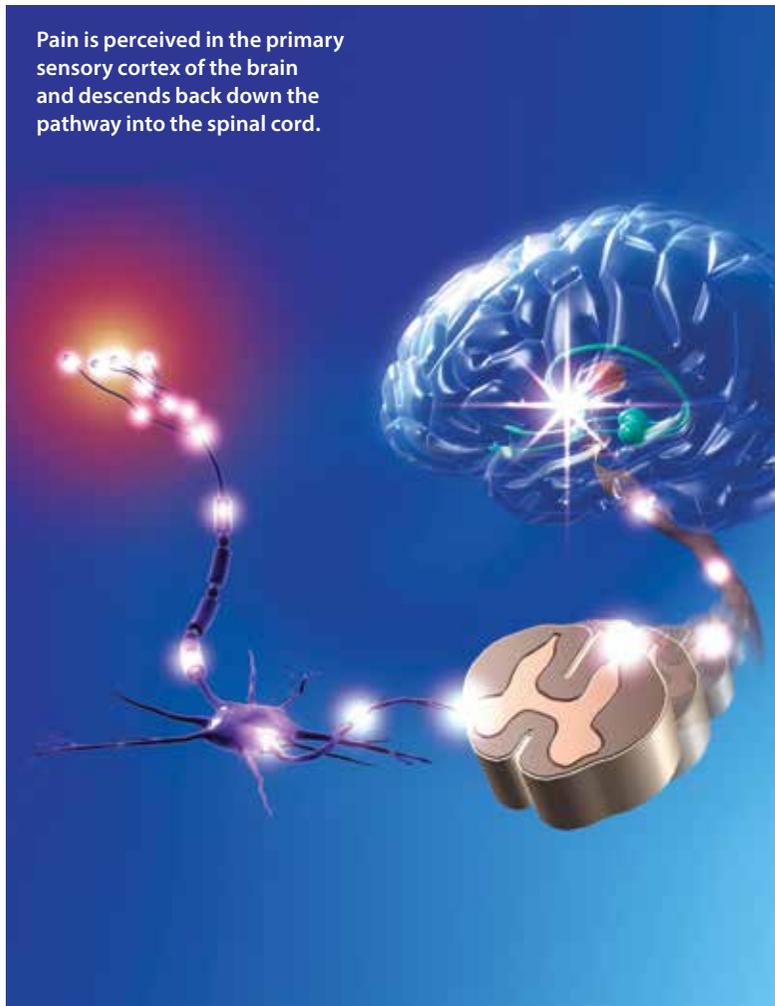
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Pain management in patients receiving palliative care

An understanding of pain mechanisms and types, triggers, and alleviating factors are needed to provide effective analgesia for patients with cancer.

Pain is perceived in the primary sensory cortex of the brain and descends back down the pathway into the spinal cord.



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“You matter because you are you, and you matter until the last moment of your life.”

—*Dame Cicely Saunders*

Pain is “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.”¹ Pain that is not well-managed contributes to suffering whether patients have restorative functional goals or are transitioning into comfort care. In the early and intermediate stages of their cancer diagnosis, 30% to 40% of patients experience unrelieved pain, while 75% of cancer patients in the terminal phase of their disease are reported to experience unrelieved pain.² Patients with HIV or AIDS have pain from their disease process or from treatment with antiretroviral agents and this pain can considerably reduce quality of life.³

Pain that is unrelieved creates negative physical effects that impact the cardiovascular,

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hematologic, pulmonary, gastrointestinal, and immune systems. Uncontrolled pain can produce catecholamines, causing increased workload on the heart. Pain can increase sodium and water retention, which result in edema/fluid overload. Pain, poorly managed, can cause a hypercoagulable state increasing the incidence of thromboembolic events. It will impair pulmonary status by decreasing effective respirations, creating hypoventilation and resultant atelectasis leading to pneumonia. Gastrointestinal motility slows down as a result of unrelieved pain. The immune system is impaired through a reduction of natural killer cells inhibiting healing.³ Lastly, when pain is poorly managed, chronic pain can develop.⁴

MECHANISM OF ACTION

In caring for patients who are receiving palliative care, nurses need to understand the underlying mechanisms that create pain. There are three subtypes of pain: somatic pain, visceral pain, and neuropathic pain.

Somatic pain originates from nociceptive activity in the skin, subcutaneous tissue, bones, muscles, and blood vessels. The painful stimulus activates the A-delta fibers and travels through the peripheral and central nervous system rapidly. This pain is localized and is described as sharp, aching, or throbbing.

Visceral pain is activated in the organs, body cavities, and is transmitted through C fibers. It is more diffuse, and is described as gnawing, cramping, dull, and aching quality.

Neuropathic pain arises as a direct consequence of a lesion or disease affecting the somatosensory system.⁵ Neuropathic pain manifests as a regional distribution of pain following along a peripheral innervation, a lesion, or disease affecting the peripheral or central nervous system or when neurologic signs corresponding to the pain distribution and confirmed by laboratory or objective measures are present. Patients may describe this pain as burning, prickling, tingling, or they may have unusual sensations ranging from numbness to lancinating sensations.

Specific details about the chemicals released in the tissue when injury or tumor develops have been identified through advances in neuroscience.⁶ Chemicals released in the periphery are prostaglandin, bradykinin, serotonin, histamine, and cytokines. Prostaglandins sensitize neurons and excite C fibers. Bradykinin is triggered by the activation of the clotting cascade and evokes a response in both A and C nociceptors, creating inflammatory pain and hyperalgesia. Serotonin is released from platelets, and histamine is released from mast cells. Cytokines are powerful sensitizers of C fibers and are part of the inflammatory process that

involves mast cells. These are all inflammatory mediators that result in painful sensations.

These mechanisms are at play in the peripheral nervous system with tissue injury or tumor, and create an action potential. An action potential results from ion exchanges (eg, sodium and potassium) along the neuronal membrane impelling the pain fiber impulse through the neurons terminating in the dorsal horn of the spinal cord. The painful impulse continues to move through the laminae of the dorsal horn of the spinal cord, crossing the dorsal horn and is carried to the brain by way of the spinothalamic tract. Within the brain, pain is perceived in the primary sensory cortex, and the pathway continues back down through the descending pathway into the spinal cord. Pain management is achieved when various combinations of medications work along the pain pathway to create analgesia.

ASSESSMENT OF PAIN

Pain assessment is the foundation of good pain management, and key elements of pain assessment apply to all patients. Integral to good pain assessment is determining the location, description, intensity, duration, alleviating and relieving factors, and associated factors of the pain.⁷ The location of the pain can help you determine the etiology of the pain, or if the pain is referred to another location from the point of origin. Descriptors patients use to describe their pain can be

Patients rarely experience pain as a solitary symptom. Associated symptoms include nausea, vomiting, itching, depression and anxiety.

burning, prickling, tingling, sharp, stabbing, achey, cramping, or pressure. Neuropathic pain is often noted as having burning, prickling, or tingling features to the pain. Somatic pain is often described as sharp and stabbing, and the patient can be very specific about where it hurts. Visceral pain may be described as aching, cramping, or pressure sensations, and is more diffuse. Moreover, patients relate a dimension of emotional suffering to their pain when they use terms such as agonizing, horrifying, or defeating.

Pain intensity scores are a self-report in which the patient gives a number indicating the intensity of the pain. For example, the patient is asked to rate his or her pain on a scale of 0 to 10, where 0 indicates no pain and 10 indicates the worst pain possible. Pain intensity assessment provides

baseline information so that as pain relieving interventions are performed, the nurse can determine if the pain is better, worse, or staying the same. By asking about the duration of the pain, nurses can determine time-associated features of the pain and the duration of relief achieved by pain-relieving interventions.

Alleviating or relieving influences of pain can be determined by asking the patient what makes his or her pain better or what makes it worse. Through this line of questioning, often the patient will inform the health care team about particular treatments that work, allowing the health care team to ask further questions to evaluate whether self-medicated interventions such as nonsteroidal anti-inflammatory drugs (NSAIDs) may produce potential harm. Lastly, patients rarely experience pain as a solitary symptom. Associated symptoms that may manifest with pain include nausea, vomiting, itching, sedation, constipation, depression, anxiety, and confusion. These must be addressed concurrently with the pain.

Various assessment tools provide a means to assess pain from a multidimensional perspective. These tools can measure mood, activity or function, sleep, and medication effectiveness. An example of a multidimensional tool is the Brief Pain Inventory (BPI). This tool was originally developed for patients with cancer, and it has good reliability and validity in other patient populations as well.⁸ Table 1 lists resources for health care professionals, caregivers, and patients to evaluate the multidimensional aspects of people in pain. A position statement and summary of tools for people unable to report their pain is available through the American Society for Pain Management Nursing.⁹

PHARMACOLOGIC INTERVENTIONS

Both a rational pharmacologic approach and nonpharmacologic plan can be developed using the information obtained from the pain assessment. The rational pharmacologic approach, called *multimodal analgesia*, is the administration of combinations of analgesics with differing mechanisms of action to provide analgesia with lower doses and fewer side effects.¹⁰ For example, a nonsteroidal anti-inflammatory drug with an opioid and acetaminophen (Tylenol) block pain at different sites along the pain pathway. NSAIDs block prostaglandin at peripheral nociception. An opioid blocks pain at the opiate receptors at the periphery, the substantia gelatinosa of the dorsal horn of the spinal cord, and the periaqueductal grey region of the brain. High doses of acetaminophen (3,000 to 4,000 mg/day) block pain at the descending serotonergic path. Other interventions to consider that may enhance pain management via multimodal analgesia are nerve blocks using local anesthetic agents, or intraspinal analgesia using

Table 1. Multidimensional pain assessment tools

Brief Pain Inventory http://medicine.iupui.edu/RHEU/Physicians/bpif.pdf
McGill Pain Questionnaire www.fcsoftware.com/images/16_McGill_Pain_Questionnaire.pdf
Multidimensional Objective Pain Assessment Tool (MOPAT) http://pubmedcentralcanada.ca/pmcc/articles/PMC3114254/pdf/jpm.2010.0302.pdf
Pain Outcomes Questionnaire www.midss.ie/sites/www.midss.ie/files/pain_outcomes_questionnaire_sf_rev_2.pdf
West Haven-Yale Multidimensional Pain Inventory www.tac.vic.gov.au/media/upload/west_haven_yale_multidimensional_pain_inventory.pdf

opioids alone or in combination with local anesthetic agents. These interventions can be used in concert with opioids and nonopioid analgesics administered systemically and with the supervision of an anesthesiologist.

Another category of medications that can be used as adjunct analgesia is the α_2 , δ -ligands, such as gabapentin (Gralise, Horizant, Neurontin, generics) and pregabalin (Lyrica, generics). These medications produce analgesia by way of neuronal membrane stabilization at voltage-gated Ca^{2+} channels along the peripheral nerve. The mechanism of action is proven to be effective in inflammatory pain, neuropathic pain, and in reducing postoperative pain when given both preemptively and postoperatively.¹¹

Many medications are available to block pain at various pain pathways. The agents discussed in this article are not an exhaustive list of medications used to treat pain. The following guiding principles for effective pain management summarize the factors to consider when developing a rational pharmacologic approach to pain management.¹²

- Understand that pain is a subjective experience involving the biological, psychological, social, and spiritual components of a person’s life.
- Pain does not usually occur in isolation from other symptoms; the associated symptoms also need to be assessed and managed (ie, nausea, dyspnea, etc.).
- Assessment should be comprehensive, individualized, and holistic involving input from the multidisciplinary team.
- Patient and caregiver should be involved in the assessment and planning of various interventions used.
- The etiology of the pain may not be known, however, attempts to determine the etiology must be compatible with the patient’s goals.
- Oral analgesia should be the preferred route of delivery

when possible, titrated until pain is relieved, and given regularly when pain is persistent.

- Morphine is considered the standard-of-choice opioid. However, if comorbid illness exists, such as renal insufficiency, an opioid with less active metabolites may be preferred to reduce side effects.
- When pain is continuous, so must the analgesia be continuous, with breakthrough pain medications available.
- Adjuvant medications should be based on the assessment of the patient's pain and overall physical condition.

NONPHARMACOLOGIC INTERVENTIONS

Nonpharmacologic modalities can be used with a pharmacologic approach to pain management. These strategies can be very effective in relieving pain and providing comfort while empowering the patient and family to deliver pain relief in a safe manner. Nonpharmacologic modalities include, but are not limited to, relaxation techniques, superficial heating or cooling, acupuncture, reflection and spirituality, and pacing.¹³

Relaxation can be learned but not forced. It involves letting go of stressful thoughts and thinking pleasant thoughts. Techniques used to assist in relaxation can help with both acute, chronic, and cancer pain. Muscle relaxation techniques include shoulder shrugs, head circles, shoulder rolls, and arm and fist tightening/relaxation. These techniques serve to focus the mind and should be performed in a quiet, comfortable, warm room.

Superficial heating and cooling via applying hot or cold packs is effective for localized pain. Although the underlying mechanism is unknown, heat or cold is believed to relieve pain by easing muscle tension or reducing swelling, respectively.¹⁴ The patient should be educated to protect the skin against prolonged exposure, and resultant tissue injury.

Acupuncture is the therapeutic placement of needles along the meridian system. Evidence supports that acupuncture releases endogenous opioid peptides, thus creating analgesia.¹⁵ Education standards for physician and nonphysician acupuncturists are established through agencies at the state level. Health insurance reimbursement, however, varies and should be investigated for the patient.

Reflection allows the patient to acknowledge and honor their feelings as they arise. Painful memories or thoughts can increase stress, and pain becomes worse. Reframing uncomfortable feelings with pleasant ones reduces stress and allows further relaxation. Spiritual health may be important to the palliative care patient and providing support for spiritual health can assist in healing. Through their spirituality, the patient can make sense of and give meaning to their suffering and their lives.

Pacing is done through interrupting activity for short and

TABLE 2. Pain management resources

American Society for Pain Management Nursing (ASPMN)
www.aspmn.org/Organization/position_papers.htm
Position statements from the ASPMN

PartnersAgainstPain.com
<http://partnersagainstpain.com/>
Information for patients and caregivers

A Patient Resource Guide: Reducing Your Pain
www.myvirtualpaper.com/doc/nphf_pain/p719_b_pain_gtg/2012022301/#0
A digital publication on pain management

Resources For People in Pain
www.americanpainsociety.org/resources/content/for-people-in-pain.html
Links to resources and information on pain management

frequent breaks. These breaks allow patients to change position, practice deep breathing for relaxation, stretch, and avoid feeling rushed and anxious by slowing the pace of activity. Energy conservation is part of pacing and can be taught to patients and their caregivers. This not only helps improve the patient's pain but also associated symptoms such as dyspnea. The steps to energy conservation are

- Eliminate unnecessary tasks.
- Avoid unnecessary bending, reaching, or walking.
- Avoid lifting objects by sliding them along a counter or using a cart.
- Pack grocery bags so they are not too heavy, and place them in a rolling cart when possible.
- Do not overload purses or briefcases.
- Avoid using shoulder bags, as these may throw off balance and cause more pain.¹⁵

CONCLUSION

The suffering that occurs from pain encompasses all of the patient's physical, psychological, social, spiritual, and daily struggles.¹⁶ Pharmacologic analgesia can be used to block the pain pathway, thereby relieving pain. Nonpharmacologic interventions can enhance pain management, individualize the patient's treatment plan, and empower the patient and their caregivers to use techniques that do not require medical or nursing intervention (Table 2). An effective pain management plan uses both pharmacologic and nonpharmacologic interventions in combination to achieve pain relief and enhance patients' quality of life. ■

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