Pain Assessment and Management

One (1.0) Contact Hour

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Purpose and Learning Objectives

The purpose of this course is to provide nurses with an overview of pain assessment and strategies for managing pain.

This course will cover material associated with assessment and management of pain with adult and pediatric patients. Pain in the neonate is outside the scope of this course.

After successful completion of this course, you will be able to:

- Identify basic physiology of pain.
- Describe appropriate components of pain assessment.
- Describe developmental and individual patient considerations in assessing pain.
- Identify pharmacologic and non-pharmacologic interventions to alleviate pain.
- Discuss considerations with using opioids.

Introduction
Pain can be a common experience for patients in the hospital setting. It is integral to the role of a nurse to effectively assess and manage the perception of pain for patients. Nurses require both the knowledge and skills to appropriately plan and provide interventions for pain.

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The Centers for Disease Control and Prevention (CDC) conducted the National Health Interview Survey in 2010. 30% of respondents over the age of 18 stated they had migraines, back pain, neck pain, or facial pain within the three months prior to the survey (CDC, 2012). It is also estimated that 100 million people in the U.S. suffer from chronic pain, resulting in approximately $560-$635 billion annually in healthcare costs (Institute of Medicine, 2011).

**Pain Defined**

Pain is defined as "an unpleasant sensation caused by noxious stimulation of the sensory nerve endings. It is a subjective feeling and an individual response to the cause. Pain is a cardinal symptom of inflammation and is valuable in the diagnosis of many disorders and conditions. It may be mild or severe, chronic or acute, lancinating, burning, dull or sharp, precisely or poorly localized, or referred. Experiencing pain is influenced by physical, mental, biochemical, psychological, physiologic, social, cultural, and emotional factors" (Mosby’s Medical Dictionary, 2012).

**Process of Pain**

Nociception is the process where information about tissue damage is conveyed to the central nervous system through sensory receptors (nociceptors). There can be pain without nociception (such as phantom limb pain), or nociception without pain. Pain occurs through four activities:

**Transduction:** Energy is converted from a noxious stimulus (thermal, mechanical, or chemical) into electrical energy (nerve impulses) by nociceptors

**Transmission:** The transmission of the neural signals from the transduction site to the spinal cord and brain

**Perception:** In higher structures, the arriving signals are appreciated as pain

**Modulation:** Occurs at the spinal cord level; descending input from the brain influences (modulates) nociceptive transmission

(American Pain Society, 2007)

**Types of Pain**

Pain is categorized as nociceptive or neuropathic, depending on the underlying pathophysiology.

**Nociceptive Pain**

Nociceptive pain is caused by the ongoing activation of nociceptors responding to noxious stimuli (such as inflammation, injury, or disease). Visceral pain arises from visceral organs, while pain coming from tissues is called somatic pain. In nociceptive pain, the central nervous system is functioning appropriately. There is a close association between the intensity of the stimulus and the perception of pain, indicating real or potential tissue damage.

**Neuropathic Pain**

Neuropathic or pathologic pain is caused by abnormal signals in the central or peripheral nervous systems, demonstrating injury or impairment. Causes of neuropathic pain may include inflammation, trauma, infections, tumors, metabolic diseases, toxins, or neurological disease (American Pain Society, 2007).
Types of Pain

<table>
<thead>
<tr>
<th>Type of Pain</th>
<th>Location</th>
<th>Quality of Pain</th>
<th>Localization</th>
<th>Sources</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nociceptive-somatic</td>
<td>Skin, tissue, muscles, tendons, joints, bones</td>
<td>Burning, sharp, dull, aching, cramping</td>
<td>Well localized to diffuse and radiating</td>
<td>Traumatic events, strain, injury, ischemia, inflammation, dermatological</td>
<td>Surgery, burns, cuts, contusions, arthritis, tendinitis</td>
</tr>
<tr>
<td>Nociceptive-visceral</td>
<td>Visceral organs</td>
<td>Sharp stabbing or deep aching</td>
<td>Well or poorly localized</td>
<td>Ischemia, inflammation, organ distension, muscle spasm</td>
<td>Appendicitis, pancreatitis, gastric ulcer, bladder distension</td>
</tr>
<tr>
<td>Neuropathic</td>
<td>Peripheral</td>
<td>Sensitivity, burning, aching, shock, sensations, shooting, cramping, throbbing, numbness, tingling</td>
<td>Diffuse; can be difficult to determine</td>
<td>Peripheral nerve damage, lesions, demyelination, trauma, compressive, metabolic disorders, ischemia, circulatory impairment, CNS disease</td>
<td>Diabetic neuropathy, neuralgia, carpal tunnel syndrome, fibromyalgia, phantom limb pain, post-stroke, multiple sclerosis</td>
</tr>
</tbody>
</table>


Test Yourself
Which type of pain arises from organs?
Neuropathic
Visceral - Correct!
Somatic

Acute versus Chronic Pain
Pain can be classified as acute or chronic. Acute pain is complex, and is described as an unpleasant experience with an identifiable precipitating cause. Acute pain generally has defined pathology, and can resolve with healing of the underlying injury. Acute pain can also be seen as a reflexive and protective response.

Chronic pain is described as pain that persists at least three months beyond the expected course of an acute injury or illness. Chronic pain can also disrupt activities of daily living and sleep, and has no protective purpose (Alexander, 2013; American Pain Society, 2007).
Pain Assessment
Pain is often referred to as the “fifth vital sign,” and should be assessed regularly and frequently. Pain is individualized and subjective; therefore, the patient’s self-report of pain is the most reliable gauge of the experience. If a patient is unable to communicate, the family or caregiver can provide input. Use of interpreter services may be necessary. Components of pain assessment include: a) history and physical assessment; b) functional assessment; c) psychosocial assessment; and d) multidimensional assessment.

History and Physical Assessment
The assessment should include physical examination and the systems in relation to pain evaluation. Areas of focus should include site of the pain, musculoskeletal system, and neurological system. Other components of history and physical assessment include:

- Patient’s self-report of pain
- Patient’s behaviors and gestures that indicate pain (e.g. crying, guarding, etc.)
- Specific aspects of pain: onset and duration, location, quality of pain (as described by patient), intensity, aggravating and alleviating factors
- Medication history
- Disease or injury history
- History of pain relief measures, including medications, supplements, exercise, massage, complementary and alternative therapies


### Acute vs. Chronic Pain

<table>
<thead>
<tr>
<th>Type of Pain</th>
<th>Description</th>
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</table>
| Acute        | - Pain usually associated with degree of tissue damage, which decreases with healing of the injury  
               - Is a result of activation of nociceptors and/or neurons  
               - Often associated with the autonomic nervous system and other protective responses (e.g. guarding behaviors)  
| Chronic      | - Difficult to identify underlying pathology and explain the presence and/or extent of the pain  
               - Perpetuated by factors apart from the cause  
               - Pain can be continuous or intermittent, with or without acute exacerbations  
               - Symptoms of autonomic nervous system hyperactivity less common  
               - Depressed mood, irritability, changes in effect, social withdrawal, fatigue, changes in activities of daily living, disrupted social relationships  
               - Loss can be a common experience, such as loss of activity or identity, grief may occur |
**Functional and Psychosocial Assessment**
Components of the functional and psychosocial assessment include:

- Reports of patient’s prior level of function
- Observation of patient’s behaviors while performing functional tasks
- Patient or family’s report of impact of pain on activities of daily living, including work, self-care, exercise, and leisure
- Patient’s goal for pain management and level of function
- Patient or family’s report of impact of pain on quality of life
- Cultural and developmental considerations
- History of pain in relation to depression, abuse, psychopathology, chemical or alcohol use
- Impact of pain on patient’s cognitive abilities


**Test Yourself**
Components of history that are needed as part of assessment include:
Medical history
History of medications
History of substance abuse
All of the above - Correct!

**Multidimensional Assessment**
Many tools are available for an in-depth, multidimensional pain assessment. This is particularly important with patients that have chronic pain, mixed pain (both acute and chronic), or complex situations (such as multiple disease processes). Common examples of these tools include:

- **Brief Pain Inventory**: Provides patient input in describing pain and effects, including psychosocial components. Can be viewed at [http://medicine.iupui.edu/RHEU/Physicians/bpisf.pdf](http://medicine.iupui.edu/RHEU/Physicians/bpisf.pdf)
- **McGill Pain Questionnaire**: Patients can use descriptors for their pain, which provides information about the experience and intensity.

**Common Pain Scales**
There are a variety of pain scales used for pain assessment, for patients from neonates through advanced ages. The three most common scales recommended for use with pain assessment are:

- The numeric scale
- The Wong-Baker scale (also known as the FACES scale)
- The FLACC scale

(Health Care Association of New Jersey, 2011).
The Numeric Scale
The numeric scale is the most commonly used pain scale with adult patients, rating pain on a scale of 0-10. Many nurses ask for a verbal response to the question. Use of this scale with the visual analog can provide a more accurate response. This scale is appropriate with patients aged nine and older that are able to use numbers to rate their pain intensity (Health Care Association of New Jersey, 2011).

![Numeric Scale Diagram]

The Wong-Baker FACES Scale uses drawn faces for patients to express their level of pain. The faces are associated with numbers on a scale ranging from 0 to 10. This scale is most commonly used with children, and is appropriate to use with patients ages three and older. Adults who have developmental or communication challenges may benefit from using this scale (Health Care Association of New Jersey, 2011).

![Wong-Baker Scale Diagram]

FLACC Scale
FLACC is the acronym for Face, Legs, Activity, Cry, and Consolability. This scale is based on observed behaviors, and is most commonly used with pediatric patients less than three years of age. The behaviors that are described are associated with a number; each component is totaled for a number ranging from 0 to 10. This scale is also appropriate with patients who have developmental delays or are non-verbal (Health Care Association of New Jersey, 2011).

![FLACC Scale Diagram]
Test Yourself
The most appropriate scale to use with a seven year old patient is:
Numberic scale
FLACC scale
Wong-Baker FACES scale - Correct!

Pain Management
Pain management refers to the appropriate treatment and interventions developed in relation to pain assessment, and should be developed in collaboration with the patient and family. Strategies are developed based on past experiences with effective and non-effective treatments to meet the patient’s goal for pain management. Considerations include type of pain, disease processes, risks, and benefits of treatment modalities. Pain management strategies include pharmacological and non-pharmacological approaches (American Pain Society, 2007; Health Care Association of New Jersey, 2011).

Non-Pharmacological Treatment
There are a variety of approaches for decreasing pain in adult and pediatric patients that are non-pharmacological. These types of strategies are often over-looked, but can be effective for alleviating pain when used either alone or in combination with other non-pharmacological or pharmacological measures.

Non-Pharmacological Treatment
Non-pharmacological interventions may include:

- Heat or cold (as appropriate)
- Massage
- Therapeutic touch
- Decreasing environmental stimuli (e.g. sound, lighting, temperature)
- Range of motion or physical therapy
- Repositioning
- Immobilization
- Relaxation techniques and imagery
- Distraction
- Psychotherapy or cognitive behavioral therapy
- Biofeedback
- Music therapy

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WHO Analgesic Ladder
One tool that was developed by the World Health Organization (WHO) in 1986 is the WHO analgesic ladder. This framework was originally developed to assist physicians in treatment choices for cancer pain. This tool continues to be validated, and used for not just cancer pain, but other forms of acute and chronic pain (CPM Resource Center, 2010a; CPM Resource Center, 2010c; Schaffer, 2010).

The analgesic ladder is used as a guideline, and is described as follows:

**Step 1:** Mild pain (e.g. rating of 0-3 on a scale of 0-10): Uses non-opioid and/or a nonsteroidal anti-inflammatory drug (NSAID), and other non-pharmacological strategies to improve quality of relief.

**Step 2:** Moderate pain (e.g. rating of 4-6): Continue with medications and methods described in step 1, plus add a mild opioid.

**Step 3:** Severe pain (e.g. rating of 7-10): Along with medications and strategies described in steps 1 and 2, add a more potent opioid (e.g., morphine, hydromorphone, fentanyl).

(HPM Resource Center, 2010a; CPM Resource Center, 2010c; Schaffer, 2010).

Pharmacological Treatments
The use of medications to treat pain can be complex. Multiple factors must be considered including age, current medications, patient medical and substance use history, type of pain (such as neuropathic versus nociceptive), etc. Pharmacological treatments include:

- **Analgesic:** Acetaminophen (Tylenol®) is a common analgesic used for mild pain, or in a combination with opioids for moderate pain. There must be caution taken in the amount of acetaminophen used per day, which can result in hepatic toxicity.

- **Non-steroidal anti-inflammatories (NSAIDs):** Common examples include salicylates, ibuprofen (Advil®), naproxen (Aleve®), and ketorolac (Toradol®). These are used to reduce inflammation which can decrease pain. NSAIDs can be used for mild pain, or in combination with opioids for moderate pain. Caution is needed with dosages for pediatric and elderly patients, and is contraindicated in patients with hepatic or renal impairment, bleeding disorders, or gastrointestinal ulcers.

- **Tricyclic antidepressants (TCAs):** Examples include amitriptyline (Elavil®), nortriptyline (Aventyl®), and desipramine (Norpramin®). TCAs can be effective in treating neuropathic pain, and can provide a mild analgesic effect. Caution should be taken with pediatric and elderly patients.

- **Selective serotonin reuptake inhibitors (SSRIs):** Common examples include fluoxetine (Prozac®), paroxetine (Paxil®), serotonin, and sertraline (Zoloft®). SSRIs can be used as adjunct therapy for depression and neuropathic pain. Caution is required with pediatric and elderly patients, as there is a risk of suicidal thoughts.

- **Anticonvulsants:** Examples include carbamazepine (Tegretol®), gabapentin (Neurontin®),
and pregabalin (Lyrica®). Anticonvulsants can provide sedation and a graded analgesic effect.

- **Topical agents:** Common examples include creams that have analgesic or local anesthetic agents. Topical agents may be used with neuropathies or arthritis.

- **Anesthetics:** Anesthetics can be used for epidurals or nerve blocks to assist with acute or chronic pain. These are temporary, and may be effective up to three or four months. Risks and benefits must be evaluated prior to performing a block.

- **Opioids:** Common examples of mild opioids include codeine, oxycodone, and hydrocodone. Common examples of more potent opioids are morphine, fentanyl, and hydromorphone, used for moderate to severe pain. Opioids can be used with both acute and chronic pain.


**Test Yourself**

Opioids should be considered in addition to other treatment strategies with patients suffering from moderate pain.

True - Correct!
False

**Opioid Considerations**

Opioids can be part of a treatment plan individualized to the patient. Opioids should not be used as a first line treatment for neuropathic pain, but may be appropriate with the use of other therapies. A trial of opioids can be implemented with patients following non-pharmacological methods, but may be started earlier with severe pain. Risks and benefits of using opioids should be discussed with the patient and family. Considerations for bowel management and prevention of nausea and vomiting are required (American Pain Society, 2007; CPM Resource Center, 2010a, 2010b, 2010c, 2010d).

Medications should be started at lower doses in short-acting form, and titrated up for pain control that correlates with the patient’s pain goals. Other considerations include if a patient is opioid naïve or opioid tolerant. A patient who is opioid naïve occurs with patients not already taking opioids, as tolerance can develop after several days. A patient who is opioid tolerant occurs with patients regularly taking opioids, generally associated with chronic pain. Use of recreational substances should also be considered. Opioid tolerant patients will require higher doses to achieve the desired effect (American Pain Society, 2007; Shands, 2012).

**Under-Treatment of Pain**

There are still many myths and misbeliefs about the use of opioids and addiction which can lead to under-treatment of pain. This is particularly true of elderly patients, and those suffering from chronic pain. Unrelieved pain can lead to physical and psychological disruptions, including hormone fluctuation, electrolyte and glucose imbalance, hypertension, tachycardia, increased oxygen consumption, impaired intake and output, fatigue, depressed immune response, reduced cognitive function, insomnia, anxiety, depression, hopelessness, and thoughts of suicide (American Pain Society, 2007; CPM Resource Center, 2010a, 2010b, 2010c, 2010d).

**Principles of Pain Management**

As nurses, it is also important to remember that we have an ethical obligation to appropriately assess and treat patients’ pain. Unfortunately, there are barriers to this, including underestimating the severity of a patient’s pain, disregarding or disbelieving self-reports of pain, beliefs of “drug-seeking” behavior, and fear of causing addiction or oversedation with patients.

Useful principles of pain management can be remembered with the “ABCDE method” as follows:
A: Ask about pain regularly
B: Believe the patient’s and/or family’s reports of pain
C: Choose appropriate pain approaches and treatment options
D: Deliver interventions in a coordinated and timely fashion
E: Empower patients and their families


Conclusion

Pain management is a vital component of patient care, and can be complex. It is important to individualize plan of care for each patient. Nursing responsibilities include:

- **Pain assessment**: The nurse must adequately and completely assess the patient’s pain
- **Pain rating**: The nurse will appropriately identify a pain rating scale matched to the patient’s needs
- **Patient and family involvement in pain management**: The nurse must include the patient and family in development of the pain management plan of care
- **Physician communication**: The nurse will notify the physician of any new pain, and/or pain that is not managed adequately
- **Medication administration**: The nurse must administer medication in an appropriate and safe manner
- **Patient and family involvement in non-pharmacological pain interventions**: The nurse will involve the patient and family, and provide appropriate instructions
- **Patient and family education**: The nurse will instruct the patient and family on the correct administration and management of medications and side effects, and provide them with pain management resources
- **Involvement of ancillary services**: The nurse will involve ancillary services in consultation for planning and implementation of pain management strategies
- **Interdisciplinary communications**: The nurse must communicate assessment, interventions, and pain management outcomes through verbal and written documentation
- **Pain evaluation**: The nurse will frequently evaluate effectiveness of pain control through pain scale, patient and family satisfaction, and knowledge base

(City of Hope National Medical Center, 2011)

References


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