



*We are all in this together*



**Module 1:  
Introduction  
to Opioids**

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**Meet The Developers**

The following Montana State University faculty and staff helped create the content of this toolkit:

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**Learning Objectives**

**At the conclusion of module one, participants will be able to:**

- Understand what opioids are and how they work in the body.
- Understand the history behind prescription opioids and the opioid epidemic.
- Identify the names of common prescription opioids.
- Identify the side effects associated with prescription opioid use.
- Identify the signs of prescription opioid misuse and Opioid Use Disorder (OUD).
- Identify the signs of an opioid overdose.



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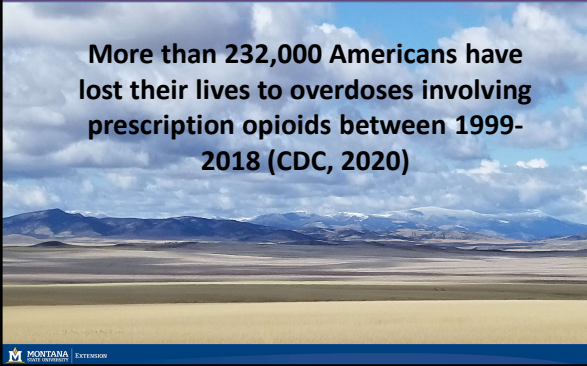
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**Did You Know?**

**More than 232,000 Americans have lost their lives to overdoses involving prescription opioids between 1999-2018 (CDC, 2020)**



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**Did You Know?**

**Overdose deaths involving prescription opioids were more than four times higher in 2018 than in 1999 (CDC, 2020)**



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**Did You Know?**

**In Montana, in 2019, there were 48.2 opioid prescriptions written for every 100 Montanans (1.5% higher than the national average of 46.7 per 100 Americans). (CDC, 2020)**



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**Did You Know?**

**In 2019, ten counties in Montana exceeded this national average (CDC,2020)**



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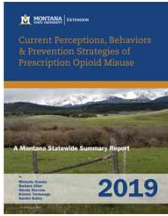
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**Did You Know?**

In early 2019, a statewide survey of 379 Montanans was conducted by the MSU Extension opioid project team. Findings included:

- 65% of respondents stated that prescription opioid use is a problem in their community.
- 52% percent of respondents stated that they know someone who has used prescription opioids to the extent that it has affected their life, and
- 21% currently provided care to someone who either has a prescription for opioids or had one in the past.



Reference: [http://health.msuestension.org/opioid\\_summary\\_report\\_2019.html](http://health.msuestension.org/opioid_summary_report_2019.html)

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**What Is an Opioid?**

“opioid” vs “opiate.”

- Opioid: Natural/organic, synthetic or partially synthetic chemicals that interact with opioid receptors on the nerve cells in the body and brain and reduce the intensity of pain signals and feelings of pain.
- Opiates: Natural opioids derived from the flowering opium poppy plant. Includes heroin, morphine, and codeine.

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## How Opioids Work in The Body

**Opioid-related Terms**

- **Endorphins:** naturally occurring opioids that produce feelings of euphoria
- **Opioid pain receptors:** tiny “docking stations” at the end of nerve cells that prevent pain signals from traveling from one nerve to another.
  - When opioids attach to pain receptors, they block the pain signals sent from the brain to the body and release large amounts of dopamine throughout the body.
- **Dopamine:** important chemical messengers involved in reward, motivation, memory, attention, and learning. Dopamine can even play a part in regulating body movements.

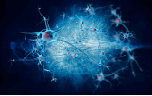


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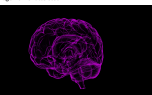


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## How Do Prescription Opioid Drugs Work In The Body?

- Prescription opioid drugs mimic endorphins and attach to the receptors.
- The body produces more pain receptors in response to large amounts of prescription opioids.
- The more pain receptors you have the more opioids are needed to fill them.
- Over time, opioids cause a decrease in the ability to create and use natural endorphins, thus causing the individual to lose the ability to reduce pain naturally.

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## Prescription Opioids

- Prescription opioids are often prescribed by doctors to treat moderate to severe pain.
- Prescription opioids are often prescribed after surgery or injury, cancer, or other chronic pain conditions
- Prescription opioids have been used to treat longer lasting chronic pain (e.g. back pain, osteoarthritis), despite serious risks and a lack of evidence to support their long-term effectiveness.



www.cdc.gov

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**Categories of Prescription Opioids**

- **Natural opioids:** includes morphine and codeine
- **Semi-synthetic opioids:** includes drugs such as oxycodone, hydrocodone, hydromorphone, and oxymorphone
- **Synthetic opioids:** includes drugs such as methadone, tramadol and fentanyl  
*(methadone can be prescribed for pain reduction or used to treat opioid use disorder)*

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**Did You Know?**

- In 2019, more than 36,000 deaths in the U.S. involved synthetic opioids (other than methadone).
- Synthetic opioid-involved death rates increased by over 15% from 2018 to 2019 and accounted for nearly 73% of all opioid-involved deaths in 2019.

(CDC, 2021)

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**Prescription Fentanyl**

- A synthetic opioid for treatment of severe pain, typically used for advanced cancer pain relief and during surgery.
- Prescription fentanyl is 50 to 100 times more potent than morphine.
- Fentanyl can be prescribed as transdermal patches or lozenges/oral swabs.




Image from the American Addiction Centers available at drugabuse.com

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## Illicitly Manufactured Fentanyl (IMF)

### Illicitly Manufactured Fentanyl (IMF)

- **Illegally sold** for its heroin-like effect, and linked to recent increases in **overdose deaths**.
- Often pressed into **counterfeit pills** or **mixed with heroin or cocaine**, with or without the user's knowledge.
- **Fentanyl analogs** are drugs that are **chemically related** to fentanyl and mimic the effects of the drug.

Overdose deaths involving synthetic opioids were nearly **12x** higher in 2019 than in 2013.

CDC, 2021

Infographic available through the cdc.gov website by following <https://www.cdc.gov/drugoverdose/data/fentanyl.html>

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## Heroin

- Heroin is an illegal and highly addictive opioid drug and its use in on the rise across the U.S.
- Heroin can be injected, smoked, or snorted. Injection use increases risk of HIV, Hep C and Hep B as well as other bacterial infections.
- Nearly all people who use heroin also use at least one other substance, which is called Polysubstance Abuse (PA)
- PA increases the risk of overdose

There were nearly **5x** the number of heroin-related overdose deaths in 2018 as there were in 2010.

<https://www.cdc.gov/drugoverdose/opioids/heroin.html>

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## Opioid Prescribing Practices in the US

Throughout the US, there is wide variability at the county level in the amount of prescription opioids prescribed per resident. Counties with higher opioid prescribing rates have been shown to have these characteristics:

- Are generally smaller cities or larger towns
- Have a higher percentage of white residents
- Have a higher number of dentists and primary care physicians per capita
- Have more people who are uninsured or unemployed
- Include more residents who have diabetes, arthritis, or a disability (CDC, 2020)

New Research from Amanda Mauri and Taylor Townsend, 2020  
<https://ghp.umich.edu/news/2021/04/2021images/opioids-united-states.jpg>

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**History of Prescription Opioids**

**"Human history becomes more and more a race between education and catastrophe."  
-H.G. Wells**

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**History of Prescription Opioids**

**1800s:**

- German pharmacist Friedrich Serturner
- First to isolate and extract the alkaloid from the poppy plant, which resulted in the creation of morphine;
- Named after the Greek god of dreams, Morpheus;
- 'Used' to treat wounded soldiers;
- The majority of those that became addicted were women.

**1900s:**

- Tens of thousands of Americans were addicted to morphine.
- By 1914, both physicians and patients were advised to avoid opiates.
- An avoidance that continued into roughly the 1990s

**1995:**

- The American Pain Society urged more aggressive and long-term use of prescription opioids for chronic, non-cancer pain. While simultaneously, Purdue Pharma released an extended-release formulation oxycodone (known as OXYCONTIN®).

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**History of Prescription Opioids – cont'd**

- **1997- 2007:**
  - OXYCONTIN® prescriptions in the U.S. increased from 670,000 to 6.2 million.
  - Purdue Pharma pleaded guilty to federal charges related to misbranding OXYCONTIN® and to misleading physicians and the healthcare industry

Since then, the U.S. has experienced extremely high levels of deaths related to prescription opioid use, now commonly referred to as the Opioid Epidemic or Opioid Crisis

- **2013 - 2016:**
  - Emergence of synthetic prescription opioids – highly potent, manufactured drugs that mimic naturally occurring opioids (e.g. Fentanyl).
  - Fentanyl was the cause of nearly 20,000 additional drug related deaths in 2016 (Liu, L., Pei, D., & Soto, P., n.d.).

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## History of Prescription Opioids- cont'd

**2019:**

- Numerous States are passing laws to help lessen the effects of the opioid crisis
  - Montana House Bill 86
- Purdue Pharma files for Bankruptcy

**2020:**

- Purdue Pharma pleaded guilty to three felony accounts of criminal wrongdoing.
- Purdue Pharma was reorganized into a public benefit corporation, with profits from future prescription opioid sales expected to fund programs aimed at alleviating Opioid Use Disorder in the U.S.




Image from Shutterstock

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## Agonist vs. Antagonist

**Agonist** is a substance which initiates a physiological response when combined with a receptor.

**Antagonist** is a substance that interferes with or inhibits the physiological response.

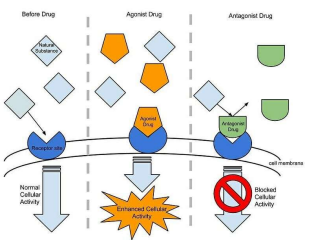


Image available at <https://biologydictionary.net/agonist/>

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## Common Names of Natural Prescription Opioid Pain Medication including "Street Names"

Name	Brand Name	Street Names
Morphine (agonist)	DURAMORPH®, ROXANAL®, KADIAN®, MS CONTIN®	M, Miss Emma, Monkey, White Stuff
Codeine (agonist)	various	<b>Codeine only:</b> Captain Cody, Cody, Lean, Schoolboy, Sizzurp, Purple Drank <b>Codeine &amp; glutethimide:</b> Doors & Fours, Loads, Pancakes and Syrup, Lean (NIH, 2017)

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### Common Names of Semi-Synthetic Prescription Opioid Pain Medication including "street names"

Name	Brand Name	Street Names
Oxycodone (agonist)	OXYCONTIN® PERCOSET® PERCODAN®	Oxy, Hillbilly Heroin, Percs, O.C., Rims, Tires, Greenies
Hydrocodone (agonist)	LORTAB® NORCO® VICODIN®	Vike, Bananas, Fluff, Hydros
Hydromorphone (agonist)	DILAUDID® EXALGO®	Smack, Dillies, Footballs, Juice
Oxymorphone (agonist)	OPANA®	Biscuits, Mrs. O, O Bomb, Octagons

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### Common Names of Synthetic Prescription Opioid Pain Medications including "street names"

Name	Brand Name	Street Names
Fentanyl (synthetic heroin) (agonist)	ACTIQ® SUBLIMAZE®	Apache, China Girl, China White, Dance Fever, Friend, Goodfella, Jackpot, Murder 8, Tango and Cash, TNT
Tramadol (agonist)	ULTRAM®	Chill Pills, Trammies, Ultras
Methodone (agonist)	DOLOPHINE® METHADOSE® METHADOSE SUGAR-FREE® METHADONE DISKETS®	Chocolate Chip Cookies, Dollies, Fizzies, Wafer

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### Side Effects of Prescription Opioids

- Increased sensitivity to pain
- Constipation
- Nausea, vomiting, and dry mouth
- Sleepiness and dizziness
- Confusion
- Depression
- Low levels of testosterone that can result in lower sex drive, energy, and strength
- Itching and sweating




Image from Shutterstock

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**What is Non-Medical Use of a Prescription Opioid?**

*Non-medical use* refers to taking prescribed or diverted prescription drugs (drugs not prescribed to the person using them) not in the way, for the reasons, in the amount, or during the time-period prescribed.

\* Through efforts to reduce stigmatizing language, this term "*non-medical use*" has replaced the term "*misuse*".

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**Did you Know?**

In 2019, over **one** in **ten** high school students reported taking a prescription drug without a doctor's prescription.



Image from Shutterstock

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**Signs of Non-Medical Use**

**Potential signs that a person is using prescription opioids in a non-medical way include:**

- extreme fatigue
- changes in sleep habits
- withdrawal from friends and family
- poor coordination
- shallow breathing
- constipation
- agitation
- mood swings
- depression
- appetite changes
- slurred speech
- nausea or vomiting
- irritability

➤ **Signs of non-medical use can be physical, psychological, and emotional. If you notice changes in a loved one that seem to come out of nowhere, he or she may be struggling with substance use.**

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**Risks Associated With Non-Medical Use of Prescription Opioids**

- **Opioid tolerance:** when a person begins to experience a reduced response to medication, requiring more opioids to experience the same effect.
- **Physical dependence:** when the body adjusts its normal functioning around regular opioid use. Unpleasant and sometimes excruciating physical symptoms occur when medication is stopped.
- **Opioid Use Disorder:** a problematic pattern where attempts to cut down or control use are unsuccessful or when use results in social problems.
- **Overdose:** injury to the body (poisoning) that happens when a drug is taken in excessive amounts. An overdose can be fatal or nonfatal. "Opioid-based" drugs cause respiratory depression which can slow or stop a person's breathing.

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**Physical Consequences of the Non-Medical Use of Prescription Opioids**

Physical Health Consequences may include:

- **Short term include:** feelings of euphoria, dry mouth, headache, flushing, mental fog, constipation, drowsiness, itching, respiratory depression, lethargy
- **Long term include:** developing Opioid Use Disorder, irregular heartbeat, increased risk of heart attack, fatigue, breathing problems, low blood pressure, chest pain, depression, severe constipation, severe abdominal pain, hormonal problems, weak bones, increased pain

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**Mental Health Consequences of the Non-Medical Use of Prescription Opioids**

Mental Health consequences may include:

- Anxiety
- Anger
- Depression
- Confusion
- Paranoia
- Mood swings
- Irritability
- Hallucinations
- Suicidal ideations
- Impaired judgment
- Loss of pleasure
- Reckless behavior




Image from Shutterstock

**Suicide Prevention Lifeline:** 1-800-273-8255 (TALK) is a 24-hour crisis intervention if you or someone you know are having suicidal thoughts.  
**Crisis Text Line:** Text 'MT' to 741741

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**Consequences of the Non-Medical Use of Prescription Opioids**

- Societal: children being removed from the home, high rates of incarceration, car crashes, suicidal deaths related to substance use, overdose deaths, etc.
- Economic: The cost these social consequences have on the individual and society as a whole.

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**Opioid Use Disorder (OUD)**

**Opioid Use Disorder:** a pattern of opioid use that causes significant impairment or distress. The term OUD is preferred over other terms such as opioid abuse, opioid dependence, or opioid addiction.

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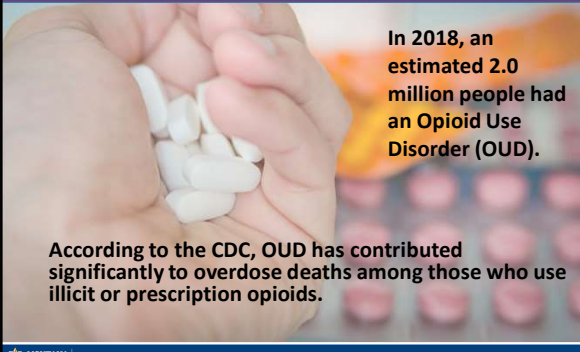
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**Did You Know?**



**In 2018, an estimated 2.0 million people had an Opioid Use Disorder (OUD).**

**According to the CDC, OUD has contributed significantly to overdose deaths among those who use illicit or prescription opioids.**

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**Medication Assisted Treatment (MAT)**

**Medication-assisted treatment (MAT):** treatment for Opioid Use Disorder that combines the use of medications (methadone, buprenorphine, or naltrexone) with counseling and behavioral therapies. (For more information on MAT see our bonus module on Treatment and Recovery.)

Very recently this treatment has been referred to as Medication for Opioid Use Disorder (MOUD).

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**Signs of Prescription Opioid Overdose**

- Small constricted "pinpoint pupils"
- Falling asleep or loss of consciousness
- Slow, shallow breathing or no breathing (less than 1 breath every 5 seconds)
- Face pale and clammy
- Pale, blue, or cold skin
- Slow, erratic, or no pulse
- Choking or gurgling sounds
- Limp body
- No response when you yell the person's name or rub the middle of their chest with your knuckles.




Image from Shutterstock

**If someone is experiencing any of the following signs of overdose, call 911 immediately.**

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**Did You Know?**

**Between 2006- 2018, more than 600 Montanans died specifically from opioid overdose**

Montana Substance Use Disorder Task Force Strategic Plan. (n.d.). Retrieved April 09, 2021, from <https://dphhs.mt.gov/opioid>



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**Synthetic Prescription Opioid Medication Used to Reverse a Prescription Opioid Overdose**

Name	Brand Name	Street Names
naloxone (antagonist)	NARCAN® (nasal spray) EVZIO® (Injection)	Unknown/unspecified

- Prescription naloxone reverses prescription opioid overdose by binding to the opioid receptors, blocking the effects of other prescription opioids.
- Administered intravenously or using a nasal spray.




Image from narcan.com

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**Naloxone Use In Montana**

**The Help Save Lives from Overdose Act (Act)**

- A law that authorized increased access to naloxone.
- DPHHS required to issue a state-wide standing order for all pharmacists to voluntarily utilize for dispensing naloxone prescriptions.
- Montana DPHHS, Best Practice Medicine is coordinating a statewide effort to train Naloxone Master Trainers as part of the strategic plan to combat mortality from opioid overdoses.

To learn more please visit:  
<https://dphhs.mt.gov/publichealth/emsts/prevention/naloxtrng>

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**Promoting Prevention Strategies**

The best ways to prevent prescription opioid overdose include:

- Improving opioid prescribing practices,
- Reducing exposure to opioids,
- Preventing use and non-medical use, and
- Treating Opioid Use Disorder.

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**What Does Prevention of the Non-Medical Use of Prescription Opioids Look Like?**

- **Individual Level:** prevention education and awareness of the dangers of prescription opioid use and how to safely use, store, and dispose of prescription opioids.
- **Local Level:** community prevention education and awareness opportunities, access to medication disposal bags and prescription drug drop box locations, and participation in the National Prescription Drug Take Back Days.
- **State Level:** prescription drug monitoring programs (PDMPs), funding for organizations at the local level.

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**Did You Know?**

According to the 2019 statewide summary report conducted by MSU Extension, 29% of rural Montanans keep their unused prescription opioids for one year or longer.



Image from Shutterstock

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**Disposal Methods**





Participate in the National Take-Back Day held yearly in October and April for more information visit <https://takebackday.dea.gov/>

Secure medication drop-boxes locations For specific year-round locations, visit <https://dphhs.mt.gov/amdd/substanceabuse/dropboxlocations>

Single-use medication deactivation pouches

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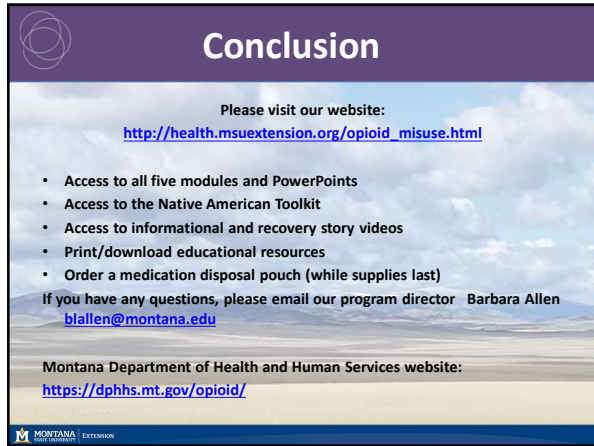
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## Conclusion

Please visit our website:  
[http://health.msuxextension.org/opioid\\_misuse.html](http://health.msuxextension.org/opioid_misuse.html)

- Access to all five modules and PowerPoints
- Access to the Native American Toolkit
- Access to informational and recovery story videos
- Print/download educational resources
- Order a medication disposal pouch (while supplies last)

If you have any questions, please email our program director **Barbara Allen**  
[ballen@montana.edu](mailto:ballen@montana.edu)

Montana Department of Health and Human Services website:  
<https://dphhs.mt.gov/opioid/>

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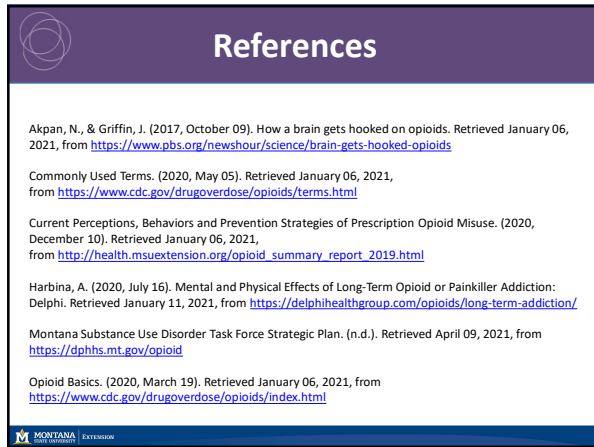
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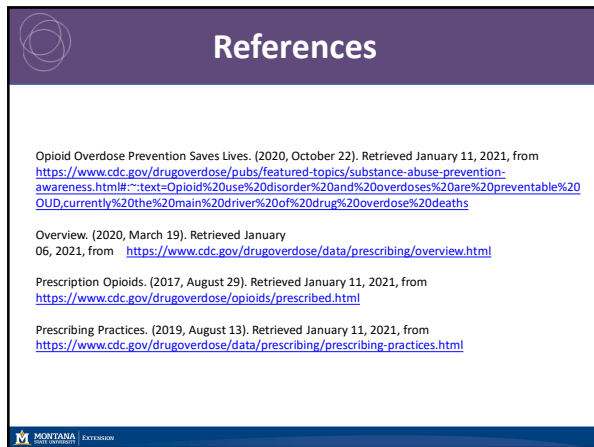
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MONTANA EXTENSION

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