

RESOURCE LIBRARY | ACTIVITY : 50 MINS

Investigating Infectious Diseases

Students learn about different kinds of disease transmission using an infographic and a reading that describe the following types of transmission: direct, indirect, fecal-oral, droplet, airborne, vector. Students then select a disease to closely investigate in this unit based on a variety of sources about the diseases, including short readings about each disease, maps, and/or websites.

GRADES

6, 7, 8

SUBJECTS

Biology, Health, Social Studies

CONTENTS

6 Links, 1 PDF, 9 Resources

OVERVIEW

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For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/investigating-infectious-diseases/>

In collaboration with

DIRECTIONS

Menacing Microbes Unit Driving Question: *How does a community get ready for an outbreak?*

There's an Outbreak! Lesson Driving Question: *How do diseases spread?*

1. Read about different kinds of disease transmission.

Set the purpose for reading with students by reviewing the project—a community Action Plan in response to an outbreak of a particular microbial disease.

- Tell students that, as they started to learn in the activity, “Getting Sick: How Diseases Spread,” not all microbial diseases are spread the same way. They will need to know about the different kinds of disease transmission to create the best outbreak response plan for their specific disease.
- In pairs, have students read the article, [Preventing and Containing Outbreaks](#).
- After reading, ask pairs to discuss: *What new information did you learn about disease transmission? What is the difference between an epidemic and a pandemic?*

2. Read and analyze an infographic to learn more about disease transmission and specific diseases that are spread through each transmission type.

In pairs, have students use the Disease Transmission infographic to discuss the following questions:

- *What is the purpose of this infographic?*
- *How is the information on the infographic different from the information in the reading?*
- *What do you notice about the different kinds of disease transmission?*
- *How can this information help you develop your action plan?*

The goal of this step is for students to learn that the types of transmission are not mutually exclusive. For example, droplets can be indirectly transmitted on surfaces and/or airborne.

3. Explore a variety of resources to learn about specific microbial diseases.

In small groups of three to four students, have groups select one of the following microbial diseases to explore in-depth: influenza, Ebola, Zika, norovirus, measles, varicella, tuberculosis, MRSA, E-Coli, Lyme disease. This will be the focal disease that they will develop their action plans for throughout the Menacing Microbes unit.

Share the following links with students for them to explore and learn more about their chosen disease:

- [*This Day in Geographic History: Mar 11, 1918 CE: Flu Pandemic Begins*](#)
- [*This Day in Geographic History: May 9, 1995 CE: Outbreak of Ebola Interactive Map: Zika Virus: 1947 to 2016*](#)
- [*Article: Zika*](#)
- [*CNN Video: What is the Zika Virus?*](#)
- [*Encyclopedic Entry: E-Coli*](#)
- [*Encyclopedic Entry: Varicella*](#)
- [*CDC Fact Sheet: Chickenpox \(Varicella\)*](#)
- [*Encyclopedic Entry: MRSA*](#)
- [*Encyclopedic Entry: Lyme Disease*](#)
- [*Encyclopedic Entry: Tuberculosis*](#)
- [*WHO Fact Sheet: Tuberculosis*](#)
- [*Article: How the Measles Virus Became a Master of Contagion*](#)
- [*CNN Video: How Measles was Eliminated and Then Came Back*](#)
- [*CDC Features: Prevent the Spread of Norovirus*](#)

Have each group use the Disease Profile section of their Action Plan for Response to Outbreak of Infectious Disease to record information from their resources and begin the development of their group's action plan.

Tip

Build a word wall as new vocabulary is introduced (e.g., vector, droplet, fecal-oral).

Tip

Step 1: When reading in pairs, have students either read silently through each section, stopping to summarize and ask/answer questions; or take turns reading aloud, stopping after each section to revisit the purpose.

Tip

Step 3: Think ahead about how you will facilitate students' selection of focal diseases. You may want to assign students a particular kind of transmission from which they can choose a focal disease. That will help to ensure variety across action plans.

Informal Assessment

Collect the Action Plan for Response to Outbreak of Infectious Disease worksheet and assess the Scramble! packet to assess students' understanding of key characteristics and transmission types of their selected diseases.

OBJECTIVES

Subjects & Disciplines

Biology

- Health

Social Studies

Learning Objectives

Students will:

- Understand the difference between a pandemic and an epidemic.
- Identify how different types of diseases are transmitted.

Teaching Approach

- Project-based learning

Teaching Methods

- Discussions
- Reading
- Self-directed learning
- Visual instruction

Skills Summary

This activity targets the following skills:

- Critical Thinking Skills
 - Analyzing
 - Applying
 - Understanding

National Standards, Principles, and Practices

COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS & LITERACY

- Reading Standards for Literacy in History/Social Studies 6-12:

Integration of Knowledge and Ideas, RH.6-8.7

- Reading Standards for Literacy in History/Social Studies 6-12:

Key Ideas and Details, RH.6-8.2

Preparation

What You'll Need

REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: 1 computer per classroom, 1 computer per pair, Projector

PHYSICAL SPACE

- Classroom
- Computer lab

GROUPING

- Heterogeneous grouping

- Homogeneous grouping
- Large-group learning
- Small-group learning
- Small-group work

BACKGROUND & VOCABULARY

Background Information

One of the first steps in learning how to create an effective plan to stop and prevent outbreaks of microbial disease is learning how they are transmitted. Each disease has a method of transmission based on the nature of the microbe that causes it. Some diseases can be transmitted in more than one way. Knowing all of the different ways that a particular disease behaves helps inform the most effective prevention and response plan.

Prior Knowledge

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Recommended Prior Activities

- [Getting Sick: How Diseases Spread](#)

Vocabulary

Term	Part of Speech	Definition
airborne	<i>adjective</i>	transported by air currents.
disease	<i>noun</i>	harmful condition of a body part or organ.
droplet	<i>noun</i>	tiny drop (as of a liquid).
fecal	<i>adjective</i>	having to do with excrement.
oral	<i>adjective</i>	having to do with the mouth or spoken words.
vector	<i>noun</i>	animal that transmits a disease from one organism to another.

