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Poliomyelitis Fact Sheet

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Poliomyelitis: The Disease

Poliomyelitis is a highly infectious disease caused by the poliovirus, which is an enterovirus belonging to the virus family Picornaviridae. The disease, which causes paralysis, can strike at any age but mainly affects children under five years of age. One in 200 infected cases ends up with irreversible paralysis. The disease has no cure, although it can be successfully prevented with the polio vaccine.

Causative Organism

Of the 3 serotypes of wild poliovirus (type 1, type 2 and type 3), wild poliovirus type 2 was declared eradicated in 2015, and wild poliovirus type 3 was eradicated in 2019. As of 2025, wild poliovirus type 1 remains endemic in two countries: Pakistan and Afghanistan.

Poliovirus infects only humans and does not survive long in the environment outside the human body. Poliovirus is rapidly inactivated by heat, formaldehyde, chlorine and ultraviolet light. There is no long-term carrier state following infection.

Mode of Transmission

The virus is transmitted by person-to-person spread mainly through the faecal-oral route or, less frequently, by a common vehicle (for example, contaminated water or food). The virus spreads rapidly to non-immune persons, and transmission is usually widespread by the time of the onset of paralysis.

Pathogenesis

The virus enters through the mouth and multiplies in the oropharynx and gastrointestinal tract. The virus is usually present in nasopharyngeal secretions for 1 to 2 weeks and can be shed in stools for several weeks after infection, even in individuals with minor symptoms or no illness. During intestinal replication, the virus invades local lymphoid

tissue and may enter the bloodstream, and then infect cells of the central nervous system. Poliovirus-induced destruction of motor neurons of the anterior horn of the spinal cord and brain stem cells results in distinctive paralysis. The site of paralysis depends on the location of nerve cell destruction in the spinal cord or brain stem. Paralysis of the muscles of respiration and/or swallowing is life-threatening.

Incubation Period

The incubation period for nonparalytic poliomyelitis is 3 to 6 days. For the onset of paralysis in paralytic poliomyelitis, the incubation period is usually 7 to 21 days.

Clinical Features

Approximately 70% of all polio infections in children are asymptomatic, while 24% of polio infections in children present as a minor, nonspecific illness characterised by a low fever, sore throat, which completely recover in less than a week. This clinical presentation is known as abortive poliomyelitis. Aseptic meningitis occurs in about 1-5% of infections.

Flaccid paralysis occurs in less than 1% of poliovirus infections. Paralysis usually progresses within 2 to 3 days, is typically asymmetrical, more severe proximally, and associated with absent or reduced deep tendon reflexes and intact sensation.

Paralytic polio is classified into three types, depending on the level of involvement. Spinal polio is most common, seen in approximately 79% of paralytic cases. It most often involves the legs. Bulbar polio presents with weakness of facial, oropharyngeal, and respiratory muscles innervated by cranial nerves and accounts for about 2% of cases. Bulbospinal polio, a combination of bulbar and spinal paralysis, accounts for approximately 19% of cases.

Paralysis due to poliomyelitis is considered to be irreversible.

The case fatality ratio for paralytic polio is generally 2% to 5% among children and up to 15% to 30% among adolescents and adults. It increases to 25% to 75% with bulbar involvement.

Laboratory Diagnosis

Laboratory diagnosis of poliomyelitis involves the growth and identification of polioviruses from faecal samples using cell culture techniques. Timely collection, storage and proper transport of samples are crucial for proper lab diagnosis of poliomyelitis.

Polio virus is excreted via faeces from an infected person or following vaccination, intermittently for one month or more. Heavy shedding of the virus occurs just before the onset of paralysis and during the first two weeks after initial symptoms occur. Therefore, two stool specimens should be collected from all cases within 14 days of the onset of paralysis. Due to intermittent excretion of the virus, the two samples should preferably be collected at least 24 hours apart.

The quantity of the sample should be adequate (size of two adult thumb nails or two tamarind seeds), as part of the original sample has to be stored as backup samples. Stools have to be collected in a clean, dry, screw capped, leak proof bottle.

Specimen containers should be packed in ice (with sufficient ice packs or ice cubes to maintain the temperature at 4-8^0 °c during transport) in a reverse cold chain box, thermos flask, or rigifoam box. Specimens should arrive at the Medical Research Institute within 72 hours of collection.

Treatment/Prevention

There is no cure for the disease, and only symptomatic and supportive therapy is given. However, poliomyelitis can be successfully prevented by polio vaccines. There are 2 vaccines available: Oral Polio Vaccine (OPV) and Inactivated Polio Vaccine (IPV).

The current schedule in the National Immunisation Schedule in Sri Lanka:

Bivalent OPV (bOPV)	Given at 2 months, 4 months, 6 months, 18 months and 5 years
Fractional dose IPV (fIPV)	Given at 2 months and 4 months

Poliomyelitis in the world

With the launch of the Global Polio Eradication Initiative in 1988, wild poliovirus cases have decreased by over 99%, from an estimated 350,000 cases in more than 125 endemic countries in 1988 to only two endemic countries (Pakistan and Afghanistan) in 2025.

Poliomyelitis in Sri Lanka

The incidence of poliomyelitis has decreased steadily along with the rapid increase in the immunisation coverage of infants and children with OPV and IPV. The last virologically confirmed case of polio in Sri Lanka was detected in 1993.

A successful surveillance programme has been conducted in the country since 1991, in which all Acute Flaccid Paralysis cases (AFP) under 15 years of age are investigated individually to rule out polio as a likely diagnosis. The investigation includes the collection of two stool samples from all the notified cases and testing for polio virology at the Medical Research Institute, collection of stool samples from 3-5 contacts of the patient for testing for the polio virus, and follow-up of the patient.

Surveillance Case Definition of AFP

An AFP case is defined as any child less than fifteen years of age with Acute Flaccid Paralysis, or any person with paralytic disease at any age when poliomyelitis is strongly suspected.