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Michigan: Pain and Its Management (323)

Authors: Lauren Robertson, BA, MPT and Susan Walters Schmid PhD

Contact hours: 3

Pharm hours: 3

Price: $29

Newly updated course covers Michigan's pain policies plus Joint Commission regulations for pain management. In addition, course includes major categories of pain; common sources of pain; pain assessment; and management in various special populations including children, older adults, and those at the end of life. Describes safe use of opioids for pain management and issues related to the abuse of prescribed opioids including the opioid epidemic.

Course Objectives

When you finish this course, you will be able to:

1. Describe the prevalence of pain in the United States.
2. Outline current Michigan State policies and programs related to pain management.
3. State three differences between acute and chronic pain.
4. List the five most common sources of pain.
5. Explain the kinds and use of pain assessment tools.
6. Compare the Self-Management and Pain Medicine models of pain management, highlighting three main differences between them.
7. Identify the three components of analgesic pain management.
8. Define tolerance, dependence, and addiction, and their place in an understanding of the opioid abuse crisis in the United States.

1. The Prevalence of Pain

First, treat the person. Second, treat the pain.

MI LARA, 2013c
A Pain Toolkit for Health Care Professionals

Pain is an unpleasant fact of daily life for many people, affecting every aspect of their lives. In its 2011 landmark report *Relieving Pain in America,* the Institute of Medicine (IOM) (now the Health and Medicine Division of the National Academies) estimated that in the United States treatment and management of pain costs about $635 billion annually in direct medical costs and lost productivity (IOM, 2011).

Although vast amounts of money are spent each year on the treatment and management of pain, it is still inadequately treated in vulnerable populations. This includes women, children, older adults, ethnic minorities, patients with cognitive impairment, cancer patients, nursing home residents, and those with active addiction or a history of substance abuse. Untreated pain has a profound impact on quality of life and can have physical, psychological, social, and economic consequences (King & Fraser, 2013).

Among African Americans, lower rates of clinician assessment and higher rates of undertreatment have been found in all settings and across all types of pain (IOM, 2011). Similar results have been found among Hispanics, Asian Americans, and Native Americans. These disparities among racial and ethnic minorities are related to lack of provider education, system-level lack of access to pain medications, and cultural beliefs about pain (Makris et al., 2015).

In Michigan, as in other states, pain is widespread. In a 2013 public telephone survey of Michigan residents, about 25% had sought treatment from a healthcare professional for a *chronic* pain condition in the previous year, and 28% had sought treatment for an *acute* pain condition (LARA, 2013a). The Michigan Advisory Committee on Pain and Symptom Management (ACPSM) noted in 2014 that up to 3 million Michigan citizens live with daily chronic pain, and that both in the state and nationally, pain affects more people than does diabetes, heart disease, and cancer combined (LARA, 2014).

In the Centers for Disease Control and Prevention's (CDC) most recent look at long-term health trends, *Health, United States, 2016,* data spanning the years from 1997 through 2015, indicate the percentage of adults over 18 reporting some of the most common kinds of pain—severe headache or migraine, low back pain, and neck pain—has remained at constant or slightly increasing levels across all age brackets, genders, races, and socioeconomic levels (CDC, 2017).

2. Policies Guiding Pain Management in MI

> …Michigan continues to be the top among states enacting policies promoting delivery of effective pain management…
>
> LARA, 2014a

The "State" of Pain in Michigan

Michigan has policies recognizing that pain management—including the use of controlled substances—is part of quality medical practice. State regulations require healthcare facilities, such as hospitals, nursing homes, and hospices, to make pain assessment and treatment an expected element of patient care. The state has established the Michigan Automated Prescription System—a prescription monitoring program—recognizing the need to reduce abuse and diversion* while making sure medication is available for patient care.

***Diversion**: The use of drugs for other than medically necessary or legal purposes or for non-medical or not medically authorized purposes. It involves, but is not limited to, physicians who sell prescriptions to drug dealers or abusers; pharmacists who falsify records and subsequently sell the drugs; employees who steal from inventory and falsify orders to cover illicit sales; prescription forgers; and individuals who commit armed robbery of pharmacies and drug distributors.

Since the 1990s the Michigan legislature has passed a body of legislation intended to improve access to pain management services, enhance the quality of care available for Michigan citizens, and provide direction to prescribers on the use of opiates without fear of prosecution. This legislation has been regularly reviewed and updated to address the changing face of pain management and the expanding opioid crisis. This legislation includes:

- Lengthening the period of time to fill Schedule 2 prescriptions, and providing for prescriptions to be partly filled incrementally for terminally ill patients (Section 333.7333 amended March 27, 2018—changes designed to help deal with opioid crisis but still help patients)
- Requiring healthcare professionals to complete continuing education in pain and symptom management as a condition of relicensure (Section 333.16204)
- Creating the Advisory Committee on Pain and Symptom Management (Section 333.16204a) (now part of Prescription Drug and Opioid Abuse Commission)
- Providing legislative support to address pain and symptom management issues and enacting legislation that supports the treatment of pain (Section 333.16204b)
- Providing legislative support for the use of controlled substances as being appropriate in the medical treatment of pain and enabling regulatory agencies to prevent the abuse and illegal diversion of controlled substances by creating an electronic monitoring system (Section 333.16204c)

- Requiring the department of consumer and industry services, in consultation with the department of community health, to develop, publish, and distribute an informational booklet on pain to include specific content. The department, in conjunction with the controlled substances advisory commission, is required to develop and conduct an educational program for health professionals that covers specific topics (Section 333.16204d)

- Addressing “rights and responsibilities of patients or residents” (Section 333.20201, amended in 2016 and 2017) (LARA, 2018a)

Prescription Drug and Opioid Abuse Commission

In 1998 Michigan established the Advisory Committee on Pain and Symptom Management (ACPSM) to address issues pertaining to pain and its management throughout the state. In 2000, ACPSM identified their areas of greatest concern, to include lack of education and training for healthcare professionals; lack of information throughout all levels of the public; concerns around Schedule II drugs (misinformation and fear of addiction); lack of availability; reluctance to prescribe for fear of disciplinary action; and patient difficulty in proving disability to insurers.

Over the next 16 years the ACPSM maintained evolving goals and was able to distribute pain management resources for healthcare providers; administer physician and public surveys to assess pain management knowledge, attitudes, and practices; implement a public service announcement campaign for the public; complete work on the *Model Core Curricula on Pain Management* for medical schools; and develop a pain management tool kit for both healthcare professionals and the public.

Along the way, Michigan was recognized as being at the forefront of dealing with pain management issues. In 2001 it was one of the first states to remove the term “intractable pain” from its statute, making its provisions apply to pain in general. In 2013 Michigan was one of only fifteen states awarded an “A” grade by the University of Wisconsin Pain and Policy Studies Group (PPSG) for its efforts to establish balanced pain policies. The state had maintained that grade since the PPSG began report cards in 2006 (PPSG, 2013a,b).

In 2016 the Michigan Advisory Committee on Pain and Symptom Management was abolished by executive order of the governor when he folded “all of the authority, powers, duties, functions, responsibilities, and records of the ACPSM, the Controlled Substances Advisory Commission, and the Prescription Drug and Opioid Abuse Task Force into the newly created **Prescription Drug and Opioid Abuse Commission**. The governor noted that the ACPSM had accomplished its original goals and that action was now needed to “combat the severe and complex prescription drug abuse epidemic that faces [the] state” (Executive Order 2016-15; LARA, 2013b,c; MDHHS, 2009).

Michigan's Automated Prescription System

> Of Michigan's approximately 60,000 prescribers, about 30 percent as of mid-January were registered and using the MAPS system.
>
> Traverse City Business News, March 2018
> *In Healthcare*

The Michigan Automated Prescription System (MAPS) is the prescription monitoring program for the State of Michigan. MAPS is used to track controlled substances, schedules II to V drugs. It is a tool used by prescribers and dispensers to assess patient risk and it is also used to prevent drug abuse and diversion at the prescriber, pharmacy, and patient levels. On April 4, 2017 the State of Michigan replaced the MAPS platform with PMP AWARxE (LARA, 2018c).

In its 2016 *Prescription Drug Overdose Status Report for Michigan,* the CDC notes that opioid pain relievers, such as oxycodone, hydrocodone, fentanyl, and hydromorphone, are responsible for three-fourths of all prescription drug overdose deaths and caused more than 16,200 deaths in the United States in 2013. Nationally, deaths involving opioids had quadrupled since 1999.The sharp rise in prescription opioid overdose deaths closely parallels an equally sharp increase in the prescribing of these drugs. Opioid pain reliever sales in the United States quadrupled from 1999 to 2010.

The severity of the epidemic varies widely across U.S. states and regions, and in Michigan the drug overdose death rate for 2013 (15.9 per 100,000 population) exceeded the national rate (13.8 per 100,000 population) (CDC, 2016).

CDC and other agencies have worked to identify and evaluate interventions to reduce prescription opioid overdose deaths, and the 2016 report focused on two key policies concerning state prescription drug monitoring programs (PDMPs), the electronic systems that track the dispensing of controlled substances to patients. The two policies supported by emerging evidence, expert consensus, and extensive review of the primary drivers of the epidemic are:

- Requiring timely data submission to the PDMP
- Requiring universal PDMP use by prescribers

PDMPs are promising tools, allowing healthcare providers to see patients' prescription histories so as to inform their prescribing decisions; however, a PDMP is useful to healthcare providers only if they check the system before prescribing. The CDC noted that, as of October 31, 2105, Michigan required dispensing data be submitted to the PDMP within 24 hours but did not require prescribers to consult the PDMP before initially prescribing opioids (CDC, 2016).

CDC believes these are only key pieces in a much larger, multi-sector approach to preventing prescription drug abuse and overdose. Other important PDMP practices suggested for states included making PDMPs easy to use and access; linking them to electronic health records systems already in place; and enabling various tracking capabilities. In addition, the Department of Health and Human Services (DHHS) supports, among other things, expanding the use and distribution of naloxone to reverse an overdose (CDC, 2016).

Going into effect in Michigan in March, June, and July 2018 are a number of new laws addressing some of these very issues. Under the new laws, prescribers of schedules II to V controlled substances must have a bona fide relationship with the patient, will be required to check MAPS prior to writing a prescription for more than a 3-day supply of a controlled substance, and will have to obtain more information from patients and provide or arrange for followup care. The laws contain other details about the writing of prescriptions and specifies penalties for failure to comply (MI Executive Office, 2017; Kraus, 2018; Lane, 2018).

In addition, in 2016 the use of naloxone was expanded when the state issued a standing order for naloxone for pharmacies, allowing them to distribute naloxone without a specific prescription, thus making it more readily available to law enforcement officers, first responders, healthcare professionals, and ordinary citizens (MI EO, 2017).

Michigan Medical Marihuana Program

The Michigan Medical Marihuana Program (MMMP) is a state registry program within the Bureau of Medical Marihuana Regulation at the Michigan Department of Licensing and Regulatory Affairs. The MMMP administers the Medical Marihuana Act, passed by Michigan voters in 2008 (LARA, 2018d). (The spelling of *marihuana* within the act is consistent with its spelling in the Michigan Public Health Code.)

State law allows medical use of marijuana under specified conditions, although the law does not protect marijuana plants from seizure or protect individuals from prosecution if the federal government chooses to take action against patients or caregivers under the federal Controlled Substances Act.

In Michigan, patients must have a physician's recommendation to be eligible to use medical marijuana legally. A qualifying, debilitating medical condition must be listed on the attending physician’s statement. Severe and chronic pain and severe and persistent muscle spasms are among the conditions approved under the state’s medical marijuana program (MCL 333.26421-333.26430).

In September 2016 three new laws went into effect that created a licensing and regulatory framework for medical marijuana. Changes included amendments and clarifications of the original 2008 bill and enactment of the Medical Marihuana Facilities Licensing Act whose framework was implemented in December 2017. More information is available on their website at: http://www.michigan.gov/lara/0,4601,7-154-78089---,00.html (MI Senate Fiscal Agency, 2016).

Joint Commission Pain Management Standards

In early 2016 the Joint Commission embarked on a revision of its accreditation standards on pain management that involved a technical advisory panel, learning visits at hospitals, and a "standards" review panel (Joint Commission, 2018a). On January 1, 2018 the Joint Commission released its new standards for hospitals, which require they:

- Establish a clinical leadership team
- Engage medical staff and hospital leadership in improving pain assessment and management, including strategies to decrease opioid use and minimize risks associated with opioid use
- Provide at least one non-pharmacologic pain treatment modality
- Facilitate access to prescription drug monitoring programs
- Improve pain assessment by concentrating more on how pain is affecting patients' physical function
- Engage patients in treatment decisions about their pain management
- Address patient education and engagement, including storage and disposal of opioids to prevent these medications from being stolen or misused by others
- Facilitate referral of patients addicted to opioids to treatment programs (JC, 2018)

Integral to both the original guidelines established in 2001 and the new ones released in 2018 are the following:

- Hospitals must have a process to address pain assessment when necessary.
- Hospitals must have a process upon clinical determination to either treat patient pain or refer patients for pain treatment, which may include nonpharmacologic or pharmacologic approaches.
- Hospitals must have a process for the clinician to reassess and respond to a patient's pain based on reassessment criteria (JC, 2018)

Information about the history of the standards and a discussion of some myths that arose about the standards can be found on the Joint Commission website. Specifically, the Joint Commission "does not endorse pain as a vital sign," "has never endorsed use of pain 'satisfaction scores' for…other than an organization's internal quality improvement," has "never required the use of drugs to manage a patient's pain," and has "never required organizations to mandate that clinicians measure pain on a numerical scale or treat patients to 'zero pain'" (JC, 2018b).

3. The Physiology of Pain

The International Association for the Study of Pain (IASP) describes pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage." Pain can be acute or chronic and, if left untreated, chronic pain can develop into what is referred to as a *chronic pain syndrome*.

Pain occurs when sensory nerve endings called **nociceptors** (also referred to as pain receptors) come into contact with a painful or noxious stimulus. The resulting painful impulse travels from the sensory nerve ending, enters the dorsal spinal cord, and travels to diverse parts of the brain via nerve tracts in the spinal cord and brainstem. The brain processes the pain sensation and quickly makes a motor response in an attempt to cease the action causing the pain (IASP, 2017; NCI, 2017). The sensory process of detecting the "actual or potential tissue damage" is called **nociception** (Kyranou & Puntillo, 2012).

Sensitization

Sensitization is a neurophysiologic response in which the pain pathways become more sensitive. This can include a drop in the threshold for activating nociceptors and an increase in the frequency of firing for all stimuli (IASP, 2017).

Hyperalgesia (exaggerated responses to stimuli) and **allodynia** (in which a stimulus not normally painful is perceived as painful) are clinical markers used to detect the presence of sensitization (IASP, 2017; Zouikr et al., 2016). There are two types of sensitization.

Peripheral sensitization occurs in response to the release of inflammatory molecules such as histamine, prostaglandins, and pro-inflammatory cytokines. These substances sensitize nociceptors by creating an "inflammatory soup" that enhances pain sensitivity by reducing the threshold of nociceptor activation (IASP, 2017; Zouikr–et al., 2016). Under normal circumstances, peripheral hypersensitivity returns to normal when inflammation subsides or the source of the injury is removed (Kyranou & Puntillo, 2012).

In **central sensitization**, nociceptive-specific neurons progressively increase their response to repeated non-painful stimuli, develop spontaneous activity, and increase the area of the body that is involved with the pain. The hyperalgesia of central sensitization usually develops as part of ongoing pathology, such as damage to peripheral or central nerve fibers, cancer, or rheumatoid arthritis, and is considered maladaptive (IASP, 2017; Kyranou & Puntillo, 2012).

Acute Pain

Acute pain comes on quickly and, although it can be severe, lasts a relatively short time (IOM, 2011). Its location is usually well-defined and there is usually an identifiable painful stimulus related to an injury, brief disease process, surgical procedure, or dysfunction of muscle or viscera. Acute pain is often successfully treated with patient education, mild pain medications, environmental changes, and stress reduction.

The Institute of Medicine (IOM) has targeted improved treatment of acute pain as an area of significant healthcare savings. Better treatment of acute pain, through education about self-management and better clinical treatment, can avoid its progression to chronic pain, which is more difficult and more expensive to treat (IOM, 2011).

Chronic Pain

Chronic pain refers to pain that exists for three or more months and does not resolve with treatment. The three-month time frame is not absolute and some conditions may become chronic in as little as a month. When pain becomes chronic, sensory pathways continue to transmit the sensation of pain even though the underlying condition or injury that originally caused the pain has healed. In such situations, the pain itself may need to be managed separately from the underlying condition.

Chronic pain can be difficult to distinguish from acute pain and can be difficult to treat. Chronic pain does not resolve quickly and opioids or sedatives are often needed for treatment. Because medical practitioners frequently approach chronic pain management from a medication perspective, other modalities are sometimes overlooked. Chronic pain is a silent epidemic that reduces quality of life, negatively impacts relationships and jobs, and increases rates of depression (Sessle, 2012).

Chronic pain affects 1 in 5 adults, is more prevalent among women and older adults, and is associated with physically demanding work and a lower level of education (King & Fraser, 2013). Chronic pain is also a symptom of many diseases. Up to 70% of cancer patients suffer from chronic pain, and among individuals living with HIV/AIDS, pain has been reported at all stages of infection (Lohman et al., 2010).

Musculoskeletal pain, especially joint and back pain, is the most common type of chronic pain (IOM, 2011). Although musculoskeletal pain may not correspond exactly to the area of injury, it is nevertheless commonly classified according to pain location. However, most people with chronic pain have pain at multiple sites (Lillie et al., 2013).

Online Resource: What Is Chronic Pain? [2:31]

https://www.youtube.com/watch?v=GTmE5X8NcXM

4. Common Pain Conditions

Certain pain syndromes are pervasive. Low back pain, migraine headaches, post operative pain, cancer pain, and pain associated with arthritis are some of the most common reasons patients seek medical care for pain.

Low Back Pain

Low back pain affects approximately 80% of people at some stage in their lives. If low back pain becomes chronic it often results in lost wages and additional medical expenses and can increase the risk of incurring other medical conditions (Chou et al., 2016).

Low back pain is the fifth most common reason for all physician visits. Approximately one-quarter of U.S. adults reported having low back pain lasting at least 1 day in the past 3 months, and more than 7% reported at least one episode of severe low back pain in the previous year.

Clinically, the natural course of low back pain is usually favorable; acute low back pain frequently disappears within 1 to 2 weeks. Any of the spinal structures, including intervertebral discs, facet joints, vertebral bodies, ligaments, or muscles could be an origin of back pain—which is, unfortunately, difficult to determine. In those cases, in which the origin of back pain cannot be determined, the diagnosis given is **nonspecific low back pain** (Aoki et al., 2012).

Headache Pain

> I've worked as a physical therapist for more than 20 years and didn't know headaches were such a big problem. I don't recall learning about headaches in school and I've never even thought about them in clinical practice, except in the most general terms—even with stroke patients!
>
> Geriatric Specialist, 2014

Headache is one of the most common neurologic disorders and accounts for many visits to both general physicians and neurologists. In 2018 the International Headache Society published the third edition of its *International Classification of Headache Disorders*.

The guide divides headache disorders into three categories:

1. Primary headaches (migraine, tension-type, trigeminal autonomic cephalalgias, and other primary headache disorders)
2. Secondary headaches—headaches attributed to:
    a. trauma or injury to the head and/or neck
    b. cranial and or cervical vascular disorder
    c. non-vascular intracranial disorder
    d. a substance or its withdrawal
    e. infection
    f. disorder of homeostasis
    g. disorder of the cranium, neck, eyes, ears, nose, sinuses, teeth, mouth or other facial or cervical structure
    h. psychiatric disorder
3. Painful cranial neuropathies, other facial pain, and other headaches (IHS, 2018)

Migraine and **tension-type headaches** are the most prevalent primary headache disorders (Oshinaike et al., 2014). Although medication overuse headache is considered separately by some (Schmid et al., 2013), beginning in 2016 the Global Burden of Disease (GBD) Study has removed it as a cause and characterizes it as a sequela of migraine and tension-type headaches (GBD, 2016).

The 2016 GBD Study ranks tension-type headaches and migraine as the third and sixth most common diseases in the world (dental caries in permanent teeth were first). Globally, migraine is the second leading cause of years lived with disability (YLDs), behind only low back pain. Although many questions remain about the occurrence of headaches, especially among children and adolescents, there is more data available all the time, yet is often ignored and headache remains undertreated globally (GBD, 2016; Steiner et al., 2018).

The medical treatment of patients with chronic primary headache syndromes is particularly challenging. Valid studies are few, and in many cases even higher doses of preventive medication are ineffective and adverse side effects frequently complicate the course of medical treatment. There is no single standard of care for patients presenting with primary chronic headache symptoms (Martelletti et al., 2013).

Postoperative Pain

> More than 80% of patients who undergo surgical procedures experience acute postoperative pain and approximately 75% of those…report the severity as moderate, severe, or extreme.
>
> *Guidelines on the Management of Postoperative Pain*

Evidence suggests that fewer than 50% of surgical patients receive adequate postoperative pain relief. Inadequately controlled pain negatively affects quality of life, function, and functional recovery, the risk of post-surgical complications, and the risk of persistent pain following surgery (Chou et al., 2016a).

Noting that quality management strategies exist to reduce and manage postoperative pain, strategies that can and should be employed before, during, and after surgery, the American Pain Society spearheaded work to establish a comprehensive set of guidelines for managing postoperative pain (Chou et al., 2016a).

The final 32 recommendations cover a range of relevant elements and include:

- Provision of patient and family-centered education and information
- Comprehensive pre-operative evaluations
- Adjustment of pain management plan on the basis of adequacy of pain relief and presence of adverse events
- Use of validated pain assessment tools to track treatment efficacy and make adjustments
- Offering multi-modal analgesia, or the use of a variety of analgesic medications and techniques combined with non-pharmacological interventions (Chou et al., 2016a)

The recommendations cover specific pharmacological and non-pharmacological substances and modalities. There is significant detail provided for use of drugs and the overall thrust is toward a multi-modal program that acknowledges that pain management is an evolving process (Chou et al., 2016a).

Pain Associated with Cancer

Pain occurs in 20% to 50% of patients with cancer (NCI, 2017). It is one of the most feared and common symptoms of a variety of cancers and is a primary determinant of the poor quality of life in cancer patients (Bali et al., 2013).

Cancer-associated pain—particularly neuropathic pain—is often resistant to conventional therapeutics, whose application may be severely limited due to side effects (Bali et al., 2013). In advanced stage, moderate to severe pain affects roughly 80% of cancer patients. Younger patients are more likely to experience cancer pain and pain flares than are older patients (NCI, 2017).

Research from Europe, Asia, Australia, and the United States indicates that cancer patients are commonly undertreated for pain, both as inpatients and outpatients—sometimes receiving no analgesia at all. Regardless of what stage the cancer has reached, it is necessary to determine the prevalence of pain in specific cancer types, both to raise awareness among clinicians and to improve patient management (Kuo et al., 2011).

Breakthrough pain is a transitory increase or flare of pain in otherwise relatively well-controlled acute or chronic pain (NCI, 2017). It is common in cancer patients.

Incident pain is a type of breakthrough pain related to certain defined activities or factors; an example is body movement's contributing to increased vertebral pain from metastatic disease. It is often difficult to treat such pain effectively because of its episodic nature. In one study, 75% of patients experienced breakthrough pain; 30% of this pain was incidental, 26% was non-incidental, 16% was caused by end-of-dose failure, and the rest had mixed etiologies (NCI, 2017).

Effective pain management can generally be accomplished by employing a comprehensive plan that involves screening to recognize pain early, proper identification of types of pain experienced, determining if pain requires pharmacologic or other modalities of treatment, identifying the optimal balance of treatment options, proper patient education about treatment, and continued monitoring (NCI, 2017).

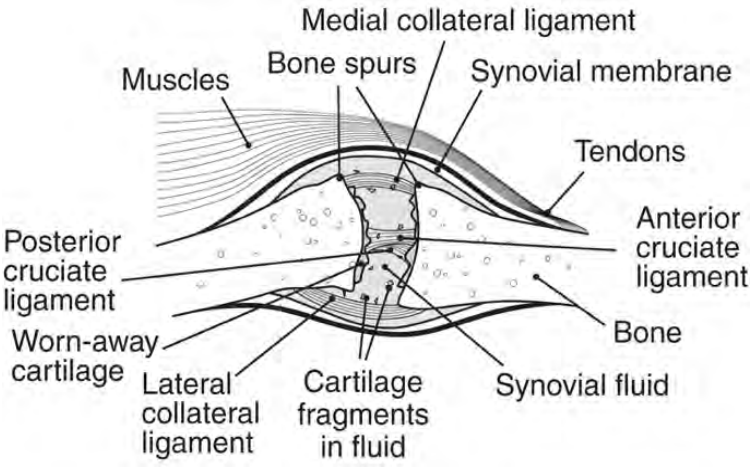
Pain Associated with Arthritis

Arthritis and other rheumatic conditions are a leading cause of pain and disability in adults in the United States. By 2030 about 25% of Americans are expected to be living with arthritis and other rheumatic conditions. The negative consequences, including pain, reduced physical ability, depression, and reduced quality of life can impact the physical functioning and psychological well-being of those living with the conditions (Schoffman et al., 2013).

Osteoarthritis

Osteoarthritis (OA) is a disease that damages the slippery tissue that covers the ends of bones in a joint. This allows bones to rub together and the rubbing causes pain, swelling, and loss of motion of the joint. Over time, the joint may lose its normal shape. The condition can cause bone spurs to grow on the edges of the joint. Bits of bone or cartilage can break off and float inside the joint space, which causes more pain and damage (NIAMS, 2016).

Osteoarthritic Knee Joint Showing Spurs



Source: NIH.gov.

With OA, joint pain and stiffness worsens over time. OA is the most common form of arthritis and it affects close to 27 million Americans. After the age of 65, 60% of men and 70% of women experience OA (Van Liew et al., 2013).

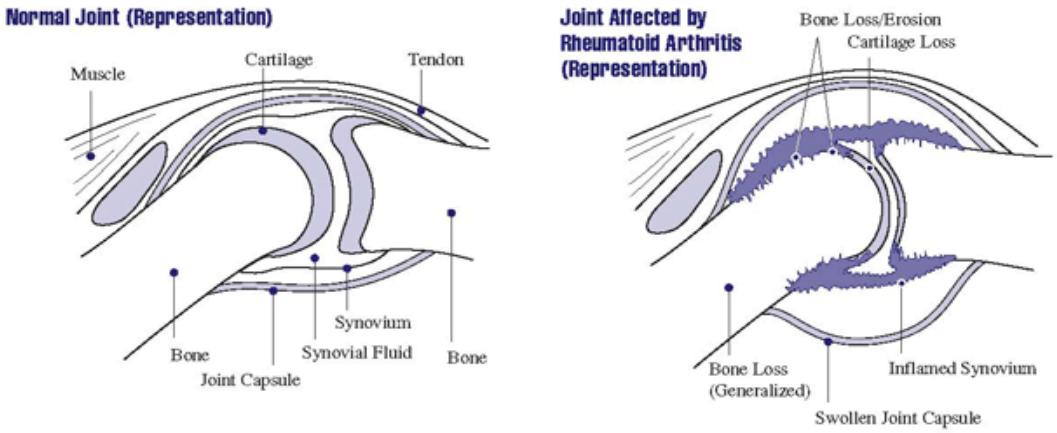
Best practice guidelines for chronic osteoarthritis focus on self-management: weight control, physical activity, and pharmacologic support for inflammation and pain. Obesity is an independent risk factor for osteoarthritis and there is an interactive relationship among osteoarthritis, obesity, and physical inactivity (Dean & Hansen, 2012). Recent research suggests the relationship between obesity and arthritis may be more complex than originally thought (DeClercq et al., 2017).

Physical exercise has become widely recommended for individuals with OA because it has been related to longevity. A meta-analysis on treatments found that exercise programs reduced pain, improved physical functioning, and enhanced quality of life among individuals with OA (Van Liew et al., 2013). Despite this, close to 44% of adults with arthritis report not engaging in exercise.

Rheumatoid Arthritis

Rheumatoid arthritis (RA) is an autoimmune disease that involves inflammation of the thin layer of tissue lining a joint space (synovium) with progressive erosion of bone, leading in most cases to misalignment of the joint, loss of function, and disability. RA is among the most disabling forms of arthritis. It affects 1% of the U.S. adult population (about 2 million people). RA tends to affect the small joints of the hands and feet in a symmetric pattern, but other joint patterns are often seen (Sarmiento-Monroy et al., 2012).

Anyone can get RA, though it occurs more often in women. Rheumatoid arthritis often starts in middle age and is common in older people, but children and young adults can also get it. The exact cause of rheumatoid arthritis is not known, but may include genes, environmental factors, and hormones. With RA, individuals immune systems attack their own body tissues. Treatment may involve regular doctor visits, medication, surgery, and complementary therapies (NIAMS, 2017).



Illustrations of normal joint and joint affected by rheumatoid arthritis. Source: NIH, public domain.

Psoriatic Arthritis

Psoriatic arthritis is an inflammatory joint disease characterized by stiffness, pain, swelling, and tenderness of the joints as well as the surrounding ligaments and tendons. It affects men and women equally, typically presents between the ages of 30 and 50, and is associated with psoriasis in approximately 25% of patients. Cutaneous disease usually precedes the onset of psoriatic arthritis by an average of 10 years in the majority of patients, but 14% to 21% of patients with psoriatic arthritis develop symptoms of arthritis prior to the development of skin disease. Psoriatic arthritis has a highly variable presentation, which can range from a mild, nondestructive arthritis to a severe, debilitating, erosive joint disease (Lloyd et al., 2012).

No one knows what causes psoriatic arthritis. Researchers believe that both genes and environment are involved, and it is more common in Caucasians than African Americans or Asian Americans. Early diagnosis and treatment are important to help prevent joint damage (NIAMS, 2017a).

Nonsteroidal anti-inflammatory drugs help with symptomatic relief, but they do not alter the disease course or prevent disease progression. Intra-articular steroid injections can be used for symptomatic relief. Physical or occupational therapy may also be helpful in symptomatic relief (Lloyd et al., 2012). For forms that are persistent or affect multiple joints, other classes of drugs may be effective. Exercise, heat and cold therapies, relaxation exercises, splints and braces, and assistive devices can help (NIAMS, 2017a).

5. Assessment of Pain

The most critical aspect of pain assessment is that it be done on a regular basis using a standard format. Pain should be re-assessed after each intervention to evaluate its effect and determine whether an intervention should be modified. The time frame for re-assessment should be directed by the needs of the patient and the hospital or unit policies and procedures.

A self-report by the patient has traditionally been the mainstay of pain assessment, although family caregivers can be used as proxies for patient reports, especially in situations in which communication barriers exist (eg, cognitive impairment, language). Family members who act as proxies typically report higher levels of pain than patient self-reports.

Both physiologic and behavioral responses can indicate the presence of pain and should be noted as part of a comprehensive assessment, particularly following surgery. **Physiologic responses** include tachycardia, increased respiratory rate, and hypertension. **Behavioral responses** include splinting, grimacing, moaning or grunting, distorted posture, and reluctance to move. A lack of physiologic responses or an absence of behaviors indicating pain may not mean there is an absence of pain.

Good communication between clinician and patient is critical and good documentation improves communication among clinicians about the current status of the patient's pain and responses to the plan of care. Documentation is also used as a means of monitoring the quality of pain management within the institution.

In the absence of an objective measure, pain is a subjective individual experience. How we respond to pain is related to genetic factors as well as cognitive, motivational, emotional, and psychological states. Pain response is also related to gender, experiences and memories of pain, cultural and social influences, and general health (Sessle, 2012).

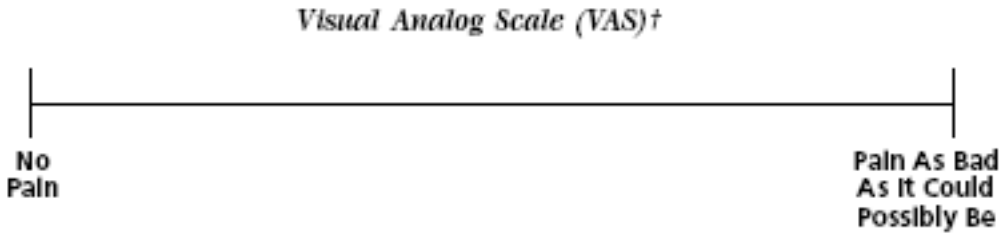
Pain Assessment Tools

Selecting a pain assessment tool should be, when possible, a collaborative decision between patient and provider to ensure that the patient is familiar with the tool. If the clinician selects the tool, consideration should be given to the patient's age; physical, emotional, and cognitive status; and personal preferences. Patients who are alert but unable to talk may be able to point to a number or a face to report their pain (Wells et al., 2008).

Pain Scales

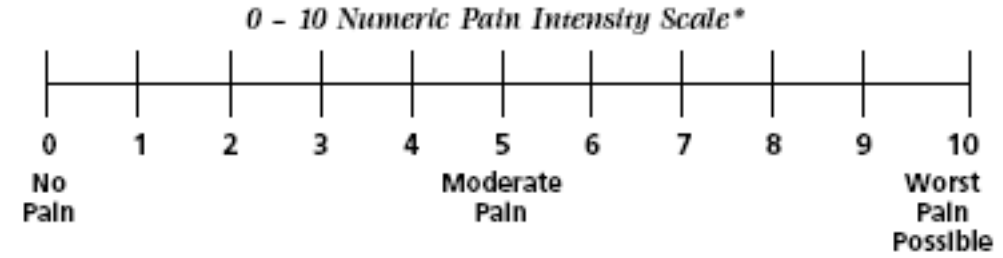
Many pain intensity measures have been developed and validated. Most measure only one aspect of pain (ie, pain intensity) and most use a numeric rating. Some tools measure both pain intensity and pain unpleasantness and use a sliding scale that allows the patient to identify small differences in intensity. The following illustrations show some commonly used pain scales.

Visual Analog Scale



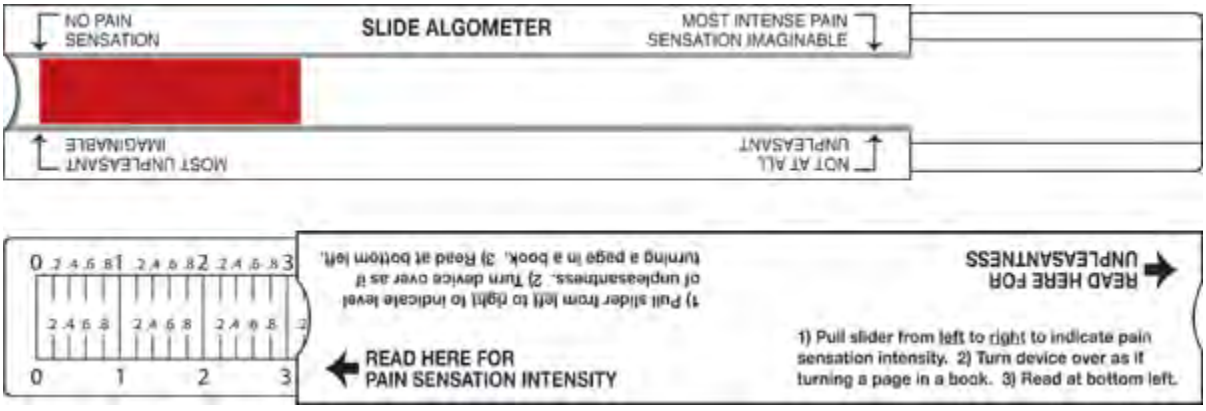
The Visual Analogue Scale. The left endpoint corresponds to “no pain” and the right endpoint (100) is defined as “pain as intense as it can be.”
†A 10-cm baseline is recommended for VAS scales.
Source: Adapted from Acute Pain Management Guideline Panel, 1992 (AHCPR, 1994). Public domain.

Numeric Rating Scale



The Numeric Rating Scale. Indicated for adults and children (>9 years old) in all patient care settings in which patients are able to use numbers to rate the intensity of their pain. The NRS consists of a straight horizontal line numbered at equal intervals from 0 to 10 with anchor words of "no pain," "moderate pain," and "worst pain." Source: Adapted from Acute Pain Management Guideline Panel, 1992 (AHCPR, 1994). Public domain.

The Pain Scale for Professionals



The Pain Scale for Professionals. The patient slides the middle part of the device to the right and left and views the amount of red as a measure of pain sensation. The arrow at the left means “no pain sensation” and the arrow at the right indicates the “most intense pain sensation imaginable.” The sliding part of the device is moved on a different axis for the unpleasantness scale. The arrow at the left means “not at all unpleasant” and the arrow at the right represents pain that is the “most unpleasant imaginable.” Source: The Risk Communication Institute. Used with permission.

Simpler tools such as the verbal rating scale (VRS) classify pain as mild, moderate, or severe. Some studies indicate that older adults prefer to characterize their pain using the VRS. The description can be translated to a number for charting (see following table) and works particularly well if everyone on the unit uses the same scale.

Verbal Rating Scale (VRS)	
Description	Points assigned
No pain	0
Mild pain	2
Moderate pain	5
Severe pain	10

For patients with limited cognitive ability, scales with drawings or pictures, such as the Wong-Baker FACES™ scale, are useful. Patients with advanced dementia may require behavioral observation to determine the presence of pain.

Wong-Baker FACES™ Pain Rating Scale

The Wong-Baker FACES scale is especially useful for those who cannot read English and for pediatric patients. Source: Copyright 1983, Wong-Baker FACES™ Foundation, www.WongBakerFACES.org. Used with permission.

Pain Questionnaires

Pain questionnaires typically contain verbal descriptors that help patients distinguish different kinds of pain. One example, the McGill Pain Questionnaire asks patients to describe subjective psychological feelings of pain. Pain descriptors such as pulsing, shooting, stabbing, burning, grueling, radiating, and agonizing (and more than seventy other descriptors) are grouped together to convey a patient's pain response (Srouji et al., 2010).

The questionnaire combines a list of questions about the nature and frequency of pain with a body-map diagram to pinpoint its location. It uses word lists separated into four classes (sensory, affective, evaluative, and miscellaneous) to assess the total pain experience. After patients are finished rating their pain words, a numerical score is calculated, called the "Pain Rating Index." Scores vary from 0 to 78, with the higher score indicating greater pain (Srouji et al., 2010).

Assessing Pain in Special Populations

Assessing Pain in Cognitively Impaired Adults

The assessment of pain in the cognitively impaired patient can be a significant challenge. Cognitively impaired patients tend to voice fewer pain complaints but may become agitated or manifest unusual or sudden changes in behavior when they are in pain. Clinicians and caregivers may have difficulty knowing when these patients are in pain and when they are experiencing pain relief. This makes the patient vulnerable to both under-treatment and over-treatment. Failure to report pain should not be assumed to mean the absence of pain.

In the absence of accurate self-report, observational tools based on behavioral cues have been developed. The most structured observational tools are based on guidance published by the American Geriatrics Society, which describe six domains for pain assessment in cognitively impaired adults:

1. Facial expression
2. Negative vocalization
3. Body language
4. Changes in activity patterns
5. Changes in interpersonal interactions
6. Mental status changes (Lichtner et al., 2014)

The interpretation of these behaviors can be complex, due to overlap with other common symptoms such as boredom, hunger, anxiety, depression, or disorientation. This increases the complexity of accurately identifying of pain in patients with dementia and raises questions about the validity of existing instruments. As a result, there is no clear guidance for clinicians and staff on the effective assessment of pain, nor how this should inform treatment and care decision-making (Lichtner et al., 2014).

Patient self-report remains the gold standard for pain assessment but in nonverbal older adults the next best option, from a user-centered perspective, becomes the assessment of a person who is most familiar with the patient in everyday life in a hospital or other care setting; this is sometimes referred to as a "silver standard" (Lichtner et al., 2014).

A thorough review of pain assessment tools for nonverbal older adults by Herr, Bursch, and Black of the University of Iowa is available here.

Assessing Pain in Children

Despite decades of research and the availability of effective analgesic approaches, many children continue to experience moderate to severe pain, especially after hospitalization. Overall, the factors affecting children's pain management are influenced by cooperation (nurses, doctors, parents, children), child (behavior, diagnosis, age), organization (lack of routine instructions for pain relief, lack of time, lack of pain clinics), and nurses (experience, knowledge, attitude) (Aziznejadroshan et al., 2016).

Pain evaluation in small children can be difficult. Previous experiences, fear, anxiety, and discomfort may alter pain perception; thus, poor agreement between instruments and raters is often the norm. In children younger than 7 years of age and in cognitively impaired children, evaluation of pain intensity through self-report instruments can be inaccurate due to poor understanding of the instrument and poor capacity to translate the painful experience into verbal language; therefore, complementary observational pain measurements should be used to assess pain intensity (Kolosovas-Machuca et al., 2016).

Three methods are commonly used to measure a child's pain intensity:

1. **Self-reporting**: what a child is saying.
2. **Behavioral measures**: what a child is doing (motor response, behavioral responses, facial expression, crying, sleep patterns, decreased activity or eating, body postures, and movements).
3. **Physiologic measures**: how the body is reacting (changes in heartrate, blood pressure, oxygen saturation, palmar sweating, respiration, and sometimes neuroendocrine responses (Srouji et al., 2010).

Children's capability to describe pain increases with age and experience, and changes throughout their developmental stages. Although observed reports of pain and distress provide helpful information, particularly for younger children, they are reliant on the individuals completing the report (Srouji et al., 2010).

6. Approaches to Pain Management

Approaches to the management of pain vary according to the individual patient. They also vary according to the training and experience of the clinician. The overall goal is to improve function—enabling individuals to work, attend school, and participate in other day-to-day activities.

To guide clinicians, the Michigan Pain Management and Palliative Care program developed the *Pain Toolkit for Healthcare Professionals*. The toolkit outlines nine essential principles for managing pain appropriately, safely, and effectively:

1. Use evidence-based and consensus guidelines for best practice outcomes.
2. Distinguish the underlying and distinct mechanisms of acute, acute recurring, and chronic pain.
3. Understand the origins of pain and methods for treating the origin.
4. Address and manage *chronic* pain effectively.
5. Use opioids appropriately and safely.
6. Know your definitions regarding opioid use in pain patients.
7. Use Michigan's electronic prescription monitoring program (MAPS).
8. Improve patient safety.
9. Prevent and reduce the misuse, abuse, and diversion of pain medications, and address proper storage and disposal. (LARA, 2013c)

Self-Management

Self-management of pain describes strategies used by a patient to manage or minimize the impact of a chronic condition on everyday life. The basic tenets of self-management include:

- Active participation by the patient
- Treatment of the whole person, not just the disease
- Empowerment of the patient (NIH, 2013)

Although some people seek professional help immediately, most try to self-manage their pain. This can include talking to friends, searching the internet, or attending group classes or programs intended to educate a person about pain management. Self-management also includes exercise, ice, heat, positioning, limiting activity, over-the-counter (OTC) medications, and education. In many cases, self-management is highly successful.

The Pain Medicine Model

The Institute of Medicine (2011) described a continuum of care referred to as the **Pain Medicine Model**. It begins with:

1. People attempting to manage pain on their own. If this fails,
2. They often seek guidance from a primary care practitioner, and if their pain continues, they turn to
3. Specialty care.

The Pain Medicine Model, though it includes primary and specialty care, possesses a relatively weak basis for efficacy—particularly for chronic pain care—and often fails to involve patients as integral, active participants in their own care. Although the Pain Medicine model has low demonstrated efficacy, it is widely used because of a strong business model, industry support, and professional training in healthcare (NIH, 2013).

Seeking treatment from a primary care provider is a mainstay of the Pain Medicine Model. Primary care involves several management strategies, ideally coordinated by a general medicine specialist. Primary care clinicians often provide the initial assessment or diagnosis and serve as a starting point for specialty services; primary care may include prescription medications, referrals to other practitioners, imaging, and surgical and interventional techniques (minimally invasive procedures with placement of drugs in targeted areas or ablation of targeted nerves). Primary care physicians are responsible for the majority of prescription pain medications.

Once the primary care clinician has completed an initial assessment, medical management ideally involves a multi-disciplinary team that develops a comprehensive treatment plan that includes appropriate pharmacologic and non-pharmacologic interventions. Treatments should be regularly re-evaluated for effectiveness, adjusted as needed, and side effects quickly addressed (PPSG, 2013b).

The National Institutes of Health (NIH) Pain Consortium conducts a symposium each year that focuses on pain management research and methods. One of the presentations at the 2017 consortium, “Self-Management Strategies as Part of an Integrated Approach for Pain Management,” emphasized a blended approach to pain management with concrete suggestions for making it successful. This was just one of many presentations in 2017, and previous years, to emphasize such multi-disciplinary approaches (Friction, 2017; NIH, 2017).

The opioid crisis that came to worldwide attention in 2017 led to an examination on multiple fronts to find ways to limit opioid prescribing and to support those who became addicted to pain killers (see Module 7).

Integrative Pain Management

It is not surprising that healthcare providers, along with those dealing with the effects of pain, have sought ways to combine the strengths of the self-management model with those of the Pain Medicine Model. The combination of these two approaches is increasingly referred to as **integrative pain management**. A wide range of techniques, medications, and practices are included in the integrative model; they include physical and occupational therapy, chiropractic, acupuncture, complementary and alternative medicine, and a variety of other techniques and practices that are only now gaining acceptance in Western medicine.

Integrative techniques and practices are of particular importance because many chronic pain patients become resistant to conventional medical treatments or suffer adverse effects from widely used prescription medications with high addictive potential. For these reasons, patients with chronic pain frequently seek to integrate complementary therapies, often without the knowledge of their primary care provider (Abrams et al., 2013).

Perhaps the most attractive aspect of integrative medicine is its focus on patient-centered care, which at its most effective addresses the full range of physical, emotional, mental, social, spiritual, and environmental influences that affect a person's health. Integrative care considers the patient's unique conditions, needs, and circumstances and uses the most appropriate interventions from an array of disciplines to heal illness and help people regain and maintain optimal health. Integrative medicine is a "whole systems" approach and, not surprisingly, chronic pain is one of the main reasons patients seek care at integrative medicine clinics (Abrams et al., 2013).

Complementary and Alternative Therapies

According to the National Center for Complementary and Integrative Health (NCCIH) many Americans—more than 30% of adults and about 12% of children—use healthcare approaches developed outside of mainstream Western, or conventional, medicine. When describing these approaches, people often use *alternative* and *complementary* interchangeably, but the two terms refer to different concepts:

- If a non-mainstream practice is used together with conventional medicine, it's considered "complementary."
- If a non-mainstream practice is used in place of conventional medicine, it's considered "alternative."

True alternative medicine is uncommon. Most people who use non-mainstream approaches use them along with conventional treatments (NCCIH, 2017).

There are many definitions of integrative health are, but all involve bringing conventional and complementary approaches together in a coordinated way. The use of integrative approaches to health and wellness has grown within care settings across the United States. Researchers are currently exploring the potential benefits of integrative health in a variety of situations, including pain management for military personnel and veterans, relief of symptoms in cancer patients and survivors, and programs to promote healthy behaviors (NCCIH, 2017). A great deal more information is available at the NCCIH website.

Rehabilitation Therapies and Chiropractic

Although rehabilitation therapists and chiropractors receive extensive training within the traditional medical model, they are uniquely positioned to combine elements from the self-management model, the medical model, and some techniques from complementary and alternative medicine. Physical and occupational therapists are trained to treat patients following many common surgeries, particularly orthopedic surgeries. Often, these therapists receive additional education and training in the treatment of neck, back, and joint injuries. Treatment modalities are aimed at reducing or eliminating pain, restoring function, and improving quality of life.

Pain Management in Special Populations

The extremes of age provide special challenges to pain care. Pediatric patients and geriatric patients have little in common physiologically, but they share a propensity toward under-medication for pain. There is some evidence that the under-treatment of pain in those at the extremes of age is improving, but acute-care clinicians should pay particular attention to pain assessment and care in these patients (Thomas, 2013).

Pain Management at the End of Life

When a person is living with an advanced illness and coming to the end of life, preventing and relieving pain is a high priority. Pain is among the most debilitating and feared symptoms that patients and families face, and effective pain management is a palliative focus for many conditions.

The Michigan Administrative Code (R 325.13302) establishes a responsibility for hospices to ensure that pain management is an essential part of patient care. Medical care is expected to prevent and control pain and other distressing symptoms (LARA, 2017; PPRG, 2013b).

Under-treatment and inequitable access to pain treatment, particularly among cancer patients presenting with pain, have been described in the literature. The reported prevalence of moderate to severe pain in advanced cancer is approximately 64%, with a sharp increase to as high as 80% to 90% at the end of life (Gao et al., 2014).

Although palliative care has, in the past, focused on cancer, it has expanded to include other conditions, including musculoskeletal pain at the end of life. Population-based studies indicate that musculoskeletal pain is such a common and significant issue at the end of life that musculoskeletal disease may have as much, if not more, effect on whether a person dies in pain than the condition that is the cause of death (Lillie et al., 2013).

Pain Management in Older Adults

It is believed that the majority of older adults experience pain on a regular basis and that the incidence of pain increases after the age of 60. Pain is the number one complaint of older adults, and 1 in 5 takes a painkiller regularly (Lillie et al., 2013).

The American Geriatrics Society and the British Geriatrics Society have issued guidelines for the management of pain in older adults. Management begins with an accurate assessment, which includes the impact of pain on the patient's daily activities. Analgesic treatment and pain-modulating drugs are a part of the pharmacologic treatment of pain in older adults, although co-morbidities and other risk factors must be carefully considered. When prescribing medications, the least invasive method of administration should be used, and in most cases the oral route is preferred (Age and Ageing, 2013).

Older adults with low income, those without adequate prescription drug coverage, and those using high-cost medications are likely to stretch out their medication supply by skipping doses or extending the intervals between doses.

Age-related changes in physiology can render an older adult more sensitive to medications, making polypharmacy a major issue associated with adverse drug events and increased hospitalizations. Older adults also have an increased pain threshold, a decreased tolerance for pain, and recover more slowly after an injury. Decline in organ function, particularly the renal and hepatic functions, which are critical in the clearance of ingested medications, dictates the pharmacokinetic properties* of many drugs. Aging patients may experience changes in body fat and water composition. These changes alter the tissue and plasma distributions of many lipophilic and hydrophilic drugs in ways that predispose patients to adverse effects (Taylor et al., 2012).

*Pharmacokinetics: the study of the absorption, distribution, metabolism, and excretion (ADME) of drugs. Changes associated with aging affect the pharmacokinetics of medications.

Patient and family education is a central part of acute and chronic pain management in older adults. Healthcare providers play a key role in helping family members understand that preventing and controlling pain is an important issue. Patients and family members should understand the interventions available to manage pain. If opioids are part of the plan of care, fear related to side effects and risk of addiction should be addressed. Patients and family members should understand that side effects can be managed effectively with medication and the risk of addiction when using opioids to control acute pain is extremely low.

Patients and their family members have a responsibility to tell healthcare providers when the patient is experiencing pain or when the nature or level of pain changes. Although complete pain relief may not be possible, healthcare providers can assure patients and family members that they will work to keep pain at a level that allows patients to engage in activities necessary to recover and return home.

Pain Management in Children and Adolescents

It is estimated that 15% to 30% of children and adolescents experience chronic pain, with prevalence increasing with age and occurring slightly more commonly in girls than boys. The most commonly reported locations of pain in children and adolescents are the head, stomach, arms, and legs. The most common chronic pain conditions in children include migraine, recurrent abdominal pain, and general musculoskeletal pain (Carter & Threlkeld, 2012).

Effective pain management in the pediatric population requires special attention to the developmental stage of the child. Current research does not adequately address the effectiveness of tools and measurements used to assess pain in children at various ages. Knowledge of the experience of pain and its associated copying strategies has not been adequately related to developmental stages. In spite of its frequency, pain in infants, children, and adolescents is often underestimated and under-treated. Infants and children who experience pain in early life have shown long-term changes in terms of pain perception and related behaviors (Srouji et al., 2010).

Clinicians need to be able to distinguish the signs of pain by age group and determine whether symptoms are caused by pain or other factors. Barriers to pain management in children are numerous, as reflected in statements like “Children do not feel pain the way adults do,” fears regarding the use of pharmacologic agents, and deficits in knowledge of methods of pain assessment. These and other factors, such as personal values and beliefs, prevent adequate identification and alleviation of pain for all children (Srouji et al., 2010).

Understanding medication dosing, interactions, and side effects is critical in children. Dosing is different for children but the goal is to reach an analgesic level of pain control. Safe pediatric prescribing requires accurate weight, proper conversion of pounds to kilograms, and the choice of an appropriate preparation and concentration.

Children with chronic pain experience significant interference with developmental functioning, showing increased levels of emotional distress and impairment. In an effort to find treatment for chronic pain, patients must often negotiate appointments with multiple providers, primary and secondary. Consequences of searching for treatment often include missed school for the child, missed work for parents, and expenditure of emotional and financial resources (Gorodzinsky et al., 2012).

7. Analgesics and Pain Management

The appropriate use of analgesics—the right drug at the right interval—provides good pain relief for the majority of patients. There are dozens, even scores, of drugs that can be used depending on the clinical circumstances. They generally fall into three categories: opioid analgesics, non-opioid analgesics, and adjuvant medications with analgesic activity.

The predominant method of analgesic pain treatment continues to be the Pain Ladder developed by the World Health Organization (WHO) in the context of cancer care. This three-step approach is based on pain severity and recommends the use of non-opioids prior to the initiation of opioid therapy.

Opioid Analgesics

Narcotics are drugs that in moderate doses dull the senses, relieve pain, and induces profound sleep but in excessive doses cause stupor, coma, or convulsions. **Opioids** have a narcotic effect; that is, they induce sedation and are effective for the management of many types of pain. Opioid receptors are found extensively in the brain and spinal cord, as well as in the vascular system, gut, lungs, airway, cardiac system, and some immune system cells.

Opioid analgesics have a legitimate medical use and are indicated for the medical management of moderate or severe pain. Although their use for the relief of a variety of chronic non-cancer pain conditions continues to evolve, and evidence of effectiveness for these conditions is derived largely from consensus standards, there seems to be a general agreement that some patients can be properly treated with opioid therapy. Physicians, osteopaths, pharmacists, and nurses (where permitted) must be knowledgeable about opioids and confident to prescribe, administer, and dispense them according to individual patient needs (PPSG, 2013a).

Dozens of compounds fall within this class of opioid analgesics, including hydrocodone, oxycodone, morphine, fentanyl, codeine, propoxyphene (recalled in 2010), hydromorphone (Dilaudid), and meperidine (Demerol), which is used less often because of its side effects. In addition to their effective pain-relieving properties, some of these medications are used to relieve severe diarrhea (eg, Lomotil, also known as diphenoxylate) or severe coughs (codeine).

Management of pain using opioid therapy requires a thorough assessment before initiation of treatment. When treating a person with chronic pain there may be physical, psychological, social, cultural, spiritual, and hereditary as well as behavioral factors that contribute to suffering and require attention and evaluation.

Opioids can cause unwanted or adverse effects. They usually cause drowsiness in the first 24 to 36 hours and patients should be advised that this will resolve. Constipation is a common side effect because opioids suppress receptors in the gut that guide peristalsis, leading to a slowdown in bowel motility. Patients should be given a bowel stimulant while on opioids.

Opioid Epidemic a National Emergency

> Thirty years ago, I attended medical school in New York. In the key lecture on pain management, the professor told us confidently that patients who received prescription narcotics for pain would not become addicted.
>
> While pain management remains an essential patient right, a generation of healthcare professionals, patients, and families have learned the hard way how deeply misguided that assertion was. Narcotics—both illegal and legal—are dangerous drugs that can destroy lives and communities.
>
> Thomas Frieden, MD, February 24, 2012
>
> Former Director, CDC (Special to CNN)

> The opioid epidemic is a problem the likes of which we have never seen.
>
> President Donald Trump
> CNN Politics, August 9, 2017

On March 29, 2017 President Donald Trump ordered the establishment of the Commission on Combating Drug Addiction and the Opioid Crisis, to be headed by New Jersey Governor Chris Christie. The final report was issued on November 1, 2017. Following is a summary of its recommendations.

Federal Funding and Programs

1. The Commission urges Congress and the Administration to block grant federal funding for opioid-related and SUD-related activities to the states, where the battle is happening every day. There are multiple federal agencies and multiple grants within those agencies that cause states a significant administrative burden from an application and reporting perspective. Creating uniform block grants would allow more resources to be spent on administering life-saving programs. This was a request to the Commission by nearly every Governor, regardless of party, across the country.
2. The Commission believes that ONDCP must establish a coordinated system for tracking all federally-funded initiatives, through support from HHS and DOJ. If we are to invest in combating this epidemic, we must invest in only those programs that achieve quantifiable goals and metrics. We are operating blindly today; ONDCP must establish a system of tracking and accountability.
3. To achieve accountability in federal programs, the Commission recommends that ONDCP review is a component of every federal program and that necessary funding is provided for implementation. Cooperation by federal agencies and the states must be mandated.

Opioid Addiction Prevention

4. The Commission recommends that Department of Education (DOE) collaborate with states on student assessment programs such as Screening, Brief Intervention and Referral to Treatment (SBIRT). SBIRT is a program that uses a screening tool by trained staff to identify at-risk youth who may need treatment. This should be deployed for adolescents in middle school, high school and college levels. This is a significant prevention tool.
5. The Commission recommends the Administration fund and collaborate with private sector and non-profit partners to design and implement a wide-reaching, national multi-platform media campaign addressing the hazards of substance use, the danger of opioids, and stigma. A similar mass media/educational campaign was launched during the AIDs public health crisis.

Prescribing Guidelines, Regulations, Education

6. recommends that HHS, DOJ/DEA, ONDCP, and pharmacy The Commission recommends HHS, the Department of Labor (DOL), VA/DOD, FDA, and ONDCP work with stakeholders to develop model statutes, regulations, and policies that ensure informed patient consent prior to an opioid prescription for chronic pain. Patients need to understand the risks, benefits and alternatives to taking opioids. This is not the standard today.
7. The Commission recommends that HHS coordinate the development of a national curriculum and standard of care for opioid prescribers. An

updated set of guidelines for prescription pain medications should be established by an expert committee composed of various specialty

8. The Commission recommends that federal agencies work to collect participation data. Data on prescribing patterns should be matched with participation in continuing medical education data to determine program effectiveness and such analytics shared with clinicians and stakeholders such as state licensing boards.
9. The Commission recommends that the Administration develop a model training program to be disseminated to all levels of medical education (including all prescribers) on screening for substance use and mental health status to identify at risk patients.
10. The Commission recommends the Administration work with Congress to amend the Controlled Substances Act to allow the DEA to require that all prescribers desiring to be relicensed to prescribe opioids show participation in an approved continuing medical education program on opioid prescribing.
11. The Commission associations train pharmacists on best practices to evaluate legitimacy of opioid prescriptions, and not penalize pharmacists for denying inappropriate prescriptions.

Non-Opioid Analgesics

For patients needing broadly effective analgesia, non-opioid approaches may offer improved overall safety and efficacy compared to opioid analgesics. Rather than immediately moving to opioids, a clinician should consider whether non-opioid approaches may be appropriate (Thomas, 2013).

Non-opioid analgesics can include:

- Acetaminophen
- Non-steroidal anti-inflammatories (NSAIDs)
- Nitrous oxide
- Medical marijuana

Acetaminophen

Acetaminophen, the active ingredient in Tylenol* has been marketed in the United States as an over-the-counter antipyretic (fever reducing) and analgesic (pain reducing) agent since 1953. Acetaminophen is widely available in a variety of strengths and formulations for children and adults as a single-ingredient product.

*Tylenol, also known as paracetamol and N-acetyl-p-aminophenol (APAP).

Acetaminophen's anti-inflammatory properties are much weaker than those of aspirin and other NSAIDs like ibuprofen, which inhibit both COX-1 and COX-2 but can irritate the stomach and gastrointestinal tract. It is thus less effective or appropriate for chronic inflammatory pain conditions such as rheumatoid arthritis. It is, however, an excellent choice for osteoarthritis, especially in those patients where aspirin is contraindicated. Acetaminophen lacks the antithrombotic, blood-thinning properties of aspirin and other NSAIDs and therefore does not inhibit coagulation, an important consideration for pain therapy following minor surgical or dental procedures.

Research has shown that acetaminophen is a major cause of acute liver failure in the United States. Taking more than the recommended amount of acetaminophen can cause liver damage ranging from abnormalities in liver function blood tests to liver failure and even death. There are an estimated 400 deaths each year from acetaminophen-caused liver failure (Hodgman & Garrard, 2012). Clinicians prescribing acetaminophen should be meticulous about warning patients against taking more than the optimal daily dosage.

Nonsteroidal Anti-inflammatories

Nonsteroidal anti-inflammatory drugs (NSAIDs) are medications with anti-inflammatory, analgesic, and antipyretic properties and are among the most widely used drugs in the world. Aspirin, developed in 1897, was the first NSAID. NSAIDs are often used to reduce short- and long-term pain, decrease stiffness, and improve function in patients with acute and chronic conditions such as arthritis, headache, dysmenorrhea, and postoperative pain.

NSAIDs work by stopping COX enzymes from making prostaglandins. Like all drugs, NSAIDs have some unwanted side effects. Because certain prostaglandins protect the stomach lining from the stomach acid that helps to digest food, NSAID use can cause gastrointestinal complications (dyspepsia and abdominal pain, increased incidence of endoscopic ulcers, bleeding, and death). A history of prior gastrointestinal symptoms or bleeding, the presence of other risk factors such as advancing age, higher doses of NSAIDs, duration of NSAID use, as well as the frailty of the patient all increase the risk for upper gastrointestinal damage and consequent bleeding (Simon, 2013).

Despite the many available forms of NSAIDs—including injectable and topical—oral dosing is the most common route, usually the one route consistently associated with chronic use and thus the one that carries the most risk. NSAIDs with a longer half-life probably place patients at greater risk of adverse events. Strategies to decrease the risk of gastrointestinal damage include transition to other types of drugs, lower doses, and the use of topical NSAIDs. Other strategies include the addition of prostaglandin analogues, H_2 receptor antagonists, or proton pump inhibitors as concomitant therapies (Simon, 2013).

NSAIDs can increase the risk of heart attacks and stroke to varying degrees and therefore should be avoided by people at high risk of cardiovascular diseases. The increased cardiovascular risk has been observed both in people with a prior high risk of cardiovascular disease and in previously healthy individuals, and this risk appears to be dose dependent (McGettigan & Henry, 2013).

Nitrous Oxide (N_2O)

Based upon the recent literature, N_2O may be poised for something of a comeback in the acute care setting. The agent is well known, self-administered, safe, and at least moderately effective. It avoids the need for IV access and has a very low risk of concerning side effects. It is excreted unchanged by the lungs so there are no issues with renal or hepatic disease. When the training, technical, and related physical barriers (eg, external venting) to N_2O use in the emergency department can be overcome, it makes sense to incorporate capability for administration of this inhaled agent for analgesia and also as an adjunct for procedural sedation (Thomas, 2013).

Medical Marijuana (Cannabis)

Cannabis (*Cannabis sativa*) is an ancient plant that has been used medicinally for thousands of years. **Cannabinoids** is the term for a class of compounds within cannabis of which delta-9-tetrahydrocannabinol (THC) is the most familiar. I addition to THC, approximately 100 other cannabinoids have been identified, including one of special scientific interest called "cannabidiol" (CBD). The human body produces endogenous cannabinoids (endocannabinoids) and contains specific receptors for these substances (Collen, 2012).

Cannabis Sativa

Source: Wikipedia Commons. Originally from the U.S. Fish and Wildlife Service.

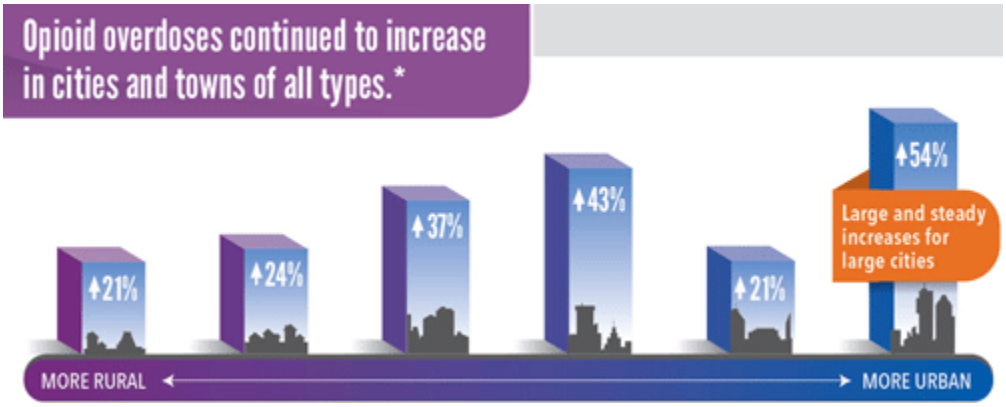
Researchers at the Center for Medicinal Cannabis Research looked at the efficacy of smoked or inhaled cannabis for the treatment of HIV neuropathy and other neuropathic conditions. The efficacy of cannabis was found to be comparable to that of traditional agents, somewhat less than that of the tricyclics, but better than SSRIs and anticonvulsants, and comparable to gabapentin. The data suggest, on balance, that cannabis may represent a reasonable alternative or adjunct to treatment of patients with serious painful peripheral neuropathy for whom other remedies have not provided fully satisfactory results (Grant, 2013).

Adjuvant Medications with Analgesic Activity

Adjuvant analgesics are medications whose primary purpose is for the treatment of something other than pain. Adjuvants are valuable during all phases of pain management to enhance analgesic efficacy, treat concurrent symptoms, and provide independent analgesia for specific types of pain. Adjuvant analgesics have been extensively studied and reviewed in non-cancer settings and are generally endorsed as an important component of pain management. Adverse drug reactions are common and must be regularly assessed.

8. Abuse of Opioid Analgesics

> We have an emergency on our hands. The fast-moving opioid overdose epidemic continues and is accelerating. We saw, sadly, that in every region, in every age group of adults, in both men and women, overdoses from opioids are increasing.
>
> Anne Schuchat, March 2018
>
> CDC Acting Director



*From left to right, the categories are: (1) non-core (non-metro), (2) micropolitan (non-metro), (3) small metro, (4) medium metro, (5) large fringe metro, (6) large central metro.
Source: CDC's Enhanced State Opioid Overdose Surveillance (ESOOS) Program, 16 states reporting percent changes from July 2016 through September 2017.

The United States is in the midst of an opioid overdose epidemic (see also Module 7). Opioids (including prescription opioids, heroin, and fentanyl) killed more than 42,000 people in 2016, more than any year on record. Forty percent of all opioid overdose deaths involve a prescription opioid (CDC, 2017a). In the year between the third quarter of 2016 and the third quarter of 2017 opioid overdoses across the nation jumped by about 30% (Stein, 2018).

Drug overdose deaths and opioid-involved deaths continue to increase in the United States. The majority of drug overdose deaths (66%) involve an opioid. In 2016 the number of overdose deaths involving opioids (including prescription opioids and heroin) was 5 times higher than in 1999. From 2000 to 2016, more than 600,000 people died from drug overdoses. On average, 115 Americans die every day from an opioid overdose (CDC, 2017a).

We now know that overdoses from prescription opioids are a driving factor in the 16-year increase in opioid overdose deaths. The amount of prescription opioids sold to pharmacies, hospitals, and doctors' offices nearly quadrupled from 1999 to 2010, yet there had not been an overall change in the amount of pain that Americans reported. Deaths from prescription opioids—drugs like oxycodone, hydrocodone, and methadone—have more than quadrupled since 1999 (CDC, 2017a).

An unfortunate consequence of the increased availability of opioid analgesics is their use in ways that are unsafe or unintended. OxyContin for example, which was designed as a slow-release, oral medication is being crushed, then snorted or injected, with lethal consequences. In an attempt to stay ahead of the illicit drug trade, new formulations have been designed that are intended to deter some of these abuses. For example, a new formulation of OxyContin releases from 21% to 48% less opioid when tampered (milled, manually crushed, dissolved, and boiled) than the original version (Raffa et al., 2012).

Paradoxically, despite an enormous rise in spending and prescription, there is limited evidence to support the efficacy of opioids in chronic non-cancer pain management. In a European survey on chronic pain, 15% of respondents felt that their medications were not very or not at all effective (Xu & Johnson, 2013). Systematic reviews have suggested limited efficacy of long-term opioid therapy over short-term treatment or placebo, while an evidence review by the Institute of Medicine concluded that the effectiveness of opioids as pain relievers, especially over the long term, is somewhat unclear (Xu & Johnson, 2013).

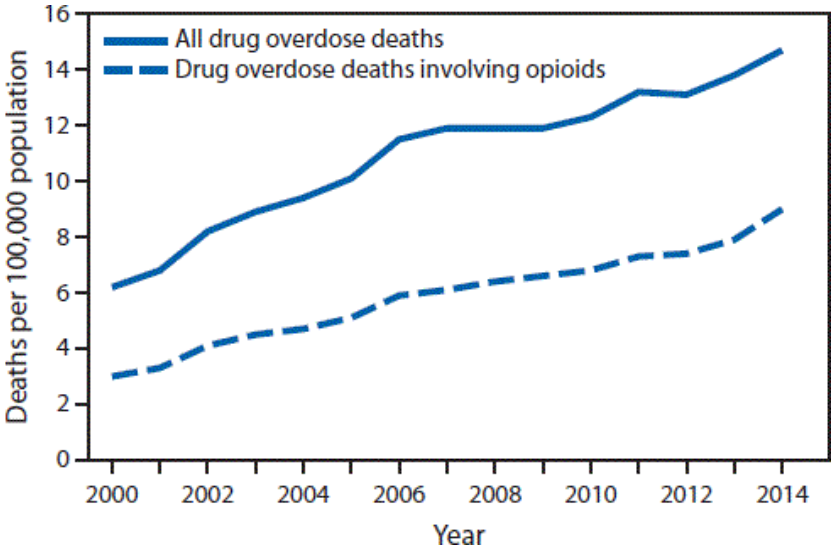
The enormous increase in the availability of prescription pain medications is drawing new users to these drugs and changing the geography and age-grouping of opiate-related overdoses. Prescription opioid–related overdoses currently represent the leading cause of death in the United States for 35- to 54-year-olds (Unick et al., 2013).

Opiate-Related Overdose and Poisoning

> Poisoning is now the leading cause of death from injuries in the United States and nearly 9 out of 10 poisoning deaths are caused by drugs.
>
> Margaret Warner, 2011

One of the *Healthy People 2020* objectives is to reduce fatal poisonings in the United States. This goal was set because, during the *Healthy People 2010* tracking period from 1999 to 2008, the drug poisoning death rate increased among all age groups. In 2008 alone, over 41,000 people died as a result of a poisoning and 80% of drug poisoning deaths that year involved opioid analgesics (Warner et al., 2011). More persons died from drug overdoses in the United States in 2014 than during any previous year on record. (CDC, 2016b).

Opiate-Related Overdose Deaths



CDC, 2016b.

In Michigan, during the reporting period covering the years 1999 and 2014:

- The total number of drug poisoning deaths has leveled in recent years but there has been a steady increase since 2012.
- The age-adjusted rate for heroin poisoning deaths nearly doubled between 2012 and 2014, while the age-adjusted rate for opioid analgesics poisoning death increased slightly.
- The age-adjusted death rate involving heroin was nearly 3.5 times higher for men than women in 2014.
- Young adults aged 25 to 34 years had the highest death rate involving heroin and adults aged 35 to 44 years had the highest death rate involving opioids (MDHHS, 2014). In 2015 35- to 44-year-olds also had the highest prescription drug overdose death rate. (MDHHS, 2017)

Tolerance, Dependence, and Addiction

The predictable consequences of long-term opioid administration—tolerance and physical dependence—are often confused with psychological dependence (addiction) that manifests as drug abuse. This misunderstanding can lead to ineffective prescribing, administering, or dispensing of opioids for cancer pain.

Tolerance

Tolerance is a state of adaptation in which a drug becomes less effective over time, which means a larger dose is needed to achieve the same effect. Tolerance occurs when a drug causes the brain to release large amounts of dopamine. In some cases, this occurs almost immediately—especially when drugs are smoked or injected—and the effects can last much longer than those produced by natural rewards.

The resulting effects on the brain's pleasure circuit dwarfs those produced by naturally rewarding behaviors. The brain adapts to these overwhelming surges in dopamine by producing less dopamine or by reducing the number of dopamine receptors in the reward circuit. This reduces the user's ability to enjoy not only the drugs but also other events in life that previously brought pleasure. This decrease compels the person to keep abusing drugs in an attempt to bring the dopamine function back to normal, but now larger amounts of the drug are required to achieve the same dopamine high (NIDA, 2016).

Analgesic tolerance is the need to increase the dose of opioid to achieve the same level of analgesia. Analgesic tolerance may or may not be evident during opioid treatment and does not equate with addiction (PPRG, 2013b).

Dependence and Addiction

> It is often said that addiction is easy to recognize, that it rarely arises during the treatment of pain with addictive drugs, and that cases of addiction during pain treatment can be managed in much the same way as other addictions, but such generalizations grossly oversimplify the real situation.
>
> International Association for the Study of Pain

Clarifying the difference between dependence and addiction is important to better understand the issues in opioid use and abuse. **Dependence** is the physical tolerance of the drug that requires increased amounts of the drug to achieve the desired response. Withdrawal of the drug will result in physical symptoms such as shaking, tremors, nausea, and vomiting. **Addiction** is a behavioral disorder that refers to the emotional desire for the drug and the desired effects it brings, which often creates strong drug-seeking behaviors. Generally, those who are dependent on opioids will vary between feeling sick without the drug and the desired high after taking the drug. Being addicted to the drug will motivate a person to do whatever it takes to get and take the drug to avoid the dreaded withdrawal symptoms.

Withdrawal symptoms include the following:

- Intense drug cravings
- Depression, withdrawal fears, anxiety
- Sweating, watery eyes, runny nose
- Restlessness, yawning
- Diarrhea, fever, and chills
- Muscle spasms, tremors, and joint pain
- Stomach cramps, nausea, and vomiting
- Elevated heart rate and blood pressure (NIDA, 2015; Kosten & O'Connor, 2013)

People at risk for opioid dependence and addiction are seen in every age, gender, ethnicity, and culture. Physical dependence varies. A genetic component has been identified that influences how quickly a person may slide from occasional use to physical need and addiction to the drug (Kreek et al., 2005). Susceptible populations have typically included the homeless, alcoholics, and those with personality or mental health disorders who look for a way to block the emotional pain of life stressors. Healthcare professionals, who experience great work stress, have a higher risk of becoming dependent or addicted to opiates following back or other injuries and having easier access to narcotics in their work setting (Kenna & Lewis, 2008).

Addiction may also be referred to by terms such as *drug dependence* and *psychological dependence.* Physical dependence and tolerance are normal physiologic consequences of extended opioid therapy for pain and should not be considered addiction. **Pseudo-addiction** is a pattern of drug-seeking behavior by pain patients who are receiving inadequate pain management that can be mistaken for addiction (PPRG, 2013b).

Addiction affects multiple brain circuits, including those involved in reward and motivation, learning and memory, and inhibitory control over behavior. As with any other disease, vulnerability to addiction differs from person to person. In general, the more risk factors an individual has, the greater the chance that taking drugs will lead to abuse and addiction. The overall risk for addiction is impacted by the biologic makeup of the individual and can be influenced by gender, ethnicity, developmental stage, and the surrounding social environment. Adolescents and individuals with mental disorders are at greater risk of drug abuse and addiction than the general population.

Although taking drugs at any age can lead to addiction, the earlier individuals begin to use drugs the more likely they are to progress to more serious abuse. This may reflect the harmful effect that drugs can have on the developing brain; it also may result from a constellation of early biologic and social vulnerability factors, including genetic susceptibility, mental illness, unstable family relationships, and exposure to physical or sexual abuse. Still, the fact remains that early use is a strong indicator of problems ahead—among them, substance abuse and addiction (NIDA, 2016).

Smoking a drug or injecting it into a vein increases its addictive potential. Both smoked and injected drugs enter the brain within seconds, producing a powerful rush of pleasure. However, this intense high can fade within a few minutes, taking the abuser down to lower, more normal levels. It is a starkly felt contrast, and scientists believe that this low feeling drives individuals to repeated drug abuse in an attempt to recapture the highly pleasurable state (NIDA, 2014).

Opioids are highly addictive and rates of addiction among patients receiving opioids for the management of pain vary from 1% to 50%, which suggests uncertainty about what addiction really is and how often it occurs (IASP, 2013). The enormous increase in the availability of prescription opioids is fuelling a rise in addiction nationally, introducing new users to these drugs and changing the geography of opiate-related overdoses (Unick et al., 2013).

To distinguish between misuse behaviors and addiction in chronic pain patients, assess the relationship between opioid dose titration and functional restoration. In this approach, in response to aberrant “drug-seeking” behaviors (ie, continued complaints of pain or requests for more medication), the clinician increases the opioid dose in an effort to provide analgesia. Improvements in functional outcomes and quality of life, with fewer problematic behaviors, indicate that active addiction is not present. In this case, drug-seeking behaviors may reflect pseudo-addiction, therapeutic dependence, or opioid tolerance. Effective dosing results in functional restoration (Chang & Compton, 2013).

9. Concluding Remarks

Pain is a common reason for people to seek medical care. In Michigan, state policy recognizes that patients have the right to expect appropriate pain and symptom management as a basic and essential element of their medical treatment. This means that a person seeking medical care for pain in Michigan can expect to receive a thorough initial examination and ongoing assessment of the effectiveness of the pain management program.

All pain technically occurs in the brain (as perception) and differentiation between types of pain is theoretical. There is no one type of pain that is worse than the others. Although it may be difficult or even impossible to determine the exact cause of a person's pain, certain pain conditions are common. Low back disorders, headaches, post-surgical pain, cancer, and arthritis are among the most common reasons someone seeks medical care for pain.

Assessment of pain is most effective when there is good communication between patients and their healthcare providers. A clinician's ability to share information, provide compassionate and empowering care, and be sensitive to patient needs is essential for optimal pain management.

Nondrug techniques, including complementary and alternative medicine and self-management of pain, pose minimal safety issues and can provide positive outcomes. Healthcare providers trained in the medical model can improve outcomes by utilizing a team approach involving other healthcare providers and complementary practitioners in the care of patients with pain, particularly chronic pain.

The evidence base supporting the use of analgesics to manage acute pain is strong and clear—analgesics, particularly opioids, are effective in controlling acute pain. Use of analgesics, particularly opioids, is currently the foundation of treatment for most types of ongoing or chronic pain. Safe use of analgesics is promoted by using more than one type of analgesic to treat an individual's pain. With opioid analgesics, in particular, pain management goals will require balancing side effects with pain control. While it is important to give enough medication to manage pain effectively, healthcare providers must remain aware of the potential for diversion of medication to recreational use or abuse.

In children, older adults, and those approaching the end of life, pain management is more complicated and requires a high degree of knowledge about side effects, drug–drug interactions, and dosing. Patients benefit from a team approach and from the use of complementary and alternative approaches to pain management.

Concern about the abuse and diversion of opioids has moved to the forefront in recent years. Although opioid analgesics unquestionably have a role in the treatment of acute and chronic pain, their increased availability has had many unintended consequences. Abuse has skyrocketed, as have deaths from prescription opioid overdoses. Healthcare providers, researchers, pharmaceutical companies, law enforcement personnel, and pain patients themselves are learning firsthand the importance of understanding the potential for abuse these drugs carry.

Healthcare providers in Michigan, as well as the Michigan Department of Licensing and Regulatory Affairs, and others involved with pain management are working to ensure that Michigan residents receive prompt and thorough pain assessment and treatment. Nevertheless, we still have a long way to go as we work to educate ourselves about the origins of pain, improve our understanding of pain medications and their effects, and learn to incorporate complementary and alternative options into our daily medical practice.

[Continue to next page for references]

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[Continue to next page to begin quiz]

Quiz: MI Pain and Its Management (323)

1. Pain is often undertreated in which of the following groups?

a. Young and middle-aged men, pregnant women, and cancer patients.

b. Nursing home residents, cancer patients, and Native Americans.

c. Patients with arthritis, professional athletes, and white men.

d. Patients newly diagnosed with HIV and middle-aged white women.

2. The Michigan Automated Prescription System (MAPS) is used to identify and prevent drug diversion at the prescriber, pharmacy, and patient levels. In the context of pain management, *diversion* is:

a. The use of drugs for other than medically necessary or legal purposes or for non-medical or not-medically authorized purposes.

b. An alternative to prosecution that seeks to divert certain offenders from traditional criminal justice processing into a program of supervision and services administered by the U.S. Probation Service.

c. The act of changing the direction of an object or using something for other than its intended purpose.

d. An activity that diverts the mind from tedious or serious concerns; a recreation or pastime that diverts attention from pain.

3. The Joint Commission's new 2018 pain management standards require that hospitals:

a. Treat pain as the "fifth vital sign."

b. Use only pharmacologic approaches.

c. Provide at least one-non-pharmacologic pain treatment modality.

d. Engage caregivers but not patients in treatment decisions.

4. A nociceptor is:

a. A collection of neurons in the nasal passageway responsible for sensing dangerous or noxious smells.

b. A type of motor nerve that is responsible for transmitting pain motor signals to the brain.

c. A collection of sensory nerves in the dorsal part of the spinal cord.

d. A sensory nerve ending that responds to painful or noxious stimuli.

5. Sensitization is:

a. Intense pain that lasts a relatively short time.

b. The increased responsiveness of nociceptive neurons to normal sensory input.

c. Pain from a stimulus that does not usually cause pain.

d. A type of intense, uncontrolled, peripheral pain.

6. Acute pain is:

a. Usually resistant to treatments used to treat chronic pain.

b. Easily distinguished from chronic pain.

c. Pain that comes on quickly but lasts a relatively short time.

d. Generally not effectively treated with self-management techniques.

7. Chronic pain:

a. Usually responds to treatments used in the treatment of acute pain.

b. Is caused by psychiatric disorders.

c. Rarely lasts more than 3 or 4 months.

d. Persists and is resistant to treatments used for acute pain.

8. Low back pain:

a. Is the fifth most common reason for all physician visits.

b. Is generally not provoked by certain postures.

c. Often begins with symptoms of nausea, vomiting, and sensitivity to light.

d. Can usually be reliably attributed to a specific disease or spinal deformity.

9. Postoperative pain management:

a. Involves only what happens just after surgery is completed.

b. Should be adjusted on the basis of adequacy of pain relief and presence of adverse events.

c. Is fully adequate for 90% of post surgery patients.

d. Should only be concerned with pharmacologic treatments.

10. Breakthrough pain in patients with cancer:

a. Is unrelated to etiology.

b. Is uncommon.

c. Is unrelated to the stage of the disease.

d. Is a temporary flare of pain that occurs even when pain is well-controlled.

11. When assessing pain: C

a. Avoid subjective measures.

b. Only physiologic measures should be used.

c. It should be done on a regular basis using a standard format.

d. Patients with chemical dependency cannot provide an accurate self-report.

12. Assessing pain in cognitively impaired adults presents certain challenges because:

a. They tend to voice fewer pain complaints.

b. They rarely show changes in behavior as a result of pain.

c. Their pain cannot be reliably assessed using a behavior pain scale.

d. They do not feel pain as acutely as younger adults.

13. When assessing pain in children, keep in mind that:

a. Behavioral measures of pain should be used with older children and adolescents.

b. A child's ability to describe pain improves with age and experience.

c. Physiologic measures of pain are rarely related to stress.

d. A child's ability to describe pain is fairly constant throughout the developmental stages.

14. The self-management model of chronic pain management:

a. Possesses a relatively weak basis for efficacy in chronic pain care.

b. Is often the strategy of last resort for chronic pain patients.

c. Is supported by strong evidence for efficacy.

d. Has never been very successful.

15. Integrative medicine:

a. Involves the services of a primary care physician, a nurse practitioner, and a surgical consultant.

b. Has little evidence to recommend it over the Pain Medicine Model.

c. Groups pain patients into similar treatment categories to keep costs down.

d. Addresses physical, emotional, mental, social, spiritual, and environmental influences that affect a person's health.

16. When managing pain at the end of life:

a. Under-treatment and inequitable access to pain treatment have been described among many cancer patients presenting with pain.

b. Consistent assessment of pain is not necessary because pain tends to stabilize at the end of life.

c. Involving the patient and family in establishing goals for palliative pain management can lead to overmedication.

d. Opioid therapy should be avoided due to fear of causing addiction or hastening death.

17. When treating an older adult who is in pain, keep in mind that:

a. Older adults don't feel pain as acutely as younger adults and children.

b. Older adults recover more rapidly than younger adults following an injury.

c. Decline in renal and hepatic functions affect the clearance of ingested medications.

d. Older adults should not be prescribed opioid medications for pain.

18. Opioid medications:

a. Do not have a narcotic effect if prescribed for medically needed pain management.

b. Have a narcotic effect, induce sedation, and are effective for management of many types of pain.

c. Are contraindicated for pain management in cancer patients because of excessive side effects.

d. Provide adequate pain control in all patients with few unwanted side effects.

19. Acetaminophen has good fever-reducing and analgesic properties but must be used with caution due to:

a. Serious risk of acetaminophen-related liver damage.

b. Its ability to irritate the gastrointestinal tract.

c. Serious and common risk of skin reactions, even in small amounts.

d. It increase the risk of stroke because such large amounts are required to reduce pain.

20. Nonsteroidal anti-inflammatory drugs (NSAIDs):

a. Work by increasing COX enzymes and production of prostaglandins.

b. Protect the stomach lining from the acid that helps to digest food.

c. Can decrease the risk of heart attacks and stroke to varying degrees.

d. Are medications with anti-inflammatory, analgesic, and antipyretic properties.

21. Tolerance to a medication is a state of adaptation:

a. In which a drug is well-tolerated, meaning the correct dose has been found to achieve the desired effect.

b. In which a drug becomes less effective over time, which means a larger dose is needed to achieve the same effect.

c. Characterized by symptoms of withdrawal when a medication is abruptly stopped, the dose is rapidly reduced, or an antagonist is administered.

d. Characterized by psychological dependence that manifests as drug abuse.

22. Addiction:

a. Does not occur when pain medications are prescribed by a medical professional.

b. Is easy for clinicians to recognize, especially in patients seeking treatment for chronic pain.

c. Is generally not affected by the biologic makeup or social environment of the individual.

d. Is a chronic, relapsing disease characterized by compulsive drug seeking and use despite the known, harmful consequences.

[Continue to next page for answer sheet]

Answer Sheet: Michigan: Pain and Its Management

Name (Print)_____

Date_____

Passing score is 80%

1. _____	12. _____
2. _____	13. _____
3. _____	14. _____
4. _____	15. _____
5. _____	16. _____
6. _____	17. _____
7. _____	18. _____
8. _____	19. _____
9. _____	20. _____
10. _____	21. _____
11. _____	22. _____

[Continue to next page to complete course evaluation]

Course Evaluation: MI Pain (323)

8 Define tolerance, dependence, and addiction, and their place in an understanding of the opioid abuse crisis in the United States.

Please use this scale for your course evaluation. Items with asterisks * are required.

1 = Strongly agree2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly disagree

*Upon completion of the course, I was able to:

1. Describe the prevalence of pain in the United States. 1 2 3 4 5

2. Outline current Michigan State policies and programs related to pain management. 1 2 3 4 5

3. State three differences between acute and chronic pain. 1 2 3 4 5

4. List the five most common sources of pain. 1 2 3 4 5

5. Explain the kinds and use of pain assessment tools. 1 2 3 4 5

6. Compare the Self-Management and Pain Medicine models of pain management, highlighting three main differences between them. 1 2 3 4 5

7. Identify the three components of analgesic pain management. 1 2 3 4 5

8. Define tolerance, dependence, and addiction, and their place in an understanding of the opioid abuse crisis in the United States. 1 2 3 4 5

*The author(s) are knowledgeable about the subject matter. 1 2 3 4 5

*The author(s) cited evidence that supported the material presented. 1 2 3 4 5

*Did this course contain discriminatory or prejudicial language? Yes No

*Was this course free of commercial bias and product promotion? Yes No

*As a result of what you have learned, will make any changes in your practice? Yes No

If you answered Yes above, what changes do you intend to make? If you answered No, please explain why.

*Do you intend to return to ATrain for your ongoing CE needs?

_____Yes, within the next 30 days. _____Yes, during my next renewal cycle.

_____Maybe, not sure. _____No, I only needed this one course.

*Would you recommend ATrain Education to a friend, co-worker, or colleague?

_____Yes, definitely. _____Possibly. _____No, not at this time.

*What is your overall satisfaction with this learning activity? 1 2 3 4 5

*Navigating the ATrain Education website was:

_____Easy. _____Somewhat easy. _____Not at all easy.

*How long did it take you to complete this course, posttest, and course evaluation?

_____60 minutes (or more) per contact hour _____59 minutes per contact hour

_____40-49 minutes per contact hour _____30-39 minutes per contact hour

_____Less than 30 minutes per contact hour

I heard about ATrain Education from:

_____Government or Department of Health website. _____State board or professional association.

_____Searching the Internet. _____A friend.

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_____Other _____

Please let us know your age group to help us meet your professional needs

_____18 to 30 _____31 to 45 _____46+

I completed this course on:

_____My own or a friend's computer. _____A computer at work.

_____A library computer. _____A tablet.

_____A cellphone. _____A paper copy of the course.

Please enter your comments or suggestions here:

[Continue to next page for registration and payment]

Registration and Payment: MI Pain and Its Management

Please answer all of the following questions (* required).

*Name: _____

*Email: _____

*Address: _____

*City and State: _____

*Zip: _____

*Country: _____

*Phone: _____

*Professional Credentials/Designations:

_____

*License Number and State: _____

_____

Payment Options

You may pay by credit card, check, or money order.

Fill out this section only if you are paying by credit card.

3 contact hours: $29

Credit card information

*Name: _____

Address (if different from above):

*City and State: _____

*Zip: _____

*Card type: Visa Master Card American Express Discover

*Card number: _____

*CVS#: _____ *Expiration date: _____