



U.S. Centers for Disease Control and Prevention



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Poliomyelitis

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Key issues

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What is polio disease?

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How is polio spread?

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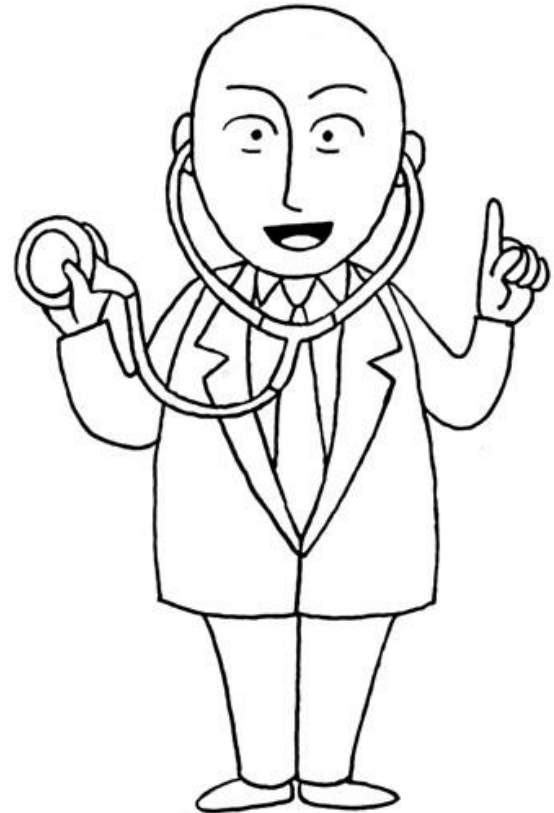
What types of viruses exist and what vaccines do we have against them?

4

What is the status of polio eradication globally?

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Why do we need IPV?



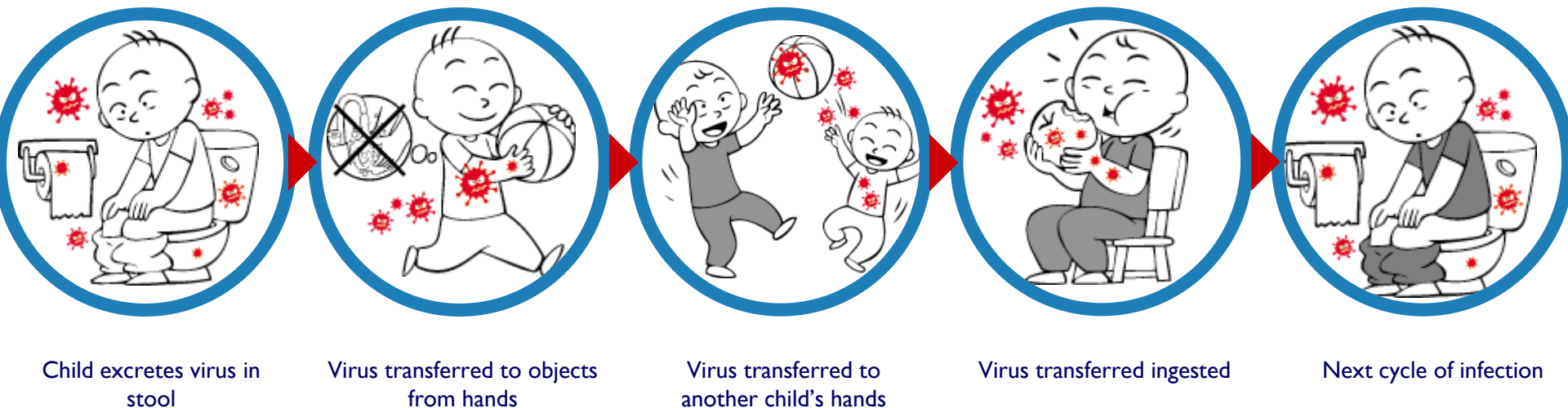
What is polio disease?

- Polio (also called Poliomyelitis) is a highly infectious disease caused by a virus
- The virus invades the nervous system and can cause *permanent paralysis*
- Polio is spread through *person-to-person contact* and can spread rapidly through a community
- Most infected people (90%) have **no symptoms or very mild symptoms**
- **However**, one in 200 infections leads to permanent paralysis (can't move parts of the body) and even death

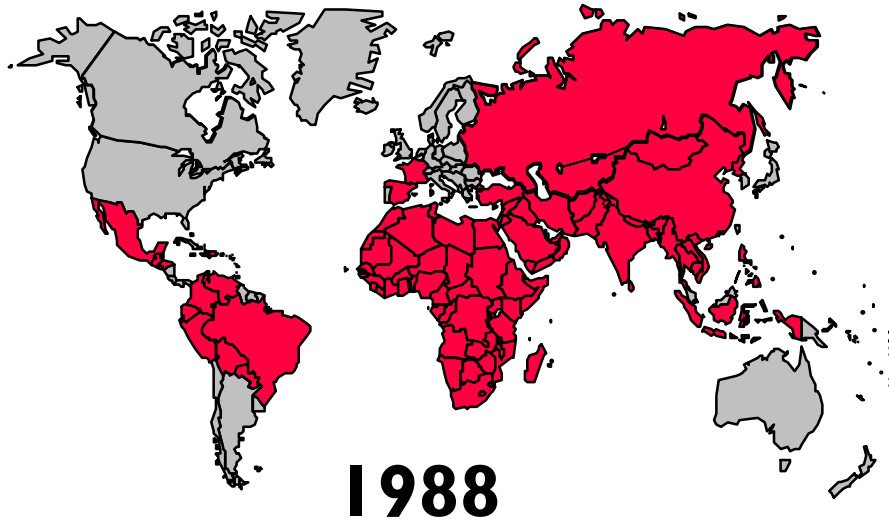


How does poliovirus spread?

- Poliovirus infection is **highly contagious**
- Poliovirus is spread mostly by the **fecal-oral route**
 - Primary mode of transmission – passage of the virus in stool to the mouth of another child
 - Can also be spread through saliva or droplets from a sneeze or cough



How many polio cases are there?



- 350,000 cases
- 125 endemic countries
- World Health Assembly resolved to eradicate polio



- 416 cases reported (as of 14 May 2014)
- 3 endemic countries
- 7 countries with re-established transmission

Types of polioviruses

- 3 Types of polioviruses
 - Wild poliovirus (WPV) – 3 serotypes
 - **Type 1 – 416 cases in 2013** (this is the only type of WPV in circulation today)
 - Type 2 – eliminated in 1999
 - Type 3 – last case reported in 2012 (more time is needed to certify eradication)



Types of Oral Polio Vaccines

- 3 Types of Oral Polio vaccine
 - **Trivalent OPV (tOPV):** types 1, 2 *and* 3
 - most commonly used OPV in routine immunization globally
 - **Bivalent OPV (bOPV):** types 1 *and* 3
 - commonly used in supplementary immunization activities (SIAs)
 - **Monovalent OPV (mOPV):** type 1, 2 *or* 3
 - primarily used for SIAs in areas where only type 1 or type 3 is circulating

OPV is still the primary vaccine for eradication

Paralysis associated with OPV

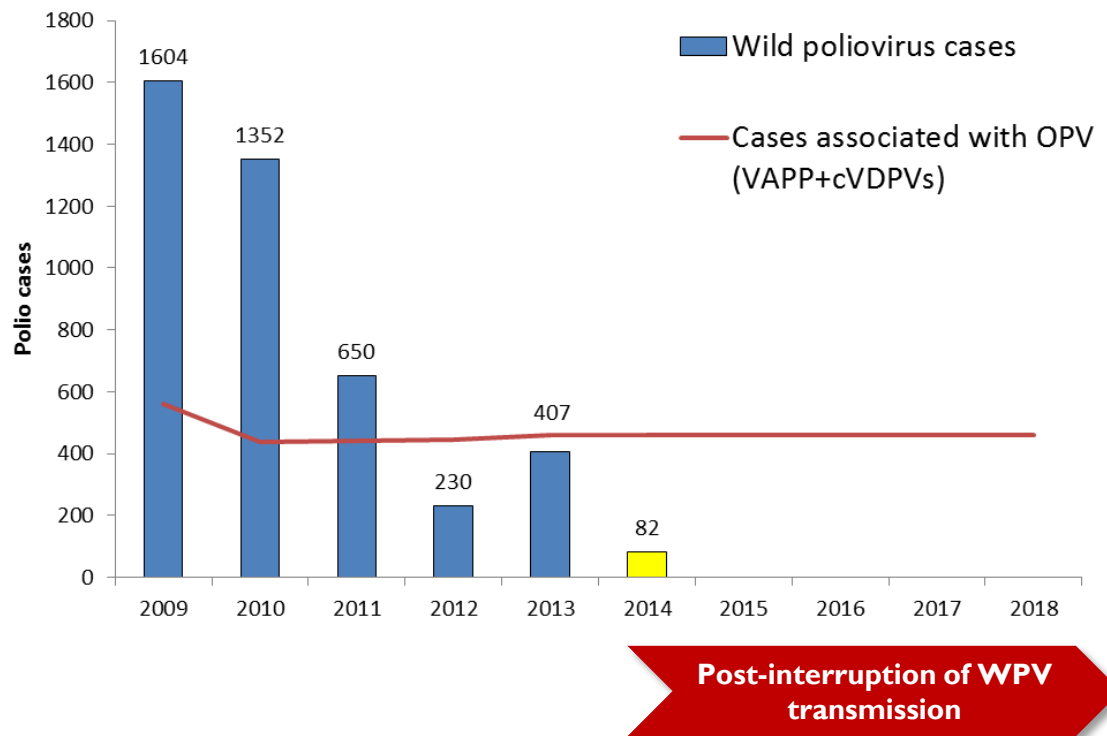
- OPV offers effective protection against polio, but...
- In very rare cases it can lead to paralysis
 - **Vaccine Associated Paralytic Polio (VAPP)**
 - Vaccine virus spontaneously changes and becomes capable of causing disease to the nervous system
 - 1 case per 2.4 million vaccine doses administered
 - 250-500 cases/year
 - 40% of VAPP are from type 2 OPV
 - **Circulating Vaccine Derived Poliovirus (cVDPV)**
 - Rare outbreaks caused by person-to-person spread of vaccine strain, which mutates/changes to a highly transmissible form capable of causing disease to the nervous system, in areas/countries with low immunity against polio
 - 97% of cVDPVs are from type 2 OPV
 - Low coverage is one of the main factors for the occurrence of cVDPVs



WPV and vaccine-related polio cases 2009-2014*

Through the use of OPV, polio cases related to the wild poliovirus have decreased.

Today the number of polio cases due to OPV is greater than those related to the wild virus.



* as of 21 May 2014

Polio eradication plan

- In May 2012 the World Health Assembly of WHO declared poliovirus eradication to be a global public health emergency
- Under this plan to achieve a polio-free world, they recommend that the **use of OPV must eventually be stopped worldwide**
- Type 2 OPV has the two risks: VAPP and cVDPV – and is no longer needed for eradication – hence the type 2 containing OPV will be eventually withdrawn from use
- OPV will be withdrawn in 2 phases beginning with type 2 OPV

Polio eradication plan (continued)

- WHO's Strategic Advisory Group of Experts (SAGE) recommends that all countries introduce **at least one dose of IPV** into their routine immunization schedule by the end of 2015, before type 2 OPV is withdrawn
- Rationale for this includes:
 - To **reduce risks** of an outbreak after type 2 OPV vaccine withdrawal
 - To **help stop outbreaks quickly** if type 2 virus is reintroduced
 - To **boost immunity** against polio types 1 & 3 to protect populations and hasten eradication



Comparison of OPV and IPV?

Oral polio vaccine (OPV)

- Live, attenuated (weakened) virus
- Administered by **drops**



- Highly successful in reducing transmission in developing countries as part of eradication strategy
- Inexpensive
- Easy to administer
- Provides mucosal/gut immunity
- Protects close contacts who are unvaccinated

Inactivated polio vaccine (IPV)

- Killed virus
- Administered by **injection**



- Highly effective
- Used commonly in developed countries
- More expensive than OPV
- Requires trained health workers
- Provides immunity through blood
- Carries no risk of VAPP or VDPV



Both vaccines are needed to fully eradicate polio!



Why IPV?

- IPV does not cause any paralysis and is a very safe vaccine
- IPV introduction sets the stage for ending OPV use entirely after WPV eradication has been achieved
- When use of OPV is eventually stopped, IPV will continue to provide full protection
- Introducing IPV to our community also helps us remind caretakers about the importance of vaccinations overall, inform them about missed and upcoming vaccinations.

Key Messages

- Polio is a highly contagious viral disease that can spread rapidly through person-to-person contact causing permanent paralysis
- There are 3 types of wild poliovirus but only type 1 remains in circulation today
- OPV is inexpensive and effective at reducing polio transmission in developing countries, but carries a risk of VAPP and VDPV
- All use of OPV must stop for the world to be completely polio-free
- IPV is being introduced to provide protection against all 3 serotypes, while OPV is being phased out, to help us make the world polio free



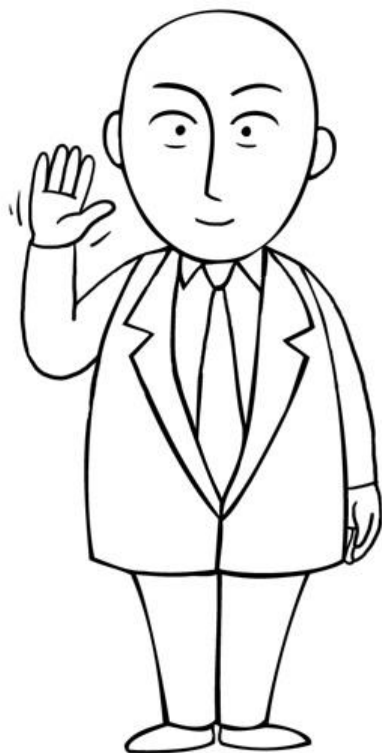
Inactivated Polio Vaccine (IPV)

- Our country is about to introduce IPV
- Next modules of this training will explain how to:

- ✓ Store the vaccine
- ✓ Determine vaccine eligibility
- ✓ Administer the vaccine
- ✓ Record the vaccine dose
- ✓ Monitor adverse events following immunization (AEFIs)
- ✓ Communicate with caregivers about the vaccine



End of module



**Thank you
for your attention!**