



Delivering the Goods



How is it that we can prevent, treat, or cure many dangerous diseases, yet, every year millions of people die from some of the most treatable of those diseases? Geography, poverty, political instability, apathy, and ignorance are all barriers to global health. And often, governments and international aid organizations must contend with limited funding, even when the consequences of delayed action are particularly serious. But every day, people are exploring—and finding—ways to overcome the obstacles to delivering health care to the people who need it.

ACTIVITY AT A GLANCE

PURPOSE: To demonstrate the kinds of difficulties aid organizations face in getting medical care and supplies to people who need them

OVERVIEW: Student teams develop plans to administer a flu vaccine to the citizens of a remote town. The challenge is to immunize everyone in the shortest amount of time at the lowest cost. Students study a map and use travel and cost information to develop their plans. Then, they test their plans to see how well they stand up to some “real-world” conditions. To do this, teams pick cards describing actual situations that can affect a mission by increasing its cost or the time required to implement it. The class compares the different plans and discusses issues that can interfere with delivering health care.

LEVEL: Grades 7–12

TIME: 1–2 class periods

CORE CONCEPTS

- To take advantage of healthcare interventions, a country must be both willing to make them available and be able to deliver them to its citizens.
- Poverty, poor infrastructure, unstable or uncooperative governments, and natural obstacles, such as mountains and bad weather, can make delivering medical care and supplies difficult.
- The scarcity of trained healthcare professionals interferes with providing people regular, sustained health care.

MATERIALS

- Student sheet for each student
- Photocopied set of *Things That Happen to an Aid Mission* cards, cut apart and placed in a container (make additional sets, if needed)

STANDARDS CONNECTION

Geography

- Standard 1: Use maps to acquire, process, and report information.
- Standard 3: Analyze the spatial organization of people, places, and environments.
- Standard 16: Examine the meaning, use, distribution, and importance of resources.
- Standard 18: Apply geography to interpret the present and plan for the future.

Social Studies

- Standard VII a: Explain how the scarcity of productive resources requires systems to produce and distribute goods and services.
- Standard IX d: Analyze the causes, consequences, and possible solutions to persistent global issues, such as health.

Health

- Standard 1: Comprehend concepts related to health promotion and disease prevention.
- Standard 4: Analyze the influence of culture, technology, and other factors on health.
- Standard 6: Use goal-setting and decision-making skills to enhance health.

NOTE: One story in this program discusses distributing condoms in Thailand to stop the spread of HIV/AIDS.

PROGRAM CONNECTION

The show examines the great paradox of global health: we can now prevent, treat, or cure many diseases afflicting humankind, yet, every year over ten million children die from some of the most treatable of those diseases—pneumonia, diarrhea, and measles. We have known how to cure tuberculosis for half a century, yet each year two million people succumb to this terrible disease. Half a million mothers have no access to emergency obstetrical care and die in childbirth. Millions of others succumb to HIV / AIDS due to lack of drugs that could keep them alive. There are many barriers to global health—geography, poverty, political instability, apathy, and ignorance—but people are exploring ways to overcome these obstacles every day.

In this activity, students devise ways of overcoming obstacles that make it hard to deliver a flu vaccine to the people living in a remote town. In developing their plans, students learn about the kinds of difficulties aid organizations face in getting medical supplies to people who need them.

BEFORE WATCHING

- Make a list of situations in which it costs more to get something done quickly. Conversely, it costs less if the work is done over a longer period of time. Have students personally experienced such situations? Discuss how one decides how to balance cost and time considerations. How could cramming for a test, pulling an all-nighter, and practicing a sport or instrument be examples of these kinds of situations?

When a situation is urgent and the consequences of delayed action are particularly serious, time becomes the priority and people are more willing to pay the extra costs associated with a quick result. When gradual change is acceptable or when money is limited, people may opt—or be forced—to do things over a longer period of time. Using fewer staff, reusing materials, and sending by regular mail rather than by express service are ways to save money by planning ahead or spreading work over a longer period of time.

- Ask students to brainstorm some things that could interfere with delivering medical care and supplies to remote areas.

Answers include: Lack of funding; governmental instability; lack of infrastructure (e.g., roads and refrigeration); war; lack of political will and leadership to provide medical care and supplies; lack of public understanding about how to stay healthy; and mistrust (e.g., western medicine causes impotence, HIV/AIDS, or sterility).

AFTER WATCHING

- Have the class make a list of obstacles that health workers face in “delivering the goods.”
- Discuss which issues that interfere with delivering health care and medical supplies in many parts of the world are also issues in the United States.
- Ask students to list specific stories in the program that solved a healthcare delivery problem. Discuss the degree to which imagination, persistence, courage, and money played a part in the solution.



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FOR MORE INFORMATION

pbs.org/rxforsurvival

PROCEDURE

1. Divide the class into teams of four and distribute the student sheet. Give teams 20 minutes to complete questions 1–6. Remind the class that the goal is to immunize all the townspeople in the shortest amount of time for the least cost.
2. After teams have completed step 6, have them see how well their plans stand up to some “real-world” conditions. Before class, photocopy three sets of Things That Happen to an Aid Mission cards. Cut the sets apart and place the cards in a container. Have each team pick three cards and complete questions 7 and 8. If a team picks duplicate cards, have that team draw additional cards until it has three different cards.
3. Have each group report the events described on the cards they drew and their effect on the outcome of their mission. On the board, note the cost and time required to implement each plan.
4. Remind students that a flu outbreak demands a quick response. Yet, they have limited funds. To help students understand the range of options, discuss the following questions:
 - If time were no issue and one or more motorcycles could take multiple trips, by how much could you reduce costs and still vaccinate everyone?
One motorcycle could make six round-trips. This would take a minimum of 21 hours per trip. One would also have to allow time for eating and sleeping. While this option costs only \$5,120, it takes 126 hours plus the time required for eating and sleeping.
 - How could you change your plan to immunize people faster than the plan with six riders?
Students could increase the number of motorcycles. With more riders, more people can be vaccinated per hour. However, each motorcycle adds \$5,000, so students need to balance the urgency of vaccinating everyone with the cost.
5. The low-cost option takes longer to implement. A rapid response costs more. The optimal situation is to immunize everyone quickly at a low cost. Have the class discuss how to balance the cost and time considerations and devise a plan that supports the class’s priorities.

GOING FURTHER

- Have students research and report on programs that succeed in delivering health care to people who typically lack such care.
- Research the controversy surrounding vaccinations. What risks are associated with vaccination? What reasoning might lead people to avoid being vaccinated? Why does the American Medical Association recommend that everyone be vaccinated?
- Ask the school nurse what vaccines are mandatory for school attendance and which ones are suggested. What are the reasons? How critical a school-health issue is infectious disease?
- Play the following classroom games to explore health conditions around the world and how vaccines play an important role in improving them.

Download these free games at pbs.org/wgbh/rxforsurvival/campaign/givetime/index.html.

- *Investing Your Money Wisely*: If you were advising a government on how to spend its limited healthcare budget, how would you keep the largest possible number of people healthy? In this game, you decide which public health measures should be put in place first. (Activity type: Debate. Duration: 30 minutes. Requires a table. Preparation time: 15 minutes.)
- *Growing Up Healthy*: How easy is it for a child to grow up healthy without an adequate public health care system? Find out how challenging it can be! (Activity type: Board game. Duration: 10 minutes. Requires tabletop. Preparation time: 15 minutes.)
- *Unfair Race*: How much of an impact does where you live have on your health? Players assume the roles of different countries and examine the extent to which one’s country can help or hinder one’s health. (Activity type: Group experience. Duration: 15 minutes. Requires a large room or outdoor space. Preparation time: 20 minutes.)

ASSESSMENT

Students' responses to the questions on the student sheet should incorporate the points discussed in the answers (included in this section). In addition, consider the following when assessing student work:

- Supported the team by contributing to the discussion, listening to others' ideas, discussing a variety of views, and helping the team develop a consensus.
- Helped the team to accurately calculate the plan's costs and times.
- Devised a thoughtful strategy for immunizing the residents of Lakeville and identified ways of making the initial plan more efficient.
- Contributed to the class discussion, either by sharing interesting ideas or asking insightful questions.
- Wrote thoughtful responses to student sheet questions that demonstrated an understanding of the difficulties associated with delivering health care and medical supplies to all people.

ANSWERS TO THE DELIVERING THE GOODS STUDENT SHEET

1. Complete the table about the two possible routes from Base to Lakeville.

ROUTE	TIME TO TRAVEL TO LAKEVILLE	ADVANTAGES	DISADVANTAGES
Highway north to dirt road	8 hours	<i>Faster; less time on dirt roads; avoids southern desert and volcano</i>	<i>Passes through snowy mountain range; crosses two bridges, which might wash out</i>
Dirt road through the desert	10 hours	<i>Avoids snowy mountain range and bridges that might wash out</i>	<i>Slower; passes through desert and near volcano</i>

2. What is the population of Lakeville? (*1,200 people*)
3. How many coolers do you need? (*6 coolers*) How many riders will you need? (*6 riders*)
4. How many hours will this group need to vaccinate the entire population? (*5 hours*)
5. At this point, how much does the plan cost after paying for the coolers and motorcycles?

ITEM	COST PER ITEM	QUANTITY	TOTAL
Motorcycles	\$5,000 each	6	\$30,000
Cooler with ice and 200 doses of vaccine	\$20 each	6	\$120
Grand Total			\$30,120

For questions 6–8, answers will vary.

THINGS THAT HAPPEN TO AN AID MISSION Activity Cards

Half of the people in Lakeville believe their traditional medicines can successfully stop a flu outbreak. They do not wish to be vaccinated. Convincing them adds a 24 hours.

Floods have washed out the bridges. Add six hours for every bridge crossed.

There are already some trained community workers in Lakeville. With their help, you reduce the time you need to vaccinate everyone by two hours.

A militia has attacked Lakeville. Most of the population has fled across the border by the time you arrive. In addition, the militia takes some of your supplies and equipment. As a result, your plan takes a 100 hours longer and replacing the doses and equipment costs \$5,000.

The rainy season has made the dirt roads muddy. Add five hours to your travel time.

The highway is repaved and the motorcycles can drive faster. If you took the highway, subtract one hour from your travel time.

You have a leak in your gas tank. Fixing it adds two hours to your trip.

You have mechanical problems with a motorcycle. Add eight hours to do the repairs.

Lakeville's leaders demand a \$1,000 payment before giving you access to their town.

Since the last official census, Lakeville's population has grown by 100. Add the time it takes to return to base and bring the extra doses back to Lakeville. Also, add \$10 for the cost of the extra vaccines.



When you arrive in Lakeville, a festival is taking place. The townspeople are all at the festival, making it easy to immunize everyone. Subtract two hours from your immunization time.

Last year, a child in Lakeville got very sick after receiving a vaccine. Now, half the people in Lakeville refuse to be vaccinated. You send out health educators ahead of your mission to reassure the population. This costs you \$3,000.

Lakeville just built a new clinic, making it easier to immunize the area. Subtract two hours from your immunization time.

The temperature was much higher than expected during your trip. While you are in Lakeville, the ice in three coolers melts. Add \$60 for the cost of the new vaccines. Also add the number of hours it takes to get the replacement coolers and bring them back to Lakeville.

One night, the refrigerator at the home base breaks down, spoiling 500 doses. Replacing everything costs \$500.

You have arrived at planting time. It takes people longer to get to the clinic where you are giving the flu shots. Add 24 hours to your vaccination time.

A snowstorm blows through the northern mountain range, making the dirt road through the mountains impassable. If you planned to take this route, you will have to turn around and take the other route. This adds 12 hours to your travel time.

A sandstorm rages in the desert around the road south of Lakeville. If you planned to take this route, add five hours to your travel time.

A volcano erupts near Lakeville. The ash from the eruption lowers visibility, adding three hours to your travel time.

Your motorcycle gets a flat tire. Add an hour to your travel time.



RESOURCES

RELATED RX FOR SURVIVAL WEB SITE FEATURES (see pbs.org/rxforsurvival)

Why Global Health Matters: Learn why we should all be involved in global health initiatives.

Global Health Atlas: Learn about the health profiles of nations, including life expectancies and incidence of infectious disease.

Deadly Diseases: Learn about some of the diseases that are humanity's most feared killers.

Global Health Champions: Learn about men and women who have profoundly changed global health outcomes and saved lives in many parts of the world.

Ask the Experts: Post a question about the value of international aid for health care.

Get Involved: Find meaningful ways to take action.

Dispatches from the Field: Hear first-person accounts from people on the frontlines of health care.

LINKS

Doctors Without Borders

doctorswithoutborders.org

Follow these dedicated medical professionals into the field as they deliver treatment to victims of armed conflict, disease, and natural disaster in nearly 70 countries.

The New Heroes

pbs.org/opb/thenewheroes

Discover a new model for “doing good” by following the stories of several social entrepreneurs—individuals who use innovative ways to address large-scale social issues.

Oxfam International

oxfam.org

Learn about Oxfam's efforts to support and empower people struggling with poverty.

Project Impact

project-impact.net

Learn how Project Impact has placed the distribution of medical supplies and services in the hands of the members of the communities it serves.

Skoll Foundation

skollfoundation.org

Read about the innovative health and human service programs the Skoll Foundation supports.

Visit a Refugee Camp

refugeecamp.org

Glimpse the hardships that the world's 33 million displaced people experience every day.

BOOKS

How to Change the World: Social Entrepreneurs and the Power of New Ideas David Bornstein. New York: Oxford University Press, 2004.

Read nine stories of people who use creative ways to help those in need, from Brazil to Bombay.

Mountains Beyond Mountains: The Quest of Dr. Paul Farmer, a Man Who Would Cure the World Tracy Kidder. New York: Random House, 2004.

For 20 years, Dr. Paul Farmer has traveled the world, treating the desperately poor, comforting the seriously ill, and refusing to let any obstacle, large or small, stand in his way.

Red Cross, Red Crescent: When Help Can't Wait Leslie Burger and Debra L. Rahm. Minneapolis: Lerner Publications Co., 1996.

Learn the history of the world's largest humanitarian organization and the steps it takes to mobilize large-scale relief efforts around the globe.

The War on Hunger: Dealing with Dictators, Deserts, and Debt Ron Fridell. Brookfield, Conn: Twenty-First Century Books, 2003.

Join the men and women who face the immense challenge of fighting hunger while overcoming the powerful forces of politics, economics, and geography.

World Watch Series Various authors. Chicago: Raintree, 2003.

Compare the missions and methods of various aid organizations profiled in this series, including UNICEF, the United Nations, and the World Health Organization.



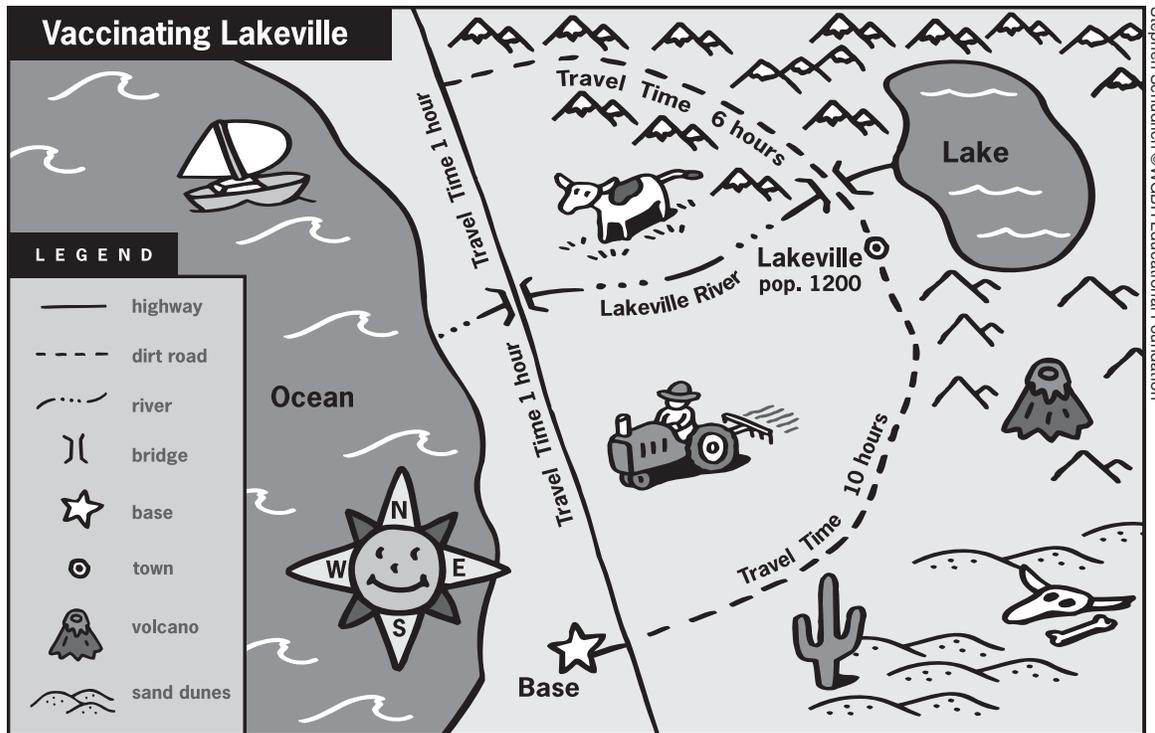
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Influenza (the flu) has made people sick since ancient times. Some strains are mild and make people sick for a week. Some strains are deadly. An estimated 30 million people died as a result of the 1918 flu epidemic. Fortunately, flu vaccines can protect people against the flu. Yet, a major challenge is getting people the vaccine they need. You manage a team of motorcycle-riding healthcare workers, similar to the “Riders for Health” featured in the program. There is an outbreak of a virulent, highly contagious flu near the town of Lakeville. You must vaccinate all the residents before they get sick and spread the disease further—you don’t want this local outbreak to turn into an epidemic. Yet, your program has limited funds. In this activity, you will try to design a plan that immunizes everyone in a reasonable amount of time and at an affordable cost.



1. Complete the table about the two possible routes from Base to Lakeville.

ROUTE	TIME TO TRAVEL TO LAKEVILLE	ADVANTAGES	DISADVANTAGES
Highway north to dirt road			
Dirt road through the desert			

2. What is the population of Lakeville? _____

- Each cooler holds 200 doses of vaccine and each rider can carry one cooler.
 - How many coolers do you need to vaccinate all the residents of Lakeville? _____ coolers
 - If each rider makes one trip, how many riders will you need? _____ riders
- How much time do you need? You send the number of riders from question 3 out as a group, and they arrive in Lakeville as a group. Each rider can vaccinate 40 people per hour. At this rate, how many hours will this group need to vaccinate the entire population? _____ hours
- At this point, how much does the plan cost after paying for the coolers and motorcycles?

ITEM	COST PER ITEM	QUANTITY	TOTAL
Motorcycles	\$5,000 each		\$
Cooler with vaccines	\$20 each		\$
Grand Total			\$

- Outline your plan below.
 - Our route will be _____.
 - We will use _____ riders and this plan will cost \$_____.
 - Starting when the first motorcycle leaves the base and ending when the last person in Lakeville is vaccinated, the mission will take us _____ hours.
- You are on your way to Lakeville. Pick three cards. These describe situations you face on the mission. List the events and indicate how much time and money they add or subtract from your original estimates.

DID YOU KNOW?
 The Tsunami of December 2004 destroyed not only the homes and lives of thousands, but also roads, harbors and airstrips—the very things needed to deliver food and medical supplies to survivors.

DESCRIPTION OF THE EVENT AFFECTING YOUR AID MISSION	Add to or subtract from time (hours)	Add to or subtract from cost (dollars)
1.		
2.		
3.		
Enter the time and cost from Step 6		
Actual time and cost of project		

- What kinds of things might you do next time to anticipate and/or solve these situations?

DID YOU KNOW?
 Under to the Geneva Convention, warring parties are required to allow humanitarian access to the affected populations. Unfortunately, groups involved in armed conflict, especially those involved in a civil war, often ignore this convention.