

Module Two

Competency 2

Pain Assessment & Management

Prepared by:

Alexandra Beel

Clinical Nurse Specialist

WRHA Palliative Care

Darlene Grantham

Clinical Nurse Specialist

WRHA Palliative Care

Competency Two Pain Management

Objectives:

1. To understand the multidimensional factors that influence the person's "total pain" experience.
2. To understand the anatomy and physiology of the pain process.
3. To collect, interpret and document pain assessment data.
4. Describe analgesics and adjuvant analgesics used for pain relief.
5. Discuss the barriers to the use of opioids.
6. Describe non-pharmacological interventions used for pain relief.
7. Describe special considerations of pain management for children and the elderly (with and without cognitive impairment) with advanced illness.
8. Discuss the use of chemotherapy in managing pain in advanced illness.

Definitions

Acute Pain	Pain of recent onset that is usually transient in nature, lasting from several minutes to several days or weeks. It is usually caused by tissue damage and is often associated with some degree of inflammation. It may or may not be associated with anxiety and overt pain behaviors (grimacing, splinting, limping) depending on the intensity, predictability and meaning of the pain.
Allodynia	A condition in which pain is perceived after a stimulus that would not normally cause pain
Analgesia	Absence of sensibility to pain.
Baseline Pain	A constant pain state experienced for at least half the day.
Breakthrough Pain	A transitory increase in pain to greater than moderate intensity that occurs on a baseline pain of moderate intensity or less. Clinically, it is very relevant because it causes increased levels of psychological distress and significant decrease in function.
Chronic Pain	Pain that persists beyond the usual course of an acute illness or injury (usually beyond 3 months), associated with a pattern of recurrence over months or years or associated with a chronic pathological process. It may be accompanied by emotional (depressive) symptoms but overt pain behaviors are usually absent.
Equianalgesic Dose Conversion	Equianalgesic dose refers to a dose of one analgesic that is equivalent in pain-relieving effects to another analgesic. This equivalence permits substitution of medications to relieve the pain and avoid possible adverse effects.
Hyperalgesia	Increased sensitivity to noxious stimuli
Hyperpathia	Painful syndrome, characterized by delay, overreaction and after-sensation. To stimulus especially repetitive stimulus.
Incident Pain	Is a type of breakthrough pain that is made worse by movement, such as pain on weight bearing in severe osteoarthritis of the hip.
Narcotic	A drug that produces stupor or narcosis (sleep). Narcotic is an obsolete term for analgesics-legal definition applies to all drugs that cause dependence.

Neuropathic Pain	The pathophysiology of Neuropathic pain is very complex. The initial injury to the nervous tissue can occur peripherally, in the central nervous system or a mixture of both (e.g. brachial plexopathy). Destruction, infiltration and compression of the nerve tissue is the cause of pain. Neuropathic pain has two main clinical manifestations: <ul style="list-style-type: none"> - Dysesthetic pain- constant burning or occasionally radiating <ul style="list-style-type: none"> o e.g. post herpetic pain - Neuralgic Pain- sharp, shooting <ul style="list-style-type: none"> o e.g. trigeminal neuralgia
Neuropathy Nociceptive Pain	Disturbance of function or pathology in a nerve. Somatic and Visceral free nerve endings of thinly myelinated and unmyelinated fibers. Pain is caused by direct stimulation of peripheral nociceptors associated with tissue injury as well as inflammation but may also be excited by endogenous chemical substances. Somatic pain is constant or intermittent, gnawing, aching, cramping and well localized. Somatic pain is categorized into superficial and deep pain (e.g. osteomyelitis, arthritic pain). Visceral pain is constant, aching, squeezing, cramping, poorly localized, and occasionally referred e.g. chronic pancreatitis, endometriosis and Crohn's Disease).
Opiate	A drug that is a derivative from opium. Morphine and codeine are Derived from opium and hence are opiates. All other drugs known as narcotic analgesics are not opiates.
Opioid	A drug that binds to opiate receptors and produces morphine-like action. Opiate and opioid often are used interchangeably in clinical practice.
Peak	The amount of medication in the blood that represents the highest Level during a drug administration cycle.
Subacute Pain	Acute pain that lasts for up to 3 months.

Myths

1. There is a defined upper limit to the dose that can be safely administered.
2. There is a significant risk of drug addiction.
3. Tolerance is unavoidable.
4. Morphine loses its effect if it is started too early
5. Opioids control all types of pain.
6. Dosing increments inevitably cause respiratory depression.
7. Subcutaneous injections are more effective than oral administration.
8. Intravenous injections are more effective than subcutaneous injections.
9. Opioids always cause confusion and drowsiness.
10. Patients who request their medication too often have become drug addicts.
11. Pain is normal and expected in the Elderly and Cognitively Impaired.
12. Pain sensitivity or perception decreases with age.
13. If someone does not complain, they are not in pain.
14. Opioids are not appropriate for use in the elderly with non-malignant pain.

15. Opioids are dangerous to use in the elderly.
16. Infants and children do not experience as much pain as adults.
17. Children may become addicted or experience respiratory depression if analgesic is administered in large doses.

Pain Management

The **clinical** definition of pain specifies that “pain is whatever the experiencing person says it is, existing wherever the person says it does” (McCaffery, 1997). The **scientific** definition of pain specifies that “pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage (Mersey, 1994). It is important to distinguish the difference between pain and suffering. Although there is a link between pain and suffering, they are distinctive entities. The sense that pain and suffering are intertwined does violence to considerations of both pain and suffering. A person in pain may suffer and a person without pain also may suffer. It is important to remember that pain may occur without suffering and visa versa. (See Module One).

1. Pain as a multidimensional phenomenon

Pain is a multidimensional phenomenon with five components: affective, behavioral, cognitive, sensory, and physiological. The emotions related to the pain (affective component), the behavioral responses to the pain (behavioral component), the beliefs, attitudes, evaluations and goals about the pain and pain control (cognitive component) all alter how the pain is perceived (sensory component) by modifying the transmission of nociceptive stimuli to the brain (physiological component). Nurses must understand each dimension in order to assess pain and to make nursing decisions based on that assessment and knowledge of the mechanism of pain.

Affective dimension: emotions such as fear, anxiety, depression, anger, hope, joy. This dimension includes emotional responses to pain that are cultural in origin.

Behavioral dimension: express pain to others, reduce pain intensity, prevent pain onset, tolerate pain, adherence to the analgesic therapy plan. This dimension includes behavioral manifestations of pain that are cultural in origin.

Cognitive dimension: beliefs, attitudes, meaning of pain and disease. Memory of past pain, cognitive resources to cope with pain, locus of control, level of consciousness. This dimension includes cognitive aspects of pain that are cultural in origin.

Physiological-Sensory dimension: pain mechanism & modulation result of which is perceived as pain. This dimension includes physiologic aspects of pain that are related to the person’s ethnic and cultural heritage, such as genetics age-related changes.

Examples of Factors that Influence the Perception of Pain
“Total Pain Concept”

Emotional Pain (Affective)	Social Pain (Behavioral)	Physical Pain (Physiological)	Spiritual Pain (Cognitive)
Social Isolation Fear Depression Anger Sadness	Financial Worries Family Distress Inability to Work	Illness (cancer) Treatment Unrelated to Cancer	Guilt Regret Fear of Dying

Physical Causes of Pain

Cancer	Treatments	Cancer-Related	Unrelated to Cancer
Bone Nerve compression Lymphoedema Myopathy Ulceration Infection	Postoperative Colostomy Nerve block Phantom pain Post Radiotherapy Pain syndromes	Constipation Pressure sores Pulmonary Embolism Candidosis Deep Venous Thrombosis	Headache Arthritis CardiovasuclarDisease

Factors that Affect Pain Threshold

Decrease Threshold	Increase Threshold
Discomfort Insomnia Fatigue Anxiety Depression Fear Anger Isolation Boredom	Symptom relief Sleep Rest Lowered anxiety Anxiolytics, antidepressants Sympathy Understanding Support Distraction

Basic Principles of Effective Pain Control

(Alberta Palliative Care Resource 2001)

- Pain is a multidimensional construct. (Total Pain Concept).
- A disciplined, multidimensional assessment is essential.
- Avoid delay in treating.
- Communicate and educate the patient, family and other caregivers.
- Follow a step approach that depends on severity.
- Constant pain requires regular administration of analgesics.
- Always leave instructions for a “breakthrough dose”.
- Consider opioids as only one part of the management of total pain.
- Patients with rapidly changing clinical circumstances require ongoing assessments.

Goals for Pain Control:

Eliminate pain at night
Eliminate pain at rest
Eliminate pain on activity

Pain in the Elderly and Cognitively Impaired

Pain in the elderly and cognitively impaired is generally under treated. Part of the problem is related to the fact that elderly persons are reluctant to report their pain symptoms and the cognitively impaired cannot. Elderly and cognitively impaired persons experience the same distressing symptoms at end of life as younger people and deserve the same attention. Elderly and cognitively persons generally consume more medication as they tend to have more medical conditions than younger adults. Therefore the risk of medication side effects is higher amongst this group. Factors contributing to this increased risk are physiologic changes that can affect the elimination of medications by the kidney and liver. Also many elderly and cognitively impaired persons are more sensitive to the central nervous system effects of certain medications. At the end of life, the disease process can compound these factors, further increasing the risk of adverse drug reactions. Common sites of non-cancer pain in the elderly are:

Site of Pain	Common Pain Syndromes
Head and Neck	Trigeminal neuralgia Cluster headache Temporal arteritis Cervical osteoarthritis
Joints	Should and hip osteoarthritis Rheumatoid arthritis
Lower Back	Lumbar disc disease Lumbar Stenosis Lumbar osteoarthritis Osteoporosis Vertebral body collapse
Extremities	Peripheral neuropathy Peripheral vascular disease Reflex sympathetic dystrophy
Heart	Angina
Trunk	Postherpetic neuralgia Diabetic radiculopathy Postsurgical intercostals neuralgia
Gastrointestinal	Hiatus hernia Chronic constipation Acute cholecystitis Irritable bowel syndrome

Pain in Children

Both acute and chronic pain may be experienced in children. Pain occurs with invasive procedures such as blood draws, skin, liver and other biopsies or as a result of chemotherapy and radiation-induced side effects such as mouth ulcerations and skin breakdown. Anxiety, age, fear, and parental attitudes are factors that can affect the child's perception of pain. Acetaminophen is the most common non-narcotic analgesic used in children. Given for mild discomfort, however, it is often challenging to get children to take medication orally, especially if they are nauseated or vomiting.

Morphine is the drug of choice in relieving moderate to severe pain in children. Noninvasive techniques in pain control used alone or in conjunction with medications are distraction and relaxation. Distractions such as play, television and video games may help the children get his/her mind off the pain. If available a child play therapist is a valuable resource to children who are in pain. If adjuvant medication is used to manage pain such as steroids side effects such as fluid retention, weight gain, and excess facial and body hair must be explained both to the patient and their family.

2. Pain Mechanisms

The neural mechanisms by which pain is perceived are part of a process that involves four major steps: 1) transduction; 2) transmission; 3) perception; and 4) modulation. The transduction and transmission steps relate to the neurochemical signals of actual or impending tissue damage (nociceptive stimuli). Not all nociceptive stimuli are perceived as pain. If there is sufficient modulation of signals and the perception of nociceptive events is prevented then there is no pain. Perception is critical to sensing pain. Modulation, either enhancing or inhibiting nociception is also crucial to pain perception. A person's emotions are an important source for pain modulation. Most pain management techniques probably mimic endogenous pain inhibition processes. Conversely, pain that is difficult to relieve probably results from enhanced nociceptive signals, sometimes fueled by the person's emotional state. Details about these four steps provide a foundation for nursing practice in the management of pain.

1. Transduction

The first step of the pain process is transduction, which is the conversion of a mechanical, thermal or chemical stimulus into a neuronal action potential. Understanding the clinical significance of this important and complex in the pain process requires knowledge of the anatomy, physiology, and pathophysiology of the peripheral nervous system and its response to tissue injury.

Anatomy and Physiology of Transduction:

Peripheral nerve cells are stimulated by tissue damage (noxious), pressure, heat or chemical forces. A sufficient stimulus generates an action potential at nociceptors (receptors) on A-delta fibers and C fibers. These are known as primary afferent nociceptors (PAN), the first order neurons in the processing of nociceptive stimuli.

Pathophysiology of Transduction:

When a soft tissue mass exerts sufficient pressure on tissues to cause nerve transduction, the nerve is activated and signals the tissue damage to the CNS. This type of mechanical injury to somatic (skin, muscle or bone) or to visceral tissues is known as nociceptive pain. In contrast, pressure from a mass that encircles or constricts neural tissues (e.g. nerve roots) and that is sufficient to injure tissue produces pain known as neuropathic pain. Nerve tissue may also be damaged by surgery, chemotherapy, infection.

Tissue damage produces chemical that cause an action potential and results in the production and release of a number of chemicals around the PAN. The chemicals can sensitize or activate the PAN directly. The chemicals are commonly described as ingredients in the peripheral soup surrounding the PAN. If any of these ingredients can be eliminated from the peripheral soup, then the PAN may not send an action potential to the CNS.

2. Transmission

Once the PAN has been transduced, the action potential must be transmitted to the CNS and through the CNS before pain is perceived. Three steps are involved in nociceptive signal transmission: 1) projection to the CNS; 2) processing within the dorsal horn of the spinal cord; and 3) transmission to the brain. Each step is important to pain perception.

3. Perception

In the brain nociceptive input is perceived as pain. Pain perception involves several brain structures. Until it is understood more clearly where pain is perceived, prudent nursing practice involves treatment of any noxious stimuli as potentially painful.

Because of the complex neural mechanisms of nociceptive processing, pain is perceived as a multidimensional sensory and emotional experience to which there are cognitive and behavioral responses.

4. Modulation

Critical to transmission of nociceptive stimuli and pain perception are the modulatory mechanisms, the final step in the pain process. Nociceptive cells in the spinal dorsal horn are selectively inhibited by brain stem stimulation. Modulation may include both inhibition and well as enhancement of nociceptive stimuli.

Pathophysiological Consequences of Unrelieved Pain

Unrelieved pain is more than an annoyance it is physically and psychologically dangerous.

- Immune System: Unrelieved pain causes decreased natural killer cell numbers, function and activity.
- Pulmonary System: Unrelieved pain causes reflex muscle spasm leads to splinting which decreases pulmonary vital capacity; could lead to atelectasis, which is often followed by pneumonia.
- Cardiovascular System: Unrelieved pain causes sympathetic activity which increases heart rate, BP, cardiac output and oxygen use.
- GI: Unrelieved pain causes increased sympathetic activity, which increase secretions and smooth muscle sphincter tone decreases intestinal motility.
- Musculoskeletal system: Unrelieved pain causes increased muscle spasm leads to impaired muscle spasm metabolism and to muscle atrophy.
- Psychological consequences of unrelieved pain include fear, anxiety, depression, distress and suffering, hopelessness, helplessness and decreased will to live.

Summary

The pain process includes neural mechanisms related to transduction, transmission, perception and modulation. These mechanisms represent complex, not fully understood systems, but begin to explain the tremendous variability in pain reported by persons experiencing similar degrees of tissue damage. The amount of pain perceived by an individual may vary tremendously depending on the context of the situation, including the person's genetic capability to metabolize analgesic drugs. Knowledge about neural mechanisms of nociception, pain perception and pain modulation is vital for clinical decision making and rational management of pain experienced by seriously ill patients.

3. Pain Assessment

How to Assess?

A common belief is that pain can be assessed but it cannot be measured. Assessment is the act of determining the importance, size or value of something. In contrast, measurement is the act or process of applying a metric gauge to something. Pain can be measured in a similar way by including valid and reliable metrics (tools or scales) of the pain experience as part of the pain assessment process.

Many tools are available to measure the sensory components of pain (pattern, area, intensity and nature). Fewer tools are available to measure the affective, behavioral and cognitive pain components in clinical practice.

Physiological Dimension

It is important to understand the link between pain assessment data and the neural mechanisms of pain. Emphasize the connection noting that the patient's description of his/her pain is a clue to the neural mechanisms of pain and therefore the key to finding the most effective therapy for the type of pain the patient has: nociceptive, neuropathic or both types.

Sensory Dimension

Four aspects of the sensory dimension are critical to understand if the pain is nociceptive or neuropathic in its etiology. Data about location, intensity, quality and pattern are important to successful pain relief.

Location and distribution of pain: Patients with cancer pain often have pain in multiple sites of the body. Location helps identify the site where the tumor is growing. Localized pain sites of pain are often associated with injury and indicators of nociceptive pain. Projected sites of pain are often associated with damage to peripheral nerve fibers and indicators of neuropathic pain. Referred sites of pain are often associated with damage to visceral tissues and indicators of nociceptive pain but can be neuropathic if persistent and unrelieved.

Intensity or severity: Will vary from person to person and often not a good indicator of pain etiology. Intensity or severity of pain should be measured when

the person is at rest and with activity, as the intensity is often different with movement and is an important source of variability in pain reports.

Quality or descriptors of the nature of pain: The use of verbal descriptors is very important and provide a clue to appropriate drug (s) to relieve pain, the need for emotional support and the patient's ability to cope.

Temporality or the pattern of the pain: This will guide decision making regarding the interval for analgesic therapies and the time to introduce non-pharmacological interventions.

Questions: When did it start?
 How long does it last?
 Does it come and go?
 What make it worse /better?
 What have you used in the past for the pain?
 What symptoms are associated with the pain?

Affective Dimension

When initial pain treatments do not provide the anticipated outcomes, a comprehensive pain assessment should be conducted.

Negative emotions: Patients with unrelieved pain often have concurrent emotional responses that can intensify pain sensation, such as anger, fear and anxiety. These emotions stimulate the autonomic nervous system. As well, depression is associated with alteration of amine function (e.g. serotonin) in the CNS which may reduce effectiveness of the pain inhibition system.

Positive emotions: Emotions such as joy, humor and laughter may decrease the amount of pain perceived by persons with pain. These mechanisms are not clearly known.

Behavioral Dimension

The behavioral dimension of pain provides important insight about pain in people not able to verbally report their pain. Theses behaviors associated with pain include behaviors that pain prevents, medication adherence, pain control behaviors and pain expression behaviors.

Behaviors prevented by pain: Pain may interfere with usual behaviors that bring the patient joy and satisfaction. The greater number of activities prevented by cancer pain has been associated with increased negative emotions such as anxiety.

Medication adherence: Despite the effectiveness of analgesic medications, many patients do not adhere to prescription for a variety of reasons. Drug side effects, if not well controlled often cause the patient to stop taking pain medication. Many other reasons related to non-adherence are related to their beliefs, attitudes and expectations.

Pain control behaviors: Patients with pain engage in a number of behaviors to control their pain. For example, watching television and visiting with family helps to distract patients from their pain and can be very effective in helping to control pain.

Cognitive Dimension

The cognitive dimension of pain is an important dimension for holistic understanding of pain.

Beliefs: Meanings associated with and beliefs, attitudes and expectations about the disease and about pain can influence patient response to pain therapy. Helping patients to expect that pain relief is possible is an important nursing intervention for all people.

Goals for pain management: A patient's goals for and expectations about pain relief and treatment outcomes are crucial in understanding cognitive aspects of pain. Goals of treatment must be realistic and attainable. Research suggests that health care professionals may expect patients to tolerate some pain, even if the pain does not interfere with the patient's function. This level of pain, however, may be inconsistent with the patient's goals. This area of pain assessment is facilitated when the patient's wishes are known and the family members are comfortable with those wishes.

Past experiences with pain and pain relief: A person's past experiences with pain and pain relief provide insight into the person's responses to different therapies and the person's coping with pain.

Other cognitive factors: Such as level of consciousness (sedation level), dementia, memory of past pain and cognitive resources to cope with the pain can dramatically influence the pain experienced by the person with pain.

Family members: Many studies have shown that families are reliable when reporting the presence or absence of pain to health professionals. Family members are less reliable when it comes to reporting the intensity, location, quality or pattern of the patient's pain. Some family members underestimate, other overestimate and a few family members are precise when compared to patient self-report of pain. Family members assume a great deal of responsibility for assessing pain in people facing the end-of-life transition.

Pain Assessment in the Elderly and Cognitively Impaired

Due to sensory deficits in hearing, vision and cognitive ability it is difficult to get a complex history from the patient and it may take longer and be more difficult. Caregiver information is extremely useful in these situations. Persons who are severely cognitively impaired may grimace and have tense body posture, especially when asleep, increased vocalization and agitation may also be due to pain. In an elderly person who is not cognitively impaired pain may be expressed by somnolence due to exhaustion from the pain. Since elderly persons do not self-report pain it is necessary to ask all elderly persons about their pain. In the elderly with new pain or intensifying pain it is important to establish whether it is due to a malignancy. "Red flags" for malignancy include:

- severe, rapidly intensifying pain
- poor response to analgesic
- night time pain
- radicular features
- constitutional symptoms (weight loss, fever, pruritis, malaise)
- previous treatment of a malignant disease

Pain Assessment in Children

The McCaffrey definition of pain applies to children as well however, children can not always let the nurse know that they are experiencing pain. Even if a child admits to pain, the amount, location, and other describing features can be difficult to elicit. Features such as restlessness, inconsolable crying, changes in vital signs, lack of interest in eating or playing, motor disturbances, decreased ability to concentrate, and inability to sleep are signs that can alert the nurse that an infant or young child is in pain. Both subjective and objective data are used to assess a child's level of pain. Assessing pain in children requires the use of tools and language that is familiar to the child. For instance, "owie" or "hurt" may be used to describe pain and therefore questions should be phrased that uses this language. The location of pain can often be determined by having the child point to the area on his/her body or use a body outline and have the child color the spot that hurts. For school-aged children assigning a number to their pain can be used to help the nurse understand the amount of pain they are experiencing. The older child or adolescent can describe the amount, type, duration and location of the pain. In addition children should never be lied to about a painful procedure. It is extremely important as with adults to build a trusting relationship with the child. Also supportive care must be family centered and parents should be involved in decision making and allowed to provide comfort to their child in the ways they have in past.

Documentation of Pain Assessments

Initial Assessment

Assessment of the critical components of pain should be assessed when initial care is provided to the patient. Comprehensive assessment should occur if the response to therapy is not sufficient in order to identify other factors contributing to the pain.

Follow-up Assessment

Reassessment should include at least pain intensity and should occur at the onset, peak, duration of the analgesic therapy. Pain intensity values at onset indicate initiation of analgesic effect, at peak determine maximum relief obtained and at duration of action reveals length of analgesic effect. Pain intensity should be reassessed frequently to document pain at rest, with activity or when wound care and other treatments are provided.

Tools for Clinical Practice

Although there is not valid and reliable pain measurement tool that measures all aspects of the pain experience, The McGill Pain Questionnaire captures many elements. Other tools include VAS and Faces Pain Scale.

Pain Assessment Study Questions

1. A patient in pain may:
 - a. Moan and groan
 - b. Laugh and smile
 - c. Be depressed
 - d. Be angry
 - e. All of the above
2. Any patient in pain is suffering? True or False
3. Patients may sleep in spite of severe pain? True or False
4. Sleep or sedation can be equated with pain relief? True or False
5. The most accurate way to measure a patient's pain is?
 - a. for the nurse and physician to observe the patient together
 - b. monitor vital signs for any changes
 - c. patient's self-report
 - d. intuitive skills developed by the expert nurse
6. What factors about the patient's pain must you know to develop a pain management plan?
 - a. description of the pain and its intensity
 - b. location of the pain and when it started
 - c. aggravating factors and previous treatments
 - d. a and b
 - e. a and b and c
7. Dull and aching commonly describe which type of pain?
 - a. visceral
 - b. somatic
 - c. Neuropathic
 - d. nociceptive
 - e. all of the above
 - f. none of the above
8. Shooting, burning and tingling describe which type of pain?
 - a. visceral
 - b. somatic
 - c. Neuropathic
 - d. nociceptive
 - e. all of the above
 - f. none of the above

9. Severe usually describes which type of pain?

- a. visceral
- b. somatic
- c. Neuropathic
- d. nociceptive
- e. all of the above
- f. none of the above

10. Pain reported as “cramping, all over my lower stomach” usually describes which type of pain?

- a. visceral
- b. somatic
- c. Neuropathic
- d. nociceptive
- e. all of the above
- f. none of the above

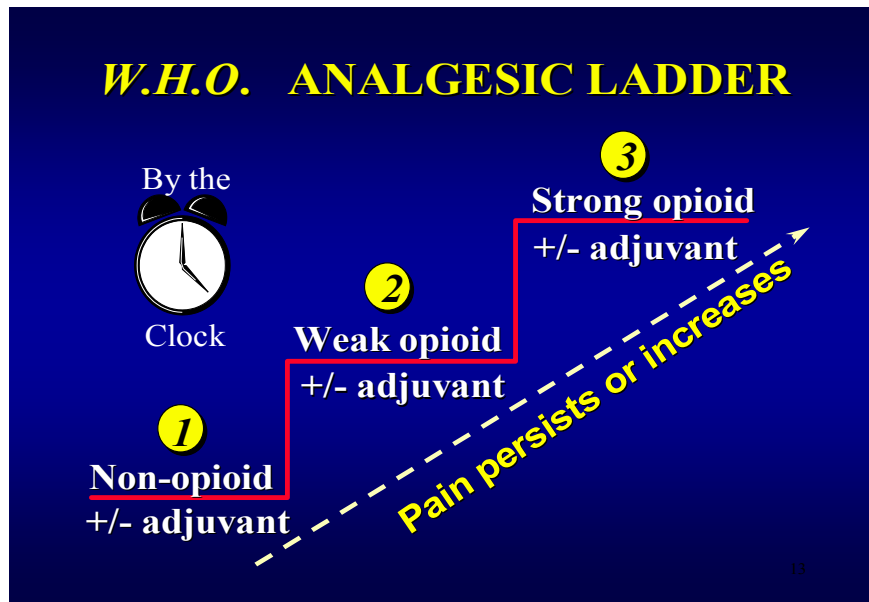
Answers

- 1. e. all of the above
- 2. False
- 3. True
- 4. False
- 5. c. patient’s self-report
- 6. e. a and b and c
- 7. d. nociceptive
- 8. c. Neuropathic
- 9. e. all of the above
- 10. a. visceral

4. Pain Management

World Health Organization Analgesic Ladder: A Systematic Approach for the Use of Analgesics

In 1986, the World Health Organization proposed that health professionals use analgesic medications via a systematic plan. The systematic plan includes a three-step ladder approach relevant to pain management for all types of pain.



Step One: Nonsteroidal Anti-Inflammatory Drugs (NSAIDs):

Nonsteroidal anti-inflammatory drugs are powerful analgesics especially for nociceptive pain. NSAIDs also are effective in some neuropathic pain syndromes when used with other analgesics. The prototype drug for the NSAIDs is aspirin. Indomethacin is one NSAID other than aspirin specifically approved for use in children. NSAIDs are used with or without adjuvant drugs to control mild pain

Mechanism of action: NSAIDs provide analgesia by blocking chemicals which sensitize the peripheral pain receptors to send a pain signal to the CNS. These drugs have anti-inflammatory and analgesic actions are both CNS and peripheral nervous system (PNS) effects whereas the antipyretic actions are CNS effects.

Routes of administration: Oral or rectal formulations

Side effects and toxicity: are mainly related to gastrointestinal (bloating, nausea, vomiting diarrhea) and renal effects.

Nursing Implications: include ongoing assessment of pain and other symptoms as well as being aware of drug interactions. NSAIDs have important interactions with alcohol, antacids, anticoagulants, lithium, diuretics. Aspirin should not be used in children with viral infections in order to minimize the adverse consequences associated with Reyes Syndrome.

Step One: Acetaminophen

Acetaminophen is well-known drug and commonly used in children and the elderly. It is available OTC and is inexpensive.

Mechanism of desired actions: Acetaminophen (Tylenol) is another step 1 drug that is used with or without adjuvant drugs to control mild pain. Acetaminophen does not block the prostaglandin synthesis in the peripheral tissues, but instead produces pain relief through central mechanism not clearly understood. Acetaminophen has both analgesic and antipyretic properties.

Routes of Administration: includes both oral and rectal formulations

Side effects and toxicity: of acetaminophen are less than aspirin. Acetaminophen does not cause gastric irritation or affect platelet function. Serious hepatic toxicity is possible with chronic use or acute overdose.

Nursing implications: Includes ongoing assessment of pain and being aware of risk factors for toxicity.

Step One: Overview of Adjuvant Analgesics

Many drugs not often thought of as analgesics have been shown to provide pain relief are know as adjuvant analgesics or as co-analgesics. Adjuvant drugs act in many different ways, some have CNS and have PNS actions, but work differently than acetaminophen, NSAIDs or opioids. Many of the adjuvant drugs are effective for neuropathic pain. Adjuvants may include tricyclic antidepressants, anticonvulsants, and steroids.

Step Two and Three Opioids

Step two and three opioids have many commonalities and several important differences. Step two opioids are recommended for mild to moderate pain. Codeine, oxycodone, and hydrocodone are examples of Step 2 drugs. These opioids are considered by some professionals to be weak opioids because they are not potent or are available in fixed formulations with other drugs such as acetaminophen that limit the opioid dose by virtue of the ceiling dose of acetaminophen. Studies indicate that 32% of patients with cancer pain can be maintained on Step 2 opioids until death.

Step 3 drugs are recommended when Step 2 drugs are not effective in producing pain relief or the pain is moderate to severe intensity. Step 3 drugs include opioids such as morphine, dilaudid, fentanyl and methadone.

The WHO Analgesic Ladder recommends morphine as the drug of choice and oral as the administration route of choice. Morphine is a very effective drug, however recent evidence raises questions about its use as the drug of choice, particularly in high doses in patients with compromised renal function. High dose morphine has been associated with hyperalgesia (exaggerated pain sensation) and myoclonus (severe muscle spasm).

World Health Organization Analgesic Ladder: Step 1 Analgesics

Drug	Dose	Equivalence	Onset	Peak	Duration
Aceparaminophen (Tylenol, Tempra)	600 mg po 600 mg pr (2,600-4,000 mg/day)	Aspirin 600 mg	30 min	60 min	3-4 hours
Acetylsalicylic Acid (aspirin)	600 mg po 600 mg pr (5,200 mg/day)	Morphine 2 mg IM	30 min	60 min	3-4 hours
Ibuprophen (Motrin, Advil)	200 mg po (3,200 mg/day)	Aspirin 650 mg	30 min	6-120 min	4 hours
Naproxen (Naprosyn)	250 mg po (1,250 mg/day)	Aspirin 650 mg	60 min	120-240 min	6-8 hours
Ketorolac Tromethamine (Toradol)	30-60 mg IM initially (120 mg IM/day x 5 day, max 30 mg IM x 20 doses)	Morphine 6-12 mg IM	10 min	60 min	3-6 hours
Indomethacin (Indocin)	25 mg po (100 mg/day)	Aspirin 650 mg	60 min	60-120 min	4 hours
Celecoxib (celebrex)	100-200 mg (400 mg)			180	
Rofecoxib (Vioxx)	12.5 – 25 mg (50 mg/day)	2400 mg Ibuprophen	45 min	120-180 min	24

World Health Organization Analgesic Ladder: Step 2 for Mild to Moderate Pain

Drug	Dose	Equivalence	Onset	Peak	Duration
Codeine	30-60 mg po 200 mg po 120 IM	Aspirin 650 mg Morphine 10 mg IM Morphine 10 mg IM	30-45	20-120	4 hours
Oxycodone IR (Roxicodone) w/aspirin- Percodant w/Tylenol- Percocet	5 mg po 30 mg pr	Codeine 60 mg po Morphine 10 mg IM Morphine 30 mg PO	10-30	30-60	4 hours
Hydrocodone (in vicodin, lortab)	30 mg po	Morphine 10 mg IM	0-15	60 min	3-4 hours
PropoxypheneHCL (Darvon, Dolene) w/aspirin- darvon N w/tylenol- darvocet N	65 mg po 100 mg po	Aspirin 600 mg Aspirin 600 mg	10-30 min	60 min	4-6 hours
			15-60 min	120 min	4-6 hours

World Health Organization Analgesic Ladder: Step 3 for Moderate to Severe Pain

Drug	Dose	Equivalence	Onset	Peak	Duration
Morphine IR M.S. CONTIN SR Astramorph INJ	30mg po- 30 mg pr 30 mg po 10 mg IM – 5 mg IV	Morphine 10 mg IM Morphine 10 mg IM Morphine 10 mg IM	20-60	120 210	4-5 hours 8-12 hours
Oxycodone IR (Roxicodone) OxyContin CR	5 mg po 30 mg pr 30 mg po	Codeine 60 mg po Morphine 10 mg IM Morphine 30 mg PO	10-30	60	4-5 hours
Methadone (Dolophine)	20 mg po- 10 mg IM- 5 mg IV	Morphine 10 mg IM	0-15	60 min	3-4 hours
Hydromorphone (Dilaudid)	7.5 mg po 3 mg pr 1.5 mg IM 1 mg IV	Morphine 10 mg IM Dilaudid 1.5 mg IM Morphine 10 mg IM Morphine 10 mg IM	30 min 15-30 min 15 min 10-15 min	90-120 min 30-90 min 30-60 min 15-30 min	4 hours 4-5 hours 4-5 hours 2-3 hours
Oxymorphone (Numorphan)	1 mg IM .5 mg IV 10 mg PR	Morphine 10 mg IM Morphine 10 mg IM Oxymorphone 1 mg IM	10-15 min 5-10 min 15-30 min	30-90 min 15-30 min 60 min	3-6 hours 3-4 hours 3-6 hours
Fentanyl (Duragesic)	.1 mg IM 24-50 mcg/hr transdermal	Morphine 10 mg IM Morphine 30 mg PO Sustained-released q 8 hr	7-15 6 hr	20-30 12-24 hr	1-2 hours 72 hours

Continuous Infusion Rates

To determine the dose rate: a) determine the 24 hour total dose of opioids
 b) divide by ½ if oral
 c) divide by 24 to get the hourly rate
 d) if pain not controlled increase the rate by 25%
 e) bolus dose is generally ½ the rate q 30 min (2/h)
 f) use a concentration of opioid that is sufficient to deliver a min of 0.2 ml/h.

Equianalgesic Dose Table

Drug	PO Dose	PO: SC/IV Ratio	SC/IV Dose
Morphine	10 mg	2:1	5 mg
Codeine	100 mg	2:1	50 mg
Oxycodone	5 mg	Controversial	Controversial
Hydromorphone	2 mg	2:1	1 mg
Methadone	1 mg	1 mg	Too irritating
Fentanyl infusion			0.05 mg
Fentanyl Patch	Use as per manufacturer	Use as per manufacture	<ul style="list-style-type: none"> Use as per manufacture

Analgesia is the desired effect. Assessment of analgesic effect should occur at the onset, peak and duration of the particular opioid drug. This will differ depending on the route of administration. It is safe to administer another full dose of an analgesic at an interval based on the drug's peak effect mindful of the drug's plasma half-life. At the peak effect of the drug nurses, observe the maximum analgesia as well as the maximum side effect of that dose. Based on the nurse's assessments and the physician's prescription, onset, peak and duration effect allows the nurse to use opioids to relieve the patient's pain.

e.g.	Morphine	<u>Onset</u>	<u>Peak</u>	<u>Duration</u>
	Immediate Release –oral	30 min	1-2 hr	4-5 hr
	Subcutaneous Bolus	10 – 30 min	50-90 min	4-5 hr
	Intravenous Bolus	5 min	20 min	2-4 hr

Breakthrough Dose Guidelines

1. For each breakthrough dose, offer 5% to 15% of the 24- hour dose
2. Codeine, hydrocodone, morphine, oxycodone, and hydromorphone all behave similarly. Therefore, an extra breakthrough dose can be offered:
 - a. Once every hour if administered orally, or less frequently in elderly
 - b. Every 30 minutes if administered subcutaneous or intramuscular
 - c. Every 10 to 15 minutes if administered intravenously. Longer intervals between breakthrough doses only prolong a patient's pain unnecessarily

Recommended Initial Transdermal Fentanyl Dose

Oral 24 hr morphine (mg)	Transdermal Fentanyl (ug/h)	Oral 24 hour morphine (mg)	Transdermal Fentanyl (ug/h)
45-134	25	585-674	175
135-224	50	675-764	200
225-314	75	765-854	225
315-404	100	855-944	250
405-494	125	945-1034	275
495-584	150	1035-1124	300

Remember: Rapid pain escalation is unusual and usually means something major is happening e.g., impending fracture or intraperitoneal bleeding. Always titrate with parenteral drugs. Subcutaneous route is the best to use with continuous infusions.

Possible Indications for Parenteral Opioids

Inability to swallow	Compliance problems
Rapidly escalating pain	Too many pills to swallow
Intractable adverse effects (nausea)	Bowel obstruction
Cognitive dysfunction	Severe Stomatitis

Side effects of opioids (side effects will be covered in more detail in Module 3)

Side effects are undesired effects. In addition to producing analgesia opioids produce side effects such as:

- **Constipation** is common. It is necessary to prevent this type of constipation by giving a stimulant laxative and stool softener early in the course of opioid therapy.
- **Sedation** can be effectively treated with stimulants if needed.
- Metoclopramide or other antiemetics can be used to treat opioid related nausea and vomiting.
- An antihistamine can be used to treat itching.
- **Respiratory depression is rare.** Patients are at most risk for respiratory depression when they are asleep, For this reason it is important to observe the rate and depth of patients who are sleeping for 3 to 4 hours past the expected time for peak blood concentrations based on route of administration. If severe respiratory depression occurs and patient stimulation does not reverse the somnolence or increase the respiratory rate, call the physician and obtain an order to administer diluted nalcen (0.4mg/ 10mls saline) in 0.5 ml increments every 2 minutes. Titrate the nalcen to avoid profound withdrawal, seizures and severe pain.
- **Nausea/Vomiting** the primary mechanism by which opioids cause nausea is via dopaminergic receptors in the chemoreceptor trigger zone of the brain and the gastrointestinal tract. Therefore the preferred antidote for this is an antidopaminergic agent such as metoclopramide or haloperidol. Always rule out constipation first.
- **Myoclonus** jerking occurs more commonly with high-dose opioid therapy. If this should develop switch to an alternate opioid especially true for morphine because of metabolite accumulation.
- **Pruitus** appears to be most common with morphine, related to the histamine release but can occur with other opioids.

Some of the Common Adjuvant Analgesics

Drug	Indications	Comments	Starting Dose	Usual Effective Dose Range
Corticosteroids(C/S)	Bone, Visceral Neuropathic	Range of effects: mood elevation, anti-inflammatory, anti-emetic, and temporary appetite stimulation. Reduces cerebral and spinal cord edema and essential in emergency management of intracranial pressure and spinal cord compression. Early effects: loss of glucose control, increased risk of infection and acute psychiatric disorders (e.g. mania)	Dexamethasone 2-8 mg TID to QID po or s.c.	Needs to be tapered according to clinical effect
Nonsteroidal Anti-inflammatory (NSAID)	Bone pain, various soft tissue, visceral or Neuropathic pains	Long term benefits of NSAIDS cause adverse effects such as GI perforation and hemorrhage and renal impairment. New COX-2 specific NSAIDS may offer analgesia with decreased incidence of GI and renal effects	The optimum NSAID and the optimum dose has not been determined for cancer pain	
Tricyclic Antidepressants	Neuropathic pain (Dysesthetic type)	Their adjuvant effects often occur at lower doses than are used for the treatment of depression and may be seen within 24-48 hours of initiating treatment. The most widely reported experience has been with Amitriptyline.	Amitriptyline or desipramine 10-25 mg hs po. (a trial of 7-10 days may be necessary while monitoring for adverse effects).	Amitriptyline or Desipramine 50-100 mg po hs.
Anticonvulsants	Neuropathic pain (neuralgic type)	These need to be used with caution in patients undergoing marrow suppressant therapies such as chemotherapy or radiation. Periodic monitoring of complete blood counts are recommended.	Carbamazepine: 100 mg po bid Phenytoin 100 mg TID Gabapentin: reported to have fewer side effects than others Always monitor blood levels when using these drugs.	Carbamazepine: increase over 2 wks to 400 mg TID Phenytoin: 100 mg TID Gabapentin: starting dose is 100 mg po TID and this can be titrated 2wks to a max of 3,000 mg in 3 divided doses
Ketamine (NMDA antagonists)	Neuropathic Pain (hyperalgesic component)	Can cause psychotic effects		
Baclofen	Neuropathic Pain (neuralgic type)	Used for painful muscle spasms		

Consider the following before using Adjuvant Medication:

1. Optimize the opioid i.e., titrate up
2. Consider the risks vs. the benefit of the drug i.e., NSAIDS: renal impairment, GI bleed- Tricyclic antidepressants: delirium and other anticholinergic side effects.
3. Remember responses to adjuvant vary from person to person, therefore allow at least 7 – 10 days for each one to determine optimal adjuvant.
4. Avoid using more than one adjuvant concurrently (avoid polypharmacy)
5. The goal is to obtain adequate analgesia and symptom control without severe adverse side effects.
6. Do not use benzodiazepines and phenothiazines as adjuvant analgesics. These drugs do not have analgesic properties and may cause significant sedation and delirium.

Other Therapeutic Options

Therapeutic Approach	Description	Advantages	Disadvantages
Radiation	Single point/ multiple points Hemibody radiation Radiopharmaceuticals	Fairly rapid response Reduce tumor size and stabilize bone	Access & Transport Limits to radiation to each area
Chemotherapy	Dependent on tumor size and stage	Reduce tumor involvement and stabilize bone	Slow response
Opioids	Increase dose until some signs of toxicity	Will control rest pain	May not relieve incident pain without unacceptable side effects
Breakthrough Opioids	Multiple routes	If given before movement can reduce pain. Quickest response to sl fentanyl	Slow response to oral and sc routes
Surgery	Sophisticated surgery to stabilize bones and spine	Long-term relief	Patient must be fit for surgery
Coricosteroids	Dexamethasone preferred	Inexpensive Rapid response	Long-term adverse effects. Response often short term
Bisphosphonates	Pamidronate Clondronate (oral)	Easy to administer IV. Low toxicity Oral Clodronate often poorly tolerated	Response limited to certain cancers (breast, myeloma) use in other tumours unproved efficacy response may be limited in amount & duration. Expensive

Helpful Hints to Communicate to a Patient in Pain (Patient and Family teaching):

- 1) Take your pain medication on a regular schedule (by the clock) to help prevent persistent or chronic pain.
- 2) Do not skip doses of your scheduled medicine. Once you feel the pain, its harder to control.

- 3) If you experience breakthrough pain, use your short-acting medicine as your doctor suggests. Don't wait for the pain to get worse- if you do, it may be harder to control.
- 4) Be sure only one doctor prescribes you pain medication. If another doctor changes your medicine, the two doctors should discuss your treatment with each other.
- 5) Never take someone else's medicine. Medicines that worked for you in the past or that help a friend or relative may not be right for you.
- 6) Pain medicines affect different people in different ways. A very small dose may work for you, while someone else may need to take a much larger dose to obtain pain relief.
- 7) Remember, your pain control plan can be changed at any time.

Opioids to Avoid

1. Meperidine is not recommended for routine dosing because of the high risks of adverse effects from accumulation of the metabolite normeperidine.
2. Propoxyphene is typically administered at doses that produce relatively little analgesia and is not recommended as a routine analgesic
3. The mixed opioid agonist-antagonists, such as pentazocine, butorphanol and nalbuphine should not be used in the patient already taking a pure agonist opioid as there is a high risk they will precipitate withdrawal.

Remember: The Use of Placebos to manage pain should never be used.

5. Barriers to the Use of Opioids

Many misconceptions about analgesics and pain are important barriers to adequate analgesia, including to people facing the end-of-life transition. Generally information about tolerance, cross-tolerance, dependence, addiction, assisted suicide and euthanasia. Nurses play an important role in altering these beliefs and attitudes held by patients, family members and professional colleagues.

Tolerance and Cross-Tolerance: Concerns about tolerance serve as barriers to effective pain management. It is important to understand and be able to explain tolerance and its importance to patient care with discounting the concerns.

Tolerance means that an increased dose is required to produce the same effects when the pain stimulus remains unchanged. Tolerance occurs with chronic exposure to a variety of drugs. In the case of opioids, tolerance is characterized by an increased opioid requirement to maintain the same degree of analgesia. Not all patients experience tolerance. The need for an increase in the amount of analgesia may reflect progressing disease, new pathology or tolerance. Do not ignore the patient's reports of increased pain. It should be treated while the cause pursued. One of the ways tolerance is managed is by titration of the drug to balance desired effects and side effects to maintain patient comfort. It is important to note that there is no ceiling effect for opioid drugs.

Cross-tolerance refers to tolerance between drugs, e.g. morphine and dilaudid. It has been noted that tolerance to one opioid does not produce a similar degree of tolerance to a new opioid.

Lack of analgesia should not be confused with tolerance or drug seeking behavior until genetic issues have been considered. For example, lack of analgesic effect from codeine doses: about 10% of people in Northern European heritage lack the genetic ability to metabolize codeine to morphine. These people will obtain no analgesic effect from codeine. A change in drug is required to help people obtain analgesia.

Dependence. Concerns regarding dependence serve as barriers to effective pain management. Patients and their family members and health care providers share these concerns. It is important to understand and be able to explain the difference between tolerance, dependence and addiction and the relative impact of each on patient care without discounting the concerns.

Dependence is an expected physiologic response to ongoing exposure to pharmacological agents. Withdrawal from opioids is characterized by symptoms such as sweating, runny nose, anxiety, irritability, abdominal cramps, and diarrhea when the drug dose is markedly decreased or abruptly discontinued. Dependence appears to be highly individualized.

All people who take an opioid for about 10 days will experience some degree of withdrawal if they abruptly stop taking the opioid. This effect is experienced because the opioid receptors are accustomed to being bound by the opioid and when they are deprived of this binding, the withdrawal symptoms occur.

In the person in the active phase of dying, it is important to continue opioid analgesics at a level to control any nociceptive signals that may or may not be perceived as pain. Unless there is a reason to believe that the etiology of the pain has been removed, which is highly unlikely, it is important to continue analgesics at or near the level that was required to relieve pain prior to the active dying phase. It is also important to prevent withdrawal in the non-communicative person. If the opioid dose is reduced too rapidly in a person physically dependent on the opioid, withdrawal syndrome can be experienced. Subjecting the dying person to this added discomfort is unnecessary and not consistent with high quality end-of-life care. Slow downward titration of the opioid will prevent withdrawal syndrome if there is a reason to believe that less opioid is needed to provide comfort at the end of life.

Addiction. Concerns regarding addiction serve as barriers to effective pain management. Patients, their family members and health care providers share these concerns.

- Addiction is the psychological drive (desire) to take a drug such as an opioid for euphoric effects.
- In contrast to dependence, less than 0.1% of patients using opioids for medical purposes become addicted to them.

- Unfortunately, most patients, families and health professionals over estimate the incidence of addiction. Addiction is a rare event.
- Often health professionals are concerned about administering opioids to people with a past or current history of substance abuse, including those with life-limiting illness.
- Concern for addiction should not interfere with patients in pain being treated for it. Even patients with a former or current substance abuse problem should be given analgesics, including opioids, when they have pain.

Assisted suicide and euthanasia are controversial topics. When large doses of opioids are required to control pain, often physicians and nurses hesitate to prescribe and administer the dose, because they are concerned that the actions will be considered as performing euthanasia or assisting the patient to commit suicide.

Relief of pain, not death is the objective of the intervention. Nurses should not hesitate to use full and effective doses of pain medication for the proper management of pain in the dying patient. The increasing titration of medication to achieve symptom control, is ethically justified.

Barriers to Pain Management

Source	Issues
Care Providers	<ul style="list-style-type: none"> - inadequate education in pain management - fears and myths of opioids analgesics - lack of priority for pain management - failure to manage adverse effects - lack of integrated interdisciplinary care - inadequate follow-up processes - poor communication of care plans to other care providers - limited accessibility to drugs and resources for pain control - a failure to consult with palliative and other pain management resources
Patient and Family	<ul style="list-style-type: none"> - myths about the inevitability of pain - fears about opioids including the issues of addiction, inevitable side effects and mental confusion - a lack of priority for pain management in the face of terminal illnesses - adverse effects of opioids - culture and religious issues - social and economic factors
System	<ul style="list-style-type: none"> - lack of standards in pain control - lack of priority for pain - funding for and cost of analgesics - a lack of palliative care and other specialized pain management resources - lack of consumer advocacy groups - triplicate prescriptions

6. Non-pharmacological Interventions

Psychological and physical interventions can be seen as an adjunct to pharmacological therapies. Choice of non-pharmacological intervention is determined by:

- 1) the nature of each case
- 2) what works for a specific patient
- 3) the skills of the clinician.

These measures are relatively non-invasive and may present less risk to the patient than invasive measures. They are often more time consuming for the patient and the nurse, and they usually place the patient in a more active role.

Psychological Modalities

Distraction can be useful by changing the patient's attention to stimuli other than the pain sensation. It usually makes pain more bearable though it does not eliminate the pain. Distraction topics need to interest the patient and consistent with the patient's energy level and ability to concentrate. Types of distraction include watching TV, listening to music, visiting with friends and family.

Active listening as a nursing intervention conveys support of the patient and trust in the patient. It offers the patient reassurance and allows the patient the opportunity to discuss other issues, which may be increasing the stress of hospitalization or illness. Research indicates that stress influences pain, so efforts to dramatically reduce stress may reduce pain.

Relaxation strategies are indicated in the presence of muscle tension. Patients can be trained to use relaxation strategies relatively easily. No special equipment is required and the nurse does not need extensive training.

Reinforce or modify pain control behaviors by observing patients to see what they do to reduce or control pain. Such observation may provide important information for tailoring nursing interventions to a specific patient. Patients often use techniques of positioning, rubbing and splinting to decrease their pain or limit the pain they may experience with a given activity.

Physical Modalities

Beds are often overlooked as a pain control strategy. Nurses are often in a position to recommend a different mattress to improve comfort. Pillows can be used to stabilize a joint, and help splint an incision for improved coughing effort.

Massage can decrease muscle tension and can break the cycle of tension, increased pain, and increased tension. Massage can help bring about mental and physical relaxation and it strengthens the nurse-patient relationship.

Heat application helps to reduce striated muscle spasm, relax smooth muscles and reduce gastric acidity. It causes vasodilation resulting in increased blood flow. Nurses can apply heat through the use of warm blankets, electric heating pads or moist hot packs and by assisting the patient to shower or bathe.

Cold application can also reduce muscle spasm by reducing muscle spindle response. It causes vasoconstriction resulting in reduction in bleeding and edema. It is felt to have a longer effect than application of heat. Cold can decrease inflammation and results in increased peristalsis of the stomach, small bowel and colon. Nurse can use ice packs, ice cubes and cool wash clothes to apply cold therapy to patients.

Positioning is another simple strategy for pain control. Simply assisting a patient to change position in the bed or chair or while ambulating can improve comfort. Additionally, appropriate body alignment and support of extremities can patient comfort and outlook.

Exercise program have been shown to reduce fatigue. The value of exercise is becoming known. Some patients report an improvement in comfort when joints are kept active.

Study Questions for Pain Management

1. What is the onset of analgesic action for Duragesic patches?
 - a. 10-12 hours
 - b. 6 hours
 - c. 24 hours
2. Sedation secondary to opioid use:
 - a. is an unavoidable side effect
 - b. is necessary to control pain adequately
 - c. might be relieved by the administration of caffeine or mephyphenidate.
 - d. can be controlled
3. Optimal pain control in persons with cancer often requires multiple modalities that work via different mechanisms. Which of the following combinations of therapies have different mechanisms of pain relief?
 - a. massage and TENS
 - b. massage, NSAID, Tricyclic antidepressant, opioid, hypnosis
 - c. systemic and spinal opioids
 - d. two different opioids
4. Your 220 lb patient asks for pain medication for acute exacerbation of terminal cancer pain. He has morphine 4-10 mg IV q2 hour prn ordered. He is sitting in bed laughing at an episode of The Simpsons on TV. He rates his pain at 7 out of 10 on a 0-10 scale. His last dose of morphine 4 mg IV was two hours ago. You should:
 - a. question the patient's report of his pain and take his vital signs
 - b. medicate with 4 mg of IV morphine
 - c. medication with 10 mg of IV morphine
5. A patient is medication with 10 mg Morphine at 900. You will need to assess and document peak effectiveness at:
 - a. 920
 - b. 1030
 - c. 1200
 - d. at the end of your shift 1800
6. You have set a PCA machine to deliver Morphine "on demand only" to the patient. After the loading dose his pain rating is 3, the same as the level tolerable to the patient. Your instructions to the patient should be:
 - a. "call me when it hurts, and we will decide to bolus you"
 - b. "If your pain goes to 9, then give yourself a bolus"
 - c. "Bolus yourself as needed to keep your pain rating 3 or less, the machine is set so you shouldn't get too much"
 - d. "I will check you hourly to determine what you should get."
7. Patient controlled analgesia (PCA) pumps can be used for subcutaneous opioid infusions to control pain at the end of life.

True	False
------	-------
8. There is a ceiling on the analgesia of morphine, that is, beyond a certain dose increasing the dose does not increase pain relief

True	False
------	-------
9. Oral morphine is as effective as parenteral morphine with equianalgesic doses

True	False
------	-------

10. Match the definition to the correct term:

1. tolerance

2. addiction

3. physical dependence

- A. After repeated administration of an opioid, withdrawal symptoms occur if the opioid is abruptly stopped
- B. After repeated administration of an opioid, a given dose begins to lose its effectiveness, resulting in the need for larger doses. The first sign is decreased duration of action, then decreased analgesia
- C. Behavior of overwhelming involvement with obtaining and using a drug for its psychic effect. High tendency to relapse back to continuing the drug once the pain is gone.

11. M.S. Contin is recommended to be used on a prn basis

True

False

12. When titrated to effect the largest dose of morphine that can be given is?

13. What is the recommended dosing interval for oral immediate release morphine?

14. What is the recommended scheduling interval for sustained release morphine?

15. What is the duration of action for Fentanyl transdermal (Duragesic)?

16. The onset of action of oral Dilaudid is?

17. In a situation where repeated doses are to be administered, the oral equianalgesic dose of Dilaudid 4 mg IM is _____ mg oral morphine?

Answers:

1. 6 hours

2. c- might be relieved by the administration of caffeine or mepylphenidate

3. b- massage, NSAID, Tricyclic antidepressants, opioids, hypnosis

4. c- medicate with 10 mg IV morphine. Based on his size, 10 mg is within the recommended dose range. His pain is severe, he needs the maximum dose despite his appearance. He may be attempting to distract himself from the pain by watching T.V.

5. a- 920

6. c- "Bolus yourself as needed to keep your pain rate 3, or less, the machine is set so you shouldn't get too much."

7. True

8. False

9. True

10. 1-B, 2-C, 3-A

11. False

12. There is no limit

13. 4 hours

14. 12 hours

15. 48 to 72 hours

16. 30 minutes

17. 80 mg po morphine

Case Study

Mrs. Cox is a 112 kg, 48 year old African-American woman admitted for an incision and drainage of a right renal abscess caused by terminal cancer. She has been a registered nurse for 20 years and now lives alone. She rates her lower (lumbar) back pain (this is chronic pain that she has lived with for several years) as a dull ache, now rated as a 3 on a 0-10 scale, is treated with TENS, massage, and warm tub baths. She notes the low back pain is now increasing and she feels angry and stressed. Now she requires QID dressing changes that are very painful. She rates the pain in the area of her incision as constantly between 3-4 on a 0-10 scale, if she takes her pain medication, but calls her incision area pain a 10 during dressing changes. She describes it as sharp, pulling type of pain that lasts for 1-2 hours after the dressing change. She reports that 2 Percocet tablets control the pain between dressing changes but the Morphine 2mg IV dose barely touches the pain during the dressing change. Her goal for pain therapy is 0 pain but she believes she can live with pain that is 1 to 2. The physician has prescribed Morphine 4-15 mg IV q 1-2 hours for dressing changes, Percocet 2 tablets q 3-4 hours for incision pain and TENS for back pain.

1. Of Mrs. Cox's personal characteristics, which are most likely to help the nurse recognize that Mrs. Cox is at risk for inadequate pain relief
 - a. her age, work history and goal for pain therapy
 - b. her age, weight, and race
 - c. her gender and race
 - d. She is not at risk for inadequate pain relief since she has a visible cause for her pain.
 - e. Her weight, history of chronic back pain, and that she lives alone
2. Which of the following would be the most appropriate intervention for the nurse to suggest that Mrs. Cox use now to treat her low back pain?
 - a. Percocet 2 tablets q 3-4 hours
 - b. TENS, a tub bath now, and tub baths several times per day
 - c. TENS
 - d. Nurse administer back rub
 - e. c and d
3. Mrs. Cox is angry about the high intensity of her pain during dressing changes. Which of the following treatments is most likely to reduce the pain intensity?
 - a. Morphine 5 mg IV 10 minutes before the dressing change
 - b. Morphine 10 mg IV 20 minutes before the dressing change
 - c. Slow rhythmic breathing for relaxation during and Percocet 1 tablet 90 minutes before dressing change
 - d. Morphine 11-12 mg IV 20 minutes before and slow breathing for relaxation
 - e. b and c
4. Mrs. Cox has had three dressing changes, each with increased doses of IV Morphine, and she rated her pain during the dressing previous change as a 7 out of 10. This lack of response to increased doses of morphine most likely is an indicator that:
 - a. The dressing change was done before the peak effect of the morphine

- b. An ineffective dose of morphine was administered
- c. She has developed tolerance to morphine
- d. a or b
- e. b or c

Answers

1. c
2. e, c, and d
3. b
4. d
5. c

REFERENCES

- Alberta Cancer Board, (2001). Alberta Palliative Care Resource, Alberta: Author
- Canadian Society of Hospital Pharmacists, (2000). Care Beyond Cure: A Pharmacotherapeutic Guide to Palliative Care. Ottawa: National Library of Canada.
- Cancer Pain & Symptom Management Nursing Research Group (2001). Toolkit for Nursing Excellence at End of Life Transition. University of Washington.
- Ferrell & Coyle (2001). Textbook of Palliative Nursing. New York: Oxford Publishing.
- Jovey, R. (2002). Managing Pain: The Canadian Healthcare Professional's Reference. Toronto: The Canadian Pain Society.
- Kemp (1999). Terminal Illness: A Guide to Nursing Care 2nd Edition. New York: Lippincott.
- Librach, S. & Squires, B. (1997). The Pain Manual Principles and Issues in Canada Pain Management. Toronto: Canadian Cataloguing in Publication Data.
- www.palliative.info Ian Anderson Learning Modules
- Whedon, M. (1991). Bone Marrow Transplantation: Principles, Practice, and Nursing Insight. Boston: Library of Congress Cataloging-in-Publication Data.