

# Pain Management: Acute and Chronic Pain

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## Purpose:

The purpose of this course is to explain the difference between nociceptive and neuropathic pain and acute and chronic pain and to outline methods of pain assessment and management, including the use of opioids, non-opioids, and adjuvant medications.

## Goals:

Upon completion of this course, the nurse should be able to:

- Explain 3 types of nociceptive pain.
- Explain 4 types of neuropathic pain.
- Describe 7 different elements of pain assessment.  
Describe at least 4 different pain scales.
- Discuss 6 things to consider when assessing acute pain.
- Discuss equianalgesia.
- Discuss pain management for 3 different levels (1-3, 4-6, and 7-10) of acute pain.
- Discuss 7 things to consider when assessing chronic pain.
- Explain the 3 steps of the WHO 3-step ladder.
- Discuss at least 8 elements of the CDC Guidelines for prescribing opioids for chronic pain.
- List and describe the use of at least 5 adjuvant medications.
- Discuss ethical issues related to marijuana.
- Discuss 5 elements of the Opioid Risk Tool (ORT).
- Explain the purpose of a patient opioid treatment agreement.
- Explain 4 possible adverse effects associated with long-term use of opioids.
- Discuss management for 3 different levels (1-3, 4-6, and 7-10) of chronic pain.

## Introduction:

For about the last 20 years, the idea that a patient's pain was "what the patient said it was" and that pain could easily be measured on a 1 to 10 scale and completely controlled became a primary belief in healthcare.



Patients and their healthcare providers, with noble intentions, came to support the idea that patients should be essentially free of pain.

Consequently, opioids, originally marketed as less addictive than morphine, have been freely prescribed for lengthy periods of time. However, these practices have contributed to a disastrous increase in the numbers of patients with addiction—and with poorly managed pain.

In order to better manage pain, healthcare providers must look beyond the patient's reported number on a scale, determine the source of the pain, evaluate the patient's functional abilities, and provide the optimal treatment. The healthcare provider must have a thorough understanding of types of pain and appropriate interventions.

## Types of pain:

There are two basic types of pain, nociceptive pain and neuropathic pain.

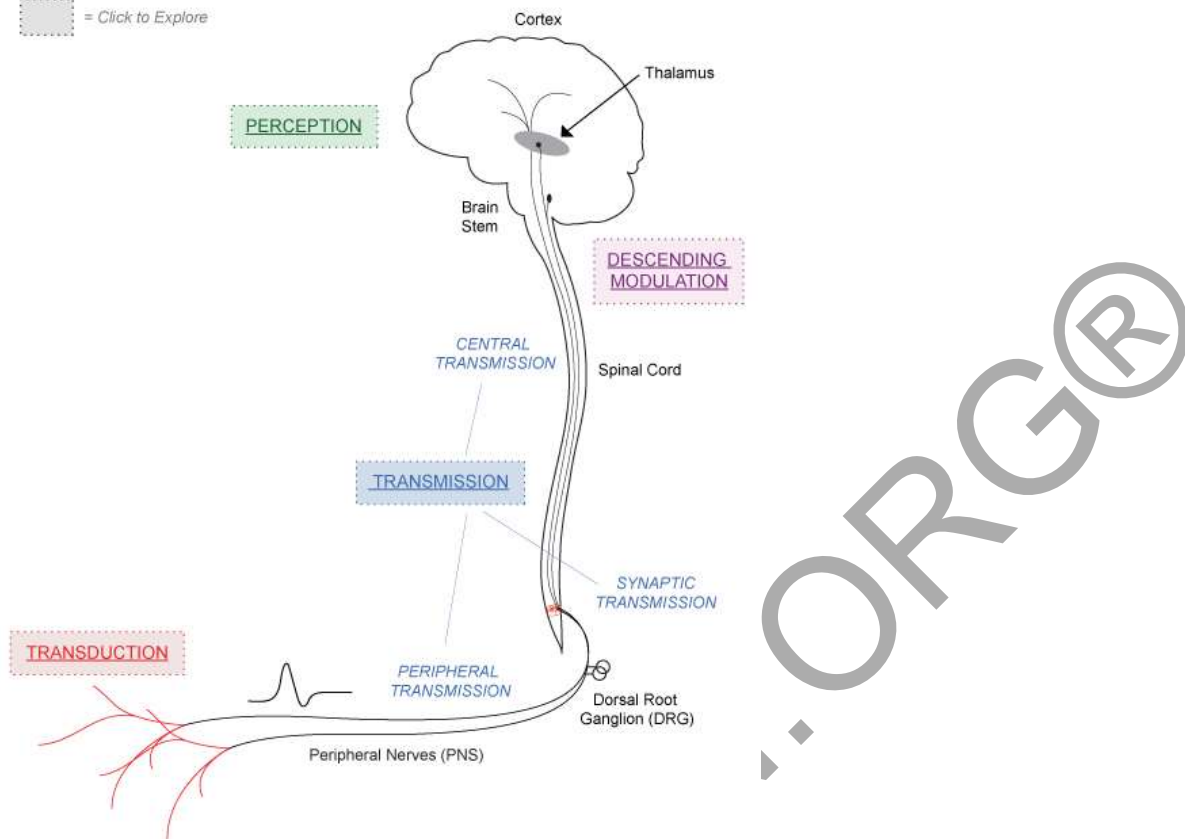
### Nociceptive (Somatic) pain

Nociceptive pain is that associated with tissue damage and may include:

- Somatic pain (superficial): Localized pain from the skin, subcutaneous tissue, or mucous membranes. Examples include sunburn, cuts, and contusions.
- Somatic pain (deep): Localized or diffusing pain from muscles, fascia, bones, and tendons. Examples include arthritis, tendinitis, muscle strain.
- Visceral pain: May or may not be localized. Arise from internal organs, such as the stomach and pancreas. Examples include pancreatitis, appendicitis, and pain from cancerous lesions.

Information about tissue damage (chemical, thermal, mechanical) is communicated to the CNS through 4 processes:

 = Click to Explore



- **Transduction:** In response to trauma of some type, chemicals (such as histamine and prostaglandins) are released, and these activate nociceptors (nerve endings).
- **Transmission:** The pain impulse is carried by the nerves to the spinal cord, the brain, the thalamus and eventually to the cortex for processing.
- **Perception:** The person recognizes the sensation of pain. Behavioral strategies, such as distraction and relaxation exercises, may decrease the recognition of pain. Opioids modify pain perception as well.
- **Modulation:** Brainstem neurons extend to the spinal cord and release endogenous endorphins that inhibit nociceptive impulses so that the impulses may not be perceived as pain. Antidepressants, including SNRIs and TCAs (and to a lesser extent SSRIs), prevent reuptake of serotonin and norepinephrine, allowing them to inhibit the impulses and thereby reducing pain.

Nociceptive pain usually responds to both non-opioid and opioid treatments, depending on the severity of the pain perception.

## Neuropathic pain

Neuropathic pain is that associated with damage to the nerves and/or structures of the CNS and involves abnormal processing of sensory input. Neuropathic pain is typically described as burning, shooting, tingling, numbing, stabbing, or shocking. Neuropathic pain may include:

- Central pain: Pain is caused by dysfunction or primary lesion. Examples include pain associated with stroke and multiple sclerosis.
- Peripheral neuropathies: Pain radiates along one or multiple peripheral nerves because of damage or inflammation of the nerves. Examples include trigeminal neuralgia, diabetic neuralgia, and post-herpetic neuralgia.
- Differentiation pain: Pain results from loss of afferent input. Examples include phantom limb pain and post-mastectomy pain.
- Sympathetically-maintained pain: Pain is secondary to sympathetic nervous system activity. Examples include complex regional pain syndrome.

Neuropathic pain often does not respond well to opioids but does respond to various adjuvant analgesics.

## Acute vs chronic pain:

### Acute pain

Acute pain typically has a sudden onset and duration of less than 3 months although at times the pain may persist up to 6 months. The severity may vary from very mild to severe, and most of the time a cause can be clearly defined (surgery, infection, traumatic injury, burns, labor and childbirth). Acute pain usually recedes with time and treatment.



Acute pain, especially if severe, is accompanied by changes in physical parameters:

- Increased heartrate and respiratory rate.
- Increased blood pressure.
- Sweating/pallor.
- Anxiety.
- Urinary retention.

Acute pain is usually well-controlled with opioids and nonopioids, depending on the severity. Pain usually begins to subside within a day or two of the initial injury/illness.

## Chronic pain



Chronic pain often has a slow and insidious beginning and persists for longer than 3 to 6 months. This type of pain may persist even after an injury or illness appears to have healed or resolved. Sometimes, an acute injury may appear to heal but the pain persists. In other cases, there is no history of disease or injury at all so the cause of the pain cannot always be determined.

Conditions associated with chronic pain include fibromyalgia, post-herpetic neuralgia, alcoholic neuralgia, diabetic neuralgia, osteoarthritis, rheumatoid arthritis, multiple sclerosis, and back pain.

Chronic pain signals may persist for years and may wax and wane in intensity. For example, some patients complain of worsening pain during cold months of the year with improvement during the summer.

Chronic pain usually does not affect physical parameters but may manifest in behavioral changes:

- Flat affect.
- Depression.
- Anger.
- Fatigue.
- Decreased physical activity.
- Weight gain or loss.
- Withdrawal from social interactions.

Chronic pain often does not respond well to conventional analgesics, including opioids and non-opioids. The goal of pain management may be to improve the quality of life and improve functioning rather than the elimination of pain.

## Pain assessment:

Pain assessment often begins (and too often ends) with asking a patient to rate the pain on a scale of 1 to 10. However, it's important to remember that pain assessment is always subjective, and the degree of pain that one person considers a 3 and another a 7 may be the same. So, determining the type of pain control that is needed must depend on more than the number.

Some people are confused by this rating scale and may simply give an arbitrary number unrelated to their actual degree of pain. Some cultures (such as Hispanics) don't usually use this system, so patients may be more likely to respond appropriately if asked if their pain is mild, moderate, or severe. The healthcare provider can also simply ask patients who seem confused by the scales to describe their pain.

When assessing pain, the patient's ability to function should be considered. For example, a patient who states his pain is 9 on a scale of 1 to 10 and is lying in bed, pale, moaning, and in fetal position may need different pain management than another patient who also rates her pain as 9 on a scale of 1 to 10 but is walking freely about the halls and chatting with friends.

Additionally, the patient's level of consciousness should be considered. If, for example, a patient has already received an opioid for pain and is very somnolent but when aroused rates pain as still 10 out of 10, giving yet another dose of an opioid may not be in the patient's best interest.

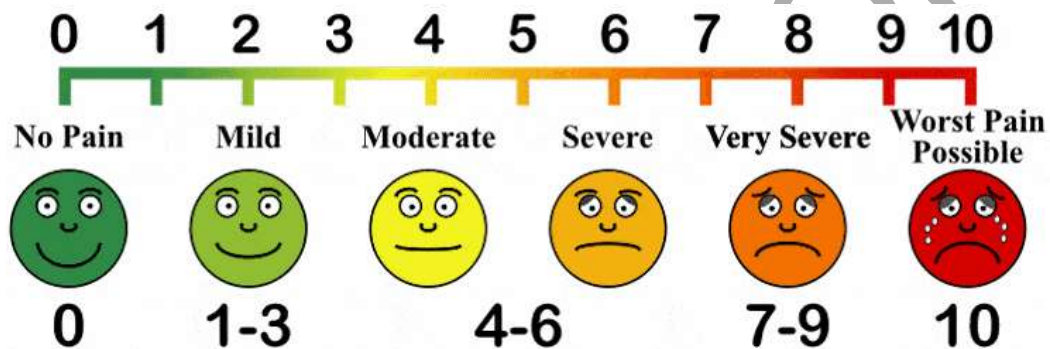
Assessment of pain should include the following elements:

- Onset of pain: When the pain started and what precipitated the pain.
- Duration and pattern of pain: How long since this episode started and how long similar pain usually lasts. The nurse should try to determine if there is any pattern to the pain. For example, is the pain worse at certain times of day or after specific activities?
- Contributing factors/Triggers: Those things that bring about the pain, worsen the pain, and make it better.
- Location: Including whether the pain is localized or radiates. The nurse should ask the patient to point to the area of pain if the patient is able to do so.
- Nature: Aching, dull, sharp, burning, shooting, etc.

- Other symptoms associated with the pain: Headache, nausea, anxiety,
- Functional limitations: Whether the pain prevents the person from carrying out usual activities.
- Management: If pain is chronic or recurrent, it's important to determine how the patient usually deals with or treats the pain.

## Pain Scales

The same pain scale may not be appropriate for all patients. The most common pain scale in use is the **1 to 10 scale**. Children and some older adults or mentally-challenged adults, however, may better understand



**FACES** (Wong-Baker), a scale that uses drawings of faces to show feelings associated with different degrees of pain. The scale above combines the 1 to 10 scales with FACES. Only children over age 6 should be expected to self-report their degree of pain because younger children lack the cognitive and language skills needed to reliably report their pain.

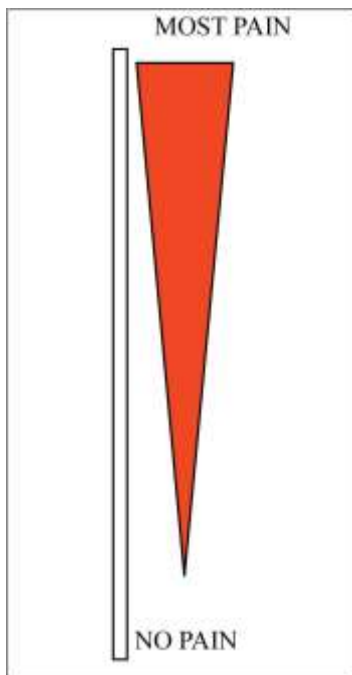
The pain scale used should be appropriate for the age and condition of the patient. For example, the **Neonatal/Infant Pain Scale (NIPS)** (see below) can be used for children under the age of one year.

## Neonatal/Infant Pain Scale (NIPS)

(Recommended for children less than 1 year old) A score greater than 3 indicates pain.

Pain Assessment		Score
<b>Facial Expression</b>		
0 - Relaxed Muscles	Restful face, neutral expression	
1 - Grimace	Tight facial muscles; furrowed brow, chin, jaw (negative facial expression – nose, mouth, brow)	
<b>Cry</b>		
0 - No cry	Quiet, not crying	
1 - Whimper	Mild moaning, intermittent	
2 - Vigorous cry	Loud scream; rising, shrill, continuous (Note: Silent cry may be scored if baby is intubated as evidenced by obvious mouth and facial movement)	
<b>Breathing Pattern</b>		
0 - Relaxed	Usual pattern for this infant	
1 - Change in breathing	Indrawing, irregular, faster than usual; gagging, breath holding	
<b>Arms</b>		
0 - Relaxed/Restrained	No Muscular rigidity; occasional random movements of arms	
1 - Flexed/Extended	Tense, straight arms; rigid and/or rapid extension, flexion	
<b>Legs</b>		
0 - Relaxed/Restrained	No Muscular rigidity; occasional random movements of legs	
1 - Flexed/Extended	Tense, straight legs; rigid and/or rapid extension, flexion	
<b>State of Arousal</b>		
0 - Sleeping/Awake	Quiet, peaceful, sleeping or alert, random leg movements	
1 - Fussy	Alert, restless and thrashing	

Some children as well as adults may be able to indicate pain using a **visual analog scale**. The vertical analog scale is most appropriate for children.



There are many pain scales to choose from. Each institution should determine which pain scales will be used with different populations, and these scales should then be used consistently by all staff so that communication about pain is clear.

Documentation about pain should indicate the scale used to assess pain: "Pain score 7 on the FLACC scale."



The **Faces, Legs, Activity, Cry, and Consolability (FLACC) scale** (below) can be used with children from 2 months to 7 years.

	DATE/TIME						
<b>Face</b> 0 - No particular expression or smile 1 - Occasional grimace or frown, withdrawn, disinterested 2 - Frequent to constant quivering chin, clenched jaw							
<b>Legs</b> 0 - Normal position or relaxed 1 - Uneasy, restless, tense 2 - Kicking, or legs drawn up							
<b>Activity</b> 0 - Lying quietly, normal position, moves easily 1 - Squirming, shifting back and forth, tense 2 - Arched, rigid or jerking							
<b>Cry</b> 0 - No cry (awake or asleep) 1 - Moans or whimpers; occasional complaint 2 - Crying steadily, screams or sobs, frequent complaints							
<b>Consolability</b> 0 - Content, relaxed 1 - Reassured by occasional touching, hugging or being talked to, distractible 2 - Difficult to console or comfort							
	<b>TOTAL SCORE</b>						

Older adults with confusion or dementia may not be able to verbalize or may be unreliable reporters. In those cases, the **Pain Assessment in Advanced Dementia (PAINAD)** scale may be utilized.

## Pain Assessment IN Advanced Dementia PAINAD

	0	1	2	Score
<b>Breathing</b> Independent of vocalization	Normal	Occasional labored breathing. Short period of hyperventilation	Noisy labored breathing. Long period of hyperventilation. Cheyne-stokes respirations	
<b>Negative Vocalization</b>	None	Occasional moan or groan. Low level speech with a negative or disapproving quality	Repeated troubled calling out. Loud moaning or groaning. Crying	
<b>Facial expression</b>	Smiling, or inexpressive	Sad. Frightened. Frown	Facial grimacing	
<b>Body Language</b>	Relaxed	Tense. Distressed pacing. Fidgeting	Rigid. Fists clenched, Knees pulled up. Pulling or pushing away. Striking out	
<b>Consolability</b>	No need to console	Distracted or reassured by voice or touch	Unable to console, distract or reassure	
				<b>TOTAL</b>

# 0-10 SCALE OF PAIN SEVERITY

Severity	Description of Experience
<b>10 Unable to Move</b>	I am in bed and can't move due to my pain. I need someone to take me to the emergency room to get help for my pain.
<b>9 Severe</b>	My pain is all that I can think about. I can barely talk or move because of the pain.
<b>8 Intense</b>	My pain is so severe that it is hard to think of anything else. Talking and listening are difficult.
<b>7 Unmanageable</b>	I am in pain all the time. It keeps me from doing most activities.
<b>6 Distressing</b>	I think about my pain all of the time. I give up many activities because of my pain.
<b>5 Distracting</b>	I think about my pain most of the time. I cannot do some of the activities I need to do each day because of the pain.
<b>4 Moderate</b>	I am constantly aware of my pain but I can continue most activities.
<b>3 Uncomfortable</b>	My pain bothers me but I can ignore it most of the time.
<b>2 Mild</b>	I have a low level of pain. I am aware of my pain only when I pay attention to it.
<b>1 Minimal</b>	My pain is hardly noticeable.
<b>0 No Pain</b>	I have no pain.

It's helpful to patients if patient information literature/videos describe the pain scales in use in an institution.

For example, if an institution uses the 1 to 10 scale for most adult patients, those who are unclear about the 1 to 10 pain scale may find that a description of each level helps them to describe their own level of pain more accurately.

Note that this scale, as many, is color-coded to reinforce the pain description, ranging from a cool color (blue) for no pain to a warm color (deep red) for severe pain.

## Treatment of acute pain

When assessing a patient with acute pain, the nurse should consider:

- The patient's report of pain or observation of pain (such as the number on a 1 to 10 scale).
- The patient's functional ability.
- The patient's level of consciousness.
- The site of pain and the cause.
- The number of days postoperative/post-injury.
- The patient's goals for controlling pain to acceptable levels.

If a patient's pain is related to an injury (fracture, lacerations, other trauma) or surgery, the nurse should always inspect the site of pain—the injury and/or the incision as appropriate to determine if there are indications of inflammation, hematoma, incisional rupture, or other problem (such as abdominal distention) that may be increasing the patient's pain and require intervention.

Typically, acute pain begins to reduce by the second or third day after surgery or injury, so pain may be treated more aggressively on day one than on day three. If the pain does not decrease or increases, this may be an indication of a complication that should be explored further.

When determining the choice of analgesics, the nurse should consider the goal of pain management. While 100% control of pain may be ideal, the tradeoff in adverse effects (tolerance, nausea, somnolence, itching, ileus, constipation) does not generally make this the best choice. The goal should be to decrease pain to a tolerable level, such as 2 to 4 on the 1 to 10 pain scale.

Pain control must be adequate, however, because poorly-controlled pain limits patient mobility, increases recovery time, and increases hospital stays. Additionally, acute pain may evolve into chronic pain, the most fearful complication of acute pain.

Institutions should avoid blanket analgesia policies, such as giving all patients who report 5 or above on the pain scale an opioid because all 5s are not created equal.

Recent studies have confirmed that a combination of ibuprofen 200 mg and acetaminophen 500 mg is as effective as low-dose opioids in controlling mild to moderate pain after surgery. Therefore, for most surgical procedures and injuries, unless the patient has very severe pain, beginning with ibuprofen and acetaminophen is reasonable.

Different combinations of ibuprofen and acetaminophen may be used to control pain. For example, one postsurgical protocol advises patients to take 650 mg of acetaminophen alternating in 3-hour durations with 600 mg of ibuprofen to a maximum of 3000 mg of acetaminophen and 3200 mg of ibuprofen in 24 hours.

In some cases, stronger NSAIDs, such as meloxicam or celecoxib, may be considered. Celecoxib is often used to reduce arthritic pain, acute pain, and menstrual pain. Meloxicam may reduce acute pain of osteoarthritis flareups.

For severe pain, such as pain after open heart surgery or major abdominal surgery, patients may require opioids for the first 2 to 3 days or longer. These may be administered intravenously by nursing staff or by the patient with a PCA system, which allows fixed doses of medication within a preset time period.

If the pain is not controlled, then a low dosage of an opioid pain medication can be added. If opioids have been ordered for a patient who is to be discharged, then only enough for the first 2 to 4 days should be provided. Rarely do patients require opioids for more than 7 days.

Patients usually transition to oral drugs when discharged. These may include opioids, acetaminophen, and NSAIDs, but the goal should be to reduce the use of opioids as quickly as possible.

## Opioids

Opiates refers to drugs that are derived directly from opium poppies, including morphine and codeine. Opioids are synthetic (manufactured chemically) or semisynthetic (chemically modified opiates) but bind to the same receptors as opiates and have similar effects. Synthetic opioids include fentanyl and methadone. Semi-synthetic opioids include oxycodone and hydrocodone.

While there is a technical difference between opiates and opioids, the term *opioid* is increasingly used to refer to both. These drugs may also be referred to as *narcotics* although this term is used less frequently in medicine because it is so often used to refer to illegal drugs.

Concern about the use of opioids has increased with the rise in drug overdose deaths. In 2017 alone, 40,000 people died, including more than 30,000 from fentanyl and other synthetic opioids.

Morphine is the drug that is used as the basis of comparison with other opioids. For example, according to the equianalgesia chart below, if a patient is to receive a dosage of hydromorphone that is equivalent to 30 mg of morphine, the hydromorphone dosage would be 7.5 mg.

<b>Equianalgesia chart</b>		
<b>Drug</b>	<b>Parenteral</b>	<b>Oral or other</b>
<b>Morphine sulfate</b>	10 mg IV q 3-4 hrs (Infants start at 0.05 mg/kg and children at 0.1 mg/kg)	30 mg q 3-4 hrs (Children's dosages vary according to preparation)
Hydromorphone	1.5mg q 3-4 hrs (Infants and children start at 0.015 mg/kg)	7.5 mg q 3-4 hrs (Children's dosages vary according to preparation)

Fentanyl	100 mcg q hr (Infants and children start at 0.5 to 2 mcg/kg)	Patches: 12-5-25 mcg/hr patch every 72 hours (adults) Transmucosal: 200 mcg. Buccal: 100 mcg.
Meperidine	75 to 100 mg q 3 hrs (Infants and children start at 1 to 1.5 mg/kg)	300 mg q 2-3 hrs (Not recommended for children) (Used for shivering but not for analgesia)
Codeine	130 mg q 3-4 hrs. (Not recommended for children)	180-200 mg q 3-4 hrs. (Children's dosages vary according to preparation).
Hydrocodone	--	30 mg q 3-4 hours (Children's dosages vary according to preparation)
Methadone	5-10 mg q 6-8 hrs.	10-20 mg q 6-8 hours.

There are, however, many additional different dosages of drugs and many drug combinations, so determining equivalency can sometimes be challenging.

In November 2018, the FDA approved a new form of the synthetic opioid sufentanil (Dsuvia®) for acute pain in adults. Dsuvia® is a tablet form of a sufentanil, which was previously available only for IV and epidural administration. Dsuvia® can be used legally only in hospitals, surgical centers, and medically supervised settings and cannot be dispensed for home use or through a pharmacy. This drug is ten times stronger than fentanyl, one of the leading causes of the current opioid addiction crisis.

Remember when establishing a pain management plan based on the 1 to 10 scale, the number assigned to each patient should reflect not only the self-reported number or description of pain but also observations about function and level of consciousness. The number used for pain management may not be the same as the number that was self-reported.

It is also important to avoid telling patients that medicine will remove or eliminate all of their pain because it rarely does. A better approach is to assure patients that the medications should help them feel "more comfortable" and able to move about with less discomfort.

Pain level	Pain management: Acute pain
1 - 3	Acetaminophen and an NSAID (ibuprofen, naproxen) or some combination, such as alternating acetaminophen with an NSAID. Given routinely for first 24 to 48 hours.
4 - 6	As above or a combination with a mild opioid, such as codeine, oxycodone or hydrocodone. Given routinely for first 24 to 48 hours.
7-10	IV, SC, or PO opioid, such as morphine, hydromorphone, oxymorphone, and fentanyl. Given as needed only. May also receive NSAID, acetaminophen, and milder opioids alternately. Patients receiving parenteral opioids should begin the transition to oral medications as soon as they begin taking fluids and pain is well-controlled.

Protocols may be in place for specific types of pain control, and these protocols should be followed. For example, the initial treatment of burn patients may include a predetermined dosage of analgesia, such as 0.2mg/kg of morphine SC. Protocols should, however, be reviewed annually to determine if they are supported by evidence-based research and reflect current understandings of pain control.

## Treatment of chronic pain

Much of the abuse of opioids has derived from treatment of chronic pain, but for most types of chronic pain, opioids are less effective or no more effective than other medications and treatment and should not be considered first-line therapy.

Conditions commonly associated with chronic pain include low back pain, arthritis, migraines, fibromyalgia, post-herpetic neuralgia, diabetic neuropathy, and alcoholic neuropathy. Conditions that cause muscle spasms, such as multiple sclerosis, may also result in chronic pain.

When assessing a patient with chronic pain the nurse should consider:

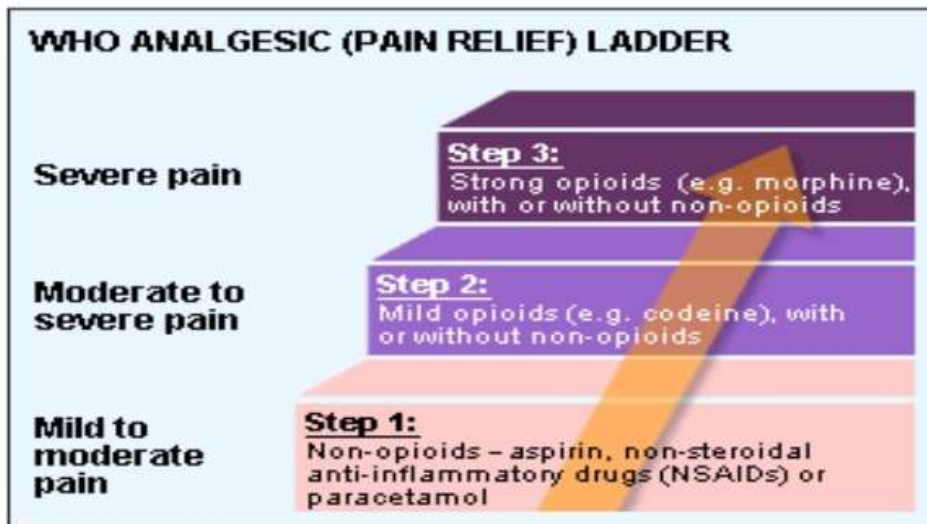
- The patient's report of pain or observation of pain (such as the number on a 1 to 10 scale).
- The patient's functional ability.
- The limitations caused by pain, including secondary consequences such as postural deficits and weakness.
- The patient's goals regarding functional ability and level of tolerable pain.
- The potential for restoring function by controlling pain.

- The medications or treatments the patient is currently taking to manage pain.
- Other medical conditions and medications that may affect pain management.
- Risk of substance abuse.

It's very important for patients with chronic pain to have a frank discussion about the inability and inadvisability (because of adverse effects) to eliminate all pain and to discuss with the patient realistic goals for reduction in pain. For example, a reduction of pain by even 30% may be enough to allow a patient to be more active and to better cope. Determining what activities the patient would like to be able to do can help to guide pain management.

The WHO developed the pain ladder to guide the treatment of cancer pain, but this scale has been widely adopted for the treatment of both acute and chronic pain as well.

## WHO 3-STEP LADDER



In March 2016, the CDC published guidelines for prescribing opioids for chronic pain in response to rising rates of opioid prescriptions and the risks that these opioids pose, including overdose and opioid use disorder.

## **CDC Guideline for prescribing opioids for chronic pain**

1. Nonpharmacologic therapy and nonopioid pharmacologic therapy are preferred for chronic pain. Clinicians should consider opioid therapy only if expected benefits for both pain and function are anticipated to outweigh risks to the patient. If opioids are used, they should be combined with nonpharmacologic therapy and nonopioid pharmacologic therapy, as appropriate.
2. Before starting opioid therapy for chronic pain, clinicians should establish treatment goals with all patients, including realistic goals for pain and function, and should consider how opioid therapy will be discontinued if benefits do not outweigh risks. Clinicians should continue opioid therapy only if there is clinically meaningful improvement in pain and function that outweighs risks to patient safety.
3. Before starting and periodically during opioid therapy, clinicians should discuss with patients known risks and realistic benefits of opioid therapy and patient and clinician responsibilities for managing therapy (recommendation category).
4. When starting opioid therapy for chronic pain, clinicians should prescribe immediate-release opioids instead of extended-release/long-acting (ER/LA) opioids.
5. When opioids are started, clinicians should prescribe the lowest effective dosage. Clinicians should use caution when prescribing opioids at any dosage, should carefully reassess evidence of individual benefits and risks when considering increasing dosage to  $\geq 50$  morphine milligram equivalents (MME)/day, and should avoid increasing dosage to  $\geq 90$  MME/day or carefully justify a decision to titrate dosage to  $\geq 90$  MME/day.
6. Long-term opioid use often begins with treatment of acute pain. When opioids are used for acute pain, clinicians should prescribe the lowest effective dose of immediate-release opioids and should prescribe no greater quantity than needed for the expected duration of pain severe enough to require opioids. Three days or less will often be sufficient; more than seven days will rarely be needed.
7. Clinicians should evaluate benefits and harms with patients within 1 to 4 weeks of starting opioid therapy for chronic pain or of dose escalation. Clinicians should evaluate benefits and harms of continued therapy with patients every 3 months or more frequently.



If benefits do not outweigh harms of continued opioid therapy, clinicians should optimize other therapies and work with patients to taper opioids to lower dosages or to taper and discontinue opioids.

8. Before starting and periodically during continuation of opioid therapy, clinicians should evaluate risk factors for opioid-related harms. Clinicians should incorporate into the management plan strategies to mitigate risk, including considering offering naloxone when factors that increase risk for opioid overdose, such as history of overdose, history of substance use disorder, higher opioid dosages ( $\geq 50$  MME/day), or concurrent benzodiazepine use, are present.

9. Clinicians should review the patient's history of controlled substance prescriptions using state prescription drug monitoring program (PDMP) data to determine whether the patient is receiving opioid dosages or dangerous combinations that put him or her at high risk for overdose. Clinicians should review PDMP data when starting opioid therapy for chronic pain and periodically during opioid therapy for chronic pain, ranging from every prescription to every 3 months.

10. When prescribing opioids for chronic pain, clinicians should use urine drug testing before starting opioid therapy and consider urine drug testing at least annually to assess for prescribed medications as well as other controlled prescription drugs and illicit drugs

11. Clinicians should avoid prescribing opioid pain medication and benzodiazepines concurrently whenever possible.

**Note:** In subsequent publications, the CDC cautioned against applying these guidelines too rigidly to post-surgical patients with severe acute pain and to patients with advanced cancer with chronic pain as opioids may be the most appropriate treatment in those cases. Cancer patients, especially, whose pain is severe or intractable should be kept as comfortable as possible as concerns about addiction are not generally applicable.

Benzodiazepines, such as clonazepam and diazepam, are widely used by patients with chronic pain; however, they are contraindicated for use with opioids and should be avoided because of the potential for abuse. Studies have indicated that patients with chronic pain using benzodiazepines are also significantly more likely to use opioids (about 40%), despite consistent warnings to physicians. Sometimes, patients are prescribed benzodiazepines

for mental health problems but other times for the muscle relaxant or potentiating properties to relieve chronic pain.

While the primary goal of pain management should be to control pain without the use of opioids or with reduced opioids, a secondary goal should include reducing the use of benzodiazepines, which can be as harmful to the patient as the opioids. Patients already taking opioids and benzodiazepines may need to be weaned off of the drugs as they should not be abruptly discontinued.

Adjuvant medications are an important mainstay of management of chronic pain.

<b>Non-opioid and adjuvant medications</b>	
Acetaminophen	Used for osteoarthritis and back pain. First-line drug for mild to moderate pain but does not reduce inflammation. May be combined with opioids in order to decrease opioid dosage. Overdose may result in liver failure so maximum dosage per day should be limited to 3000 mg. Side effects may include nausea, vomiting, itching, headache, light-headedness, and stomach pain.
NSAIDS	Used for inflammatory pain, but should be used at lowest possible dose and for the shortest amount of time. Increase risk of cardiovascular events and GI problems, including bleeding. Include ibuprofen and naproxen. Stronger NSAIDs, such as meloxicam, may be used to reduce pain and inflammation caused by osteoarthritis and rheumatoid arthritis.
Aspirin	Used for inflammatory pain (although inflammatory effect requires high dosage) and does not pose the cardiovascular risk that other NSAIDs do, but does increase the risk of hemorrhagic stroke, gastritis, and gastrointestinal bleeding. Aspirin may interact with other drugs, such as warfarin, methotrexate, and SSRIs, and should be avoided with renal and liver problems. <b>Note:</b> While aspirin is the most commonly used over-the-counter analgesic, it is not routinely prescribed as part of pain management.
Gabapentin (anti-seizure)	Used for neuropathic pain (first line drug). One of the most commonly used adjuvant drugs. May be appropriate for long-term use. Side effects include instability, blurred vision, weight gain, and (rare) suicidal ideation.

Pregabalin (anti-seizure)	Same as gabapentin, but second line drug for those who don't respond well to gabapentin. Only anti-seizure medication FDA-approved to treat fibromyalgia by calming overactive nerves.
TCAs	Include nortriptyline (sodium channel blocker), amitriptyline, and imipramine for neuropathic pain and depression. May be appropriate for long-term use. Side effects include dizziness, dry mouth, and constipation. Venlafaxine provides good analgesia but has increased risk of serotonin syndrome.
SNRIs	Include milnacipran, which is FDA-approved for treatment of fibromyalgia. Prevent reuptake of serotonin and norepinephrine, allowing them to inhibit pain impulses. Side effects include nausea, dry mouth, dizziness, headaches, diaphoresis, insomnia, constipation, and changes in sexual function.
SSRIs	Include duloxetine, which may reduce osteoarthritic pain and pain associated with diabetic neuropathy, low back pain, fibromyalgia, and chronic musculoskeletal pain. Side effects include drowsiness, nausea, dry mouth, insomnia, diarrhea, nervousness, dizziness, and changes in sexual function.
Steroids	Include prednisone and dexamethasone. Used for inflammatory pain, but should be used at the lowest dose and for the shortest period of time. Dosages must be tapered when discontinued. Side effects include hypertension, glaucoma, weight gain, edema, osteoporosis, muscle weakness, immunodepression, stomach ulcers, mood swings, and increased susceptibility to infections.
Lidocaine patch	Topical used for localized pain, such as from postherpetic neuralgia, diabetic neuropathy, and low back pain. Side effects include local burning, bruising, blisters, itching, nausea, dizziness, confusion, tremors, and irregular heartbeats.
Diclofenac	Topical NSAID has antiinflammatory properties and is used for localized pain from osteoarthritis and rheumatoid arthritis. Side effects are similar to other NSAIDs, such as ibuprofen, but usually less because of less systemic absorption. Local irritation may occur.
Carbamazepine (antiseizure)	Used for trigeminal neuralgia (first-line drug). Side effects include dizziness, abnormal thinking, difficulty speaking, tremors, constipation, dry mouth, confusion, vision changes, and liver dysfunction.

Baclofen	Used for trigeminal neuralgia and to relieve pain associated with muscle tightness and spasms, such as with multiple sclerosis. Side effects include nausea and vomiting, drowsiness, confusion, headache, and muscle weakness. <b>Note:</b> Generally, most muscle relaxants are not recommended beyond an acute period because of potential for abuse, and some potentiate opioids.
Valproic acid	Used for headaches. Side effects include chest pain, signs of infection, bleeding, dysrhythmias, tachypnea, loss of consciousness, tarry stools, nausea, diarrhea, and depression.
Alpha-2-agonists	Include clonidine, tizanidine, and dexmedetomidine. These drugs have opiate-sparing effects and allow for lower dosages of opioids.

**NOTE: Marijuana** and its extracts are now legal in some states but illegal under federal regulations. Cannabidiol (CBD) derived from hemp is now legal across the United States and is often marketed and used for pain control, but there is little research to support this use at present. Healthcare providers may face an ethical dilemma when patient's take or smoke marijuana for pain control.

However, studies in states with legal CBD, such as Colorado, which has legalized recreational marijuana, and others that have legalized medical marijuana show that the most common medicinal reason that people seek CBD is for the treatment of chronic pain. Additionally, analyses of prescriptions show that an increase in the use of CBD decreases prescriptions of conventional pain medications, including opioids.

Healthcare providers should encourage patients to be open about marijuana use and react nonjudgmentally (ensuring confidentiality) but consider the type and amount of use when determining the need or dosages of opioids or other medications.

Opioids should be reserved for those whose pain is moderate to severe and interferes with the patient's ability to carry out activities of daily living and for which non-opioid therapy has been ineffective. Prior to beginning opioid therapy, an opioid risk assessment, such as with the Opioid Risk Tool (ORT) (see sample below) should be carried out.

**PREDICTING ABERRANT BEHAVIOURS IN OPIOID TREATED PATIENTS**

**Opioid Risk Tool (ORT)**

Mark each box that applies:	Female (Score)	Male (Score)
1. Family history of substance abuse		
• Alcohol	<input type="checkbox"/> 1	<input type="checkbox"/> 3
• Illegal drugs	<input type="checkbox"/> 2	<input type="checkbox"/> 3
• Prescription drugs	<input type="checkbox"/> 4	<input type="checkbox"/> 4
2. Personal history of substance abuse		
• Alcohol	<input type="checkbox"/> 3	<input type="checkbox"/> 3
• Illegal drugs	<input type="checkbox"/> 4	<input type="checkbox"/> 4
• Prescription drugs	<input type="checkbox"/> 5	<input type="checkbox"/> 5
3. Age (mark box if between 16-45 years)	<input type="checkbox"/> 1	<input type="checkbox"/> 1
4. History of preadolescent sexual abuse	<input type="checkbox"/> 3	<input type="checkbox"/> 0
5. Psychological disease		
• Attention deficit disorder, obsessive compulsive disorder, bipolar, schizophrenia	<input type="checkbox"/> 2	<input type="checkbox"/> 2
• Depression	<input type="checkbox"/> 1	<input type="checkbox"/> 1
<b>Scoring Totals</b>	<input type="text" value="0"/>	<input type="text" value="0"/>
	Low Risk	Low Risk

**ORT Scoring and risk of aberrant behaviour**

- 0-3:** low risk      estimated 6% risk of aberrant behaviour
- 4-7:** moderate      estimated 28% risk of aberrant behaviour
- >8:** high risk      estimated 91% risk of aberrant behaviour

Risk assessment should be ongoing and carried out periodically during treatment with opioids. Those at high risk will require more careful monitoring than those at low risk of aberrant behavior associated with drugs.

Before prescribing opioid drugs, the healthcare providers should access information about the patient on the state’s electronic Prescription Drug Monitoring Program. These statewide programs are now available in all states except Missouri although Missouri does have existing monitoring programs in some counties, administered by St. Louis County. Accessing the PDMP can help to identify patients with drug-seeking behavior and addiction.

In addition to risk assessment, the patient should agree to sign and adhere to a patient opioid treatment agreement (see sample below) and should agree to have an initial urine screening for drugs as well as periodic random urine tests.

## Patient Opioid Treatment Agreement

I understand that I am receiving prescribed opioids from Dr. \_\_\_\_\_ to treat my condition. I agree to the following conditions:

1. I will not seek opioids from another physician. Only Dr. \_\_\_\_\_ Will prescribe opioids for me.
2. I will not take opioids in larger dosages or more frequently than is prescribed by Dr. \_\_\_\_\_.
3. I will not give or sell my medication to anyone else, including family members; nor will I accept any medications from anyone else.
4. I will not use other medications for pain control without first discussing this with Dr. \_\_\_\_\_.
5. I understand that if my prescription runs out early for any reason (such as my losing the medication or taking more than prescribed), Dr. \_\_\_\_\_ Will not normally prescribe extra medications for me. I will have to wait until my next prescription is due.
6. I will fill my prescriptions at one pharmacy of my choice. My pharmacy's name, address, Fax, and telephone number are:  
  
\_\_\_\_\_

7. I will store my opioid medication in a secured location to limit the potential of unsafe use of this medication by others.
8. If requested by my physician, I will complete periodic urine drug screening to assist in verifying compliance with my treatment plan.
9. If requested by my physician, I will present my opioid medications to my pharmacy or physician's office to verify that the correct quantities are in my possession.

**I understand that if I break these conditions, Dr. \_\_\_\_\_ may choose to stop writing monitored drug prescriptions for me.**

**Patient's name (Print)** \_\_\_\_\_

**Patient's signature** \_\_\_\_\_

**Physician's name (Print)** \_\_\_\_\_

**Physician's signature** \_\_\_\_\_

**Date:** \_\_\_\_\_

The patient's pill counts should be monitored at every visit and patients asked to always bring their bottles of medication to any clinic, emergency department, or office visit.

Treatment with opioids for patients not already on opioids should always begin with short-acting opioids. Patients may later be switched to long-acting or extended release drugs after an adequate daily dosage has been established.

Opioids may carry **special risks** for some populations of patients:

- Older adults: May require lower dosages and may exhibit oversedation, increasing risks of falls.
- Pregnant women: May pose a risk to the developing fetus.
- Obstructive sleep apnea: May increase risk of respiratory depression and respiratory arrest.
- Alcoholics: May increase risk of overdose.
- Substance use disorder: May increase risks of further abuse of drugs.

After administration of pain medication, careful followup should be carried out to determine how long it takes the medication to take effect and how much it reduces the patient's pain and ability to function. Oral medications should begin to take effect within about 15 to 30 minutes. Parenteral medications should provide relief more rapidly, but this varies according to the medication.

**Long-term use of opioids** has a number of possible adverse effects:

- Opioid tolerance: Over time the patient may require a greater dosage to achieve the same pain relief. This may require an increased dosage or rotation to a different opioid.
- Substance use disorder (addiction): Patients may be unable to control the use of opioids and may exhibit drug-seeking behaviors, such as wanting more medications and higher doses or claiming that medications were lost and need to be replaced.
- Withdrawal: Patients who have taken opioids for prolonged periods of time may experience symptoms of withdrawal (nausea, vomiting, insomnia, pain, tachycardia, hypertension, anxiety) when trying to stop the drugs, especially if the drugs are stopped abruptly. Patients taking opioids and reducing the dosage or discontinuing the drug should be slowly and carefully weaned under supervision.
- Hyperalgesia (Opioid-induced): An increased sensitivity toward pain can develop in those who were previously addicted to opioids. The increased pain leads the patients to recurrent craving for drugs and relapses into use. In some patients, hyperalgesia may occur while the

patients are taking opioids, requiring more and more drugs because of increasing pain. In this case, the dosage must be decreased slowly until the patient can tolerate non-opioid drugs.

Medication	Onset of Action (minutes)*	Peak Effect (hours)*	Duration of Action (hours)*	Route of Admin.
<b>Non-Opioid Analgesics</b>				
Acetaminophen	30-45	0.5-1	4-6	Oral
Ibuprofen	Analgesia: 30-60 Anti-inflammatory: Up to 7 days	Analgesia: unknown  Anti-inflammatory: 1-2 weeks with routine administration	Analgesia: 4-6	Oral
Naproxen sodium	Analgesia: 30-60 Anti-inflammatory: within 2 weeks	Analgesia: unknown  Anti-inflammatory: 2-4 weeks with routine administration	Analgesia: Up to 7 Please consider up to 12	Oral
<b>Opioid Analgesics</b>				
Codeine	15-30	0.5-1	4-6	Oral
Fentanyl	Unknown	20-72 It may take up to 6 days for fentanyl levels to reach equilibrium on a new dose	72	Trans-dermal Patch
Hydrocodone (combinations)	10-30	0.5-1	4-6	Oral
Hydromorphone	30	0.5-1	3-4	Oral





Medication	Onset of Action (minutes)*	Peak Effect (hours)*	Duration of Action (hours)*	Route of Admin.
Methadone	30-60	1-2	4-6 Full analgesic effects, are not attained until 3 to 5 days after initiation of dosing. Drug is known to eliminate slowly causing high risk of overdose	Oral
Morphine, immediate release	15-60	1	3-6	Oral
Oxycodone, immediate release	15	1-2	3-4	Oral
Oxymorphone	5-15	0.5-1	3-6	Oral
Tramadol, immediate release	60	2-3	6	Oral
<b>Muscle relaxants</b>				
Baclofen	3-4 days	5-10 days	4-6	Oral
Tizanidine	Unknown	1-2	3-6	Oral

As with acute pain, when determining the appropriate level of pain management based on the 1 to 10 scale, the number used should reflect functional abilities, level of consciousness, and observations of the patient as well as the self-reported number or description of pain.

Pain level	Pain management: Chronic pain
1 to 3	<ul style="list-style-type: none"> <li>Review possible modifications of lifestyle and needs for assistive devices and other aids, including handicapped parking permits to limit walking distances.</li> <li>Explore non-medicinal treatments, such as hot packs, cold packs, and exercise (Tai chi, yoga).</li> <li>Determine if the patient may benefit from physical therapy and/or occupational therapy.</li> <li>Use acetaminophen as needed rather than routinely.</li> </ul>

4 to 6	<ul style="list-style-type: none"> <li>• Begin non-opioid medical treatments routinely or as needed, such as with acetaminophen.</li> <li>• Use NSAIDs for short periods for acute flareups of pain but avoid for extended periods.</li> <li>• Utilize adjuvant medications, such as gabapentin, TCAs, or SNRIs.</li> <li>• Utilize adjuvant medications FDA-approved for specific conditions, such as pregabalin, milnacipran, and duloxetine for fibromyalgia.</li> <li>• Consider topical medications, such as lidocaine and diclofenac to relieve joint pain.</li> <li>• Utilize physical therapy and occupational therapy as indicated.</li> <li>• Consider complementary therapies, such as acupuncture, relaxation exercises, massage, and biofeedback.</li> <li>• Recommend cognitive behavioral therapy to address psychosocial contributors to pain.</li> </ul>
7 to 10	<ul style="list-style-type: none"> <li>• Consider invasive procedures, surgical repair, epidural, arthrocentesis, intraarticular glucocorticoid/hyaluronidase injections, radiofrequency ablation, neuromodulation, depending on the patient's condition.</li> <li>• Consider complementary therapies, physical therapy, and occupational therapy.</li> <li>• Conduct opioid risk screening and draw up an opioid agreement before initiating opioid therapy.</li> <li>• Begin opioid therapy if other therapies unsuccessful in controlling pain to a meaningful degree. Start with a low dose short-acting/immediate release opioid and titrate to the appropriate level. <b>Note:</b> objective evidence of severe disease should be found from observations and testing before beginning opioid therapy.</li> <li>• Consider whether patients receiving opioids should have naloxone (Narcan®) on hand for emergency overdose.</li> <li>• Educate patients regarding the dangers of opioids and safe storage and use.</li> </ul>

## Conclusion:

Pain management should be carried out in collaboration with the patient so that the patient has a clear idea of the benefits and risks of different types of pain management, including the use of non-opioid and opioids.

Acute pain is generally limited in duration and tends to decrease over time, so treatment is generally for a short period. Thus, problems encountered with treatment of acute pain are less a concern than those encountered with chronic pain. Although control of pain is no less important, and failure to adequately control acute pain can lead to chronic pain.

Chronic pain tends to increase over time, requiring more intervention instead of less. Chronic pain has multiple components (physical, emotional, cognitive) and determining the best approach and the most effective interventions can be challenging.

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