

Polio Eradication



DAVID J. SENCER
CDC MUSEUM
PUBLIC HEALTH ACADEMY



Word Bank

endemic

vaccine

paralysis

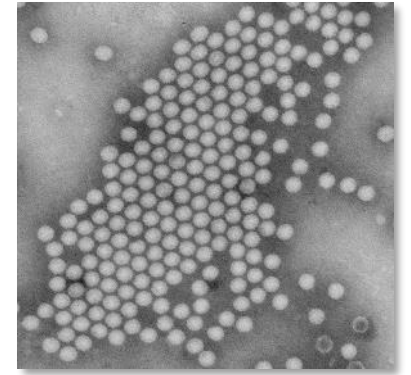
eradication

virus

	a substance used to stimulate the production of antibodies and provide immunity against disease
	the reduction to zero of an infectious disease's presence in the global host population
	type of microbe that causes infectious diseases; has a core of genetic material but no way to reproduce on its own
	the regular presence of a disease or infectious agent in a population
	the loss of the ability to move (and sometimes to feel anything) part or most of the body; caused by illness, poison, or injury

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)
 - 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. How does the poliovirus's choice of host make it an easy target for **eradication**?
2. What jobs and skills would be needed to stop a disease from spreading?
3. Polio mainly affects children. How does that affect the public's interest in stopping the spread of the poliovirus?

Polio and CDC

- Inactivated polio vaccine (IPV)
 - Developed by Jonas Salk in 1950s
 - Uses killed poliovirus
 - Given through injection
 - U.S. only uses IPV for safety reasons
- Oral polio vaccine (OPV)
 - Developed by Albert Sabin in 1960
 - Uses weakened live virus
 - Given as drops in the mouth
 - OPV preferred in places where administration is difficult, particularly remote places



Polio and CDC

- In 1955, CDC Epidemic Intelligence Service (EIS) Officers responded to an incident at Cutter Laboratories where 40,000 children being accidentally injected with live poliovirus
 - 260 children were paralyzed
 - 10 children were killed
 - Led to increased vaccine safety regulations



- CDC partnering with other agencies through Global Polio Eradication Initiative (GPEI) to eradicate polio globally
 - Cases of polio down over 99% globally
 - Last endemic case in U.S. was in 1979
 - Polio only endemic in Pakistan and Afghanistan

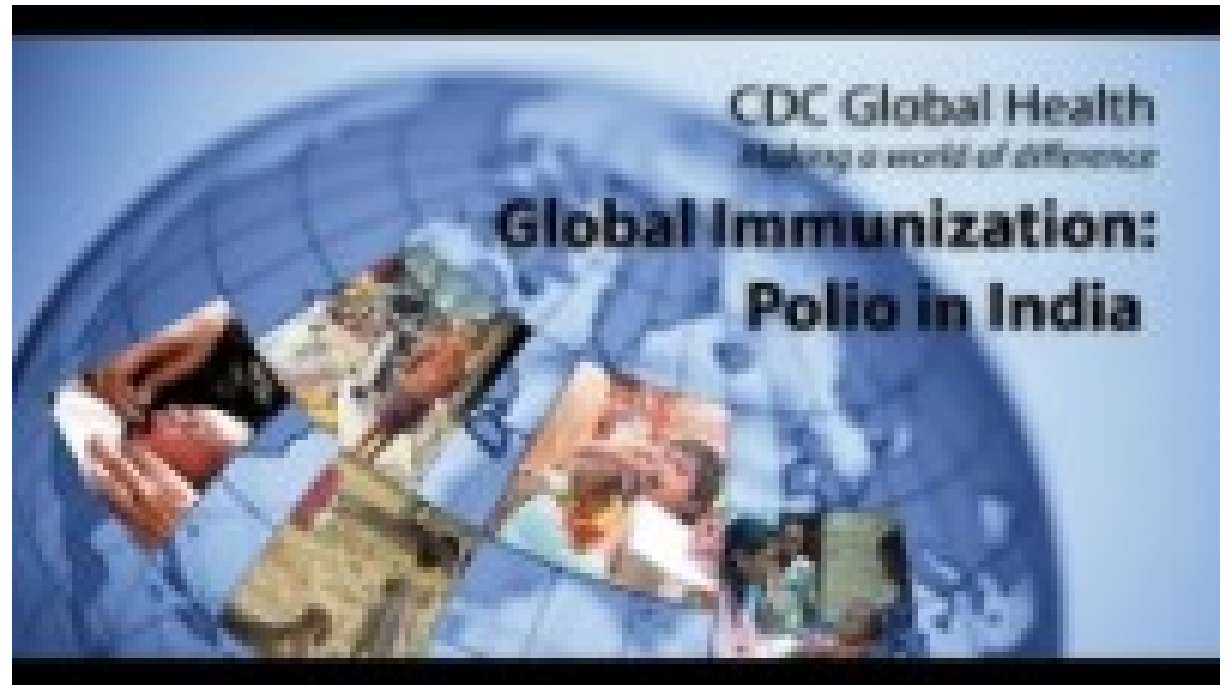




Think About It

1. Why might people be reluctant to be **vaccinated**?
2. How many years have passed since the disease was **endemic** in the U.S.?
3. How does **vaccination** help limit the spread of polio?

From the Expert



<https://youtu.be/uPGhmLzUGec>



Think About It

1. What role does global politics play in public health?
2. Explain the important role communication plays in **vaccination** initiatives.
3. How can your efforts support the efforts of CDC and GPEI?

Call to Action!

1. Design and build a polio vaccine carrier.
2. Test your prototype.
3. Share your designs.

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. Design and Build the Vaccine Carrier

- Design a vaccine cooler that can maintain temperature between 35-46°F (2-8°C)
- Build a prototype of your design

Give it a
Try

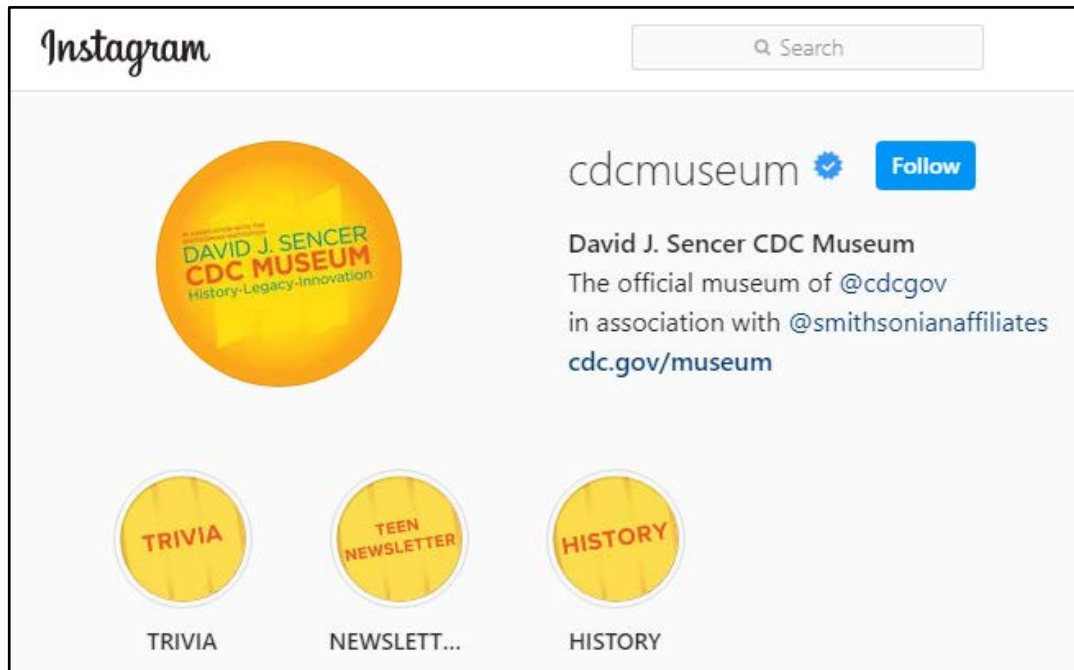
2. Test the Vaccine Carrier

- Add a frozen substance to your vaccine carrier and monitor temperature over time
- Graph your results
- Suggest improvements for design

Give it a
Try

3. Share Your Findings

- Instagram @CDCmuseum



Give it a
Try

Questions? 