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UNIT

## Menacing Microbes

Students learn about how communities prevent and contain outbreaks of infectious diseases.

**GRADES**

6 - 8

**SUBJECTS**

*Biology, Health, Geography, Geographic Information Systems (GIS), Human Geography, Physical Geography, Social Studies, Civics*

**CONTENTS**

3 Lesson plans

For the complete unit with media resources, visit:

<http://www.nationalgeographic.org/unit/menacing-microbes/>

## In collaboration with



## UNIT OVERVIEW

In this unit, students explore the behaviors of specific diseases and the ways in which the government, communities, organizations, and individuals can respond to outbreaks of each. Students begin by analyzing a historical case study to learn about the ways in which epidemiologists use maps to locate the source of a disease. They then select a focal disease and create an action plan for how a community would respond to an outbreak of that microbial disease. Students then take on the roles of epidemiologists and public health officials in a simulation to mobilize each other's action plans. To bring it all together, students create infographics about vaccination and handwashing with the goal of educating people about public health measures to prevent future outbreaks.

Use this [unit at a glance](#) to explore a brief outline of the materials included in this resource.

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

## LESSON 1: THERE'S AN OUTBREAK! | 3 HRS 20 MINS



In this series of activities, students learn about how microbial diseases are transmitted and start to think about who is involved in a community response to an outbreak of an infectious disease. Students use the case of John Snow to learn how epidemiologists can use maps to locate the source of an outbreak and map a hypothetical pathway of disease transmission for a particular disease. This lesson is part of the [Menacing Microbes](#) unit.

## LESSON 2: CONTROLLING THE CONTAGION: PROACTIVE AND REACTIVE RESPONSES TO AN OUTBREAK | 2 HRS 30 MINS



Students evaluate different proactive and reactive measures that can be implemented in response to an outbreak of infectious diseases. They then explore how different contextual factors can present unique challenges for an outbreak response and disease prevention. This lesson is part of the [Menacing Microbes](#) unit.

## LESSON 3: STAYING HEALTHY | 2 HRS 30 MINS



Students draw on real-world examples of public health action plans to develop their own community action plan for a response to an outbreak of a specific disease. This lesson is part of the *Menacing Microbes* unit.

## BACKGROUND & VOCABULARY

### Vocabulary

<b>Term</b>	<b>Part of Speech</b>	<b>Definition</b>
<b>activation</b>	<i>verb</i>	become active or operative.
<b>airborne</b>	<i>adjective</i>	transported by air currents.
<b>Centers for Disease Control and Prevention (CDC)</b>	<i>noun</i>	agency, part of the Department of Health and Human Services, whose mission is "to create the expertise, information, and tools that people and communities need to protect their health through health promotion, prevention of disease, injury and disability, and preparedness for new health threats."
<b>cholera</b>	<i>noun</i>	infectious, sometimes fatal disease that harms the intestines.
<b>climate</b>	<i>noun</i>	all weather conditions for a given location over a period of time.
<b>community</b>	<i>noun</i>	social group whose members share common heritage, interests, or culture.
<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>contain</b>	<i>verb</i>	to keep under control, hold, or prevent escape.
<b>containment</b>	<i>noun</i>	act or policy of limiting the spread of an idea or influence.
<b>contaminate</b>	<i>verb</i>	to poison or make hazardous.
<b>coordination</b>	<i>noun</i>	process of organizing people or groups so that they work together well.
<b>demobilization</b>	<i>noun</i>	break up the organization of or disband.
<b>demobilize</b>	<i>verb</i>	deactivate, disband; often refers to armed troops, disaster response teams, or similar groups.
<b>diagnose</b>	<i>verb</i>	to identify a disease or problem.

<b>Term</b>	<b>Part of Speech</b>	<b>Definition</b>
<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>disease</b>	<i>noun</i>	harmful condition of a body part or organ.
<b>droplet</b>	<i>noun</i>	tiny drop (as of a liquid).
<b>epidemic</b>	<i>noun</i>	outbreak of an infectious disease able to spread rapidly.
<b>fecal</b>	<i>adjective</i>	having to do with excrement.
<b>immunization</b>	<i>noun</i>	process of becoming immune to a disease.
<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>lab testing</b>	<i>noun</i>	procedure used to identify or characterize something, conducted under controlled scientific conditions in a lab (also called Laboratory).
<b>medical treatment</b>	<i>noun</i>	care given to a patient for an illness or injury, relating to the science or practice of medicine.
<b>microbe</b>	<i>noun</i>	tiny organism, usually a bacterium.
<b>mobilize</b>	<i>verb</i>	set into motion, assemble for action.
<b>monitoring</b>	<i>verb</i>	watch, keep track of, or check.
<b>mortuary services</b>	<i>noun</i>	service providing a space in which dead bodies are kept, for hygienic storage or for examination, until burial or cremation.
<b>non-pharmaceutical interventions</b>	<i>noun</i>	actions, apart from getting vaccinated and taking medicine, that people and communities can take to help prevent or limit the spread of illnesses.
<b>notification</b>	<i>noun</i>	action of notifying someone or something.
<b>oral</b>	<i>adjective</i>	having to do with the mouth or spoken words.
<b>outbreak</b>	<i>noun</i>	sudden occurrence or rapid increase.
<b>patient zero</b>	<i>noun</i>	person identified as the first carrier of a contagious disease in an outbreak of related cases.
<b>personal hygiene</b>	<i>noun</i>	action or habit of keeping oneself clean, especially as a means of maintaining good health.
<b>policy</b>	<i>noun</i>	set of actions or rules.
<b>population density</b>	<i>noun</i>	the number of people living in a set area, such as a square mile.
<b>practice</b>	<i>verb</i>	to do or perform often, customarily, or habitually

<b>Term</b>	<b>Part of Speech</b>	<b>Definition</b>
<b>recall</b>	<i>noun</i>	manufacturer's request that all the purchasers of a certain product return a product that may be defective or contaminated.
<b>route</b>	<i>noun</i>	path or way.
<b>rural</b>	<i>adjective</i>	having to do with country life, or areas with few residents.
<b>symptom</b>	<i>noun</i>	sign or indication of something.
<b>transmission</b>	<i>noun</i>	when disease-causing germs pass from an infected person to a healthy person.
<b>urban</b>	<i>adjective</i>	having to do with city life.
<b>vaccine</b>	<i>noun</i>	preparation of a weakened or killed pathogen, or of a portion of the pathogen's structure that upon administration stimulates antibody production against the pathogen but is incapable of causing severe infection itself.
<b>vector</b>	<i>noun</i>	animal that transmits a disease from one organism to another.
<b>warning</b>	<i>noun</i>	notice or bulletin that alerts to a hazard.
<b>waste management</b>	<i>noun</i>	collection, disposal, or recycling of materials that people have discarded.



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