

Pain Management: The Assessment and Treatment of Pain

2.0 Contact Hours

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Pain Management: The Assessment and Treatment of Pain

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The contents of this course are taken from the U.S. Food and Drug Administration. Learning objectives and post test have been prepared by Marietta Farrell, RN, BSN.

Objectives:

Upon completing this course, the learner will be able to:

1. Describe the processes of the transmission of pain to the brain.
2. Describe the function of the body's natural painkillers
3. Explain the strategies of pain assessment.
4. Describe nursing care strategies.
5. Explain the potential benefits and harms involved in the use of pain management strategies.

Introduction: What Is Known About Pain

Pain is a complicated process that involves an intricate interplay between a number of important chemicals found naturally in the brain and spinal cord. In general, these chemicals, called *neurotransmitters*, transmit nerve impulses from one cell to another.

There are many different neurotransmitters in the human body; some play a role in human disease and, in the case of pain, act in various combinations to produce painful sensations in the body. Some chemicals govern mild pain sensations; others control intense or severe pain.

The body's chemicals act in the transmission of pain messages by stimulating *neurotransmitter receptors* found on the surface of cells; each receptor has a corresponding neurotransmitter. Receptors function much like gates or ports and enable pain messages to pass through and on to neighboring cells. One brain chemical of special interest to neuroscientists is *glutamate*. During experiments, mice with blocked glutamate receptors show a reduction in their responses to pain. Other important receptors in pain transmission are opiate-like receptors. Morphine and other opioid drugs work by locking on to these opioid receptors, switching on pain-inhibiting pathways or circuits, and thereby blocking pain.

Another type of receptor that responds to painful stimuli is called a *nociceptor*. Nociceptors are thin nerve fibers in the skin, muscle, and other body tissues, that, when

stimulated, carry pain signals to the spinal cord and brain. Normally, nociceptors only respond to strong stimuli such as a pinch. However, when tissues become injured or inflamed, as with a sunburn or infection, they release chemicals that make nociceptors much more sensitive and cause them to transmit pain signals in response to even gentle stimuli such as breeze or a caress. This condition is called *allodynia* -a state in which pain is produced by innocuous stimuli.

The body's natural painkillers may yet prove to be the most promising pain relievers, pointing to one of the most important new avenues in drug development. The brain may signal the release of painkillers found in the spinal cord, including serotonin, norepinephrine, and opioid-like chemicals. Many pharmaceutical companies are working to synthesize these substances in laboratories as future medications.

Endorphins and *enkephalins* are other natural painkillers. Endorphins may be responsible for the "feel good" effects experienced by many people after rigorous exercise; they are also implicated in the pleasurable effects of smoking.

Similarly, *peptides*, compounds that make up proteins in the body, play a role in pain responses. Mice bred experimentally to lack a gene for two peptides called *tachykinins-neurokinin A* and substance P-have a reduced response to severe pain. When exposed to mild pain, these mice react in the same way as mice that carry the missing gene. But when exposed to more severe pain, the mice exhibit a reduced pain response. This suggests that the two peptides are involved in the production of pain sensations, especially moderate-to-severe pain. Continued research on tachykinins, conducted with support from the NINDS, may pave the way for drugs tailored to treat different severities of pain.

Treatment of Pain

The goal of pain management is to improve function, enabling individuals to work, attend school, or participate in other day-to-day activities. Patients and their physicians have a number of options for the treatment of pain; some are more effective than others. Sometimes, relaxation and the use of imagery as a distraction provide relief. These methods can be powerful and effective, according to those who advocate their use. Whatever the treatment regime, it is important to remember that pain is treatable.

Background

- The majority of hospitalized elderly patients suffer from both acute and chronic pain.
- Elderly adults with cognitive impairment experience pain but are often unable to verbalize it.
- Both patients and health care providers have personal beliefs, prior experiences, insufficient knowledge, and mistaken beliefs about pain and pain management that:

- influence the pain management process and
 - must be acknowledged and addressed before optimal pain relief can be achieved.
- Pain assessment must be regular, systematic, and documented in order to accurately evaluate treatment effectiveness.
- Self-report is the gold standard for pain assessment.

Strategies for Pain Assessment

- Review medical history, physical examinations, and laboratory and diagnostic tests in order to understand the sequence of events contributing to pain.
- Assess present pain, including intensity, character, frequency, pattern, location, duration, and precipitating and relieving factors.
- Review medications, including current and previously used prescription drugs, over-the-counter drugs, and home remedies. Determine what pain control methods have previously been effective for the patient.
- Assess patient's attitudes and beliefs about use of analgesics, anxiolytics, and nonpharmacological treatments.
- Gather information from family members about patient's pain experiences. Ask about patient's verbal and nonverbal/behavioral expressions of pain, particularly in demented patients.
- Use a standardized tool to assess self-reported pain. Choose from published measurement tools, and recall that elders may have difficulty using 10-point visual analog scales. Vertical verbal descriptor scales or faces scales may be more useful with elders, especially those with some cognitive losses.
- Assess pain regularly and frequently, but at least every 4 hours. Monitor pain intensity after giving medications to evaluate effectiveness.
- Observe for nonverbal and behavioral signs of pain, such as facial grimacing, withdrawal, guarding, rubbing, limping, shifting of position, aggression, depression, moaning, and crying. Also watch for changes in behavior from patient's usual patterns.

Nursing Care Strategies

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

- Treatment guidelines
 - Pharmacologic
 - Elderly adults are at increased risk for adverse drug reactions and drug--drug interactions.
 - Monitor medications closely to avoid over- or undermedication.
 - Administer pain drugs on a regular basis to maintain therapeutic levels; avoid prn drugs.
 - Document treatment plan to maintain consistency across shifts and with other care providers.
 - Nonpharmacologic
 - Investigate elderly patients' attitudes and beliefs about, preference for, and experience with nonpharmacological pain treatment strategies.
 - A variety of techniques exist, but they must be tailored to the individual.
 - Cognitive-behavioral strategies focus on changing the person's perception of pain (e.g., relaxation therapy, education, and distraction), and may not be appropriate for cognitively impaired persons.
 - Physical pain relief strategies focus on promoting comfort and altering physiologic responses to pain (e.g., heat, cold, transcutaneous electrical nerve stimulation [TENS] units).
 - A combination approach is often the best.

Potential Benefits and Harms of Implementing These Guidelines

Potential Benefits

Patient Will:

- Either be pain free or pain will be at a level that the patient judges as acceptable
- Maintain the highest level of self-care, functional ability, and activity level possible
- Reduce the risk of iatrogenic complications, such as falls, gastrointestinal upset/bleed, or altered cognitive status

Nurse Will:

- Demonstrate evidence of ongoing and comprehensive pain assessment
- Document evidence of prompt and effective pain management interventions
- Document systematic evaluation of intervention effectiveness
- Demonstrate knowledge of pain management in elderly patients, including assessment strategies, pain medications, nonpharmacological interventions, and patient/family education.

Institution Will:

- Provide evidence of documentation of pain assessment, intervention, and evaluation of treatment effectiveness
- Provide evidence of referral to specialists for specific therapies (e.g., psychiatry, psychology, biofeedback, physical therapy or pain treatment centers).
- Provide evidence of pain management resources for staff (e.g., care planning and pain management references, pain management consultants).

Potential Harms

Medication Side-Effects

- *Acetaminophen* (Tylenol): Has few side effects and is probably the safest non-opioid for most people. Use with caution in people with underlying hepatic or renal disease; renal dysfunction may be associated with prolonged use.
- *Nonsteroidal Anti-inflammatory Drugs (NSAIDs)* (e.g., ibuprofen [Advil, Motrin]): Common side effect is gastric damage resulting in increased gastrointestinal tract susceptibility to injury. The elderly are more likely to develop ulcer disease and have a greater incidence of death from gastrointestinal effects of NSAIDs. Renal insufficiency is more likely to occur in the elderly with NSAID use. Use with caution with hepatic and renal disease.

Other side effects include increased bleeding time, central nervous system effects, hepatic disease, and worsening asthma. When NSAIDs are used as single-doses, in low doses, and for short periods of time, side effects are usually less common than with long-term use. Co-administration of misoprostol (Cytotec) has been shown to reduce the gastrointestinal complications associated with NSAID use.

- *COX-2 Inhibitors* (e.g., Rofecoxib*, Celecoxib): Are as effective as NSAIDs for pain relief and are associated with less gastrointestinal bleeding, but have a similar risk for other side effects
- *Tramadol* (e.g., Ultram): Nausea and vomiting are common side effects associated with the use of tramadol, along with dizziness, sedation, restlessness, diarrhea or constipation, dyspepsia, weakness, diaphoresis, seizures, and respiratory depression. It should be used cautiously in hepatic or renal impairment.
- *Opioid Drugs* (e.g., codeine and morphine): Potential side effects include nausea, constipation, drowsiness, cognitive effects, and respiratory depression. Tolerance to the side effects develops with use over time; therefore coadministration of stool softeners for relief of constipation is recommended.
- *Hydrocodone, Oxycodone, Morphine sulfate, MS Contin, Fentanyl, Hydromorphone*: Same as codeine (see above).

A Case Study on the Management of Chronic Pain

Helen Dearman, 52, of Houston, had a broken back for more than a decade and didn't know it. After falling from a ski lift in Mt. Hood, Ore., when she was 23, Dearman was diagnosed with a broken left arm and thought that was her only injury. Her arm healed. But she developed excruciating back pain that made it hard to sleep and move around. "I worked as a teacher, so some doctors suggested that the problem was from standing on my feet all day," Dearman says. "Others told me it was all in my head. For years, I left doctors' offices feeling desperate for help."

The pain grew worse during her 30s. One morning, Dearman woke up with stabbing pains in her back and could barely walk. This time, her husband took her to an orthopedic surgeon who specialized in back problems. The doctor ordered X-rays that revealed three old fractures in Dearman's spine.

"When the doctor showed me the X-rays, I cried," Dearman says. "Someone had finally given me the words and understanding for all the pain I had been suffering from for so long."

Pain That Persists

By definition, acute pain after surgery or trauma comes on suddenly and lasts for a limited time, whereas chronic pain persists. "Acute pain is a direct response to disease or injury to tissue, and presumably it will subside when you treat the disease or injury," says Sharon Hertz, M.D., deputy director in the Food and Drug Administration's Division of Anti-Inflammatory, Analgesic, and Ophthalmologic Drug Products. "Chronic pain goes on and on--for months or even years."

Common types of chronic pain include back pain, headaches, arthritis, cancer pain, and neuropathic pain, which results from injury to nerves. In Dearman's case, her untreated back injury caused her spine to twist out of place, not only resulting in severe back pain, but also putting intense pressure on the nerves in her legs. "I often felt pain shooting down my legs," she says, "like a jolt of electricity."

Experts say the first step in treating chronic pain is to identify the source of the pain, if possible. Many people with chronic pain try to tough it out, according to research from the American Academy of Pain Medicine. But persistent pain should never be ignored because it could signal disease or injury that will worsen if left untreated. Sometimes, it turns out that the cause of pain is unknown. Fibromyalgia, for example, is characterized by fatigue and widespread pain in muscles and joints. While scientists have theorized that the condition may be connected to injury, changes in muscle metabolism, or viruses, the exact cause is unclear.

Regardless of the type of chronic pain, the physical and emotional effects can be devastating. Dearman says, "My teaching career suffered, my children were confused

about why I always felt bad, and our finances were ruined." Sometimes, she says, she even considered suicide.

Finding Relief

Dearman believes the first two surgeries she had to repair the fractures in her back and realign her spine were necessary. But she questions the four surgeries that followed. "I talked myself into the operating room more than once because I was desperate to feel better," Dearman says. "Even when doctors told me there was only a small chance another surgery would help, I wanted to take the chance." But after several surgeries, Dearman's pain only seemed to be getting worse.

The turning point occurred in 1995 when a physical therapist referred Dearman to a pain management specialist, a professional who takes a multidisciplinary approach to managing pain. She was treated by a team of pain experts. Doctors and nurses worked with her to manage pain medications. Psychologists addressed her depression and anger, and physical therapists helped improve her strength and mobility.

Dearman finally found effective drug treatment with a pump implanted into her abdomen that delivers morphine through a catheter into the fluid surrounding her spine. The pump, called an intrathecal drug infusion pump, is used for severe pain only after other oral and intravenous drug therapies have failed. The pump is programmed to deliver a controlled amount of medication continuously. Risks include surgical complications, such as infection, and complications with the catheter or pump. "It doesn't take away all the pain, but it's a drastic improvement and allows me to be in control of the pain," says Dearman, who also takes other pain medication as needed.

Seddon Savage, M.D., a pain specialist on the faculty of Dartmouth Medical School in Hanover, N.H., says there are times when it's impossible to eliminate pain. "The goal of pain management is to provide as much pain relief as possible and improve functioning," Savage says.

Because pain varies from person to person, treatment is individualized. Someone with arthritis may do well with occasional use of an over-the-counter pain reliever, whereas someone else with arthritis may need a prescription pain reliever and regular aerobic exercise to feel good.

"Treatment for chronic pain is about much more than medication," Savage says. It can also involve stress relief and relaxation, physical therapy, improved sleep and nutrition habits, and exercise. Dearman says that through a multidisciplinary approach to pain management, she also learned to pace her activities so that she is realistic about how much she can do in a certain time period.

Savage recommends that people seek professional help for chronic pain when they feel that pain is interfering with their quality of life. "Start with your primary care physician, who may refer you to other specialists," she says. "Consider asking your doctor about a

pain management specialist if you feel that your pain is just not getting better over time." Another reason to seek advice from a specialist is if you are experiencing intolerable side effects from medications.

Concerns About Drug Abuse

One of Dearman's biggest fears was of becoming addicted to pain medications. "It's a common concern for both patients and health providers," says Savage, who specializes in addiction.

"Most forms of chronic pain respond to non-opioid drug treatments," she says. Examples of non-opioid pain relievers, which don't have addiction potential, include aspirin, acetaminophen, ibuprofen, naproxen, and other non-steroidal anti-inflammatory drugs. A combination of different types of analgesic medications at lower doses is often more effective than a single high-dose medication.

"But if opioids are prescribed for your pain, you are not abusing drugs if you are taking the medication as prescribed," Savage says. "Taking doses of drugs to relieve pain is not the same as taking drugs to get high."

Opioids are controlled substances that are potentially addictive. Pain medications containing opioids include Vicodin (hydrocodone), OxyContin and Percocet (oxycodone), MS-Contin (morphine), Tylenol #2, #3 and #4 (codeine), and the Duragesic Patch and Actiq (fentanyl).

June Dahl, Ph.D., director of the American Alliance of Cancer Pain Initiatives and professor of pharmacology at the University of Wisconsin-Madison Medical School, says she recently took a call from a man with cancer who said he stopped taking an opioid pain medication on his own for fear that he was becoming addicted. "But what he described were not signs of addiction, but signs of physical dependence," Dahl says.

Addiction is characterized by craving and compulsive use of drugs. Physical dependence occurs when a person's body adapts to the drug. If someone has become physically dependent on a drug and suddenly stops taking it, withdrawal may occur. These symptoms can include muscle aches, watery nose and eyes, irritability, sweating, and diarrhea. Physical dependence is a normal response to repeated use of opioids and is distinct from psychological addiction.

Savage says that in prescribing potentially addictive medications, doctors should consider patients' personal and family histories of addiction, as well as psychological and social stressors that may affect medication use. Also, some people who begin taking opioid medications for pain as prescribed may later discover that they are using the medication for its psychic brain effects. Physicians need to be aware of this potential adverse effect, and should educate patients and their families about appropriate use of addictive drugs.

To better guide physicians, the Federation of State Medical Boards adopted guidelines for the use of controlled substances for pain treatment in 1998. The guidelines advise physicians on patient evaluations, treatment plans, and medical records.

The use of opioids in pain treatment remains controversial for several reasons. The rate of addiction in the properly treated pain population is unknown. The media has highlighted problems of addiction to pain medicine among celebrities. And there has been considerable drug abuse involving OxyContin, which the FDA approved for moderate-to-severe pain in 1995. The FDA strengthened warnings for oxycodone in 2001, while continuing to recommend appropriate pain control for people living with severe pain.

But experts say that finding a balance between cracking down on drug abusers and protecting people in pain is an ongoing struggle. "Some doctors fear regulatory scrutiny for over-prescribing these drugs," Dahl says. "And concerns about the small segment of people who abuse drugs ends up interfering with effective pain management for others."

Sheryl Kaufman, 40, of Boston, who uses oxycodone and a fentanyl patch for severe pain associated with breast cancer, says she recently filed a grievance with a pharmacy over her struggles to get prescriptions filled. "They made me feel like a criminal," she says. "Sometimes I've had to go without pain medication for two to three days because of delays in filling prescriptions."

The Value of Support

Dearman's experiences with chronic pain led her to establish the National Chronic Pain Society in 2002. The organization provides peer support for people with chronic pain and their families.

"We give people support for dealing with all of the issues that can go along with chronic pain—not having your pain taken seriously, frustration over not finding relief, how to communicate your pain to your doctor, and how to maintain relations with your family," Dearman says.

Penney Cowan, executive director of the American Chronic Pain Association, another peer support organization in Rocklin, Calif., says support systems are important because they give people with pain the coping skills needed to take an active role in their recovery. "Sometimes doctors tell people they'll have to learn to live with the pain," Cowan says. "But too often they stop short of telling them how to accomplish that."

Dearman says finding effective treatment and gaining the skills to live with her pain made all the difference. "It's about being a person first and not letting pain define who you are," she says. "Our motto is: Pain may be unavoidable, but suffering is optional."

For More Information

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