

Why Vaccines Matter

Activity Guide

Learning objectives:

- Getting vaccinated protects the people around you.
- High levels of vaccination in a community help protect unvaccinated people.

Version 1 – Best for grades K - 4 and smaller group sizes

Materials:

- “Low vaccination” bubble board
- “High vaccination” bubble board

Advance preparation:

Before using the activity for the first time, prepare the bubble boards. Choose one board to be the “low vaccination” board. Using the permanent marker, mark 30 bubbles around the board (see sample layout on yellow board in the photo below; the exact placement of marks is not crucial). The other board will be the “high vaccination” board; mark 80 bubbles around the board (see sample layout on the green board in the photo on the next page.)

What to do:

1. Introduce the idea of how germs spread by asking students about their own experiences with getting sick:
 - *Have you ever had a cold before?*
 - *Did you ever think about how you got it? Where did the germs come from that made you sick?*
 - *When you had a cold, did anyone around you get sick, too? Your sister or brother, or a friend at school?*
2. Explain that sicknesses like colds are caused by viruses – germs that are too tiny to see—and they can spread from one person to another. People who have the virus can infect the people around them and make them sick, too.
 - *What are some ways that people might spread germs to each other?*
3. Point out that some viruses, like colds, don't usually make people very sick, but other viruses, like the one that causes COVID-19, can be much more dangerous. To help protect us against the dangerous viruses, we have medicines called vaccines.
 - *Have you seen or heard of a vaccine before?*
 - *What have you heard about them?*
4. Invite students to help you find out how a virus spreads through a group of people using a model. Show them the “low vaccination” bubble board and ask them to imagine that it is a group of people. (To connect the model to students' experience, you could suggest a community they know, like “the kids at our school” or “the people in your neighborhood.”)
 - *Each bubble is a person*
 - *Marked bubbles are people with the vaccine – they are protected from the virus*
 - *Plain bubbles are people without the vaccine – they can catch the virus*
5. Invite a student to “infect” one person on the board by pushing down an unmarked bubble. Explain that the four “people” around the infected person—up, down, left, and right (but not diagonal)—will catch the virus from them, unless they are



vaccinated. You could suggest a scenario where this might happen, like “this person sits with these four people at the lunch table.” Ask students to push down those bubbles.

- *Who is now infected with the virus?*
 - *Which new people can those people now infect?*
6. Ask students to infect any unvaccinated “people” that are in contact with the newly infected people (up/down/left/right) by pushing down those bubbles. You could ask students to suggest situations where the infections happen, like “these three sat together on the bus going home” or “these four went to the same afterschool program.”
 7. Repeat the infection step until there are no more unvaccinated people next to infected people. Remind students if needed that the vaccinated people (marked bubbles) can't get the virus, so those bubbles stay up.
 8. Discuss what this model shows:
 - *What did you notice about how the virus spread through the group (our school)?*
 - *How many of the unvaccinated people got infected?*
 - *What do you think could make the virus spread more slowly?*
 9. Show the group the “high vaccination” bubble board. Ask:
 - *What do you notice about this group of people? How is it different from our first one?*
 - *How do you think the virus will spread in this group?*
 10. Repeat the infection activity (steps 5 – 7 above) with the second board. Then ask students to compare this result to the first one:
 - *What did you notice about how the virus spread in this group?*
 - *How many unvaccinated people got infected this time?*
 11. Explain that there are some people who can't get the vaccine, like little kids and some people with other health problems that make the vaccine not work for them.
 - *If you couldn't get the vaccine, which group (school/neighborhood) would you rather be in—the first board or the second board? Why?*
 - *Do you know anybody in our community who can't get the vaccine?*
 12. End by summarizing key ideas from the discussion:
 - Vaccinated people keep the virus from spreading to others around them. Having the vaccine protects not just you, but also the people around you.
 - When only a few people are vaccinated, the virus can spread around them.
 - When lots of people are vaccinated, the virus can't spread very far. This protects people who aren't vaccinated.



Optional extension:

What happens with a virus that spreads more easily? Try the activity again with each board, this time pushing down bubbles for unvaccinated people both adjacent and diagonal to the infected person.

Maintenance:

If the marks begin to wear off the bubbles, refresh using the permanent marker.

Version 2 – Best for grades 5+ and larger group sizes

Materials:

- Two large containers or bowls
- Index cards, 2 per student

Advance preparation:

Before starting the activity, place cards in each container equal to the number of students in the class (for example, if the class has 25 students, each container should have 25 cards):

- **Container 1 (low vaccination):** Write “virus” on 3 cards, “vaccine” on 3 different cards, and leave the rest blank.
- **Container 2 (high vaccination):** Write “virus” on 3 cards, keep 3 cards blank, and write “vaccine” on all the remaining ones.
- Fold all cards in half as you put them in the container so no one can read them.

What to do:

1. Introduce the idea of how germs spread by asking students about their own experiences with getting sick:
 - *Have you ever had a cold before?*
 - *Did you ever think about how you got it? Where did the germs come from that made you sick?*
 - *When you had a cold, did anyone around you get sick, too? Your sister or brother, or a friend at school?*
2. Explain that sicknesses like colds are caused by viruses – germs that are too tiny to see—and they can spread from one person to another. People who have the virus can infect the people around them and make them sick, too.
 - *What are some ways that people might spread germs to each other?*
3. Point out that some viruses, like colds, don’t usually make people very sick, but other viruses, like the one that causes COVID-19, can be much more dangerous. To help protect us against the dangerous viruses, we have medicines called vaccines.
 - *Have you seen or heard of a vaccine before?*
 - *What have you heard about them?*
4. Explain that you will be modeling how viruses like COVID-19 spread through a community, using the students in your class. Show Container 1 and explain that three people will be “infected” with the virus, three people will have vaccines, and the rest will have neither.
5. Invite each student to take a card from Container 1. They may open and read it but should not let anyone else know what it says.
6. Ask students to shake hands (or elbow bump, or air high five) with the students immediately next to them on all four sides. This represents how the virus could spread between people.
7. Ask the students with the “virus” cards to raise their hands. Explain that anyone who shook hands with an “infected” person is now also infected and should raise their hands also—except people with the “vaccine” cards, who are protected.
8. Repeat the handshake process, with newly infected students now passing on the virus too.
 - *How many students are infected now?*
 - *How many rounds do you think it would take until all the unvaccinated students are infected?*
 - *What could we do to slow down how the virus spreads?*
9. Show Container 2 and explain that in this case, almost all the students will be vaccinated.
 - *How do you think this case will be different from the first?*
 - *How many rounds do you predict it will take for all the unvaccinated students to be infected?*

10. Repeat steps 6 – 9 with Container 2 and count the number of infected people after each round.
11. Discuss:
 - *How was the spread of the virus different between the two groups?*
 - *Was there anything about how it spread that surprised you?*
12. Explain that there are some people who can't get the vaccine, like little kids and some people with other health problems that make the vaccine not work for them.
 - *If you couldn't get the vaccine, which group would you rather be in? Why?*
 - *Do you know anybody in our community who can't get the vaccine?*
13. End by summarizing key ideas from the discussion:
 - Vaccinated people keep the virus from spreading to others around them. Having the vaccine protects not just you, but also the people around you.
 - When only a few people are vaccinated, the virus can spread around them.
 - When lots of people are vaccinated, the virus can't spread very far. This protects people who aren't vaccinated.

What's going on:

Infectious diseases spread like a chain reaction, from one person to the people they interact with, to the people *they* interact with, and so on. Vaccination helps protect a person from getting sick, but it also slows this chain reaction because vaccinated people don't spread the disease as easily to others. High levels of vaccination help to build "community immunity" (often called "herd immunity" because the principle was first studied in groups of lab animals). Community immunity means that because the disease can't spread as easily between vaccinated people, it's less likely to spread to unvaccinated people as well.

Some people choose not to get vaccinated, but others *can't* get vaccinated—maybe because they are too young or because their immune system is weak for another reason. Often these are the people who are most likely to get seriously sick. The more people who get vaccinated, the more everyone is protected.

The level of vaccination needed for community immunity depends on the virus. The more easily a virus spreads, the more people who need to be vaccinated.

In this activity, vaccination completely stops the spread of the disease. COVID-19 vaccines do not completely stop the coronavirus, but they do help protect unvaccinated people in two ways. First, a vaccinated person, especially with a booster shot, is less likely to get infected if they are exposed to the virus. Second, if they do get infected, they are likely to be contagious for a shorter period of time.

Credits and rights:

Version 1 was adapted by The Franklin Institute from "Herd Immunity – Pop Its," developed by The Pensacola MESS Hall for Communities for Immunity.

Version 2 was adapted by The Franklin Institute from "New Vaccines Workshop, Activity 1: Creating Herd Immunity" developed by the Centre for the Cell.

This toolkit was made possible by support from the National Nurse-Led Care Consortium through a cooperative agreement with the Centers for Disease Control and Prevention.

Copyright 2022, The Franklin Institute, Philadelphia, PA. Published under a Creative Commons Attribution-Noncommercial-ShareAlike license: <https://creativecommons.org/licenses/by-nc-sa/4.0/>