

RESOURCE LIBRARY | ACTIVITY : 50 MINS

# Mapping the Spread of Disease in a Community

In groups, students are given a community map and a Patient Zero who has been infected with a disease. Using a narrative of Patient Zero's daily life, students plot the patient's path through the day and indicate moments of disease transmission on a map based on the story.

## GRADES

6, 7, 8

## SUBJECTS

*Biology, Health, Geography, Social Studies*

## CONTENTS

3 PDFs

## OVERVIEW

In groups, students are given a community map and a Patient Zero who has been infected with a disease. Using a narrative of Patient Zero's daily life, students plot the patient's path through the day and indicate moments of disease transmission on a map based on the story.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/mapping-spread-disease-community/>

## In collaboration with



## DIRECTIONS

*This activity is part of the [Menacing Microbes](#) unit.*

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

**Lesson Driving Question:** *How do diseases spread?*

**1. Discuss ways to stop the spread of disease in a community.**

Reflecting on the work done in the last activity, Analyzing Disease Outbreaks, have students answer the following questions in their project groups:

- *What disease maps did they analyze with four-level analysis?*
- *What actions might need to be taken to stop the spread of the diseases on those maps?*
- *Who would need to be involved in those actions?*

**2. Map the route of Patient Zero through the course of a day to track the spread of disease.**

To kick off this activity:

- Inform students that they are going to use maps to record pathways of microbial disease transmission and learn the impact of one infected person's behavior on the community.
- Introduce the term, patient zero, and add to the word wall started at the beginning of the unit.
- Provide students with a copy of the community map mark up.
- Go over the directions on the community map for labeling the route and other important moments on the map as a class.
- Explain to students that they will be marking the map to indicate disease transmission points if Patient Zero was infected with their focal disease.

Conduct the Activity:

- Read the story of Patient Zero aloud to the class.
- As you read the story, have students trace the route of their patient through the community.
- Pause after each section to allow students to trace Patient Zero's route on the community map.

Application:

- After Patient Zero's route has been mapped, have students use their disease profile and the directions from the map to indicate moments of possible transmission of their disease on the map.

### **3. Identify steps that Patient Zero could have taken to prevent the spread of disease.**

- In their project groups, ask students to respond to the following question: *What could Patient Zero have done differently to stop the spread of disease?* (Possible answers: wash hands, stay inside, wear bug repellent, wear long sleeves and pants)
- Have groups share with the rest of the class the following information:
  1. Their focal disease
  2. Methods of transmission
  3. Two ways that Patient Zero could have prevented the spread of disease to others

## Modification

Step 1: If completing this activity individually and not as part of the unit, skip Step 1.

Step 2: Instead of reading aloud, distribute the student version of the story to each group for students to work on independently.

## Tip

Step 2: While reading aloud, pause to allow for groups to discuss and map each section of the story.

## Informal Assessment

Have students turn in an Exit Ticket with the answers to the following:

1. *What is the name of your focal disease?*
2. *What is the method of transmission?*
3. *Who else was likely infected by Patient Zero?*

## OBJECTIVES

# Subjects & Disciplines

## Biology

- Health

## Geography

## Social Studies

# Teaching Approach

- Project-based learning

# Teaching Methods

- Cooperative learning
- Discussions
- Hands-on learning

# 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

### • CCSS.ELA-LITERACY.RH.6-8.7:

Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

## Preparation

### What You'll Need

#### REQUIRED TECHNOLOGY

- Internet Access: Required

#### PHYSICAL SPACE

- Classroom

#### GROUPING

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

#### RESOURCES PROVIDED: HANDOUTS & WORKSHEETS

- [Mapping Patient Zero](#)
- [The Story of Patient Zero \(Teacher Version\)](#)
- [The Story of Patient Zero \(Student Version\)](#)

## BACKGROUND & VOCABULARY

### Background Information

Spatial thinking is an important skill for understanding geography and the world we live in. Geoscience requires knowledge of spatial representations and relationships. A map is an essential tool for communicating geographic information and representing spatial thinking. When people think with maps, they become equipped to visualize the world around them and solve problems related to human interactions with the world.

### Prior Knowledge

# Recommended Prior Activities

- [Analyzing Disease Outbreaks](#)
- [Getting Sick: How Diseases Spread](#)
- [Investigating Infectious Diseases](#)

## Vocabulary

<b>Term</b>	<b>Part of Speech</b>	<b>Definition</b>
disease	<i>noun</i>	harmful condition of a body part or organ.
outbreak	<i>noun</i>	sudden occurrence or rapid increase.
patient zero	<i>noun</i>	person identified as the first carrier of a contagious disease in an outbreak of related cases.
route	<i>noun</i>	path or way.
transmission	<i>noun</i>	when disease-causing germs pass from an infected person to a healthy person.



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