

## FACT SHEET: VACCINE-DERIVED POLIOVIRUS

Global efforts to immunize children with the oral polio vaccine (OPV) have **reduced wild poliovirus cases by 99.9% since 1988**. The vaccine is very safe, but the live weakened virus it contains can, on rare occasions, mutate into circulating vaccine-derived poliovirus (cVDPV).

| TYPES OF POLIOVIRUS         |   |  |
|-----------------------------|---|--|
|                             | WILD POLIOVIRUS (WPV)   | CIRCULATING VACCINE DERIVED POLIOVIRUS (cVDPV)   |
| <b>Definition</b>           | Infectious virus that invades the nervous system. Can cause paralysis or death.                     | A very rare, circulating infectious virus mutated from the weakened strain of poliovirus in OPV. Under certain conditions, may cause paralysis or death. |
| <b>Risk Factors</b>         | Low immunization rates, poor sanitation, high population densities.                                 | Low immunization rates, poor sanitation, high population densities.  |
| <b>To Stop Transmission</b> | Increase immunization rates with OPV.   | Increase immunization rates with OPV.  |
| <b>Strains</b>              | Type 1: Caused 100% of 2014 cases<br><b>Type 2: Eradicated in 1999</b><br>Type 3: Last seen in 2012 | Type 1: Causes 8% of cVDPV<br><b>Type 2: Causes 90% of cVDPV</b><br>Type 3: Causes 2% of cVDPV   |
| <b>Cases in 2014</b>        | 358   | 52   |

Eradicating polio for good requires **eliminating both wild and vaccine-derived polio**.

| STEPS TO STOP cVDPV |   |
|---------------------|---|
| <b>Ongoing</b>      | <b>Continue to increase vaccination campaign quality and <a href="#">improve surveillance</a></b> , the same tactics used to stop WPV.  |
| <b>Short-Term</b>   | <b>Switch from trivalent to bivalent OPV.</b> Trivalent OPV contains weakened forms of all three strains of polio, including type 2. Wild poliovirus type 2 was eradicated in 1999. The weakened type 2 strain in trivalent OPV is no longer needed to protect children from wild polio, but causes 90% of all cVDPV. Switching to <a href="#">bivalent OPV</a> that does not contain the type 2 component will reduce the risk of cVDPV.<br><br><b>Begin introduction of inactivated polio vaccine (IPV)</b> , which cannot cause cVDPV and <a href="#">boosts immunity</a> when administered in combination with OPV. All countries are on track to introduce IPV by the end of 2015. |
| <b>Long-Term</b>    | <b><a href="#">End all use of OPV</a> after WPV transmission has been stopped.</b> At that point, only IPV will be used to maintain population immunity levels.   |

## Polio Vaccines

OPV and IPV have important but distinct advantages, and **both vaccines are necessary to end polio for good**. Because OPV protects both the individual and the community, it has been an essential tool for countries working to stop wild poliovirus transmission. IPV eliminates the risk of cVDPV, and thus is vital to end polio once and for all.

As part of the [polio eradication endgame](#), all countries will stop OPV use and transition to IPV. With support from the GPEI and Gavi, the 126 remaining OPV-only countries have plans to introduce at least one dose of IPV into their routine immunization programs by the end of 2015.

| TYPES OF POLIO VACCINE |   |  |
|------------------------|---|--|
|                        | ORAL POLIO VACCINE (OPV)  | INACTIVATED POLIO VACCINE (IPV)  |
| <b>Contains</b>        | Mixture of live, weakened poliovirus strains.<br><br><i>Trivalent OPV:</i> All 3 poliovirus types<br><i>Bivalent OPV:</i> Types 1 and 3<br><i>Monovalent OPV:</i> Any 1 individual type   | Mixture of inactivated, killed strains of all three poliovirus types.  |
| <b>How it Works</b>    | Body produces antibodies in the blood and gut in response to the weakened virus. Helps stop transmission by limiting the virus' ability to replicate in the gut and spread to infect others.  | Body produces antibodies in the blood in response to the inactivated virus. Protects the individual, but the virus may still replicate in the gut and could spread to infect others. |
| <b>Administration</b>  | Easy, oral administration can be conducted by volunteers and is part of many countries' routine immunization programme. Used extensively in immunization campaigns to root out poliovirus. Costs less than US\$0.15 per dose.                     | Vaccine injection is administered primarily through routine immunization programmes by trained health workers. Higher cost, starting at US\$1 per dose for low-income countries.     |
| <b>Use</b>             | Extremely effective in protecting children from WPV and cVDPV. Nearly every country has used OPV to stop wild poliovirus transmission because it prevents person-to-person spread of the virus, protecting both the individual and the community. | Extremely effective in protecting children from polio disease due to WPV and cVDPV, but cannot stop spread of virus in a community.  |
| <b>cVDPV Risk</b>      | Can cause cVDPV in under-immunized populations, though very rare.   | Cannot cause cVDPV.  |