Opioids: Real People. Real Stories. Real Science.

Virtual Field Trip Companion Activity

The use and misuse of opioids in the United States is a problem that is not going away. Although we continue to learn more about the effect of opioids on the brain and collect data on opioid use and misuse, more and more people - of all ages and backgrounds - are misusing and becoming addicted to opioids. As the number of people using and misusing opioids increases, so too does the number of those overdosing on these powerful drugs.

Opioids are a class of drugs that include the illegal drug heroin, synthetic opioids such as fentanyl, and pain relievers available legally by prescription, such as oxycodone, codeine, and morphine. These types of drugs are all chemically related and interact with receptors found on nerve cells in the body and brain. While they can be taken safely for a short time for pain relief when prescribed by a doctor, unfortunately they are often misused because they can produce a feeling of euphoria that becomes highly addictive to the user. Regular use—even as prescribed by a doctor—can lead to physical dependence and, when misused, opioid pain relievers can lead to addiction, overdose incidents, and death. The National Institute on Drug Abuse reported in March of 2018 that more than 115 people die of overdose due to opioid misuse every day in the U.S., and the number of opioid overdoses increased in nearly every state from 2016 to 2017.

In this Virtual Field Trip activity, students will be asked to compare their perceptions about opioid use, misuse, and addiction to the reality that they learn through information and interviews. They will also research a specific type of opioid and create a wearable infographic that explains how the opioid affects the brain, how it alters brain chemistry, and gives important facts and statistics about their assigned opioid.

OBJECTIVES

Students will:

- Recognize that there is an opioid crisis in the U.S. and discover who is affected by opioid misuse.
- Compare their perceptions to the reality of opioid misuse.
- Examine the effects of various types of opioids on the brain and body.
- Design a wearable infographic that gives information about a specific opioid to the viewer.

PRE-VFT ACTIVITY: Opioid Misuse: Perception vs. Reality

MATERIALS:

- Large sheets of paper or poster board
- Various colored markers
- Capture sheet (1 per student)

Before beginning the activity, the teacher should ask students if they have heard that there is a growing opioid crisis in the United States. Students can share what they know with the whole group. Use the background information to define what opioids are for students and why opioid addiction is a crisis that all people should be aware of and informed about.

The instructor should write each of the discussion questions (below) at the top of large sheets of easel paper or poster board, and post these in various areas in the classroom, creating seven "discussion stations." Assign or ask students to form collaborative groups of three or four, and give each group a different colored marker. In this carousel activity, groups will travel to different stations around the room and read the discussion question presented on the poster board or large easel paper at that station. Ask groups to think about and share their ideas and answers to the question with each other. They should come up with a statement or two that they all agree on as their answer to the discussion question and record it on the sheet with their colored marker. When the instructor calls time, the groups should switch to the next discussion question station, and repeat the process with that question. When student groups have visited all seven stations, each group should share all of the answers for their final question with the class.

Opioids: Perception vs. Reality – Discussion Questions for Students

- What events in a person's life could lead to addiction to opioids?
- How do opioids affect the brain and body? How do they work?
- Why would some people be more susceptible to prescription drugs than others?
- How are the people in the life of someone that misuses opioids (family, friends, community) affected by their addiction?
- Why do so many people addicted to opioids relapse after being involved in an addiction treatment program?
- What are alternative ways to help manage physical and emotional pain that do not involve opioids?
- Why is it important that teens be informed about opioids and the risks of addiction?

Finally, distribute the *Opioids: Perception vs. Reality* Capture Sheet to students. As they view the Virtual Field Trip, students can add new information to the **Reality** column on their capture sheet. For the **Reflection** column, students will return to their groups to discuss and record their answers for this column, or this could be done individually.

POST-VFT ACTIVITY: How Opioids Work

MATERIALS:

- Disposable shower cap (1 per group)
- Permanent markers in various colors
- Paint
- Paintbrushes
- Glue or tape
- Construction paper or colored paper
- Cardstock
- Internet access

Assign or ask students to form groups of three to four and assign each group a specific opioid that will be the focus of their research for this activity. Each group will be given a copy of the Capture Sheet: *How Opioids Work* Research Sheet. Students should use the Internet and suggested websites to research the answers to the questions on the Capture Sheet. When their research is completed, each group should be given a clear or white shower cap that will serve as the base for their wearable infographic. Students will then use colored permanent markers (or paint) to construct an outline of the brain on their cap. They should identify and label the areas of the brain that are directly affected by their opioid and add a description, either directly on the cap or on an attached piece of paper or cardstock that explains the effect their opioid has on it. Next, the group should use the facts and statistics from their research sheet to create graphics that can be added to the "brain cap."

This transforms the "brain cap" into a wearable infographic that gives important information about how their opioid works and the dangers it presents to a person's brain and body. When the brain caps are completed, the activity culminates with groups presenting their wearable infographic to the class, or as a walking "science fair." In this, group members take turns walking around the classroom to view other groups' wearable opioid infographics (brain caps) and asking questions to learn information about each type of opioid presented.

Possible opioids for research may include:

- Codeine
- Fentanyl
- Hydrocodone
- Methadone
- Morphine
- Heroin
- Oxycodone

NATIONAL STANDARDS

Next Generation Science Standards

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

LS1.A: Structure and Function

- Systems of specialized cells within organisms help them perform the essential functions of life. (HS-LS1-1)
- All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells. (HS -LS1-1) (Note: This Disciplinary Core Idea is also addressed by HS -LS3-1.)
- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)
- Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)

National Health Education Standards

1.12.7 Compare and contrast the benefits of and barriers to practicing a variety of healthy behaviors.
2.12.2 Analyze how the culture supports and challenges health beliefs, practices, and behaviors.
2.12.7 Analyze how the perceptions of norms influence healthy and unhealthy behaviors.
8.12.1 Utilize accurate peer and societal norms to formulate a health-enhancing message.
8.12.2 Demonstrate how to influence and support others to make positive health choices.
8.12.3 Work cooperatively as an advocate for improving personal, family, and community health.
8.12.4 Adapt health messages and communication techniques to a specific target audience.

SOURCES

- https://www.hhs.gov/opioids/
- https://www.drugabuse.gov/drugs-abuse/opioids
- https://www.drugabuse.gov/drugs-abuse/opioids/opioid-overdose-crisis
- https://teens.drugabuse.gov/blog/post/out-control-opioids-and-brain
- https://www.drugabuse.gov/sites/default/files/soa_2014.pdf
- https://medlineplus.gov/druginfo/meds/a682133.html
- https://americanaddictioncenters.org/health-complications-addiction/central-nervous-system/
- https://www.drugabuse.gov/publications/drugs-brains-behavior-science-addiction/drugs-brain
- https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Know-Your-Brain
- https://www.drugabuse.gov/publications/teaching-packets/understanding-drug-abuse-addiction/section-i/4-reward-pathway
- https://www.dea.gov/factsheets

CAPTURE SHEET 1 **NAME**_____

OPIOIDS: ***Perception vs. Reality*** **DATE**_____

DISCUSSION QUESTION	**Perception** *conclusion from Carousel Activity*	**Reality** *from Virtual Field Trip video*	**Reflection** *How did our perception compare to the reality of opioid addiction? What surprised you about this?*
What events in a person's life could lead to addiction to opioids?			
How do opioids affect the brain and body? How do they work?			
Why would some people be more susceptible to prescription drugs than others?			

How are the people in the life of someone who misuses opioids (family, friends, community) affected by their addiction?			
Why do so many people addicted to opioids relapse after being involved in an addiction treatment program?			
What are alternative ways to help manage physical and emotional pain that do not involve prescribing or the use of opioid drugs?			
Why is it important that teens be informed about opioids and the risks of opioid addiction?			

CAPTURE SHEET 2 **NAME**_____

HOW OPIOIDS WORK: ***RESEARCH SHEET*** **DATE** _____

Use the internet to find information about your assigned opioid, which will be used to create your wearable "brain cap" infographic in the next part of this activity.

SUGGESTED LINKS FOR OPIOID RESEARCH

https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Know-Your-Brain

https://www.dea.gov/factsheets

https://teens.drugabuse.gov/blog/post/out-control-opioids-and-brain

https://medlineplus.gov/

https://www.drugabuse.gov/sites/default/files/soa_2014.pdf

https://www.drugabuse.gov/publications/teaching-packets/understanding-drug-abuse-addiction/section-i/4-reward-pathway

OPIOID NAME: _____

ADDITIONAL NAMES/STREET NAMES FOR OPIOID: _____

Questions for Research	
What area(s) of the brain are directly affected by the use of your opioid?	
What other effects does your opioid have on the body?	

What does it do at a cellular level? (How does it affect nerve cells in the brain or nervous system?)	
Is this drug naturally occurring or is it manufactured?	
When and where did this drug originate?	
Is this opioid prescribed? If so, what for?	
How does this opioid differ from other types of opioids? Is it similar to any other type?	

List any statistics you can find about the use of your opioid. (This could include how many prescriptions there are per year, who is misusing it, how many overdoses or deaths happen per year, etc.)	
What are some other interesting or surprising facts about your opioid that you discovered in your research?	