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Course Introduction

Authors:

Tracey Long, RN, PhD, APRN
Sara E. Wilson, BA

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Course Summary

If you are a healthcare professional, you have a role in our nation's opioid epidemic. From those who prescribe to those who administer opioids, everyone plays a part in helping or hurting those seeking opioids for pain relief. This course discusses the causes, definitions of use and abuse, pharmacodynamics, and prevention and treatment strategies for this serious issue in healthcare.

The following course information applies to occupational therapy professionals:

- Target Audience: Occupational Therapists, OTAs
- Instructional Level: Intermediate
- Content Focus: Category 1—Domain of OT, Client Factors
Category 2—Occupational Therapy Process, Outcomes

Criteria for Successful Completion

A score of 80% or higher on the post test, a completed evaluation form, and payment where required. No partial credit will be awarded.

Accreditation

To find specific accreditations or approvals, [click here](#).

Course Objectives

When you finish this course you will be able to:

1. Name 3 of the five points stated by the government in announcing a national emergency about opioids.
2. Identify at least 2 of the causes of the opioid crisis.
3. List 6 of the withdrawal symptoms of opioid overdose.
4. Name the 3 opioid receptors in the human brain.
5. Describe 3 opioid addiction screening tools.
6. Identify and discuss the 1 most used medication for reversal of opioid overdose.

1. Opioid Epidemic, National Emergency

The United States is experiencing an opioid epidemic. *The New York Times* reported that opioids are now the leading cause of death of Americans under the age of 50 (Katz, 2017). The 2018 National Survey on Drug Use and Health (NSDUH) indicates approximately 9.9 million people aged 12 or older misused prescription pain relievers in the past year (SAMSHA, 2019).

Opioids include codeine, fentanyl, hydrocodone, meperidine, hydromorphone, methadone, morphine, oxycodone, and heroin. Drugs of the opioids class are powerful analgesics and are used for pain management. Because they are powerful, and powerfully addicting, millions of people who use them have become physically and psychologically dependent or addicted to them. From 2000 to 2015, more than half a million people in the United States alone died from opioid drug overdoses.

Opioids are categorized as schedule 1 or 2 drugs by the Drug Enforcement Agency (DEA). A schedule 2 drug such as morphine means that, although it has been approved for medical treatment as an analgesic, it has high potential for strong psychological and physiologic dependence. It has been used for over one hundred years as an analgesic. Heroin is made by taking morphine, which is from the opium plant, and adding a chemical reagent that makes it more potent and potentially dangerous. Heroin is a schedule 1 drug and is not approved for any medical use because it is highly addictive.

The Government Takes Notice

In the late 1990s, pharmaceutical companies reassured the medical community that patients would not become addicted to opioid pain relievers. Healthcare providers began to prescribe them at greater rates in response to a perceived epidemic of unrelieved chronic pain. The increase of prescription opioids led to widespread misuse of both prescription and non-prescription opioids, which are in fact highly addictive despite drug manufacturers' claims. Since the 1990s, prescription opioids have exacted an increasingly severe toll: **Unintentional overdose deaths have quadrupled since 1999.**

The government response to the "opioid crisis," as it was called, has been ramping up since about 2010, as overdose death rates increased. In 2017, U.S. Department of Health & Human Services (HHS) declared a public health emergency and announced a *5-Point Strategy To Combat the Opioid Crisis*.

1. Improve access to prevention, treatment, and recovery support services.
2. Target the availability and distribution of overdose-reversing drugs.
3. Strengthen public health data reporting and collection.
4. Support cutting-edge research on addiction and pain.
5. Advance the practice of pain management. (HHS, 2017)

The federal government has taken steps to inform more judicious opioid prescribing through the development of the CDC's *Guideline for Prescribing Opioids for Chronic Pain* (CDC, n.d.). Current data show that the rates of prescribing are decreasing. Between 2006 and 2017, the annual prescribing rate per 100 persons decreased from 72.4 to 58.5 for all opioids, which is an overall 19% reduction (CDC, 2019b). The declines in opioid prescribing rates since 2012 and high-dose prescribing rates since 2008 suggest that healthcare providers have become more cautious in their opioid prescribing practices. Even so, data from 2018 shows the crisis is far from over:

- More than 191 million opioid prescriptions were dispensed to American patients in 2017.
- Opioid prescription rates vary widely across states. Healthcare providers in the highest prescribing state, Alabama, wrote almost three times as many of these prescriptions per person as those in the lowest prescribing state, Hawaii.
- Studies suggest that regional variation in use of prescription opioids cannot be explained by the underlying health status of the population. (CDC, 2019b)

Opioids were involved in 47,600 overdose deaths in 2017 (67.8% of all drug overdose deaths). The opioid overdose epidemic continues to evolve and worsen because of the continuing increase in deaths involving synthetic opioids. Previously, the most common drugs involved in prescription opioid deaths were methadone, oxycodone, and hydrocodone (CDC, 2019b); however, in recent years the drugs involved in overdose deaths in the United States have changed. The rate of drug overdose deaths involving **synthetic opioids** other than methadone (drugs such as fentanyl, fentanyl

analogs, and tramadol) doubled in a single year from 3.1 per 100,000 in 2015 to 6.2 in 2016, and was 9.0 deaths per 100,000 in 2017. Overdose deaths involving heroin increased from 4.1 per 100,000 in 2015 to 4.9 in 2016; it held at 4.9 per 100,000 in 2017. Overdose deaths involving natural and semi-synthetic opioids (morphine, codeine, hydrocodone, and oxycodone) increased from 3.9 per 100,000 in 2015 to 4.4 in 2016; the rate in 2017 was also 4.4 (Hedegaard et al., 2018; Hedegaard et al. 2017).

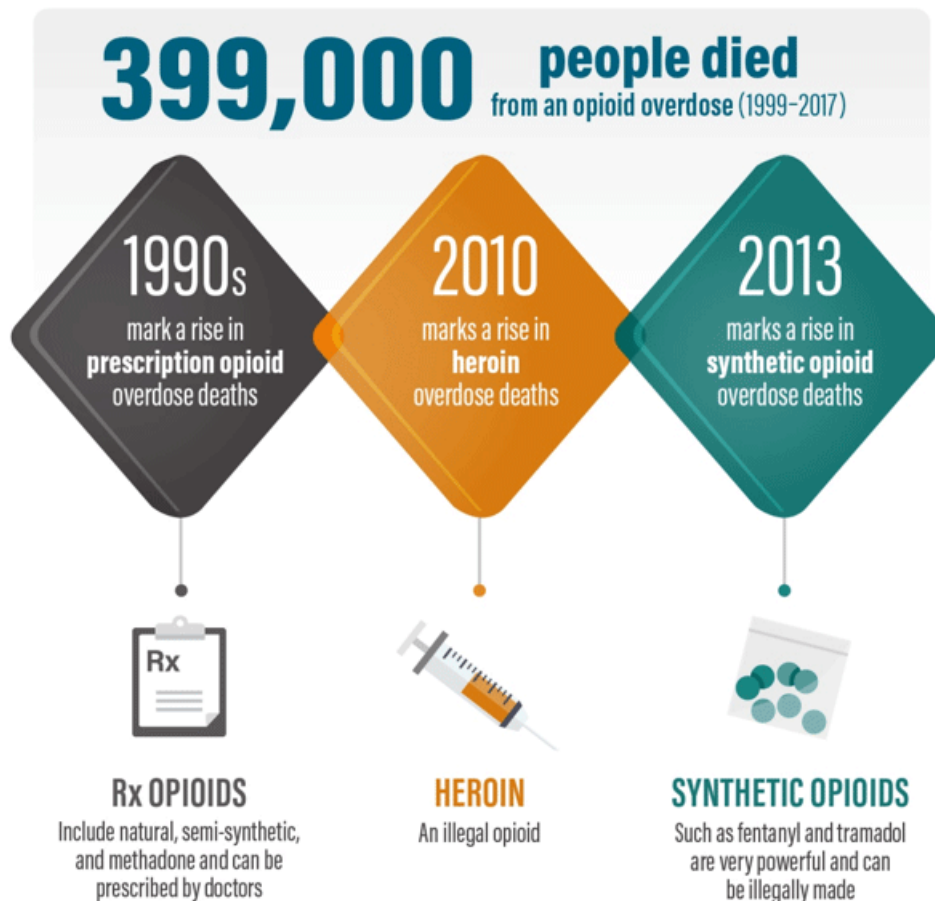
Three Waves of Overdose Deaths

Almost 400,000 people died from an overdose involving an opioid, including prescription and illicit opioids, between 1999 and 2017. The CDC considers the opioid crisis in the United States to have three waves:

1. The first wave began with increased prescribing of opioids in the 1990s, with overdose deaths involving prescription opioids (natural and semi-synthetic opioids and methadone).
2. The second wave began in 2010, with rapid increases in overdose deaths involving heroin.
3. The third wave began in 2013, with significant increases in overdose deaths involving synthetic opioids (particularly those involving illicitly manufactured fentanyl, which can be found in combination with heroin, counterfeit pills, and cocaine).

RISE IN OPIOID OVERDOSE DEATHS IN AMERICA

A Multi-Layered Problem in Three Distinct Waves



Learn more about the evolving opioid overdose crisis: www.cdc.gov/drugoverdose

Source: CDC, 2019a.

Response in Society

Thousands of consolidated lawsuits have been filed against nearly two dozen big pharma companies, arguing that fault of opioid addiction and overdose deaths lies with virulent advertising campaigns. The campaign against America's opioid

epidemic earned a victory in August 2019 when an Oklahoma judge held Johnson & Johnson responsible for its role in oversupplying addictive drugs. Judge Thad Balkman found that

the company's 'false, misleading, and dangerous marketing campaigns have caused exponentially increasing rates of addiction, overdose deaths.'

Balkman also found that Johnson & Johnson was part of a wider collaboration by pharmaceutical makers to change medical policy by "creating the illusion of an epidemic of untreated pain to which opioids were the solution" (McGreal, 2019a).

Patients as Targets

The State of Pennsylvania filed a lawsuit in May 2019 against Purdue Pharma, the company that made billions of dollars with OxyContin. The suit states "Even when Purdue knew people were addicted and dying, Purdue treated patients and their doctors as 'targets' to sell more drugs." Pennsylvania is among the states hardest hit by the opioid epidemic. Roughly 5,390 Pennsylvanians died from drug overdoses in 2017—more than any other state. Most of those deaths were from opioids. The suit continues, "Tragically, each part of Purdue's campaign of deception earned the company more money, and caused more addiction and death." Pennsylvania's Attorney General Josh Shapiro claims that the Purdue supervisors encouraged sales staff to focus on the elderly and veterans, going so far as to establish a website called exitwoundsforveterans.org, which "deceptively assured veterans that Purdue's opioids are not addictive" (Winter & Schapiro, 2019).

A lawsuit brought by the *Washington Post* and owners of *Gazette-Mail* recently resulted in the removal of a protective order to keep from the public the raw data of the Automation of Reports and Consolidated Orders System (ARCOS) database. Some drug companies and the Drug Enforcement Agency (DEA) fought to keep the information secret, arguing that it contains proprietary details about their business practices and sensitive information used by law enforcement. Now the public can see the astonishing scale of the prescription opioid deluge. The drug industry shipped 76 billion oxycodone and hydrocodone pills over a 7-year period (2006 to 2012) (Achenbach, 2019; Mann, 2019).

5.7 million pills to a town of 300 people

In July 2019, just days after the ARCOS database federal prosecutors charged a former president of a major pharmaceutical distributor (Anthony Rattini, former head of Miami-Luken) with deluging more than 200 pharmacies in West Virginia, Ohio, Indiana, and Tennessee with millions of opioid pills and ignoring mounting evidence that they were causing addiction and overdose deaths, and that the drugs were not being dispensed with legitimate prescriptions. Miami-Luken* acknowledged delivering 5.7 million opioid pills to Kermit, West Virginia (population 380 people)—the equivalent of 5,264 pill for every resident including children (McGreal, 2019b).

Purdue Pharma filed for bankruptcy in September 2019 after reaching a tentative settlement with state and local governments that were suing it over the toll of opioids. The deal, which could be up to \$12 billion over time (AP and Strickler, 2019). Purdue Pharma is defending itself in lawsuits from 2,600 governments and other entities.

Bob, a 45-year-old construction worker was being treated in an acute care hospital for a broken femur repair and a low-back, work-related injury. The nurses offered narcotic analgesics around the clock, as ordered, to keep Bob comfortable. (Rather than offer any other comfort measures, it was just easier to administer the narcotic that kept him from using the call light repeatedly.)

After he was discharged, Bob followed up with his primary care physician, who initially prescribed oxycodone and muscle relaxers in a limited supply and without refills, per standard practice. Within one month, Bob returned complaining of constant pain, and he was given a new prescription for oxycodone. The monthly visits became routine and without additional assessments, offering alternative modalities or a narcotic use contract, the prescriptions continued to be written and filled.

Eventually, the medications offered no further pain relief and Bob began supplementing with legal marijuana to provide relief, both of the initial back pain and of the progressive physical craving for the opioid. He visited several other physicians to increase his supply and none of the providers were aware of his multiple visits and duplicated prescriptions.

Bob eventually advanced to street heroin and ultimately overdosed on the combination of opioids that took his life.

What could have been done to avoid this needless loss of life?

What is the role of healthcare professionals in the prescribing and monitoring of opioid drugs?

What is the nurse's role in the opioid epidemic?

What prevention and treatment strategies are available?

Not every opioid-related death is a stereotypical drug addict who is homeless and helpless. Opioid users include persons of any age, gender, religion, or culture who may have been prescribed opioids for pain control of injuries not their own fault. Often the desire for acute or chronic pain relief evolves to the need for stronger pain control and drug-seeking behaviors driven by the basic desire for pain relief.

Unfortunately, opioid drug users also include those looking for entertainment through narcotic drug use and those who gradually become addicted. For example, compare these two users: one, a teen looking for peer acceptance and entertainment, and the other an educated healthcare professional seeking pain relief; both suffer serious consequences from misuse of the powerful class of drugs known as opioids:

- A 15-year-old female overdosed at a high school party after being given street heroin laced with contaminants.
- A 45-year-old ER physician was caught writing her own prescriptions for oxycodone after suffering from chronic knee pain. Her license was suspended and she was then forced into rehabilitation under the terms of the medical board.

Healthcare professionals who are a part of prescribing or administering opioids need to be aware of the potential for abuse and misuse. Not only do they need to be well informed about the appropriate use and cautions for opioid use but they also need to be able to recognize its effectiveness, side effects, and overdose symptoms, and to recognize abuse in patients as well as their colleagues. Healthcare professionals are actually at greater risk than the general population for opioid abuse because of their access to the drugs.

2. What Precipitated the Opioid Crisis?

So how did we get to this point of millions of Americans using and abusing opioids? The documented use of opioids began as early as the 3400 B.C. in Mesopotamia, where they called it the “joy plant.” Opium was used for every medical malady including diarrhea, cholera, rheumatism, fatigue, and even diabetes by early Egyptians. Opium was regularly traded by the Turks and Arabs in the sixth century.

Opioid use became much more common in the early 1700s, when the British refined production from the Asian poppy plant that was grown during the British Crown Rule of India and sold in China. What became helpful as analgesia quickly became popular for treating every possible malady, and was even used as entertainment according to historical records of opium parties (Britannica, 2017).

Opium Poppy Plant (*Papaver Somniferum*)



Source: Wikimedia Commons.

British ships delivered a thousand chests of opium into China in the 1760s, gradually increasing it to 4,000 chests in 1800—to eventually 40,000 chests in 1838. Opium was immensely popular in China and the desire for porcelain, silk, and tea was equally in demand in the West, so the trading continued. Alarmed by its powerful addicting properties among the Chinese citizens, the Chinese emperor Yongzheng (1722–1735) eventually prohibited the sale and smoking of opium, which led to opium wars with the Westerners (Britannica, 2017).

Opium trading eventually became regulated and it slowed during the Communist reign in twentieth-century China. Unfortunately, opium trading continued with new players, notably tropical growers and illegal importers from Central and South America to the United States. In the late 1800s, Bayer manufactured and sold heroin, and its misuse was rampant until regulations and taxes were designed to thwart its use. Then, after WWII and Vietnam, another wave of use and abuse crossed America with the resultant reflex to further regulate and tax its use (Britannica, 2017). The so-called war on drugs has continued.

Pain as the Fifth Vital Sign

Concurrent with the increasing demand for opioids here in the United States was the medical profession's increased interest in addressing patients' pain. Pain was added as the fifth vital sign in 1996 and a movement to minimize all pain

increased prescriptions for opioids.

Campaigns by pharmaceutical companies boasting the effectiveness of their drugs without side effects added to the growth of prescriptions for opiates. These companies even created organizations with persuasive lobbyists to decrease barriers and regulations on opiate use. In 2007 the maker of Oxycontin (Purdue Pharma) was forced to pay over \$6 million in fines for misleading claims about opioid safety. More recent lawsuits against drug companies have resulted in additional reparations payments in the billions of dollars.

Another cause for the increase in the opioid epidemic is the ease of creating the drugs chemically, including **semi-synthetic and fully synthetic drugs** created in a laboratory by pharmaceutical companies. Creating heroin from morphine can be done in a home laboratory, thus contributing to the availability of street drugs. The demand for heroin by Americans continues to support the supply coming illegally from Central and South America into the United States.

Balancing Pain Management

Balance is the goal in treating patients' pain and preventing drug abuse and diversion. On January 1, 2018, the Joint Commission implemented a new and revised pain assessment and management standards. The new standards, which revise the original standards established in 2001, state that hospitals must:

- Establish a clinical leadership team.
- Actively 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. (Joint Commission, 2018)

National Center for Complimentary and Integrative Health (NCCIH) is part of the National Institutes of Health Pain Consortium, which coordinates pain research across NIH. NCCIH-supported studies are helping to build an evidence base on the effectiveness and safety of complementary modalities for treating chronic pain. The scientific evidence suggests that some complementary health approaches may help people manage chronic pain, such as mindfulness-based interventions, hypnosis, and cannabinoids (NCCIH, 2018).

People do still have pain

Some doctors express frustration at new state laws on prescribing opioids. Although they understand the intent of the laws is to reduce misuse of the powerful prescription opioids, they say that the regulations have caused administrative obstacles and a climate of fear for doctors and patients. Doctors claim that some health insurers are using the laws as a reason to deny or delay prescriptions even for patients with cancer and other terminal illnesses. "It's not like people don't have pain anymore. They do. There are patients who need something. We as doctors are not just responsible for managing opioid prescriptions, but to manage patient care and pain," says Betty Chu, president of the Michigan State Medical Society (Greene, 2018).

Insurers further compound the problem of promoting responsible treatment of patients with pain. Many insurers won't pay for less-addictive ways of controlling patients' pain. Such treatments include physical therapy, acupuncture, nerve blocks, massage therapy, psychological counseling, and cognitive therapy. "The epidemic isn't just about how easy opioids have been to come by. It's also about how hard it is to access alternatives," says Caleb Alexander, co-director of Johns Hopkins University's Center for Drug Safety and Effectiveness. "No one ever died of an overdose of physical therapy" (Demko, 2019). There is great variation in what insurers will cover.

Test Your Knowledge

Which of the following is a cause of the opioid epidemic?

1. Artificial limitations to prescriptions
2. Emphasis on treating pain aggressively
3. Lack of self-discipline
4. Belief that pain should be treated at all cost

Answer: 2

Apply Your Knowledge

Did You Know . . .

Opium comes from the natural Asian poppy plant and is 10 times as potent as cocaine. Heroin (diamorphine) is 3 to 10 times as potent as opium or morphine. **Heroin** is illegally combined with a chemical reagent called acetic anhydride and often with other often-lethal contaminants to act as stabilizers.

Online Resource

American Epidemic: The Nation's Struggle with Opioid Addiction [34:26]

<https://www.youtube.com/watch?v=nNj89ohoYQ0>

3. The Painful Numbers of Opioid Abuse

The Centers for Disease Control and Prevention (CDC) has declared the overuse and abuse of opioids an epidemic (Hedegaard et al., 2018; Rudd et al., 2016). On average, 130 Americans die every day from an opioid overdose (CDC, 2019a). The United States consumes 99% of all the world's hydrocodone, 80% of the world's oxycodone, and 65% of the world's hydromorphone prescription opiate supply. Twenty-five percent of all workers' compensation costs relate to opioids, and \$56 billion per year is spent on opioid abuse costs.

Trends of opioid overdose-related deaths have increased 5.5% annually, from 6 deaths per 100,000 people in the United States in 1999 to 16.3 in 2015. Rates of drug overdose deaths continued to increase. In 2017 the age-adjusted rate of drug overdose deaths (21.7 per 100,000) was 3.6 times the rate in 1999 (6.1 per 100,000).

The rate of drug overdose deaths involving synthetic opioids other than methadone, which include drugs such as fentanyl, fentanyl analogs, and tramadol, increased from 0.3 per 100,000 in 1999 to 1.0 in 2013, 1.8 in 2014, 3.1 in 2015, 6.2 in 2016, and was 9.0 in 2017. That is an increase of 45% from 2016 to 2017. The rate increased on average by 8% per year from 1999 through 2013 and by 71% per year from 2013 through 2017 (Hedegaard et al., 2018).

In 2017 the number of overdose deaths involving opioids (including prescription opioids and illegal opioids like heroin and illicitly manufactured fentanyl) was 6 times higher than in 1999 (CDC, 2019a). Clearly, America has an opioid epidemic that is claiming lives and lifestyles. Additional statistics, not as easily identified but very real, are the lost productive work hours and loss of meaningful lives, families, and marriages due to opioid abuse (ASAM, 2016).

Opioid drugs include:

Natural opioids

- Morphine
- Codeine (only available in generic form)
- Thebaine

Semi-synthetic

- Hydrocodone (Hysingla ER, Zohydro ER)
- Hydrocodone/acetaminophen (Lorcet, Lortab, Norco, Vicodin)
- Hydromorphone (Dilaudid, Exalgo)
- Oxycodone (OxyContin)
- Heroin

Fully synthetic/manmade

- Fentanyl (Actiq, Duragesic, Fentora)
- Meperidine (Demerol)
- Methadone (Dolophine, Methadose)
- Tramadol
- Levorphanol
- Pethidine
- Dextropropoxyphene

Whereas natural opiates come from the opium plant and the active ingredient is morphine, semi-synthetic opioids are those created in laboratories and include hydromorphone, hydrocodone, and oxycodone as well as the illegal drug heroin. All of these are called **narcotics** and are schedule II drugs, except for heroin, which is an illegal schedule I drug and hasn't been approved for any medical use.

Substance abuse is global in scale and claims millions of lives worldwide. According to the *World Drug Report 2019*, published by United Nations Office on Drugs and Crime (UNODC) in 2017, some 53.4 million people worldwide had used opioids in the previous year, 56% higher than the estimate for 2016. Among those people, 29.2 million had used opiates such as heroin and opium, 50% higher than the 2016 estimate of 19.4 million.

North America continues to be the subregion with the highest annual prevalence of opioid use, with 4.0% of the population using opioids. North America has seen a rising number of overdose deaths resulting from the use of opioids. More than 47,000 opioid overdose deaths were recorded in the United States in 2017, an increase of 13% from the previous year. Those deaths were largely attributed to synthetic opioids such as fentanyl and its analogues, which were involved in nearly 50% more deaths than in 2016. In Canada, nearly 4,000 opioid-related deaths were reported in 2017, a 33% increase from the 3,000 overdose deaths reported in 2016. Fentanyl or fentanyl analogues were involved in 69% of those deaths in 2017, compared with 50% in 2016 (UNODC, 2019)

In 2017 the states with the highest rates of death due to drug overdose were West Virginia (57.8 per 100,000), Ohio (46.3 per 100,000), Pennsylvania (44.3 per 100,000), the District of Columbia (44.0 per 100,000), and Kentucky (37.2 per 100,000).

States with statistically significant increases in drug overdose death rates from 2016 to 2017 included Alabama, Arizona, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maine, Maryland, Michigan, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, West Virginia, and Wisconsin (CDC, 2019a).

Test Your Knowledge

Which of the following is NOT an opioid?

1. Morphine
2. Hydrocodone
3. Cocaine
4. Fentanyl

Answer: 3

Apply Your Knowledge

You are a medical/surgical nurse and a patient who has orders for hydrocodone is complaining of pain rated at 5 out of 10. What nonpharmacologic options do you have to help with pain reduction? How often do you offer those to your patients? Is your healthcare facility supportive of your efforts to offer **non**pharmacologic options for pain control?

Online Resource

Terrifying Facts About the Current Opioid Addiction Epidemic [17:38]

<https://www.youtube.com/watch?v=Owj9AKn4bg>

Defining Use and Abuse

Clarifying the difference between dependence and addiction is important to better understanding of 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/substance use disorder**, 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.

The DSM-5 defines **opioid use disorder (OUD)**, as a disorder characterized by loss of control of opioid use, risky opioid use, impaired social functioning, tolerance, and withdrawal. Tolerance and withdrawal do not count toward the diagnosis in people experiencing these symptoms when using opioids under appropriate medical supervision. OUD covers a range

of severity and replaces what DSM-IV termed “opioid abuse” and “opioid dependence.”

An OUD diagnosis is applicable to a person who uses opioids and experiences at least 2 of the 11 symptoms in a 12-month period (SAMHSA, 2018). 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 (having OUD) 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, irritability
- Insomnia
- Dilated pupils
- Yawning
- Diarrhea, abdominal cramps
- Fever and chills
- Muscle spasms
- Tremors and joint pain
- Nausea and vomiting
- Elevated heart rate and blood pressure (ASAM, 2015)

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 (NCSBN, 2014, 2011).

Test Your Knowledge

What is the definition of dependence?

1. A drug user who wants the drug for a party.
2. The drug user who depends on his dealer for a steady supply.
3. A person who uses the drug regularly and now physically depends on an increase of the drug.
4. The person who takes opioids occasionally for entertainment and to feel pleasure.

Answer: 3

Apply Your Knowledge

Q: What are the first symptoms you see when a patient has had too much oxycodone?

A: Change in level of consciousness and pinpoint pupils.

4. Pharmacokinetics and -dynamics of Opioids

Analgesics are a class of drugs that help relieve the body from the sensation of pain by blocking chemicals in the pain sensor neurons of the brain. Other neurons throughout the body send messages to the brain on a multitude of topics (eg, temperature, pressure, pH).

Nociceptors, nerve receptors for pain, send messages of noxious stimuli to the brain that something is potentially hurting the body. Nociceptors send messages about such things as pressure, sharp objects, noxious smells, bad tastes, and pain, and the brain interprets those for immediate response to protect the body.

Opioid Receptors

There are several neurotransmitters involved in pain signals, the main ones being *glutamine* and *substance P*. When noxious stimuli trigger the primary neuron through the skin or muscle, the message is relayed by a secondary neuron to the spinal cord's dorsal root ganglion and toward the brain for interpretation. These chemical neurotransmitters are relayed to the thalamus in the brain and then onto the limbic system for an emotional response. Ideally, the message to the limbic area of the brain promotes learning so as to avoid the cause of the noxious substance in the future.

Opioids inhibit pain signals at multiple areas in this pathway. They affect the brain, the spinal cord, and even the peripheral nervous system. Opioids work on both directions of messages in the nervous system, including the ascending pathways in the spinal cord, which they inhibit, and the descending pathways, by which they block inflammatory responses to noxious stimuli.

Our bodies have three receptors called mu, kappa, and delta, that can be activated by opioid agonists like morphine, hydrocodone, or heroin. When mu receptors are activated, dopamine, the natural brain chemical for pleasure, is also increased. Pleasurable feelings are experienced as inherently worth repeating, which drives the user to repeat the drug use.

Opioid receptors are found on both the primary and secondary neurons, and when an opioid binds to these receptors no other pain signals are sent up to the brain—making opioids very effective against pain. In the brain, opioids cause sedation and decrease the emotional response to pain. Heroin, like morphine, passes through the liver and then is released back into the blood, where it crosses the blood–brain barriers. Heroin is converted to morphine where it connects with mu receptors, so fast that heroin is three times more potent than morphine.

Short-term sensations of opioids

- Warmth sensation through skin and body
- A feeling of heaviness in arms and legs
- Pain relief
- Dry mouth
- Itchiness
- Possible dry mouth
- Drowsiness
- Slowed heart functioning
- Slowed breathing
- Relaxation
- Sense of well being

These opioid agonists come with additional noxious side effects. When a kappa receptor is stimulated, it can also produce hallucinations, anxiety, and restlessness. Delta and mu receptors can cause respiratory depression, because as the midbrain is stimulated it suppresses the body's ability to detect carbon dioxide levels in the body, which is the main stimulus for breathing.

Other negative side effects include constipation, sedation, nausea, dizziness, urinary retention and tolerance. **Tolerance** is the requirement of the body for increased amounts of the drug to reach its desired effects; this is why opioids can become addictive as the person continues taking more and more of the drug to achieve the desired pain relieving and

sedating effects (Dunphy & Winland-Brown, 2016). The key ingredient in opium is morphine, which began to be produced formally by the pharmaceutical company Merck. It was also discovered that when administered by IV, morphine is 3 times more potent than administered by other methods such as smoking or snorting.

Long-term Side Effects of Opioid Use

Long-term use of opioids has been shown to cause deterioration of the brain's white matter and includes effects of insomnia, chronic constipation, sexual dysfunction, irregular menstrual cycles in women, and kidney disease, as well as physical damage resulting from administration techniques such as snorting, smoking, or IV drug use.

Although cocaine and morphine both have effects on the neurotransmitter dopamine, they work in different ways. Whereas the opioids increasing dopamine stimulation, cocaine blocks the reuptake of existing dopamine and makes it last longer, producing a longer state of pleasure. Both opioids and cocaine do, however, influence the brain's interpretation of pleasure—reinforcing the repeated drive to get the drug. In addition to short-term withdrawal symptoms,

Long-term opioid use causes

- Decreased ability in decision making
- Decreased ability for self-reflection and discipline
- Decreased ability to respond to stress effectively

Test Your Knowledge

How do opioids work?

1. They block pain at the site of the noxious signal.
2. Opioids block the neurotransmitter dopamine.
3. Opioids bind to receptors in the peripheral and CNS to block pain signals.
4. Opioids increase serotonin throughout the brain.

Answer: 3

Apply Your Knowledge

Q: What is the fastest acting opioid that is used in medicine for pain relief? How is it administered?

A: IV morphine and fentanyl

Online Resource

The Science of Opioids [8:42]

<https://www.youtube.com/watch?v=AqDo4LiKz-c>

5. Prevention and Screening Strategies

CVS pharmacies announced today that they will no longer fill prescriptions for opioids for more than one week without a repeat prescription from the physician. This will affect their nearly 100,000 Caremark members and they will counsel others as well.

NBC News TV, September 22, 2017

Prevention

Of course the best treatment is prevention, which means decreasing the availability or prescriptions for opioids in the first place. The Food and Drug Administration (FDA) has produced guidelines for effective pharmacologic use of opiates, which include the identification of persons at risk, assessing a patient's benefit vs. risk, and developing and using tools to decrease risks of opiate prescription, including contracts for pain management and standards of required 30-day physician visits before new prescriptions can be refilled.

Prevention strategies include:

- Patient education regarding use of opiates
- Pain contract signed by patient to agree to terms of drug use
- Prescription monitoring programs to detect multiple use of pharmacies and physicians for opiates
- Detection of inappropriate prescribing of opioids
- Photo identification to pick up opioid prescriptions
- Urine toxicology screening for employees
- Safe disposal of unused opioids
- Referrals to pain and addiction specialists
- Use of semi-synthetic opioid alternatives

Patient education regarding the use of opiates, and actually all prescription medications, is essential for them to understand the need for the drug, its side effects, and adverse effects. A **pain contract**, which outlines the parameters for the use of the drug, may be included with the patient education. Especially when used for chronic pain management, patients should be partners with the prescriber to outline when the drug will be used and for how long.

Photo ID for prescriptions?

Prescription monitoring programs include detection systems in pharmacies and the local district that identify patients who have filled a narcotic prescription. In many states, photo ID is already required for the purchase of cigarettes or alcohol and could become a beginning point to dissuade unauthorized and high-frequency prescription use. According to the National Alliance for Model State Drug Laws (NAMSDL, 2017), currently 85% of states require ID for narcotic prescription use. Some drugstores even run the name of a client picking up a narcotic prescription through a drug monitoring data system for alerts. The challenge is for busy pharmacists to take the time to use the monitoring system and for all of us to be patient as the process is completed.

Possible **red flags** that could lead to prescription denial:

- A pain medication not previously filled by the pharmacy
- A "new" doctor writing a prescription for the same pain medication
- A doctor writing a prescription who is not in a "reasonable geographic location" near the pharmacy
- A patient paying for a prescription in cash
- A patient seeking an early refill of a prescription
- A patient seeking an "excessive" number of pills
- A patient taking the same pain medication for more than 6 months

Another strategy includes receiving prior authorization before opiates can be filled. In 2007 the FDA passed an amendment to create a patient registry for opioids. In 2012 Blue Cross Blue Shield began to require prior authorization for more than a one-month supply of opioids in a two-month period. By this simple process alone, in the state of

Massachusetts the number of opioid prescriptions was decreased by more than 6,500,000 pills in one year (*Boston Globe*, 2012). In 2018, CVS Caremark introduced limits on opioid prescriptions based on guidelines that aligned with the CDC's *Guidelines for Prescribing Opioids for Chronic Pain*. Some insurance plans have discontinued coverage for certain addictive opioids in favor of drugs that have a lower risk of abuse; for example, Blue Shield Blue Cross no longer covers OxyContin in Alabama and Tennessee as of January 1, 2019 (Demko, 2019; AP, 2018).

To combat the prescription drug overdose epidemic, many states have enacted laws that set time or dosage limits on the prescribing or dispensing of controlled substances. One main category of prescription drug limit laws sets forth time limits (hours' or days' supply) to the supply of prescription drugs. These time-limit laws can be further classified by their applicability to certain drugs, certain populations or certain situations.

Some states set time limits for prescription drug refills. Another category of prescription drug limit laws regards the dosage of prescription drugs. Although state laws are commonly used to prevent injuries and their benefits have been demonstrated for a variety of injury types, there is little information on the effectiveness of state statutes and regulations designed to prevent prescription drug abuse and diversion (CDC, Public Health Law, 2015).

Safe disposal of opioids is a challenging issue because many people believe that flushing them down the toilet is appropriate, which it is **not**. Public education and awareness programs must also include safe medication disposal, such as mixing with used coffee grounds, dirt, or kitty litter and placing in a sealed container to dispose of in the garbage. Used opioid patches should be folded in half on the sticky sides and disposed of in a sealed container in the garbage.

The DEA has strict regulations for drug take-back programs, including National Prescription Drug Take Back Days. The Seventeenth National Take Back Day, April 27, 2019, collected 937,443 pounds (468.72 tons) of prescription drugs nationwide (DEA, 2019).

Screening Tools for Addiction

Several screening tools are available to help clinicians identify when a patient taking opioids may be experiencing dependence or addiction.

SBIRT

“Screening, Brief Intervention, and Referral to Treatment (SBIRT) is an evidence-based practice used to identify, reduce, and prevent problematic use, abuse, and dependence on alcohol and illicit drugs” (SAMHSA and HSRA, 2019). The SBIRT model was inspired by a recommendation from the Institute of Medicine to increase community-based screening for health risk behaviors, including substance use.

SBIRT is an early and brief intervention of 15 to 30 minutes and billable to Medicare/Medicaid. The screening and referral to treatment includes a patient encounter, history, physical examination, clinical diagnosis, and plan for care specific to the concern of substance abuse (other than for those patients already identified with severe substance abuse). The SBIRT screening tool can be as simple as asking several key questions of patients receiving narcotics and opioids at every doctor's office visit.

Opioid Risk Tool and Pain Medication Questionnaire

The **Opioid Risk Tool** and **Pain Medication Questionnaire (PMQ)** are other brief screening tools of questions to help identify a patient at increased risk for dependence and abuse. Currently no one tool has been identified to be better than any others, nor is any one tool sufficient to identify drug behaviors of chronic pain patients using opioids (Klimas et al., 2019).

Test Your Knowledge

What is the SBIRT screening tool?

1. A form completed to assess for risk for drug abuse.
2. A brief intervention billable to Medicare/Medicaid.
3. Used to admit a patient to a rehab facility for drug abuse.
4. The history and physical used to assess patients for drug abuse. Answer: 2

Apply Your Knowledge

In the case presented at the beginning of this course, what steps could have been done to help identify the patient as at risk for opioid addiction and to avoid the overdose?

Online Resource

The SBIRT Process (role model) [7:57] <https://www.youtube.com/watch?v=hqt2CuyiXc>

6. Acute Treatment for Overdose

Treatment for opioid abuse generally starts with treatment of withdrawal in the acute phase. Managing symptoms of overdose and preventing death are the first objectives. Securing an airway and supporting the patient during the tremors, seizures, hypertension, nausea, vomiting, and pain are often handled in an ED or medical/surgical setting.

Nalaxone

Naloxone (Narcan) can be used for reversal of opioid overdose and is available in IV, SQ, IM, and nasal routes. If a patient is unconscious, follow the ABCs of emergency response such as calling 911, checking for a pulse, securing an open airway, and providing rescue breaths. Give the first full dose of naloxone and continue rescue breaths. If the patient doesn't respond, give the second full dose of naloxone. Patients will often respond quickly and be confused and possibly combative. Monitor the patient after recovery with naloxone to prevent another dose of an opioid and follow up with further medical attention.

Most states have passed laws to widen the availability to naloxone for family, friends, and other potential bystanders of overdose. In April 2019 the FDA approved the first generic naloxone hydrochloride nasal spray that can stop or reverse the effects of an opioid overdose. Naloxone nasal spray delivers a measured dose when used as directed. This product can be used for adults or children and is easily administered by anyone, even those without medical training. The drug is sprayed into one nostril while the patient is lying on his or her back and can be repeated if necessary (FDA, 2019).

As the FDA stated in 2019:

The use of naloxone nasal spray in patients who are opioid-dependent may result in severe opioid withdrawal characterized by body aches, diarrhea, increased heart rate (tachycardia), fever, runny nose, sneezing, goose bumps (piloerection), sweating, yawning, nausea or vomiting, nervousness, restlessness or irritability, shivering or trembling, abdominal cramps, weakness, and increased blood pressure.

Antagonist Medications

Using pharmacologic blocking agents is helpful in stopping the opioid overdose. Antagonist medications block opioid receptors so that the desired effect is no longer active. Three opiate substitution medications are currently available in the United States—**methadone, levomethadyl acetate, and naltrexone**—but are only available in strictly regulated environments where medication is received under clinical observation and limited outpatient use (Dowell et al., 2016).

Methadone and buprenorphine are synthetic opioid agonists and act on the same mu receptors that opioids activate; therefore, they have been a popular treatment for addiction that is known as **opioid substitution therapy (OST)**. Methadone has a slow onset of action and long elimination half-life of about 24 hours. A longer-acting opioid receptor agonist is **buprenorphine**, a partial opioid agonist that can reduce cravings and symptoms of withdrawals.

Naltrexone works differently than methadone and buprenorphine in the treatment of opioid dependency. While methadone and buprenorphine reduce cravings, Naltrexon eliminates the desire to take opioids. If a person using naltrexone relapses and uses the abused drug, naltrexone blocks the euphoric and sedative effects of the abused drug and prevents feelings of euphoria.

These drugs can be taken less frequently and can help wean a patient from likely fatal opioids. Control trials show that they are more effective than a placebo and can help decrease fatalities from opioids.

In 2018 the FDA approved the first non-opioid medication, **lofexidine (Lucemyratm)**, for use in reducing symptoms associated with opioid withdrawal in adults, whether they have been using opioids appropriately or experience OUD. “The fear of experiencing withdrawal symptoms often prevents those suffering from opioid addiction from seeking help. And those who seek assistance may relapse due to continued withdrawal symptoms,” says FDA Commissioner Scott Gottlieb. “The FDA will continue to encourage the innovation and development of therapies to help those suffering from opioid addiction transition to lives of sobriety” (FDA, 2018).

People with OUD can benefit from taking **medication-assisted treatment (MAT)** for varying lengths of time, including

lifetime treatment. Treatment with OUD medication is linked to better outcomes and retention than treatment without medications. Further, studies show that medication as part of treatment of OUD is cost-effective.

Access to these drugs is still dependent upon physician-controlled prescribing or treatment programs (Schuckit, 2016). Research shows that many people in need of treatment for substance use disorder do not receive treatment.

- NSDUH data indicate that in 2018, an estimated 21.2 million people aged 12 or older needed substance use treatment in the past year. Stated another way, about 1 in 13 people aged 12 or older (7.8%) needed substance use treatment.
- In 2018 approximately 3.7 million people aged 12 or older received substance use treatment in the past year, or 1.4% of the population. (SAMSHA, 2019)

Getting into approved treatment programs, where these drugs can be given and monitored closely, in combination with behavioral therapy, is often difficult, expensive, and not approved by insurance companies. Strict control of opiate-substitution drugs is necessary because they do produce a euphoric sensation like the opiates and there is a concern for creating a new market of illicit use. These medications can be given in sublingual, oral, and even intranasal forms. These opioid antagonist drugs act as competition for the mu receptors and, ideally, block the effectiveness of other opiates.

Test Your Knowledge

What is the antidote for an opioid overdose?

1. Narcan
2. Flumazenil
3. Mucomyst
4. Atropine

Answer: 1

Apply Your Knowledge

What is your facility's process for treatment of an opioid overdose? Do you know how to use Narcan?

Online Resource

Using Nasal Naloxone to Reverse Opiate Overdose [8:02]

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

7. Treatment for Long-Term Recovery

One big challenge with opioid use is its effectiveness against pain, and pain is very real. Addiction is a chronic, treatable illness. Treating patients with opioid use disorder (OUD) requires continuing care rather than an episodic, acute care approach. Patients should have access to medical treatment, mental health services, addiction counseling, and other recovery support services. Treatment should be tailored to each patient's needs and preferences (ASAM, 2015). In fact, there is no single best approach that works for all patients. A comprehensive approach to treatment is part of addressing the problem of drug diversion. Research shows that many people in need of treatment for substance use disorder do not receive treatment.

Long-term treatment relies on pharmacologic therapy and behavioral therapy, known as medication-assisted treatment (MAT). The objective of treatment is to reduce the dependence and addiction on opioid drugs, prevent opioid overdose, and thus to decrease the opioid-related deaths and mortality. Clinical studies show behavioral modification isn't effective on its own because the body has physical dependence that must be addressed. Opioid abuse is not an ethical or moral addiction, but rather a physiologic response to the need for opioid receptor activation.

Physical withdrawal is painful and difficult, and those with opioid addiction will do anything to avoid it. With careful management, a person can successfully overcome the physical withdrawal; however, the psychological withdrawal is often more difficult and requires continual emotional support. Programs such as Alcoholics Anonymous can help guide the person through a series of steps towards independence from opioids, drugs, and pain.

Pain clinics can be effective

Pain clinics are a newly developed specialty that allows patients suffering from chronic pain to work with a pain specialist for more effective management using a variety of modalities. It is estimated that at least 100 million Americans live with chronic pain. Pain clinics can offer help by focusing on procedures that deal with specific pain (eg, neck, lower back pain). They can also approach pain in an interdisciplinary way involving psychologists, physical therapists, nutritionists, and occupational and vocational therapists, in addition to physicians and nurses. They can suggest other modalities such as acupuncture, biofeedback, cognitive behavioral therapy, water therapy, massage, and meditation as options for chronic pain in lieu of opioids. Both patient education and prescriber need to include these alternative treatment strategies.

Recognition of opioid use within healthcare professionals has been addressed by the National Council of State Boards of Nursing. A free educational webinar for understanding substance use disorder and help in identifying signs of opioid use is available to nurses and managers. The webinar also outlines a system for helping professionals into therapy and recovery. It can be accessed here.

Test Your Knowledge

Which of the following is NOT a strategy to help with chronic pain and opioid use?

1. Physical therapy
2. Massage therapy
3. Tapering opioids gradually over many months
4. Nutrition therapy

Answer: 3

Apply Your Knowledge

How can you be an advocate to improve pain control without the use of opioids?

Online Resource

National Practice Support Guidelines

<https://www.asam.org/docs/default-source/practice-support/guidelines-and-consensus-docs/asam-national-practice-guideline-supplement.pdf?sfvrsn=24>

8. Summary

Our nation's opioid epidemic is complicated and concerning. Thousands of lives are being lost needlessly due to opioid addiction and overdose. Education of prescribers and patients is desperately needed. Legislation can help to regulate opioids available on the market and how they may be used.

States must implement availability and training for the use of naloxone and opioid agonists for overdose and weaning. Healthcare professionals must learn to collaborate with pharmacists, nutritionists, and behaviorists who work with those who have chronic pain to offer more options for pain management. Schools and public officials such as law enforcement must be enabled to improve security that will dissuade drug sales.

These proposed strategies to fight our national opioid crisis are at various stages of development, and implementation and take time. The cost to implement programs, educate stakeholders, and evaluate any negative consequences to appropriate treatment plans for pain is considerable but necessary. Become and advocate for decisive government action to address this opioid epidemic.

In the meantime, small efforts can save lives. Your effort to learn more about the opioid epidemic is a beginning!

9. Resources and References

Resources

American Heart Association

eccguidelines.heart.org/wp-content/uploads/2015/10/2015-AHA-Guidelines-Highlights-English.pdf

American Pain Society

americanpainsociety.org/education/guidelines/overview

American Society of Addiction Medicine

www.asam.org/quality-practice/practice-resources/treatment

The ASAM Criteria; Treatment Criteria for Addictive, Substance-Related, and Co-Occurring Conditions, Third Edition.

Centers for Disease Control and Prevention (CDC)

<https://www.cdc.gov/mmwr/volumes/65/rr/rr6501e1.htm>
www.cdc.gov/drugoverdose/prescribing/guideline.html

Diagnostic and Statistical Manual of Mental Disorders (DSM-V)

Drug Enforcement Administration, Office of Diversion Control

www.deadiversion.usdoj.gov

Medication Assisted Treatment (MAT)

<http://www.samhsa.gov/medication-assisted-treatment>

National Institute on Drug Abuse (NIDA)

<https://www.drugabuse.gov/>

Ohio Physicians Health Program

www.ophp.org

National Institutes of Health (NIH)

<https://www.nih.gov/news-events/news-releases/hhs-leaders-call-expanded-use-medications-combat-opioid-overdose-epidemic>

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www.samhsa.gov/treatment/substance-use-disorders
www.samhsa.gov/medication-assisted-treatment

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Quiz: Opioid Epidemic Crisis Continues

- A passing score is 80% or above.
- You can take the test as many times as needed to pass.
- The system will remember your progress if you leave and return.

Question 1

1. Which one of the following is a cause of the opioid epidemic?

Choose one

- a. Artificial limitations to prescriptions.
- b. Emphasis on treating pain aggressively.
- c. Lack of self-discipline.
- d. Belief that pain should be treated at all cost.

Question 2

2. Which of the following drugs is not an opioid?

Choose one

- a. Morphine
- b. Hydrocodone
- c. Cocaine
- d. Fentanyl

Question 3

3. What is the definition of dependence?

Choose one

- a. A drug user who wants the drug for a party.
 - b. The drug user who depends on his dealer for a steady supply.
 - c. A person who uses the drug regularly and now physically depends on an increase of the drug.
 - d. The person who takes opioids occasionally for entertainment and to feel pleasure.
-

Question 4

4. How do opioids work?

Choose one

- a. They block pain at the site of the noxious signal.
 - b. Opioids block the neurotransmitter dopamine.
 - c. Opioids bind to receptors in the peripheral and CNS to block pain signals.
 - d. Opioids increase serotonin throughout the brain.
-

Question 5

5. What is the SBIRT screening tool?

Choose one

- a. A form completed to assess for risk for drug abuse.
 - b. A brief intervention billable to Medicare/Medicaid.
 - c. Used to admit a patient to a rehab facility for drug abuse.
 - d. The history and physical used to assess patients for drug abuse.
-

Question 6

6. What is the antidote for an opioid overdose?

Choose one

- a. Narcan
 - b. Flumazenil
-

c. Mucomyst

d. Atropine

Question 7

7. Which of the following is NOT a strategy to help with chronic pain and opioid use?

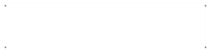
Choose one

a. Physical therapy

b. Massage therapy

c. Tapering opioids gradually over many months.

d. Nutrition therapy



Answer Sheet

Opioid Epidemic: The Crisis Continues

Name (Please print your name) _____

Date _____

Passing score is 80%

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Evaluation: Opioid Crisis Continues

Upon completion of the course, I was able to:

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Name 3 of the five points stated by the government in announcing a national emergency about opioids.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identify at least 2 of the causes of the opioid crisis.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
List 6 of the withdrawal symptoms of opioid overdose.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Name the 3 opioid receptors in the human brain.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Describe 3 opioid addiction screening tools.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identify and discuss the 1 most used medication for reversal of opioid overdose.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please rate the following statements:

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The author(s) are knowledgeable about the subject matter.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The author(s) cited evidence that supported the material presented.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please answer Yes or No to these statements:

	Yes	No
Did this course contain discriminatory or prejudicial language?	<input type="radio"/>	<input type="radio"/>
Was the course free of commercial bias and product promotion?	<input type="radio"/>	<input type="radio"/>
As a result of what you have learned, do you intend to make any changes in your practice?	<input type="radio"/>	<input type="radio"/>

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

Please respond here

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.

Navigating the ATrain Education website was:

- Easy.
- Somewhat easy.
- Not at all easy.

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?

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

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

- 60 minutes (or more) per contact hour
- 50–59 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

An advertisement

I am a returning customer

My employer

Social Media (FB, Twitter, LinkedIn, etc)

Other...

Registration and Payment Form

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

*Name: _____

*Email: _____

*Address: _____

*City and State: _____

*Zip: _____

*Country: _____

*Phone: _____

*Professional Credentials/Designations:

*License Number and State: _____

*Name and credentials as you want them to appear on your certificate.

Payment Options

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

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

2.5 contact hours: \$15

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: _____