



Classroom Activities

THE VACCINE WAR: The Growing Debate Over Vaccine Safety

VIDEO OVERVIEW

Vaccines have been touted as one of the most successful advances of modern medicine, yet an increasing number of parents are choosing not to vaccinate their children because of possible side effects. In this video chapter from *The Vaccine War*, students will examine the debate among public health officials, doctors and parents around vaccine safety and hear differing perspectives on the benefits and risks of vaccination.

GETTING STARTED

For classrooms studying health, biology and government, FRONTLINE provides a set of themes and discussion questions to help students analyze and understand key current events. Watch the video clip and start a discussion that examines the debate over childhood vaccination. Go further into this topic with *The Vaccine War Lesson Plan*, which models how disease spreads in a community with and without vaccine immunity.

VIDEO THEMES

- Vaccines have increased our lifespan by 30 years and have largely eradicated certain diseases, like smallpox and polio.
- While vaccination now prevents 16 different communicable diseases in the United States, some parents are concerned about the safety and sheer number of vaccines given to young children.
- In communities like Ashland, Ore., where 28 percent of children lack some or all of their recommended vaccinations, some parents, health officials and school administrators worry about the possibility of an outbreak—or “breakthrough disease”—in vaccinated children.
- The issue of vaccination can be contentious on both sides and involves balancing the risks to the public as a whole versus the risks to any one family or child.

DISCUSSION QUESTIONS

- Through a published schedule and set of guidelines, the Centers for Disease Control and Prevention (CDC) and public health officials recommend that every child receive certain vaccinations by age 6. What are the benefits of this recommendation to public health officials, to the community and to other children?
- Some parents and health care professionals question the CDC's recommendations and decide not to vaccinate their children, while others, like Jennifer Margulis, choose to vaccinate their children along an alternative schedule. How might her decision affect both her own children and others?
- In what ways is vaccination different from other types of personal health decisions?
Who should be involved in deciding whether children receive a specific vaccine?
- Should the government have the right to compel vaccination? Should parents have the right to refuse it?

GO FURTHER

Featured Lesson Plan: [“The Outbreak”](#)

Web-exclusive Resource: [Alternative Vaccination Schedules: An Interview with Robert W. Sears, M.D.](#)
<http://www.pbs.org/frontline/vaccines/interviews/sears.html>

LESSON PLAN: THE VACCINE WAR:

“THE OUTBREAK”

Overview:

In this lesson, students will watch the first chapter of the program, conduct a simulation to see how disease spreads in a community with and without vaccine immunity, and take part in a survey on views about vaccination. In doing so, they will consider some of the personal and societal aspects of decisions about vaccinating children. (For background information on vaccination, see “[How Do Vaccines Work?](#)” and other information in the [Related Resources](#) section of this guide:

<http://www.healthychildren.org/English/safety-prevention/immunizations/pages/How-do-Vaccines-Work.aspx>

Note: Students may have strong feelings about this issue based on their family history, parental viewpoint, religious background or other factors. Please ensure the discussion is respectful of different perspectives.

Subject Areas:

Health, Biology, English, Social Studies, U.S. Government

Grade Level:

Grades 7-12

Objectives:

Students will:

- Identify different perspectives on vaccinating children
- Develop an understanding of how disease is transmitted in a population with and without vaccine immunity
- Examine different views on the risks and benefits of vaccines
- Consider the balance between individual choice and public good involved in the question of vaccination

Estimated Time Needed:

One to two 50-minute class periods

Materials Needed:

- Internet access and equipment to show the class an online video clip and complete a survey
- Chapter One of *The Vaccine War*: “[A Visit to Ashland, Oregon](#)” [link to the homepage of this guide]
- Handout 1: [Outbreak](#) (PDF file)
- Small folded pieces of paper or index cards, one for each student, half with “V” written on them and half with “S”
- Handout 2 (optional): [Where Do You Stand on Vaccines?](#) (PDF file)

Procedure:

Video Chapter

1. Ask students what they think vaccines are and how they might work. If they are not sure, explain that vaccines act with the body's immune system to protect against disease. Point out that when the body is exposed to an infectious disease, it creates antibodies that can neutralize or destroy that particular disease. A vaccine is a weakened form of the disease that enables people to become immune to the disease without getting sick from it.
2. Explain that the class will watch a segment of FRONTLINE's *The Vaccine War*, which introduces two perspectives on whether children should be vaccinated. Ask students what they think the two perspectives might be.
3. Show Chapter One of *The Vaccine War*: "A Trip to Ashland, Oregon." As they watch, have students use a T-chart labeled "Favors Vaccines" and "Opposes Vaccines" to jot down words or phrases used in the video by people from the two viewpoints.
4. Ask students: "What perspectives on vaccinating children are presented in the chapter? Why do some parents choose not to vaccinate their children? What might be some of the consequences of that decision?"

Infectivitis Simulation

Round 1 – Without Vaccination

1. Remind students of the measles outbreak described in the video. Ask, "How could so many people be affected when just one person was initially infected?"
2. Give students copies of the [Outbreak](#) student handout and explain that the class will simulate how disease spreads in a community. Read the description of *Infectivitis*, making sure students understand its three-day progression and the motions they will use to signify their status.
3. Choose a student sitting near the center of the class to introduce *Infectivitis* to the community. That student should put both hands on the head as described in the student handout. Point out that this is Day 1 of Round 1. Count the number of people currently sick and have students record it on the handout.
4. Remind students that the sick person is contagious and spreads the disease by tagging one person while remaining seated. Announce the end of Day 1.
5. Continue in this manner, and each day of the round, do the following:

- Announce the beginning of the day
 - Remind sick students to change their status as the disease progresses
 - Count and record the number of sick people
 - Have sick people tag one susceptible student they can reach from their seat
 - Announce the end of the day
6. The round ends either when all students have had *Infectivitis* or when transmission stops because there is no one left to tag. Count and record the number of students who were sick and who were never sick during the round.

Round 2 – With Vaccination

7. Tell students that they will do the simulation again, but this time half of the students will be immune to *Infectivitis* because they were vaccinated for it. As in real life, students will not be able to tell who is immune and who is susceptible.
8. Distribute the folded cards and have students look at, but not share with anyone, what their card says. Students with “V” have been vaccinated and are immune, and students with “S” are susceptible. Have students write “50% Immune” and “50% Susceptible” on Round 2 of the student handout.
9. Conduct the simulation as before, except in this round, when immune students are tagged, they should hold up their “V” card. The people who tagged them do not get to tag anyone else, and the vaccinated students will not tag another student. (Note: If the student you choose to start the round has been vaccinated, the round will end immediately. You may want to conduct another round.)

Discussion

10. Lead students in a discussion about the simulation, asking questions such as:
- What observations can you make about disease transmission from the simulation?
 - Why did some people never get sick in Round 2?
 - Herd immunity prevents a disease from spreading because a large percentage of the population is immune to the disease as a result of vaccination. How does herd immunity benefit individuals who are not vaccinated?
 - What might happen if fewer people or more people were vaccinated? (If you have time, you may want to run more rounds with these scenarios to find out.)

- As the video points out, there are some risks associated with vaccinations. A few people have reactions ranging from rash to serious illness. How would you weigh the risks to an individual of getting the disease versus the risks of the vaccine itself? How would you weigh those risks against the benefit to society as a whole?

Survey: Where Do You Stand On Vaccines?

- Explain to students that FRONTLINE's *The Vaccine War* website includes a national survey that was conducted in February 2010 to determine views on vaccinating children. Have students answer key questions from the survey either online or by completing copies of the Where Do You Stand on Vaccines? handout.
- Have students compare their responses to the survey results reported on the website:
<http://www.pbs.org/wgbh/pages/frontline/vaccines/etc/questions.html>

CREDITS

This teacher's guide was developed by Cari Ladd. It was written by Leslie Comnes. Advisers were Megan Palevich of Montgomery School in Chester Springs, Pa., and Mark Percy of Braden River High in Bradenton, Fla.

The idea for the simulation in the lesson plan came from "Protecting the Herd," *Emerging and Re-Emerging Infectious Diseases*, by Joseph D. McInerney and Lynda B. Micikas. National Institutes of Health, National Institute of Allergy and Infectious Diseases (NIH Publication No 99-4645), 1999. Available at:

http://science-education.nih.gov/supplements/nih1/diseases/guide/pdfs/NIH_Diseases.pdf

LESSON EXTENSIONS

- Use this May 2008 report from the *PBS NewsHour*, which includes interview footage of two parents of children affected by the San Diego measles outbreak, to open a general discussion of opposing perspectives on vaccination. Conduct a debate on what are the medical risks vs. benefits to the individual and to the community with one side arguing for vaccination and one arguing against vaccination. Have each side prepare its arguments using information from the video and the [transcript](http://www.pbs.org/newshour/bb/health/jan-june08/vaccines_05-22.html) http://www.pbs.org/newshour/bb/health/jan-june08/vaccines_05-22.html from the PBS NewsHour's website.
- Show the entire *The Vaccine War* program. Have students respond to the "Did This Report Change Your Mind?" poll [link to <http://www.pbs.org/wgbh/pages/frontline/vaccines/etc/poll.html>] and see how others responded. Discuss: What about the video influenced your viewpoint on vaccines? Would it be appropriate for a TV program like this to try to change people's opinions? Why or why not? Do you think the video favored a particular perspective? If so, which perspective and how?
- Ask students to think about where they go for health information –and who they trust to give them medical advice. Have students explain their answers. Then, have students compare and analyze different sources of information and evidence presented in the video. <http://www.pbs.org/wgbh/pages/frontline/vaccines/view/>

For each source consider, for example:

Who is the expert?

What are the expert's qualifications?

How does the source derive its information? (For example, is it from a comprehensive study or from personal anecdotes?)

RELATED RESOURCES:

Information on How Vaccination Works

How Do Vaccines Work?

<http://www.healthychildren.org/English/safety-prevention/immunizations/pages/How-do-Vaccines-Work.aspx>

The American Academy of Pediatrics provides a brief overview of how vaccination protects the body from disease.

Information About Specific Diseases

Vaccines and Preventable Diseases

<http://www.cdc.gov/vaccines/vpd-vac/default.htm>

The Centers for Disease Control list descriptions of diseases for which there are vaccines, including their causes, symptoms and transmission.

Vaccine-preventable Diseases

<http://www.vaccineinformation.org/>

The Immunization Action Coalition provides informative Q&A sheets about specific diseases, with videos, photos, case histories and vaccine information. (Immunization Action Coalition is an organization that advocates vaccination.)

Questions About Vaccination

Frequently Asked Questions

<http://www.nvic.org/faqs.aspx>

The National Vaccine Information Center gives information about vaccine reactions and other concerns. (NVIC is a consumer organization founded by Barbara Loe Fisher, interviewed in the video.)

Do I Vaccinate?

<http://www.generationrescue.org/vaccines>

Generation Rescue presents issues to consider before vaccinating your child. (Generation Rescue's website describes itself as "Jenny McCarthy's Autism Organization.")

Concerns About Vaccines

<http://www.immunize.org/catg.d/p4038.pdf>

The Immunization Action Coalition addresses common questions about vaccines answered by doctors Paul Offit (from video) and Louis Bell in their book, *Vaccines: What You Should Know*.

RELATED STANDARDS:

These standards are drawn from "Content Knowledge," a compilation of content standards and benchmarks for K-12 curriculum by McRel (Mid-continent Research for Education and Learning) at <http://www.mcrel.org/standards-benchmarks/>.

Civics, Standard 3: Understands the sources, purposes and functions of law and the importance of the rule of law for the protection of individual rights and the common good

Health, Standard 2: Knows environmental and external factors that affect individual and community health

Health, Standard 8: Knows essential concepts about the prevention and control of disease

Language Arts, Standard 9: Uses viewing skills and strategies to understand and interpret visual media

Science, Standard 11: Understands the nature of scientific knowledge

Science, Standard 12: Understands the nature of scientific inquiry