

RESOURCE LIBRARY | ACTIVITY : 50 MINS

# Getting Sick: How Diseases Spread

Students learn about two different kinds of disease transmission through a Bubble Sickness game and a High Five game to introduce the concepts of symptom, contagious, contagion, direct/indirect transmission, microbe, and infectious diseases.

## GRADES

6, 7, 8

## SUBJECTS

*Biology, Health, Social Studies*

## CONTENTS

2 PDFs

## OVERVIEW

Students learn about two different kinds of disease transmission through a Bubble Sickness game and a High Five game to introduce the concepts of symptom, contagious, contagion, direct/indirect transmission, microbe, and infectious diseases.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/getting-sick-how-diseases-spread/>

## 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. Activate students' prior knowledge with a brief Turn-and-Talk with a neighbor about the last time they remember being sick.**

To get students thinking about symptoms and transmission pathways of particular illnesses, ask students to remember the last time they were sick. Have them discuss with a neighbor:

- What were your symptoms (what was happening to their bodies)?
- How long were you sick?
- How do you think you got sick?
- What helped you get better?
- Do you think anyone else got sick from you?

Have students share some of their responses and record them on the board or on chalk paper. You will refer to this at the end of this activity.

**2. Play the High Five game to learn about direct contact disease transmission.**

Set up:

- Tell students that the class is going to play a couple of games to learn about how different diseases can be spread.
- Give each student an index card that they will use in the next step, Play.
- Have students count off 1-12.

Play:

- Have students walk through the room with their blank index card and something to write with. When they encounter another student, they give each other a High Five and write the other person's number down on their index card. Do this long enough for each student to gather 3-5 numbers on their index cards, about five minutes.
- Have students return to their seats.
- Roll a set of two dice. Tell students what number was infected with the "High Five" sickness. Anyone who has that number on their card has now been infected.

Debrief:

- Introduce the concept of direct disease transmission. Tell students that this is when an infected person makes physical contact with another person.
- Lead a Think-Pair-Share discussion by asking: *What kinds of illnesses do you think are spread this way? What kinds of things could help stop the spread of diseases spread through direct transmission?*
- Have students use hand sanitizer or wash their hands before the next activity step.

### 3. Play the Bubble Sickness game to learn about indirect disease transmission.

Set up:

- Tell students that you, the teacher, are sick with “Bubble Sickness.” You promise not to touch anyone as long as you are sick with “Bubble Sickness.” However, if one of your bubbles lands on someone, that person becomes “sick.”

Play:

- Have students wander around the room.
- Blow bubbles at the students.
- If a bubble lands on a student, that student becomes “sick.”
- After about 30 seconds, have “sick” students stand on one side of the room, and healthy students stand on the other side of the room. Tell students that the bubbles could represent a sneeze or a cough.

Debrief:

- Introduce the concept of indirect and airborne disease transmission. Bring their attention to how many people can get “sick” from one person’s sneezes.
- Lead a Think-Pair-Share discussion by asking: *What kinds of illnesses do you think are spread this way? What kinds of things could help stop the spread of airborne diseases?*

### 4. Facilitate an inquiry discussion to generate students’ questions and ideas about how communities respond to outbreaks of infectious diseases.

- Tell students that when someone has a sickness that can spread to other people, they are considered contagious. A germ or microbe that makes people sick is called an infectious

disease. Transmission of infectious disease is called contagion. When a lot of people get sick with a particular disease, it is called an outbreak.

- Facilitate a whole group discussion about who in the community (doctors, public health officials, mayor, scientist) might be affected and involved in an outbreak response. Begin by asking: *If you were sick with Bubble Sickness, who would be the first person you would tell?*

Possible prompts can include: *Who would that person tell? If you needed to go to the doctor, how would you get there? What would be the risk that people around you would get sick? Who would the doctor tell? What would those people do?*

- As students respond, create a flowchart on the board to map the direction of both information transfer and decision-making flow.
- Next, ask: *When an outbreak happens in a community, what questions would you ask that could help you stop the spread of the sickness (e.g. How many people are sick? Where are the people getting sick? What are the symptoms? How long are people sick for? Who needs to know about this?).*
- In pairs, have students take five minutes to write down as many questions as they can think of in response to the prompt above.
- Have pairs of students share their questions with a small group and circle questions that they have in common.
- From those circled questions, have students select two questions to share with the entire class and record on the board.

## **5. Introduce students to the project to anchor all of the learning in this unit.**

- Tell students that communities need to have plans in place in case there are outbreaks of infectious diseases. In this unit, students will pick a particular disease to explore in-depth, and develop a community action plan to respond to an outbreak of that disease. All of the learning that they do in this unit will be working toward the development of that plan.
- Distribute and review the Action Plan for Response to Outbreak of Infectious Disease and the Action Plan Research worksheet with the students.

## **Tip**

Create a word wall with the vocabulary used in the activity: airborne, direct transmission, contagious, contagion, outbreak, symptom, infectious disease.

# Informal Assessment

Ask students to write a response to the following on the back of the index card that they used for the Bubble Sickness game:

When we started class, you shared with a partner about the last time you were sick.

1. *How do you think you got sick?*
2. *Who else do you think you spread the sickness to?*

Be sure to use either direct or indirect transmission as part of your response.

## OBJECTIVES

## Subjects & Disciplines

### **Biology**

- Health

### **Social Studies**

## Learning Objectives

Students will:

- Describe the complex nature of coordination among individuals, groups, and organizations, needed for effective response to outbreaks of infectious diseases.

## Teaching Approach

- Project-based learning

## Teaching Methods

- Discussions
- Inquiry
- Simulations and games

# Skills Summary

This activity targets the following skills:

- 21st Century Themes
  - Civic Literacy
  - Health Literacy

## National Standards, Principles, and Practices

### COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS & LITERACY

- CCSS.ELA-LITERACY.SL.9-10.1:

Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

### THE COLLEGE, CAREER & CIVIC LIFE (C3) FRAMEWORK FOR SOCIAL STUDIES STATE STANDARDS

- D2.Civ.13.6-8:

Analyze the purposes, implementation, and consequences of public policies in multiple settings.

- D2.Civ.6.6-8:

Describe the roles of political, civil, and economic organization in shaping people's lives.

### Preparation

### What You'll Need

### MATERIALS YOU PROVIDE

- Index cards
- Bubbles

## PHYSICAL SPACE

- Classroom

## GROUPING

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

## RESOURCES PROVIDED: HANDOUTS & WORKSHEETS

- [Action Plan for Response to Outbreak of Infectious Disease](#)
- [Action Plan Scoring Rubric](#)

## BACKGROUND & VOCABULARY

### Background Information

There are many different kinds of diseases that affect people. These include allergic disease, fungal infections, autoimmune diseases, and microbial diseases. In this activity, the focus is on microbial disease. Outbreaks of microbial disease can and do happen during which more people are infected with a particular disease than is typical in a community, region, or time period. One of the first steps in learning how to create an effective plan to stop and prevent outbreaks is learning how microbial diseases are transmitted.

### Prior Knowledge

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### Recommended Prior Activities

- None

### Vocabulary

<b>Term</b>	<b>Part of Speech</b>	<b>Definition</b>
<b>contagion</b>	<i>noun</i>	disease-producing agent, like a virus or bacteria; can also refer to the disease itself or the transmission of the disease.
<b>contagious</b>	<i>adjective</i>	capable of being transmitted by contact with an infected person or object.
<b>direct transmission</b>	<i>noun</i>	when disease-causing germs pass from an infected person to a healthy person via direct physical contact with blood or body fluids.
<b>indirect transmission</b>	<i>noun</i>	when disease-causing germs pass from an infected person to a healthy person via sneezes or coughs, sending infectious droplets into the air or onto objects.
<b>infectious</b>	<i>adjective</i>	communicable; passed from one person to another.
<b>microbe</b>	<i>noun</i>	tiny organism, usually a bacterium.
<b>outbreak</b>	<i>noun</i>	sudden occurrence or rapid increase.
<b>symptom</b>	<i>noun</i>	sign or indication of something.



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