



Understanding and Managing Chronic Pain

Two (2.0) Contact Hours

Expires: 11/30/2020

First Published: 5/2/2014

Reproduction and distribution of these materials is prohibited without an Rn.com content licensing agreement.

Copyright © 2014 by RN.com.
All Rights Reserved.

Acknowledgements

RN.com acknowledges the valuable contributions of...

Kim Maryniak, PhD(c), MSN, RNC-NIC...C

Material protected by copyright

Conflict of Interest

RN.com strives to present content in a fair and unbiased manner at all times, and has a full and fair disclosure policy that requires course faculty to declare any real or apparent commercial affiliation related to the content of this presentation. Note: Conflict of Interest is defined by ANCC as a situation in which an individual has an opportunity to affect educational content about products or services of a commercial interest with which he/she has a financial relationship.

The author of this course does not have any conflict of interest to declare.

The planners of the educational activity have no conflicts of interest to disclose.

There is no commercial support being used for this course.

Purpose and Objectives

The purpose of this course is to provide a brief review of pain components, and discuss assessment and management of chronic pain conditions.

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

- Review basic physiology of pain.
- Review appropriate components of pain assessment.
- Identify management options, including pharmacologic and non-pharmacologic interventions to alleviate chronic pain.
- Describe considerations of chronic noncancer pain, neuropathic pain & cancer pain.
- Discuss common barriers to effective pain management.

Introduction

Pain is individualized and subjective, and affects patients in a holistic fashion. It can alter the physical, psychological, social, spiritual, and cultural well-being of any patient. Chronic pain is multidimensional and unique to each patient, making it complex for evaluation and management. The National Health Interview Survey showed that approximately 25.3 million people in the United States experience chronic pain (National Center for Complementary and Alternative Medicine [NCCAM], 2016).

This course will cover material associated with assessment and management of chronic pain with adult and pediatric patients. Pain in the neonate is outside the scope of this course. For more information on other pain topics, refer to other courses available on RN.com, including *Pain Assessment and Management* and/or *Acute Pain: Evaluation and Management*.

Types of Pain

Pain is categorized as **nociceptive** or **neuropathic**, depending on the underlying pathophysiology. Patients who experience chronic pain may have both nociceptive and neuropathic processes occurring.

Nociceptive pain transpires from nociceptor response to noxious stimuli, which can occur in the superficial or deep tissues (somatic) or in the visceral organs (visceral). The central nervous system functions appropriately with nociceptive pain. Superficial somatic pain is caused by external events that may be mechanical, chemical, or thermal. Examples may include surgery, burns, cuts, contusions, abrasions, injections, or dermatological disorders. Deep somatic pain may result from

mechanical injury, overuse, inflammation, or ischemia. Examples include arthritis, tendonitis, or otitis media. Some examples of visceral pain include appendicitis, pancreatitis, gastric ulcer, bladder distension, or sickle cell disease (Ingraham, 2017).

Neuropathic pain, also known as pathologic, pain is caused by injury or impairment of the central or peripheral nervous systems. This causes abnormal pain signals which can cause diffuse pain, making it difficult to determine the source. Examples of neuropathic pain include diabetic neuropathy, neuralgia, carpal tunnel syndrome, phantom limb pain, post-stroke, or autoimmune disorders (such as multiple sclerosis or fibromyalgia) (Ingraham, 2017; Smith, Kara, & Argoff, 2012).

Test Yourself

Which type of pain is associated with abnormal signals in the peripheral or central nervous system?

Neuropathic - **Correct**

Visceral

Somatic

Review: Description of Chronic Pain

Pain can be classified as **acute** or **chronic**.

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. It can be difficult to identify underlying pathology and explain the presence and/or extent of chronic pain, and it can be affected by factors that are not related to the cause (including psychological). Chronic pain may be present without physiologic signs, and can be incessant or periodic, with or without acute exacerbations (Alexander, 2013).

Acute and Chronic Pain

A patient with a chronic illness may also experience acute pain. This could be from a separate disease process or trauma, or related to the chronic process. When an acute episode occurs from the chronic disorder, it is known as “breakthrough pain.” This can also be an increase in the intensity of the chronic pain. Each new pain episode should be assessed and evaluated separately. A completely different pain regimen may be needed to manage the acute pain, and there may be a separate cause for this pain. Making an assumption that the acute pain is simply related to the chronic process can be detrimental to the patient (Registered Nurses’ Association of Ontario, 2013).

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. A patient who has experienced chronic pain is very self-aware of their body and the effects of pain.

Components of pain assessment include:

- History and physical assessment (including subjective and objective information, medication history, and history of pain relief measures)
- Functional assessment (including subjective and objective data of how pain impacts the patient’s ability to function)
- Psychosocial assessment
- Multidimensional assessment

Material protected by copyright

(Registered Nurses' Association of Ontario, 2013)

Test Yourself

History components that are required as part of assessment include:

History of substance use

History of medications

Medical history

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 [here](#).
- **McGill Pain Questionnaire:** Patients can use descriptors for their pain, which provides information about the experience and intensity. The questionnaire can be viewed [here](#).
- **Pain Anxiety Symptoms Scale:** Patients answer questions that relate to chronic pain and related anxiety. Can be viewed [here](#).
- **Pain Outcomes Questionnaire:** Provides information about functional subcategories of pain, and looks at outcomes. Can be viewed [here](#).
- **Global Pain Scale:** Patients rate current, recent, and average levels of pain. Psychosocial and functional questions are also asked. Can be viewed [here](#).

(Institute for Clinical Systems Improvement [ICSI], 2013; Registered Nurses' Association of Ontario, 2013)

Further Assessment

Chronic pain is described as pain that extends beyond the period of healing, which can disrupt normal activities of daily living, sleep, and degrades health and functional capability. It is important to perform more in-depth assessments to determine how chronic pain affects these aspects of a patient's life, including their quality of life. Common examples of these tools include:

- **American Pain Association Quality of Life Scale:** Patients provide information about how pain affects their daily activities and ability to function. Can be viewed [here](#).
- **CHANGE Pain Scale:** Patients rate their current and acceptable levels of pain with a numeric scale, and identifies the impact of pain on everyday living. Can be viewed [here](#).
- **Patient Health Questionnaire (PHQ-9):** Patients provide information on their current levels of depression, which can be a detrimental effect of chronic pain. Can be viewed [here](#).
- **Mini Mental Status Exam (MMSE):** This gives a series of tests and exams, which can determine if cognitive functioning has been affected by chronic pain. Can be viewed [here](#).

Pain: Verbal Reports

Conducting an in-depth pain assessment will assist you in developing a comprehensive pain management plan. If patients are able to communicate, it is important to incorporate verbal reports of

pain using descriptions and/or appropriate tools. Pain must be assessed and recorded in a manner that promotes reassessment. By using the OPQRSTUV assessment of pain, the healthcare provider can perform and document a comprehensive pain assessment.

Onset: When did the pain start? How often does the pain occur? How long does it last?

Provocative or Palliative: What makes the pain better or worse?

Quality: Describe the pain. Is it burning, shooting, aching, stabbing, crushing, etc.?

Radiation: Does the pain radiate to another body part?

Severity: Use appropriate pain scale to determine severity of pain.

Timing: Does it occur in association with something else? (e.g. eating, exertion, movement).

Understanding or Impact on Patient: What do you think is causing the pain? Are there other symptoms with the pain? How does the pain impact you and your family?

Values: What is your goal with the pain? What is your acceptable comfort level with this pain? Are there other views or feelings associated with this pain? Is there anything else about this pain that hasn't been addressed?

(Registered Nurses' Association of Ontario, 2013)

Key Information

Patients with chronic pain require an adequate pain assessment including:

- Identification of pain location(s), intensity, quality
- Onset, duration of pain, including any pain variations or exacerbations (e.g. improvement in pain over two months, then becoming worse), rhythms (e.g. is it worse in the morning, or does it worsen throughout the day)
- Manner of expressing pain (e.g. is there non-verbal expressive behavior, does the patient voice pain)
- Pain relief (including multiple therapies, and to what degree is the pain relieved)
- Exacerbation triggers
- Effects of pain (including psychosocial factors)

Response to previous treatment (e.g. what has been tried, what has worked, what has not worked). Formulating a management plan should include pain assessment tools that are appropriate for the individual, including multidimensional and functional assessments, with a pain self-report being the primary source. Regular reassessment and follow up is critical.

(Institute for Clinical Systems Improvement [ICSI], 2013; Registered Nurses' Association of Ontario, 2013)

Test Yourself

The Acronym OPQRSTUV can be used with pain assessment. What does the "S" in this acronym stand for?

Stabbing pain

Severity of pain - **Correct**

Shooting pain

Common Pain Scales

Subjective reports of pain are vital to assessment and management strategies. Use of a pain scale for the patient's self-report of pain, along with descriptions of pain, are essential. There is a variety of pain scales available for pain assessment, with patients from neonates through advanced ages.

The most common scales recommended for use with pain assessment are:

- Numeric scale
- Visual analog scale
- Wong-Baker scale (also known as the FACES scale)
- FLACC scale
- Neonatal/Infant Pain (NIPS) Scale
- Scales for adult, nonverbal patients:
 - Checklist of Nonverbal Pain Indicators (CNPI)
 - Behavioral Pain Scale (BPS)
 - Critical-Care Pain Observation Tool (CPOT)
 - Non-Verbal Pain Scale (NVPS)

(Institute for Clinical Systems Improvement [ICS], 2013; Registered Nurses' Association of Ontario, 2013)

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 (Institute for Clinical Systems Improvement [ICS], 2013; Registered Nurses' Association of Ontario, 2013)

Visual Analog Scale

The Visual Analog Scale is a simple bar that is used to have the patient mark on the line between "no pain" and "worst pain", to show their current level of pain. For those patients who suffer with chronic pain, this scale can also be used to indicate where a patient's usual daily pain level is (Institute for Clinical Systems Improvement [ICS], 2013; Registered Nurses' Association of Ontario, 2013)

Wong-Baker Scale (FACES)

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 (Institute for Clinical Systems Improvement [ICS], 2013; Registered Nurses' Association of Ontario, 2013)

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 (Institute for Clinical Systems Improvement [ICS], 2013; Registered Nurses' Association of Ontario, 2013)

Scales of Adult, Nonverbal Patients

The Checklist of Nonverbal Pain Indicators (CNPI) is used for adults who are nonverbal; it also designed to measure pain behaviors in cognitively impaired older adults. The items include nonverbal complaints, facial grimaces, bracing, restlessness, rubbing, and verbal complaints. Each

Material protected by copyright

item is scored both with movement and at rest. Score is “0” if the behavior was not observed. Score is “1” if the behavior occurred even briefly. The scores are subtotaled for the movement and at rest columns, and added together for a total score. There are no clear cut-off scores to indicate severity of pain. Instead, the presence of any of these behaviors may be indicative of pain and warrants further investigation, treatment and/or monitoring.

The Behavioral Pain Scale (BPS) is used for adults who are nonverbal and ventilated. It includes items of facial expression, upper limb movement, and compliance with mechanical ventilation. Scores for each category range from 1-4, with total scores of 3 indicating no pain, and 12 as maximum pain.

The Critical-Care Pain Observation Tool (CPOT) is used for adults who are nonverbal; it also designed to measure pain behaviors in cognitively impaired older adults. Indicators include facial expression, body movement, compliance with ventilator OR vocalization, and muscle tension. Scores for each indicator is from 0-2. There are no clear cut-off scores to indicate severity of pain.

The Non-Verbal Pain Scale (NVPS) is used for adults who are nonverbal; it also designed to measure pain behaviors in cognitively impaired older adults. Indicators include face, activity, guarding, physiologic (i.e. vital signs), and respiratory. Scores for each indicator is from 0-2. There are no clear cut-off scores to indicate severity of pain.

(Drew, 2012; Institute for Clinical Systems Improvement [ICSI], 2013; Registered Nurses’ Association of Ontario, 2013)

The Neonatal-Infant Pain (NIPS) Scale

The NIPS scale is recommended for children less than one year old. The tool uses the behaviors that nurses have described as being indicative of infant pain or distress. It is composed of six (6) indicators, and each behavioral indicator is scored with 0 or 1 (except "cry", which has three possible descriptors and is scored with a 0, 1 or 2). A score greater than 3 indicates pain. Infants should be observed for one minute in order to fully assess each indicator (Institute for Clinical Systems Improvement [ICSI], 2013; Registered Nurses’ Association of Ontario, 2013)

Test Yourself

An appropriate scale to use with a nonverbal, seventy-year-old patient is:

Numeric scale

FLACC scale

CNPI scale - **Correct**

Pain: Objective Behaviors

Objective behaviors observed by the healthcare professional should also be considered with pain assessment. Patients with chronic pain may exhibit different behaviors than those experiencing acute pain. Although these observations can indicate pain, absence of these behaviors does not indicate absence of pain. These behaviors may include:

- Change in sleep patterns (such as interrupted sleep, insomnia) and/or change in physical appearance from lack of sleep (such as appearing fatigued or tense, dull eyes).
- Expressive behavior (such as restlessness, irritability, crying, moaning).
- Guarding behavior (such as protective guarding, positioning, posturing/movement, rubbing).
- Fatigue, weakness.
- Anorexia, cachexia (wasting)

Material protected by copyright

- Increased psychological distress (such as anxiety, depression).
- Decreased concentration, impaired cognition.
- Self-focusing behaviors, or questions meaning of pain.
- Changes in affect (such as flat affect).
- Alteration in muscle tone, muscle spasms.
- Decrease in ability to perform activities of daily living.
- Social withdrawal.
- Other symptoms that are related to etiology of condition.

Note: Vital signs can normalize with chronic pain as the body adapts; therefore, changes in vital signs may not be an expected observation.

(Institute for Clinical Systems Improvement [ICS], 2013; Registered Nurses' Association of Ontario, 2013)

Standards of Care

Management of pain is a critical area of healthcare and is addressed by the accreditation agencies, such as the Joint Commission (TJC) and Det Norske Veritas (DNV), who clearly outline how healthcare institutions should assess and manage pain. Organizations should be committed to provide appropriate pain management. Some strategies may include:

- The use of an interdisciplinary committee to review and assess current practices and any pain management issues, to promote continuous quality improvement.
- Pain management should be regularly assessed through patient satisfaction and comments, documentation review, staff input, and medication reviews.
- Explicit policies and procedures should be written, reflecting standards of pain management. Information to be included in policies are a) who assesses pain, b) when pain is assessed and reassessed, c) how pain is assessed, d) documentation, e) methods of communication among team members, and f) conditions for relieving pain.
- Accountability for pain management should be established, such as through job descriptions, performance reviews, and competencies.
- Education about pain management should be done regularly with staff.
- Patients and families should be made aware of the organization's commitment to pain management.

(DNV-GL, 2014; The Joint Commission, 2017)

Standards for Pain Assessment

The Centers for Medicare and Medicaid Services (CMS) also provide guidelines for the assessment and treatment of pain for acute care, long-term care, and ambulatory settings. The HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems) survey is submitted to CMS from hospitals for public reporting of data. One of the topics included in the HCAHPS survey is pain management. The questions included in this section are:

- During this hospital stay, did you need medicine for pain? (Q12)
- During this hospital stay, how often was your pain well controlled? (Q13)
- During this hospital stay, how often did the hospital staff do everything they could to help you with

Material protected by copyright

your pain? (Q14)

(CMS, 2017)

For more information on HCAHPS, see RN.com's course *The Role of the Staff Nurse in Patient Satisfaction and HCAHPS*.

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. Pain management for patients with chronic pain often requires a multidisciplinary approach. Considerations include type of pain, disease processes, risks, and benefits of treatment modalities (Institute for Clinical Systems Improvement [ICS], 2013; Registered Nurses' Association of Ontario, 2013).

Pain Management Strategies

Pain management strategies for chronic pain are categorized into level I and level II. Level I management includes pharmacological and non-pharmacological approaches, including complementary medicine. Level II management includes use of a multidisciplinary team, for those patients that have not had pain managed well with more conservative approaches. These levels will be further discussed with the specific chronic pain categories later during this course (Institute for Clinical Systems Improvement [ICS], 2013).

Effects of Unrelieved Pain

Unrelieved pain can actually cause systemic effects. Some of these effects include:

- **Metabolic:** hyperglycemia, glucose intolerance, insulin resistance, gluconeogenesis, hepatic glycogenolysis, muscle protein catabolism, increased lipolysis, hypokalemia.
- **Cardiovascular:** increased heart rate and cardiac output, increased peripheral and systemic vascular resistance, hypertension, increased coronary vascular resistance, increased myocardial oxygen consumption, hypercoagulation, venous thromboembolism.
- **Respiratory:** hypoxemia, decreased respiratory volumes, atelectasis, shunting, decreased cough, respiratory infection.
- **Endocrine:** increased cortisol, adrenocorticotrophic hormone, increased cortisol, increased antidiuretic hormone, increased epinephrine and norepinephrine, increased growth hormone, increased catecholamines, increased renin and angiotensin II, increased aldosterone, increased glucagon, decreased insulin, decreased testosterone, increased interleukin-1.
- **Genitourinary/Gastrointestinal:** urinary retention/decreased urinary output, fluid overload, decreased gastric motility, anorexia.
- **Musculoskeletal:** muscle spasm, impaired muscle function, immobility.
- **Immune:** decreased immune response.
- **Cognitive/Developmental/Quality of Life:** fatigue, mental confusion, reduction in cognitive function, increased behavioral and physiologic responses to pain, altered temperament, increased somatization, increased vulnerability to stress disorders/addictive behavior, sleeplessness, anxiety, fear, hopelessness, increased thoughts of suicide.

(Institute for Clinical Systems Improvement [ICS], 2013; Registered Nurses' Association of Ontario, 2013)

Material protected by copyright

Test Yourself

A potential consequence of unrelieved pain is:

Muscle flaccidity

Increased thoughts of suicide - **Correct**

Increased mental alertness

Non-Pharmacological Treatment

There are a variety of approaches for decreasing pain in adult and pediatric patients that are non-pharmacological. These can be effective for alleviating chronic pain when used either alone or in combination with other non-pharmacological or pharmacological measures. 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
- Aromatherapy
- Acupressure or acupuncture
- Transcutaneous electrical stimulus (TENS)

(City of Hope National Medical Center, n.d.; Institute for Clinical Systems Improvement [ICSI], 2013; Registered Nurses' Association of Ontario, 2013)

Chronic Pain and Herbal Supplements

Many patients who experience chronic pain look to alternative and complementary therapies for pain relief, including the use of herbal supplements. There has been mixed results with evidence of a variety of these supplements. Patients should be educated on the potential risks and benefits when considering use (National Center for Complementary and Alternative Medicine (NCCAM), 2016).

Some examples include:

- **Headache:** Herbal supplements have been studied for effectiveness in treating migraines, with some initial positive results. These may include riboflavin, coenzyme Q10, feverfew, and butterbur. Cautions with feverfew and butterbur include allergic reactions, and potential gastrointestinal disturbances. There is a contraindication with using feverfew during pregnancy, as it may cause premature labor.
- **Back pain:** Some preliminary studies have found short-term positive effects of cayenne, white willow bark, and devil's claw, but long-term studies have not been performed.
- **Osteoarthritis:** Many supplements are used for osteoarthritis, but there is no conclusive evidence for positive effects. Some of these may include glucosamine, chondroitin, S-adenosyl-L-

methionine (SAME), dimethyl sulfoxide (DMSO), and methylsulfonylmethane (MSM). Caution should be taken with the use of glucosamine and chondroitin in patients with poor renal function, and those taking warfarin.

- **Rheumatoid arthritis:** Supplements that include omega-3 fatty acids may assist with symptom relief, as well as thunder god vine. However, there are concerns with thunder god vine, including gastrointestinal disturbances, alopecia, decreased bone density, headache, and rash.
- **Other:** Vitamin D has been examined with a variety of chronic pain conditions, but there is limited research in this area.

WHO Analgesic Ladder

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) (WHO, 2017).

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

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

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.

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 (; Registered Nurses' Association of Ontario, 2013; WHO, 2017).

Test Yourself

The WHO Analgesic Ladder can only be used for patients experiencing cancer pain.

True

False - **False**

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. Acetaminophen has antipyretic and analgesic effects. Often acetaminophen has fewer adverse effects and may be used safely in patients with decreased platelets or gastrointestinal disorders. However, acetaminophen has very little effect against inflammation. There must be caution taken in the amount of acetaminophen used per day, which can result in hepatic toxicity; there a maximum dose of 4000 mg/day in most adult patients, and 3000 mg/day with elderly patients (Hodgson & Kizior, 2013).
- **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, as well as antipyretic effects. NSAIDs can be used for mild pain, or in combination with opioids for moderate pain. The adverse effects of NSAIDs include gastrointestinal dysfunction (nausea, vomiting, diarrhea, cramps, and gas), gastric ulcers and/or gastric bleeding, and interference with platelet aggregation. Caution is needed with dosages for pediatric and elderly patients, and is contraindicated in patients with hepatic or renal impairment,

bleeding disorders and/or low platelets, or gastrointestinal ulcers (Hodgson & Kizior, 2013).

- **COX-2 inhibitors:** Cox-2 inhibitors were developed to reduce inflammation by selectively blocking the cyclooxygenase-2 (Cox-2) enzyme. Recent information about risks of Cox-2 Inhibitors has severely limited their use. Celebrex is now the only Cox-2 drug on the market and it carries a very strong warning against cardiovascular and skin complications.
- **Tricyclic antidepressants (TCAs):** TCAs can be effective in treating neuropathic pain, and can provide a mild analgesic effect. These may be considered a first line treatment for chronic, neuropathic pain. Examples include amitriptyline (Elavil®), nortriptyline (Aventyl®), and desipramine (Norpramin®). Analgesia generally occurs within a few days to a week, whereas antidepressant effect takes longer to occur. 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.

(City of Hope National Medical Center, n.d.; Institute for Clinical Systems Improvement [ICSI], 2013; Registered Nurses' Association of Ontario, 2013).

More Pharmacological Treatments

- **Muscle relaxants:** Common examples include baclofen (Lioresal®), cyclobenzaprine (Flexeril®), and tizanidine (Zanaflex®). Muscle relaxants may be effective in reducing pain and muscle tension, and increasing mobility.
- **Anticonvulsants:** Examples include carbamazepine (Tegretol®), gabapentin (Neurontin®), and pregabalin (Lyrica®). Anticonvulsants can provide sedation and a graded analgesic effect, and can be effective with neuropathic pain.
- **Corticosteroids:** Common examples include dexamethasone and prednisone. Corticosteroids can be given to reduce inflammation, and may be used briefly with acute pain episodes or with chronic conditions.
- **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. Opioids are commonly administered through enteral and parenteral routes. Some may even be administered transdermally, subcutaneously, intrathecally, and epidurally. Around the clock oral dosing is the preferred mechanism for managing chronic pain. Alternatively, parenteral administration is usually a good choice for acute, surgical pain and breakthrough pain.

(City of Hope National Medical Center, n.d.; Institute for Clinical Systems Improvement [ICSI], 2013; Registered Nurses' Association of Ontario, 2013).

Test Yourself

Opioids should be administered around the clock for patients with chronic pain.

Material protected by copyright

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. The use of opioids with chronic noncancer pain has been a source of uncertainty for many years. Many guidelines recommend the use of opioids with these patients when there is no response to other treatments, but there have been patients who do not have significant improvements with the use of opioid therapy. There are also side effects and potential aberrant behavior, including addiction, with the long-term use of opioids. 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 (Agency for Healthcare Research and Quality, 2014; Registered Nurses' Association of Ontario, 2013).

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 College of Physicians, 2016).

Did You Know

In 2013, the Agency for Healthcare Research and Quality (AHRQ), along with the Effective Health Care Program, developed a protocol to investigate the long-term effects and risks of opioids for chronic pain. A systematic review was done to examine key questions related to opioid use. After an extensive search, 39 studies were included. It was determined that there was little evidence on long-term opioid therapy for chronic pain, but what was found suggested an increased risk of serious harms that appears to be dose-dependent. The group determined that more research is needed to understand long-term benefits, risk of abuse and related outcomes, and effectiveness of different opioid prescribing methods, as well as strategies to mitigate risk (AHRQ, 2014).

Risk of Opioid Adverse Effects

Common side effects of opioid use include:

- Sedation
- Confusion or mental clouding
- Respiratory depression
- Pruritus
- Nausea and vomiting
- Constipation

The risk for adverse effects can be increased with certain patients. The elderly, patients with a central nervous system disorder, or patients using multiple medications have a higher risk for central nervous system effects, such as sedation and confusion. There is also an increased chance for constipation with the elderly, those patients who are immobilized, or patients with abdominal problems.

Respiratory depression is an increased risk with patients who are opioid naïve, those with a head

injury, or patients with respiratory disorders (American College of Physicians, 2016).

Opioid Toxicity

Although the likelihood of patients developing opioid toxicity is not common, it can cause short term and long term adverse effects. Thus, all patients on opioid therapy should be monitored for toxicity. Assessment should take into account the dose, treatment duration, the overall condition of the patient, and renal and liver function.

Mild symptoms of opioid toxicity include nausea, drowsiness, unusual dreams or hallucinations, and mild myoclonic jerks. If mild opioid toxicity is diagnosed then serious side effects can be avoided by reducing the opioid dose reduction or giving an opioid antagonist (naloxone). Severe manifestations of opioid toxicity include respiratory depression, pupil constriction, and central nervous system depression. The type and doses of the opioids should be adjusted accordingly, and naloxone may be administered (American College of Physicians, 2016; Hughes, 2012).

Did You Know

For long-term use of opioids, the use of an agreement form with patients may be warranted. Components of such an agreement should include:

- The patient agrees to participate in other treatments aside from opioid therapy
- The patient agrees to taking medications exactly as described
- Regular appointments will be kept
- Opioid medications will only be prescribed by the practitioner with whom the patient is signing the agreement form
- New conditions or hospitalizations will be reported to the current practitioner
- Only one pharmacy will be used
- Early refills will not occur, including if the opioid medication is lost or stolen
- The patient also agrees to refrain from using all recreational and illegal drugs; this includes the use of alcohol

(Institute for Clinical Systems Improvement [ICS], 2013; Registered Nurses' Association of Ontario, 2013)

Equianalgesic Dose Conversions

Note that equianalgesic conversion tools should be used as a guide only. Clinical assessment and reassessment is of paramount importance in determining the effectiveness of drug therapy. Clinical judgment and patient response should always guide your practice first and foremost. Dosages on these charts are usually adult approximations, unless otherwise stated. Doses should be reduced for children or the elderly as clinically indicated.

Equianalgesic dosing means using different medications or routes of delivery that provide similar effectiveness of pain control. Often nurses are responsible for managing a patient's pain when converting from one opioid to another or converting from different routes of delivery.

Equianalgesic dose charts should be used to help you determine if the patient is receiving the appropriate dose of medication via the appropriate route when therapy changes are made (Shaw & Fudin, 2013).

Equianalgesic charts are readily available online, or may be available on your unit. An example of an Equianalgesic dosing chart can be viewed [here](#).

Chronic Pain

Chronic pain is a common problem in the United States and other countries. A systematic review of studies estimated the incidence of adult chronic pain ranges from 24.8-40%, with an average of 30.3% patients reported persistent pain worldwide (Elzahaf, Tashani, Unsworth, & Johnson, 2012).

Chronic Pain Treatment Goals

Chronic pain is an intricate and multifaceted experience that can be associated with major physical, social, spiritual, and emotional disruption, including disability. Considerations are not just focused on pathology, but also on the holistic effects that this pain has on the patient. Management must include assessment, education, and the ability to set appropriate and achievable goals.

Treatment goals and strategies for chronic pain include:

- Decrease suffering from pain and the related psychosocial effects
- Increase and/or restore physical, social, and occupational function
- Optimize health and well-being at a holistic level
- Improve coping and quality of life for chronic pain patients

(Institute for Clinical Systems Improvement [ICSI], 2013; Registered Nurses' Association of Ontario, 2013)

Chronic Pain Guidelines

Many guidelines exist for the treatment of chronic pain. Some guidelines are hospital-specific, while others have been published for wide usage.

One commonly used algorithm for chronic pain was developed by Institute for Clinical Systems Improvement (ICSI) (2008). The ICSI has also created algorithms for various subcategories of pain.

The assessment algorithm begins with using history, physical, key questions, and appropriate tools for pain assessment to determine the type of pain the patient is experiencing. The biological mechanisms of pain can be categorized as neuropathic, muscular, inflammatory, or mechanical/compressive. Assessment for chronic pain should include psychological assessment, spiritual assessment, disability issues or impact on work, and contributing factors (ICSI, 2013).

According to the ICSI (2013), after assessment, management of pain begins. As previously discussed, there is level I and level II management considerations.

- **Level I:** Core principles include setting goals and developing a holistic plan of care, providing psychosocial management, and including physical rehabilitation. Pharmacological and non-pharmacological therapies are included. Level I plans for specific conditions will be discussed further.
- **Level II:** If goals have not been met for comfort, function, and overcoming barriers using level I strategies, then level II management should be implemented. This includes the use of an interdisciplinary team as well as a consultation with a pain specialist or pain clinic.

Level I Planning

Material protected by copyright

Principles for developing a plan of care for chronic pain patients include the use of shared decision making in planning treatment (including family), inclusion of patient self-management strategies (such as a fitness program), and considerations of cognitive-behavioral approaches to improve patient function. Another key concept is that psychological concerns should not minimize or invalidate a patient's report of pain (ICSI, 2013).

The care plan should be written to ensure that the approach is comprehensive, and that biopsychosocial considerations are addressed. The elements for a care plan of a chronic pain patient include:

- Setting personal goals
- Decreasing pain
- Improving sleep
- Managing stress
- Increasing physical activity

Test Yourself

Management of chronic pain must include assessment, education, and what other factor?

The ability to set appropriate and achievable goals - **Correct**

The necessity of a pain specialist for all patients

The need for a short timeline

Level I Pharmacological Considerations

There are general considerations and recommendations for pharmacological treatment of chronic pain (ICSI, 2013). These include:

- Clearly defined goals of therapy are required prior to prescribing medications.
- Medications should be adapted to meet the patient's individual goals.
- Patients should be educated regarding risks and benefits of all medications, including management of side effects.
- The source(s) of pain should be identified and treated.
- NSAIDs are recommended for occasional exacerbations of mild to moderate inflammatory pain or non-neuropathic pain.
- When considering the use of opioids, the benefits should undoubtedly outweigh the risks, and cautions should be used. A written agreement is recommended for patients that will be on long-term opioid therapy.

Multimodal Therapy

There are many recommendations for the use of multiple (or multimodal) therapy when planning treatment for patients suffering from chronic pain. This is the use of multiple interventions used concomitantly to increase beneficial effects of treatment.

Some examples include using medications from various drug classes, rehabilitative therapies and medications, regional anesthesia blocks and medications, or other combinations of pharmacological and non-pharmacological interventions (Institute for Clinical Systems Improvement [ICSI], 2013; Registered Nurses' Association of Ontario, 2013).

Level II Interdisciplinary Strategies

The use of an interdisciplinary team can promote collaboration and develop a comprehensive treatment plan for a patient. Team members may include physicians (from various specialties), nurses (may include a pain resource nurse), case managers, pharmacists, physical therapists, occupational therapists, speech therapists, social workers, and spiritual care. A pain specialist or palliative care member may also be included.

Patient and family education is an important component with chronic pain, and interdisciplinary team members can assist with this. Education about the pain, including possible causes and realistic pain goals, should be done. Review of factors that may alleviate or aggravate pain, strategies to manage the pain, and lifestyle changes that may be required are other educational components (Institute for Clinical Systems Improvement [ICSI], 2013; Registered Nurses' Association of Ontario, 2013)

Chronic Noncancer Pain

Chronic pain that is not associated with cancer can fall into many categories of causes, and is often referred to as chronic noncancer pain. The pain may be a result of an acute injury that has developed into chronic pain, chronic pain that occurs from a chronic condition, or from an unidentified cause. Rheumatoid disorders, musculoskeletal disorders, chronic inflammatory disorders, and some hematologic disorders are common sources of chronic noncancer pain. These may include:

- Osteoarthritis
- Rheumatoid arthritis
- Systemic lupus erythematosus
- Fibromyalgia
- Multiple sclerosis
- Myofascial pain
- Chronic back pain
- Chronic headaches
- Sickle cell disease

(Institute for Clinical Systems Improvement [ICSI], 2013; Registered Nurses' Association of Ontario, 2013)

Osteoarthritis

Osteoarthritis is a form of joint disease that arises from degeneration of the cartilage in the synovial joints, which occurs over years or decades. Although the joints may appear normal initially, there is a progressive reduction in range of motion, and persistent pain. Patients generally describe the pain as deep and achy within the joint, which is exacerbated by movement (Lozada, 2017).

Osteoarthritis Management

Level I management of osteoarthritis may consist of:

- Use of heat and cold
- Exercise and physical therapy, such as cardiovascular, resistance and aquatic exercise
- Occupational therapy
- Weight loss

Material protected by copyright

- Psychosocial interventions, such as relaxation, stress management
- Use of walking aids
- Oral anti-inflammatory medication, including NSAIDs and corticosteroids
- Topical anti-inflammatories
- Tramadol
- Corticosteroid injections
- Cox 2 inhibitor
- Duloxetine (Cymbalta®) has also been found effective with osteoarthritis
- Surgical interventions, such as osteotomy or fusion, may be considered in patients with persistent, severe pain or joint misalignment
(Lozada, 2017; ICSI, 2013)

Rheumatoid Arthritis

Rheumatoid arthritis is an autoimmune disorder that causes a chronic systemic inflammatory process. Persistent synovitis in the joints causes pain, swelling, and an eventual, muscle atrophy, destruction and deformity in the joints. It is the most common cause of juvenile arthritis (Smith, 2017).

Rheumatoid Arthritis Management

Level I management of rheumatoid arthritis includes:

- Exercise
- Diet
- Use of heat and cold
- Stress reduction
- Physical therapy
- Occupational therapy
- Massage
- Use of orthotic devices
- Use of adaptive equipment
- Disease-modifying antirheumatic drugs (DMARDs), such as methotrexate (MTX), rituximab, leflunomide, cyclosporine, gold salts, D-penicillamine, and minocycline
- NSAIDs
- Corticosteroids, including IV steroids
- Cox-2 inhibitors
- Tramadol
- Opioids
- Surgical procedures may reduce pain and deformities, such as myofascial techniques, excisions, reconstructions, joint fusions, and joint replacements
(ICSI, 2013; Smith, 2017)

Test Yourself

Disease-modifying antirheumatic drugs (DMARDs), such as methotrexate, are used with both

osteoarthritis and rheumatoid arthritis.

True

False- Correct

Systemic Lupus Erythematosus

Systemic lupus erythematosus (SLE) is a chronic inflammatory disease, which is also an autoimmune disorder, and follows a course of remissions and exacerbations. This disease can affect any system, and may demonstrate systemic and local symptoms (Bartels, 2016).

SLE Management

Level I management of SLE may include:

- Activity modification as necessary
- Psychosocial interventions, including relaxation techniques, stress reduction
- Limitations to sun exposure
- NSAIDS
- Corticosteroids
- Disease-modifying antirheumatic drugs (DMARDs)

Due to the complexity of SLE, level II management should be implemented quickly. This may include multiple consultations with a rheumatologist, infectious disease specialist, neurologist, pulmonologist, cardiologist, gastroenterologist, nephrologist, dermatologist, hematologist

(Bartels, 2016; ICSI, 2013)

Fibromyalgia

Fibromyalgia is a chronic disorder that is also thought to be autoimmune, which causes widespread pain and tenderness, as well as disrupted sleep and potentially cognitive function (Boomershine, 2016).

Fibromyalgia Management

Level I management of fibromyalgia can consist of:

- Use of heat and cold
- Massage
- Exercise, such as aquatics, cardiovascular, and gentle graded strength exercise
- Psychosocial interventions, including relaxation techniques, stress reduction
- Physical therapy
- Diet, such as reduced refined sugars or gluten
- Tricyclic antidepressants
- Muscle relaxants
- Tramadol
- NSAIDS may have some use
- Opioids have limited efficacy

Material protected by copyright

(Boomershine, 2016; ICSI, 2013)

Multiple Sclerosis

Another immune disorder that causes a chronic inflammatory disease process is multiple sclerosis (MS), which results in demyelinating of the brain and spinal cord. Symptoms of MS can occur as exacerbations and remissions. Pain occurs in up to 50% of patients, and can be either neuropathic or musculoskeletal (Luzzio, 2017).

MS Management

Level I management of MS may include:

- Massage
 - Exercise, such as aquatics, cardiovascular, and gentle graded strength exercise
 - Psychosocial interventions, including relaxation techniques, stress reduction
 - Physical therapy
 - Occupational therapy
 - Speech therapy
 - Cognitive therapy
 - Immunomodulatory therapy, such as interferon, natalizumab
 - Corticosteroids
 - Selective serotonin reuptake inhibitors (SSRI) for depressive symptoms
 - Tricyclic antidepressants
 - Amantadine may be used for fatigue
 - Anticonvulsants
 - Muscle relaxants
 - Nonnarcotic analgesics
- (Luzzio, 2017; ICSI, 2013)

Test Yourself

Demyelination of the brain and spinal cord occurs with:

Systemic lupus erythematosus

Fibromyalgia

Multiple sclerosis- Correct

Myofascial Pain

Myofascial pain is thought to be caused by trauma or overuse of muscles, with pain to the muscle and surrounding fascia. Hyperirritable areas in a taut band of muscle fibers is a characterization, and myofascial pain is related to chronic headaches, such as migraines (Phillips, 2016).

Myofascial Pain Management

Level I management of myofascial pain may include:

- Exercise, such as stretching
- Physical therapy

Material protected by copyright

- Massage
- Acupressure
- Acupuncture
- Use of heat and cold
- Aromatherapy
- NSAIDs
- Corticosteroid injection
- Tricyclic antidepressants
- Muscle relaxants
- Nonnarcotic analgesics
- Anticonvulsants
- Injection of botulinum toxin has been used, but with controversy
(Phillips, 2016; ICSI, 2013)

Chronic Back Pain

Chronic back pain, particularly low back pain, is a common form of chronic mechanical/compressive pain. Nociceptive pain results from strain or sprain of muscles or ligaments, degeneration of discs or facet joints, fracture, disc compression, or osteoporosis. This chronic pain can be intermittent or continuous, and is generally aggravated with activity and relieved by rest (Wheeler, 2016b).

Chronic Back Pain Management

Level I management of chronic back pain can include:

- Use of heat
- Exercise, such as stretching
- Psychosocial interventions, including relaxation techniques, stress reduction
- Chiropractic therapy
- Acupuncture or acupressure
- Massage
- Aromatherapy
- Epidural corticosteroid injection
- NSAIDs
- Muscle relaxants
- The use of opioids should be for short-term usage with severe pain only
(ICSI, 2013; Wheeler, 2016b)

Chronic Headaches

Chronic headaches can be classified as migraine, cluster, or tension headaches. Although the etiology of chronic headaches are not well understood, it is thought that there are vascular

disturbances that disrupt blood flow, dysfunction of neurotransmitters, or relation to neuromuscular disorders can cause these headaches. Chronic headaches have periods of recurrence and exacerbation (Chawla, 2017; Blanda, 2016 & 2017).

Chronic Headache Management

Level I management of chronic headaches may include:

- Use of heat or cold
- Exercise, such as stretching
- Psychosocial interventions, including relaxation techniques, stress reduction
- Chiropractic therapy
- Acupuncture or acupressure
- Massage
- Corticosteroid injections at trigger points
 - Aromatherapy

Medications may be used prophylactically, and during a headache flare:

- **Migraine:** NSAIDs, tricyclic antidepressants, hormones, beta-blockers, and anticonvulsants may be used prophylactically. An active migraine may be treated with NSAIDs, opioids, caffeine, tricyclic antidepressant, or combination therapy.
- **Cluster:** Corticosteroids, anticonvulsants may be used prophylactically. An active cluster headache may be treated with use of oxygen, vasoconstrictors.
- **Tension:** Tricyclic antidepressants may be used prophylactically. An active tension headache may be treated with NSAIDs, analgesics
(Chawla, 2017; Blanda, 2016 & 2017; ICSI, 2013).

Test Yourself

An alternative therapy which may be useful with chronic back pain and chronic migraines is:

Acupuncture- Correct

Long-term opioids

Oral corticosteroids

Sickle Cell Disease

Sickle cell disease is an inherited disorder in which red blood cells are abnormally shaped into a crescent shape. These cells break apart easily, live a much shorter life span than normal red blood cells, and can cause anemia and blockage of blood flow. Severe obstruction of blood flow to an organ can cause ischemia and potentially necrosis. Pain is severe, can develop suddenly and in any body part, and last for several days (Maakaron, 2016).

Sickle Cell Disease Management

Treatment of associated problems, such as infection, anemia, vascular occlusion must be included with an acute episode

Patients with a sickle cell crisis experience severe pain. Opioids, particularly morphine, can provide

the best pain control.

Level I management of pain associated with sickle cell disease includes:

- Physical therapy
- Use of heat and cold
- Acupuncture and acupressure
- Massage
- TENS
- Hypnosis
- Psychosocial interventions, including relaxation techniques, stress reduction, support groups
- Hydroxyurea is used for increasing hemoglobin
- Sustained released opioids can be used for chronic pain. Oral opioids may be used for breakthrough pain
- Tricyclic depressants
- NSAIDs
- Analgesics

(Maakaron, 2016; ICSI, 2013)

Test Yourself

The best pain control during a sickle cell crisis can be obtained with the use of:

NSAIDs

Morphine - **Correct**

Tricyclic antidepressants

Neuropathic Pain

Neuropathic pain, as previously discussed, is caused by abnormal signals in the central or peripheral nervous systems, demonstrating injury or impairment. Peripheral neuropathies include motor, sensory and autonomic fiber derangements that feed into the central nervous system. Central nervous system disorders occur as a result of injury, stroke, disease or congenital conditions involving the brain and/or spinal cord.

According to some studies, over 30% of all neuropathies are a result of diabetes in the U.S. Disorders that are classified as neuropathies can cause pain, as well as weakness, numbness, paralysis, paresthesia, and gastric dysfunction (Cleveland Clinic, 2016).

Causes of Neuropathic Pain

Neuropathic pain can be caused by many conditions. Some of these include:

- **Metabolic:** such as diabetes, vitamin deficiency
- **Trauma:** such as phantom limb pain
- **Compressive:** such as carpal tunnel syndrome
- **Toxic:** such as chemotherapy

- **Autoimmune:** such as MS, fibromyalgia
- **Congenital disorders:** such as Fabry's disease
- **Infections:** such as Lyme's disease, Guillain-Barre syndrome

(Cleveland Clinic, 2016)

Management of Neuropathic Pain

Level I management of neuropathic pain may include:

- Disease or disorder specific treatment (such as diabetic blood glucose control)
- Topical agents: such as lidocaine patches, anesthetic cream
- Regional anesthetics: may include nerve blocks, epidural pumps
- Acupuncture
- Massage
- TENS
- Chiropractic therapy
- Splinting
- Physical therapy
- Use of assistive devices
- Biofeedback
- Hypnosis
- Relaxation techniques
- Nerve ablation
- Anticonvulsants
- Tricyclic antidepressants
- Corticosteroids
- Opioids (should not be used as a first line treatment)
(Cleveland Clinic, 2016; ICSI, 2013).

Complex Regional Pain Syndrome

One neuropathic pain disorder that is widespread is called Complex Regional Pain Syndrome (CRPS), which can be caused by an injury, fracture, or surgical procedure which can affect or damage a nerve. It may also be from malfunction of the peripheral or central nervous systems. CRPS generally affects one limb, although it is also thought that fibromyalgia may include CRPS. Although it can occur at any age, CRPS is most common in women, with the average age of 40.

CRPS is characterized by:

- Atrophy, dystrophy, and a movement disorder
- Neuropathic edema
- Autonomic dysregulation
- Severe pain beyond the injury

(Schwarzman, 2012; National Institute of Neurological Disorders and Stroke, 2013)

CRPS Symptoms

Signs and symptoms of Complex Regional Pain Syndrome include that may be constant and/or severe. The pain may be described as burning, tingling, or pressure, and may radiate to another area of the body. Other symptoms may include:

- Abnormal pain processing, such as increased sensitivity (allodynia) and heightened pain responses
- Temperature change, cyanosis, mottling, pallor, or erythema
- Swelling and edema
- Changes in skin texture
- Changes in growth patterns of nail and hair
- Abnormal perspiration
- Stiffness and decreased range of motion
- Uncoordinated or abnormal muscle movement
- Fixed abnormal position (dystonia)
- Tremors or jerkiness

(National Institute of Neurological Disorders and Stroke, 2017)

Patients who are early in the course of CRPS generally demonstrate noticeable inflammatory signs and symptoms that include neurogenic edema, erythema and an increased temperature of the affected extremity. Further in the process, patients suffer from more widespread pain spread and an apparent centralization of the process, shown through severe generalized autonomic motor and trophic changes of skin, nails, bone, and muscle (National Institute of Neurological Disorders and Stroke [NINDS], 2017)

Causes of CRPS

The actual cause of CRPS is unknown. Many individuals with certain trauma or injuries recover without incidence, while others go on to develop CRPS. The abnormal response that occurs with CRPS may be autoimmune, similar to an allergic response. A genetic anomaly or preexisting neurotransmitter or myelination abnormalities may also result in the development of CRPS (NINDS, 2017).

Diagnosis of CRPS

There is no single diagnostic test to confirm CRPS. Therefore, diagnosis is based on the affected patient's medical history and physical examination. Testing also may be used to help rule out other conditions, such as arthritis, Lyme disease, generalized muscle diseases, a clotted vein, or small nerve fiber polyneuropathies (such as from diabetes).

The distinguishing feature of CRPS is usually a history of earlier injury to the affected area, as most of these other conditions are not triggered by injury. Individuals without a history of injury should be carefully examined to make sure that another treatable diagnosis is not missed.

The International Association for the Study of Pain (IASP) identified diagnostic criteria for CRPS. These include:

- An initiating noxious event or cause of immobilization (not required for diagnosis; about 5-10% of patients do not have a triggering event)
- Continuing pain, sensitivity, or heightened pain, with the pain disproportionate to any known

Material protected by copyright

triggering event

- Edema, changes in blood flow to skin, or abnormal motor activity (either current or in patient's history)
- Exclusion of other disorders that would account for pain and dysfunction (Wheeler, 2016a)

CRPS Prognosis

The outcome of CRPS varies from patient to patient, from recovery, to mild symptoms, to debilitation. Most children and teenagers with CRPS have good recovery. Some individuals, particularly those middle-aged or older, can have unremitting pain and crippling, irreversible changes despite treatment.

Some studies suggest that early diagnosis and treatment, including rehabilitation, is helpful in limiting the disorder. More research is needed to understand what causes CRPS, the disease progression, and how early treatment can affect prognosis (NINDS, 2013).

Management of CRPS

Level I management of CRPS may include:

- Physical therapy
- Occupational therapy
- Psychotherapy
- Sympathetic nerve block
- Spinal cord or neural stimulation (including deep brain stimulation)
- Intrathecal medication pumps (including opioids and local anesthetics)
- NSAIDS
- Corticosteroids
- Tricyclic and SSRI antidepressants
- Anticonvulsants
- Botulinum toxin injections
- Opioids
- N-methyl-D-aspartate (NMDA) receptor antagonists such as dextromethorphan and ketamine
- Nasal calcitonin (for deep bone pain)
- Topical local anesthetic creams and patches (NINDS, 2013)

Test Yourself

Which is a true statement regarding Complex Regional Pain Syndrome?

CRPS can always be attributed to an injury or traumatic event

There is a heightened sensation of pain, which can be severe - **Correct**

CRPS is diagnosed through laboratory testing

Cancer Pain

Cancer pain, or malignant pain, is that associated with the processes that surround this life-threatening disease. Cancer pain can be acute or chronic, or a combination of both. There can also be both nociceptive and neuropathic pain associated with cancer, adding to the complexity of treatment. Pain can be attributed to the disease process, such as invasion of tumors, obstructive and

Material protected by copyright

compressive processes, inflammation, and infection. There is also pain associated with some cancer treatments, such as radiation and chemotherapy (National Cancer Institute, 2017).

Cancer Pain Management

Level I management of cancer pain can include:

- Use of the WHO Analgesic Ladder (previously discussed) is highly recommended
- Psychosocial interventions, including relaxation techniques, stress reduction, support groups
- Acupuncture and acupressure
- Hypnosis
- TENS
- Sustained released opioids can be used for chronic pain. Oral or IV opioids may be used for breakthrough pain
- NSAIDs
- Analgesics
- Tricyclic depressants
- SSRIs
- Anticonvulsants
- Corticosteroids
- Regional blocks or intrathecal opioids may be used
- Surgery may be considered in some types of cancer (National Cancer Institute, 2017).

Pain and Palliative Care

Pain can be undertreated with patients who are on palliative care, due to communication difficulties, fear, and other barriers. The WHO Analgesic Ladder provides guidelines that can be used with these patients. Some non-pharmacological approaches may not be appropriate, due to the pathological processes that occur, and should be individually assessed. Treatment of associated problems, such as constipation, nausea, and vomiting, should also be a priority. The goal of palliative care is to provide comfort and dignity for patients transitioning from this life, which requires thorough assessment and appropriate treatment (Hughes, 2012).

Adjuvant medications are also important to appropriately manage pain with palliative care patients. Some examples include:

- Bisphosphonates: These are used in patients with bone pain associated with metastases (examples include Boniva® and Fosamax®)
- Tricyclic antidepressants
- Anticonvulsants
- Benzodiazepines
- Corticosteroids

Test Yourself

Which of the following may be an appropriate first line treatment for neuropathic pain?

Opioids

Tricyclic antidepressants - **Correct**

Material protected by copyright

Viewpoints of Chronic Pain Patients

As part of the development of assessment and management guidelines for chronic pain, a focus group of patients suffering from chronic pain was conducted. This provided information about chronic pain from the perspectives of those patients. Key points included:

- Patients feel that little education is provided early on when suffering from chronic pain. Thus, patients seek out information and “research” on their own, which may not provide for accurate material. Patients and their families require education about their specific disease, explanations about medications and procedures, and setting realistic goals. Patients that are well-informed feel more accountability and empowerment for their care.
- Patients can try to be proactive in seeking methods to decrease or eliminate their pain. They may seek out several types of physicians and have tried a multitude of strategies to find pain relief, including medications, alternative and complementary therapies.
- Patients who are faced with the term “chronic” pain may become emotional, and they may feel no hope for the future, or that their pain will never dissipate.
- Patients tend to look for a “quick fix” for their pain. Interventions which provide only temporary relief can cause frustration and grief.
- Patients want to be included in the plan for treatment plan. Effective communication, empathetic listening, collaboration, and respect are essential in developing a treatment plan. When caregivers acknowledge that chronic pain has holistic effects on the patient, then patients are more likely to be open to learning pain management versus looking for a cure for their pain.
- Most patients want to return to a normal routine in their lives, such as activities of daily living, a social life, and working within their limitations. The focus of a care plan should be on improving function.

(ICSI, 2013)

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 (Institute for Clinical Systems Improvement [ICSI], 2013; Registered Nurses’ Association of Ontario, 2013).

Ethics 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 (Oncology Nursing Society, n.d.).

Ethical Principles

Nurses must uphold ethical principles when managing pain. These include:

- **Autonomy:** The right of a patient to self-determination and make decisions for themselves. This includes the right to information, consideration, requests, or refusals of any treatment (both

pharmacological and non-pharmacological) which they believe will help manage their pain.

- **Beneficence:** This is the principle of doing good for others, which includes promoting comfort and pain relief. Beneficence is upheld when treatment is administered appropriately and in a timely manner, which results in the best pain control with acceptable side effects.
- **Nonmaleficence:** This is the ethical principle of doing no harm to others. When determining pain treatment, risks and benefits must be weighed. Myths and misperceptions of pain management must be understood, so that the patient is adequately treated.
- **Justice:** This means that patients should be treated with fairness, and according to their individual situation. Awareness of potential bias in treating patients, such as age or personal history, must be understood to ensure that pain is treated appropriately.

(Oncology Nursing Society, n.d.).

Cultural Considerations

There are many cultural differences that can impact the patient with chronic pain. Culture includes beliefs, perceptions, patterns, and social constructs amongst a group of individuals. Culture can affect how someone perceives and expresses pain, and how pain can influence the individual's role. The meaning of pain can also be based on culture, as a punishment, burden, or life lesson one must endure. Culture can have an effect on how individuals cope with chronic pain. Apparent compliance of the patient or use of alternative medicine are also factors related to culture. It is important for healthcare professionals to try and understand cultural differences, but also remember to always individualize care (Pillay, van Zyl, & Blackbeard, 2014).

Test Yourself

Which of the following statements is true regarding pain?

Patients feel they get adequate education about chronic pain

Oversedation occurs more frequently than undertreatment of pain

Culture can influence how someone expresses pain- Correct

Pain Myths

There are many misbeliefs and myths about pain management that can negatively affect the treatment of a patient's pain. These myths must be addressed to move past these barriers and effectively treat the patient (Registered Nurses' Association of Ontario, 2013; Oliver et al., 2012).

Opioids are more dangerous for infants and children than they are for adults.

Fact:

Metabolism of drugs are done in the same manner over one month of age. The risk of adverse effects can be decreased by careful selection of appropriate medications, dosing, and scheduling. Frequent monitoring for effects, both desirable and undesirable, is recommended. Opioid addiction is very rare in children.

Patients who are in pain always have objective behaviors and observable signs that are more reliable than their own self-reports of pain.

Fact:

Physiological adaptations occur quickly, particularly with chronic pain, and should not be used instead of self-report.

Patients will tell us when they are in pain, and they will use the term “pain.”

Fact:

Patients will not necessarily verbalize when they are in pain, which can be influenced by individual and cultural factors. Patients may not use the word “pain”, but rather describe other sensations.

People who use opioids for pain are addicts.

Fact:

Opioids are a standard management intervention for moderate to severe pain with surgery, cancer, and chronic non-cancer pain.

Pain is directly proportional to the tissue injury.

Fact:

Pain is complex and multidimensional. It is influenced by many factors, including disease processes, and each patient’s response is individual.

Pain is a normal part of the aging process. It can never really be very intense, as pain sensation decreases with age.

Fact:

Persistent pain is not a normal part of aging. Pain sensation and intensity does not decrease in older persons. Inadequate pain management of potential or actual pain in older persons has numerous consequences.

Physiologic dependence, tolerance, or withdrawal of opioids or other medications indicate an addiction.

Fact:

Expected responses to opioids and other controlled substances include tolerance, withdrawal, and physiologic dependence when given in sufficient doses over a prolonged period of time. These responses are not alone indicative of addiction.

Patients who do not adhere to pain medication regimens or experience anxiety are showing addictive behaviors.

Fact:

Persistent pain can cause distressed behaviors. Psychiatric disorders, such as depression, may coexist with chronic pain. These do not necessarily indicate addiction.

Addiction can be accurately identified and diagnosed with the initial assessment.

Fact:

Although there are screening tools which may assist in identifying addiction, addiction itself is not an entirely predictable response. It is diagnosed over time, based on established criteria.

Behaviors such as preoccupation with receiving medication, “clock-watching,” deception, stockpiling unused medication, and illicit substance use indicates addiction.

Fact:

Material protected by copyright

Patients with undertreated pain may engage in problematic behaviors that may look like substance abuse behaviors. However, once pain is adequately treated and controlled, these behaviors resolve.

Conclusion

Chronic pain is a multifaceted issue that must be thoroughly and accurately assessed to be managed successfully. Pain management is a vital component of quality patient care, and can be complex. It is important to individualize plan of care for each patient.

A thorough patient history and assessment should be conducted for all existing and new pain, recognizing that the patient is the best equipped to describe the pain. Successful pain control is often achieved by providing both pharmacological and non-pharmacological therapies. Level I and level II management strategies should be considered.

Continuous education for healthcare professionals about pain management and current strategies, addressing barriers, and awareness of patients at risk for under-treatment is needed. Providing quality patient care includes appropriately managing pain and alleviation of suffering.

(City of Hope National Medical Center, n.d.).

Resources

American Academy of Pain Medicine. Website: <http://www.painmed.org/>

National Institutes of Health. Website: <http://www.nih.gov/>

American Pain Society. Website: <http://www.americanpainsociety.org/>

Academy of Integrative Pain Management. Website: <http://www.integrativepainmanagement.org/>

Institute for Clinical Systems Improvement. Website: <https://www.icsi.org/>

American Chronic Pain Association. Website: <http://theacpa.org/>

References

Agency for Healthcare Research and Quality (AHRQ). (2014). The effectiveness and risks of long-term opioid treatment of chronic pain. Retrieved from <https://www.effectivehealthcare.ahrq.gov/ehc/products/557/1971/chronic-pain-opioid-treatment-report-141205.pdf>

Alexander, L. (2013). Assessment and management of pain at the end of life. *CME Resource, March 20, 2013*, 1-16.

American College of Physicians. (2016). SAFE Opioid Prescribing: Strategies. Assessment. Fundamentals. Education. Retrieved from https://www.acponline.org/system/files/documents/meetings/focused_topics/pre_1616_pdf_handout_2_slides_pp.pdf

American Society of Interventional Pain Physicians (ASIPP). (2012). American Society of Interventional Pain Physicians (ASIPP) guidelines for responsible opioid prescribing in chronic non-cancer pain: Part 2 – guidance. Retrieved from <https://www.guidelines.gov/summaries/summary/38257/american-society-of-interventional-pain-physicians-asipp-guidelines-for-responsible-opioid-prescribing-in-chronic-noncancer-pain-part-2--guidance?q=pain>

Bartels, C. (2016). Systemic lupus erythematosus (SLE). Retrieved from <http://emedicine.medscape.com/article/332244-overview>

Blanda, M. (2017). Cluster headache. Retrieved from <http://emedicine.medscape.com/article/1142459->

Material protected by copyright

overview#a0104

Blanda, M. (2016). Tension headache. Retrieved from <http://emedicine.medscape.com/article/792384-overview>

Boomershine, C. (2016). Fibromyalgia. Retrieved from <http://emedicine.medscape.com/article/329838-clinical>

Centers for Medicare and Medicaid Services (CMS). (2017). HCAHPS survey. Retrieved from http://www.hcahpsonline.org/files/2017_Survey%20Instruments_English_Mail.pdf

Chawla, J. (2017). Migraine headache. Retrieved from <http://emedicine.medscape.com/article/1142556-overview#aw2aab6b2b3>

City of Hope Medical Center Pain and Palliative Care Center. (2014). Knowledge and attitudes survey regarding pain. Retrieved from [http://prc.coh.org/Knowledge%20%20&%20Attitude%20Survey%207-14%20\(1\).pdf](http://prc.coh.org/Knowledge%20%20&%20Attitude%20Survey%207-14%20(1).pdf)

City of Hope National Medical Center. (n.d.). Pain management competency. Retrieved from http://prc.coh.org/pdf/COH_Competency.pdf

Cleveland Clinic. (2016). Neuropathic pain. Retrieved from <https://my.clevelandclinic.org/health/articles/neuropathic-pain>

Denny, D., & Guido, G. (2012). Undertreatment of pain in older adults: An application of beneficence. *Nursing Ethics*, 19(6), 800–809.

DNV-GL. (2014). Standard, interpretive guidelines and surveyor guidance for hospitals. Retrieved from <https://webcache.googleusercontent.com/search?q=cache:tr5G1U4hFusJ:https://www.dnvgl.es/publications/standard-interpretive-guidelines-and-surveyor-guidance-for-hospitals-8441+&cd=2&hl=en&ct=clnk&gl=us>

Drew, D. (2012). Pain assessment across the lifespan (and the span of life). Retrieved from <http://www.aspmn.org/documents/HandoutsDrew.pdf>

Elzahaf, R., Tashani, O., Unsworth, B., & Johnson, M. (2012). The prevalence of chronic pain with an analysis of countries with a Human Development Index less than 0.9: a systematic review without meta-analysis. *Current Medical Research Opinion*, 28(7), 1221-1229.

Hodgson, B., & Kizior, R. (2013). *Saunders nursing drug handbook*. St. Louis, MO: Elsevier Saunders.

Hughes, L. (2012). Assessment and management of pain in older patients receiving palliative care. *Nursing Older People*, 24(6), 23-29.

Ingraham, P. (2017). The basic types of pain. Retrieved from <https://www.painscience.com/articles/pain-types.php>

International Association for the Study of Pain. (2017). IASP curriculum outline on pain for nursing. Retrieved from <http://www.iasp-pain.org/Education/CurriculumDetail.aspx?ItemNumber=2052>

Institute for Clinical Systems Improvement (ICSI). (2013). Health care guideline: Assessment and management of chronic pain. Retrieved from <https://www.azprioritycare.com/Content/providers/2014-ChronicPain-ICSI.PDF>

Lozada, C. (2017). Osteoarthritis. Retrieved from <http://emedicine.medscape.com/article/330487-overview>

Luzzio, C. (2017). Multiple sclerosis. Retrieved from <http://emedicine.medscape.com/article/1146199-treatment#aw2aab6b6b9>

Maakaron, J. (2016). Sickle cell anemia. Retrieved from <http://emedicine.medscape.com/article/205926-overview>

McNamara, M.C., Harmon, D., & Saunders, J. (2012). Effect of education on knowledge, skills and attitudes around pain. *British Journal of Nursing*, 21(16), 958-64.

National Cancer Institute. (2017). Cancer pain (PDQ®)—Health professional version. Retrieved from <https://www.cancer.gov/about-cancer/treatment/side-effects/pain/pain-hp-pdq>

National Center for Complementary and Alternative Medicine (NCCAM). (2016). Chronic pain: In depth.

Material protected by copyright

Retrieved from <http://nccam.nih.gov/health/pain/chronic.htm>

National Institute of Neurological Disorders and Stroke. (2017). Complex regional pain syndrome fact sheet. Retrieved from http://www.ninds.nih.gov/disorders/reflex_sympathetic_dystrophy/detail_reflex_sympathetic_dystrophy.htm

Oliver, J., Coggins, C., Compton, P., Hagan, S., Matteliano, D.,...& Turner, H. (2012). American Society for Pain Management nursing position statement: Pain management in patients with substance use disorders. *Pain Management Nursing*, 13(3), 169-183.

Oncology Nursing Society. (n.d.). Making a difference in the management of pain. Retrieved from http://www.cmecorner.com/macmcm/ons/ons2002_09.htm

Pasero, C., Quinlan-Colwell, A., Rae, D., Broglio, K., & Drew, D. (2016). Prescribing and administering opioid doses based solely on pain intensity: A position statement by the American Society for Pain Management Nursing. Retrieved from http://www.aspmn.org/Documents/Position%20Statements/Dose_Numbers_PP_Final.pdf

Phillips, C.D. (2016). Cervical myofascial pain. Retrieved from <http://emedicine.medscape.com/article/305937-overview>

Pillaya, T., van Zyl, H., & Blackbeard, D. (2014). Chronic pain perception and cultural experience. *Procedia - Social and Behavioral Sciences*, 113, 151 – 160.

Registered Nurses' Association of Ontario. (2013). *Assessment and management of pain* (3rd ed.). Toronto, ON: Registered Nurses' Association of Ontario.

Shaw, K., & Fudin, J. (2013). Evaluation and comparison of online equianalgesic opioid dose conversion calculators. *Practical Pain Management*, August 2013, 61-66.

Smith, H. (2017). Rheumatoid arthritis. Retrieved from <http://emedicine.medscape.com/article/331715-overview>

Smith, H., Kara, S., & Argoff, C. (2012). Management of neuropathic pain: Current insights and future perspectives. Retrieved from <http://www.touchneurology.com/articles/management-neuropathic-pain-current-insights-and-future-perspectives-0>

The Joint Commission. (2017). Proposed acute pain assessment and management standards. Retrieved from https://www.jointcommission.org/assets/1/6/2017_Draft_Pain_Standards.pdf

Wheeler, A. (2016a). Complex regional pain syndromes. Retrieved from <http://emedicine.medscape.com/article/1145318-overview>

Wheeler, A. (2016b). Low back pain and sciatica. Retrieved from <http://emedicine.medscape.com/article/1144130-overview>

World Health Organization (WHO). (2017). WHO's cancer pain ladder for adults. Retrieved from <http://www.who.int/cancer/palliative/painladder/en/>