

Poliomyelitis (Paralytic)

Poliomyelitis is a Class A Disease. Recognized and suspected cases must be reported to the Office of Public Health within 24 hours.

Poliomyelitis, polio, or infantile paralysis is caused by poliovirus, an enterovirus of the family *Picornaviridae*. The virus primarily replicates in the gastrointestinal tract. Transmission is person-to-person through the fecal-oral route, although transmission may also be accomplished through oral/nasal secretions. Polio is asymptomatic in most people who acquire the virus; less than 1% develops more serious symptoms, such as paralysis.

In the early 1900s, poliomyelitis became epidemic in the United States. In 1952, over 20,000 cases were reported. Following the introduction of effective vaccines, the reported incidence of poliomyelitis declined drastically in the U.S. to less than 100 cases in 1965 and less than ten cases in 1973.

Vaccine-associated paralytic poliomyelitis (VAPP) was first recognized with the introduction and widespread use of oral poliovirus vaccine, which contains live-attenuated poliovirus strains. In the U.S. by 1973, more cases of VAPP were reported than paralytic disease caused by wild poliovirus. The last cases of indigenously transmitted wild poliovirus were reported in 1979. Since then, apart from six cases of imported poliomyelitis, all reported cases of paralytic poliomyelitis have been vaccine-associated. VAPP is a very rare disease with an average of eight reported cases annually. In order to eliminate VAPP from the U.S., the Advisory Committee on Immunization Practices recommended in 2000 that only inactivated poliovirus vaccine (IPV) be used in the United States. The last case of VAPP acquired in the U.S. occurred in 1999.

In 1998, the World Health Assembly, composed of the ministers of health of all Member States of the World Health Organization, voted to launch a global effort to eradicate polio. As a result of the 'Global Polio Eradication Initiative,' the largest public health effort to date, at the end of 2015, indigenous polio had been eliminated from all but two countries in the world, Afghanistan and Pakistan. However, wild polio was detected in Nigeria in 2016 after two years without the disease present.

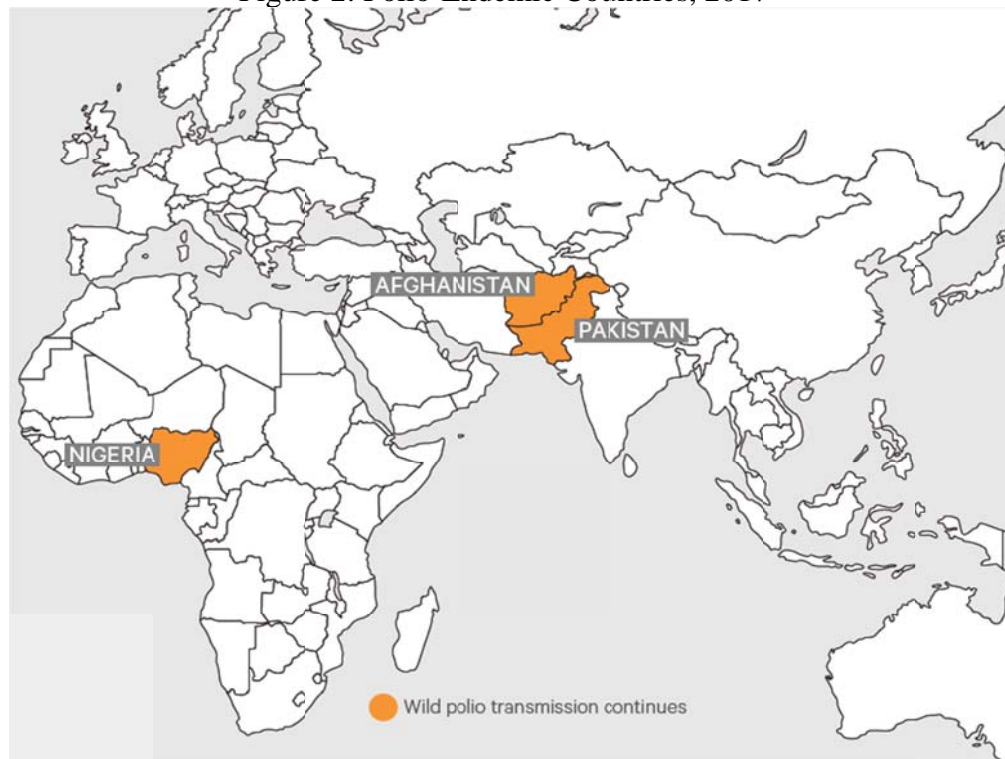
Worldwide polio cases have decreased (by over 99%) since 1988, from an estimated 350,000 cases to 118 cases reported worldwide in 2017 (22 cases of Wild Polio Virus, and 96 cases of vaccine-derived poliovirus). The reduction is the result of the global effort to eradicate the disease; 94% of these case occurred in endemic countries. When the Global Polio Eradication Initiative was launched, wild poliovirus was endemic in more than 125 countries on four continents, paralyzing more than 1,000 children every day (Figures 1 and 2).

Figure 1: World-wide distribution of poliomyelitis, 1988



Source: World Health Organisation/Global Polio Eradication Initiative

Figure 2: Polio-Endemic Countries, 2017*



Source: PolioEradication.org: Polio Eradication Initiative: Shrinking the Mao

*No cases were identified in Nigeria in 2017; however, transmission in inaccessible areas cannot be ruled out.

Since 1988, some two billion children around the world have been immunized against polio thanks to the unprecedented co-operation of more than 200 countries and twenty million volunteers, backed by an international investment of three billion dollars. In 2016, only three countries in the world remained polio-endemic, down from more than 125 in 1988. The remaining countries are Afghanistan, Pakistan, and Nigeria. Nigeria did not have any new cases reported in 2017; however, undetected ongoing transmission in inaccessible areas cannot be ruled out.

Persistent pockets of polio transmission in Afghanistan, Pakistan, and Nigeria constitute the current focus of the polio eradication initiative. As long as a single child remains infected, children in all countries are at risk of contracting polio. Between 2003 and 2005, 25 previously polio-free countries were re-infected due to importation of the virus.

While the Western Hemisphere was certified free of indigenous wild poliovirus in 1994, the potential for importation of wild poliovirus into the U.S. remains until world-wide poliomyelitis eradication is achieved. Because inapparent infections with wild virus strains no longer contribute to establishing or maintaining poliovirus immunity in the U.S., universal vaccination of infants and children is the only means of maintaining population immunity against poliovirus and preventing poliomyelitis cases and epidemics caused by importation of wild virus into the United States. For this reason inactivated poliovirus vaccine (IPV) is still a recommended childhood vaccine.