

# Exploring Polio



DAVID J. SENCER  
**CDC MUSEUM**  
PUBLIC HEALTH ACADEMY



# Word Bank

virus

polio

paralysis

infectious

sanitation

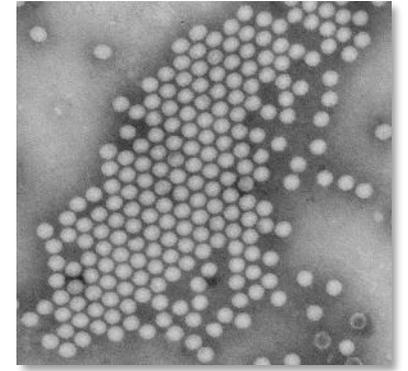
phrenic nerve

poliovirus

	disabling and life-threatening disease caused by poliovirus infection
	likely to be transmitted to people and organisms through the environment
	a nerve that runs from the neck to the diaphragm and controls breathing
	type of microbe that causes infectious diseases
	loss of the ability to move (and sometimes to feel) part of the body
	making or keeping things free from filth, infection, or other dangers to health
	virus that infects people and causes poliomyelitis, polio for short

# Understanding Polio

- Polio (aka poliomyelitis) is:
  - a disabling and life-threatening disease
  - caused by the poliovirus
- Polio can be spread through:
  - Contact with the feces (poop) of an infected person
  - Droplets from a sneeze or cough of an infected person
  - People who are infected even without symptoms
- Symptoms of Infection:
  - 1 out of 4: flu-like symptoms (sore throat, fever, etc)
  - 1 out of 25: meningitis infection of brain or spinal cord
  - 1 out of 200: paralysis/weakness in arms, legs, or both





## Think About It

1. What microbe causes polio?
2. How is polio spread in a community?
3. Why do some communities lack access to clean water and sewage sanitation?

# Polio and CDC

- Polio usually infects children
- Polio infection can cause paralysis in any area of body
- Phrenic nerve paralysis affects diaphragm muscle and leads to an inability to breathe
- Iron lungs provided artificial respiration for polio patients
- Without iron lung, patients died
- Today, portable respirators have replaced the need for iron lungs



# Polio and CDC

- President Franklin D. Roosevelt contracted polio and was partially paralyzed
- Roosevelt asked Basil O'Connor to found National Foundation for Infantile Paralysis to study polio, which later became the March of Dimes
- CDC and partners are working to globally eradicate polio through vaccination
- Last case of endemic (naturally occurring) polio in U.S. was in 1979





## Think About It

1. What symptom is required for a person to be considered to have polio?
2. What types of discrimination do people with physical disabilities experience?
3. What are the disadvantages of iron lung treatment?

# From the Expert



<https://youtu.be/C6Weidit5Wo>



## Think About It

1. What are the dangers associated with polio?
2. Why is it important for everyone to understand the dangers of polio?
3. How can your efforts support the efforts of CDC?

## Call to Action!

1. Create a lung model.
2. Conduct a breathing demonstration.
3. Share your findings.

Why do you think participation is important?

Give it a  
Try

# Use the Engineering Design Process



Define

Define the problem



Research

Do background research



Requirements

Specify requirements



Brainstorm

Develop solutions



Build

Build a prototype



Test

Test and redesign

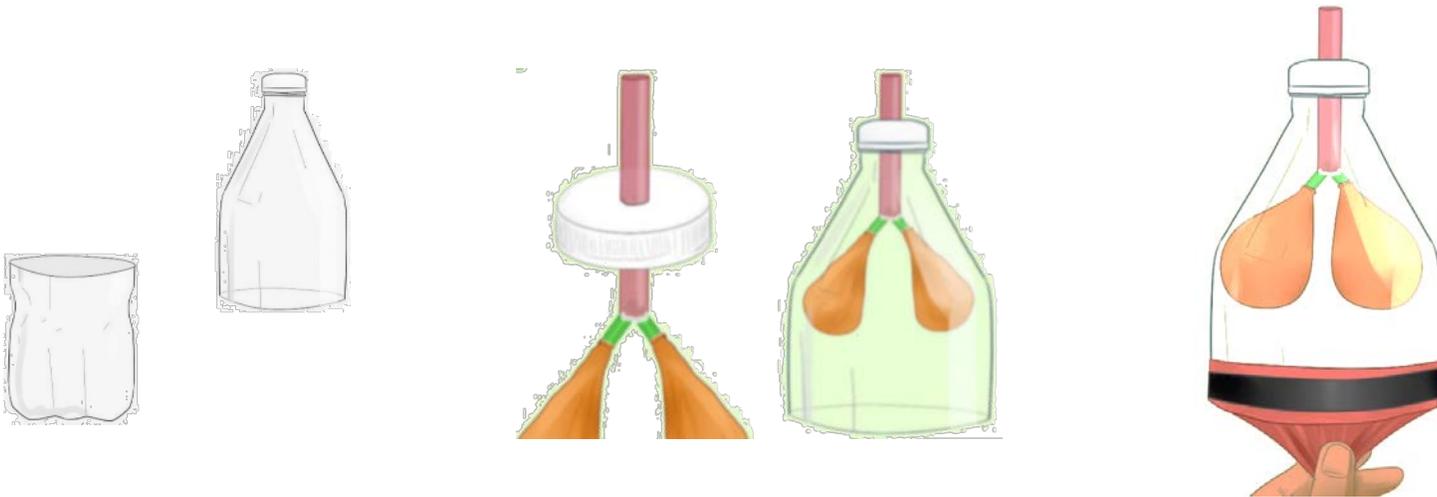


Share

Communicate results

## 1. Create a lung model.

- Use a plastic bottle to make a chest cavity
- Use straws and balloons to make the windpipe and lungs
- Assemble and add the diaphragm muscle and phrenic nerve



Give it a  
Try

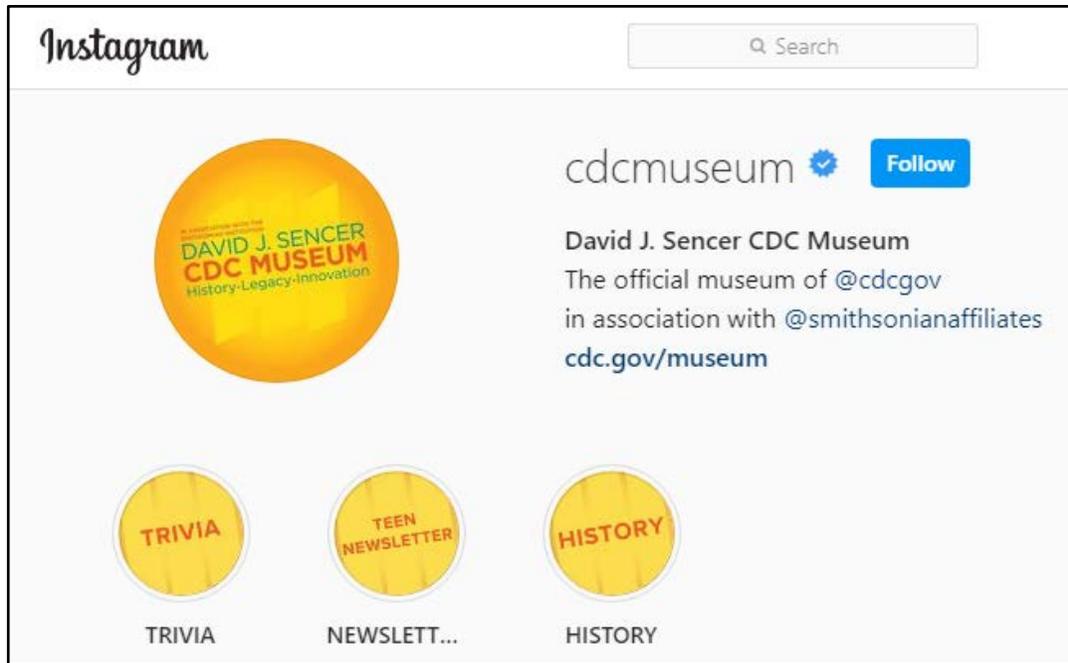
## 2. Conduct a breathing demonstration.

- Record a demonstration of your iron lungs
- Pull down on the diaphragm to show how the lungs respond
- Describe how paralysis of the phrenic nerve due to polio would change the lungs

Give it a  
Try

### 3. Share Your Findings

- Instagram @CDCmuseum



Give it a  
Try

Questions? 