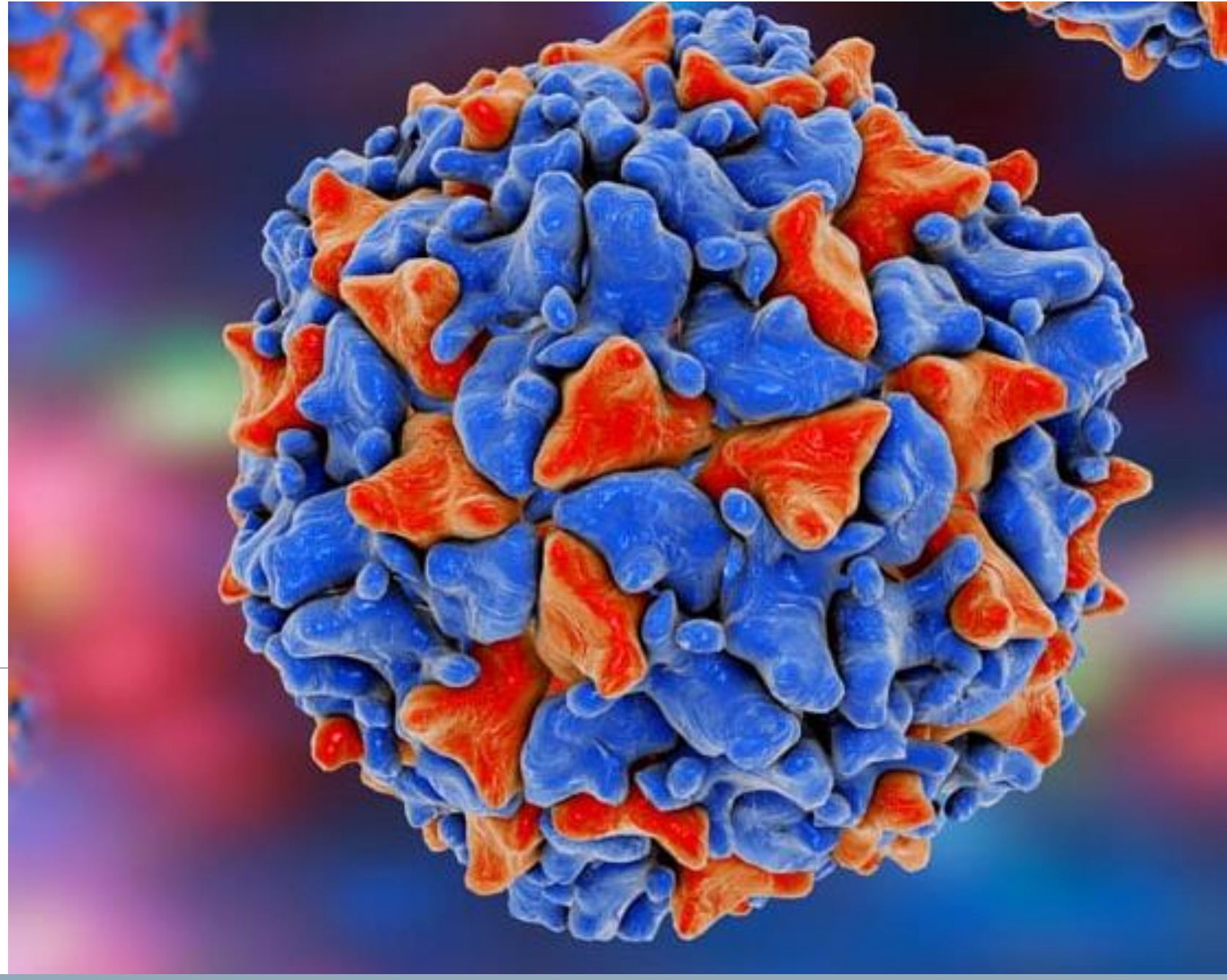
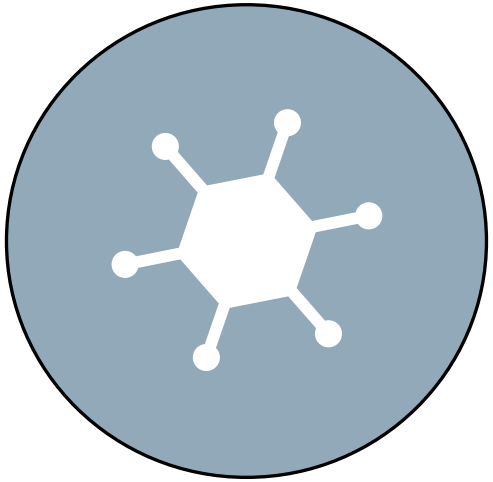
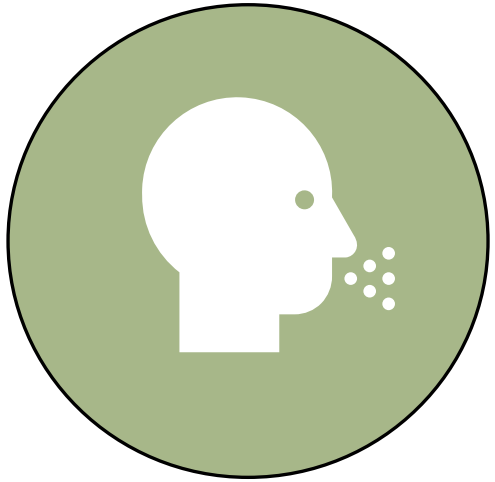
Polio



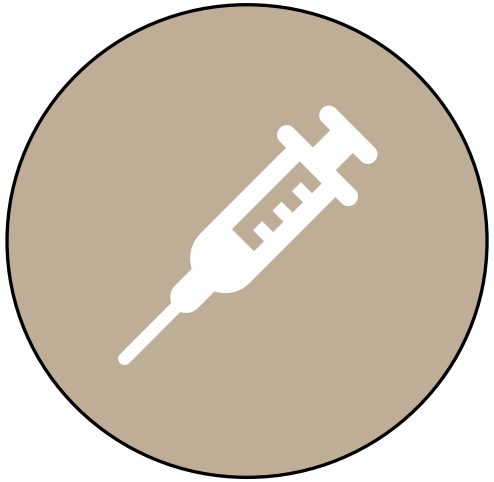
Polio



CAUSES



SYMPTOMS



TREATMENT

Polio

Viral infection recognized by acute onset of flaccid paralysis.

Ancient Egyptian paintings and carvings depict otherwise healthy people with withered limbs, and young children walking with canes.

The first localized paralytic polio epidemics began to appear in Europe and the United States around 1900.

The Salk killed-virus vaccine was approved in 1955, the Sabin live-attenuated vaccine in the late 1960s.

By 2006, polio remained endemic in only 4 countries.

The recommended vaccination coverage to prevent the reintroduction of the poliovirus is 95 percent. In 2020, only 80 percent of children in the Pan American region had received the third dose of the oral vaccine needed for full immunization – a decline from 87 percent in 2019.

In 2022, a vaccine-derived polio case was detected in New York.

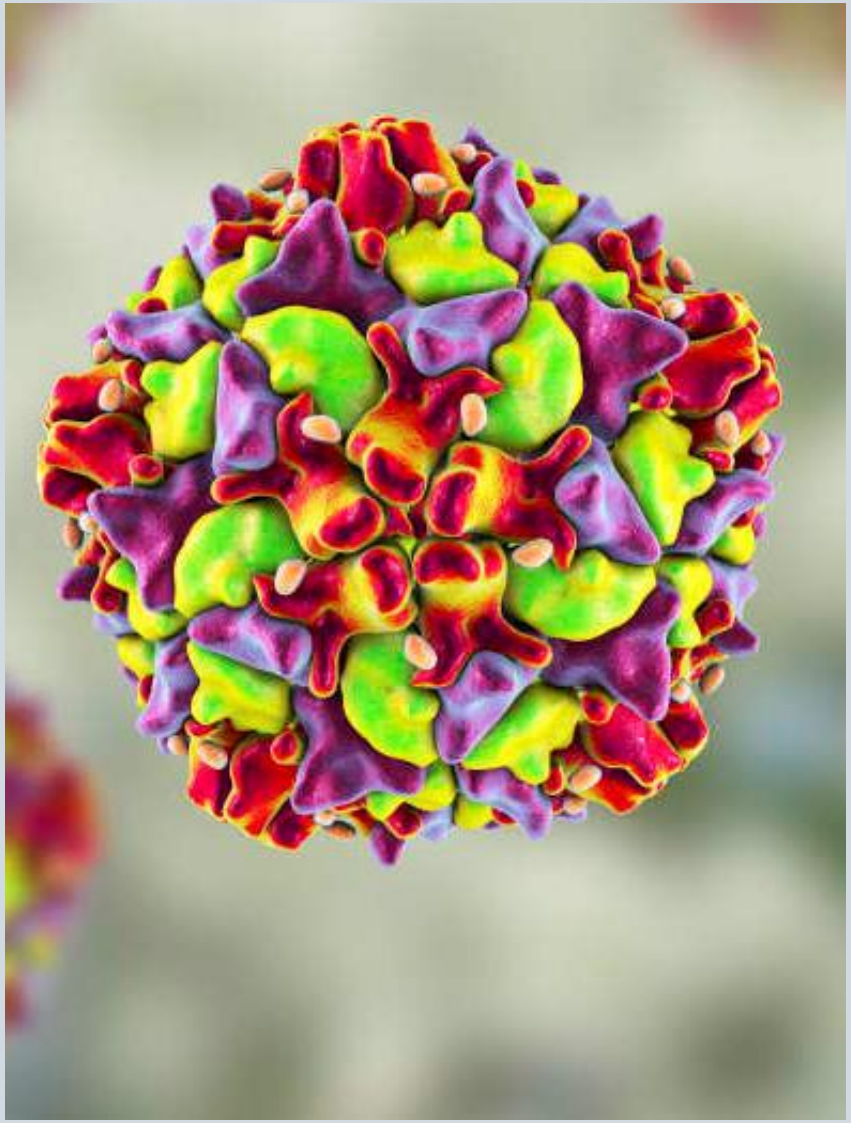
Causes

Humans are the only reservoir, most frequently people with inapparent/asymptomatic infections.

Transmitted primarily through person-to-person contact.

- Fecal-oral route most common.
- Throat secretions.

Transmission from contaminated food or drink is rare, but possible..



Transmission - Highly Contagious

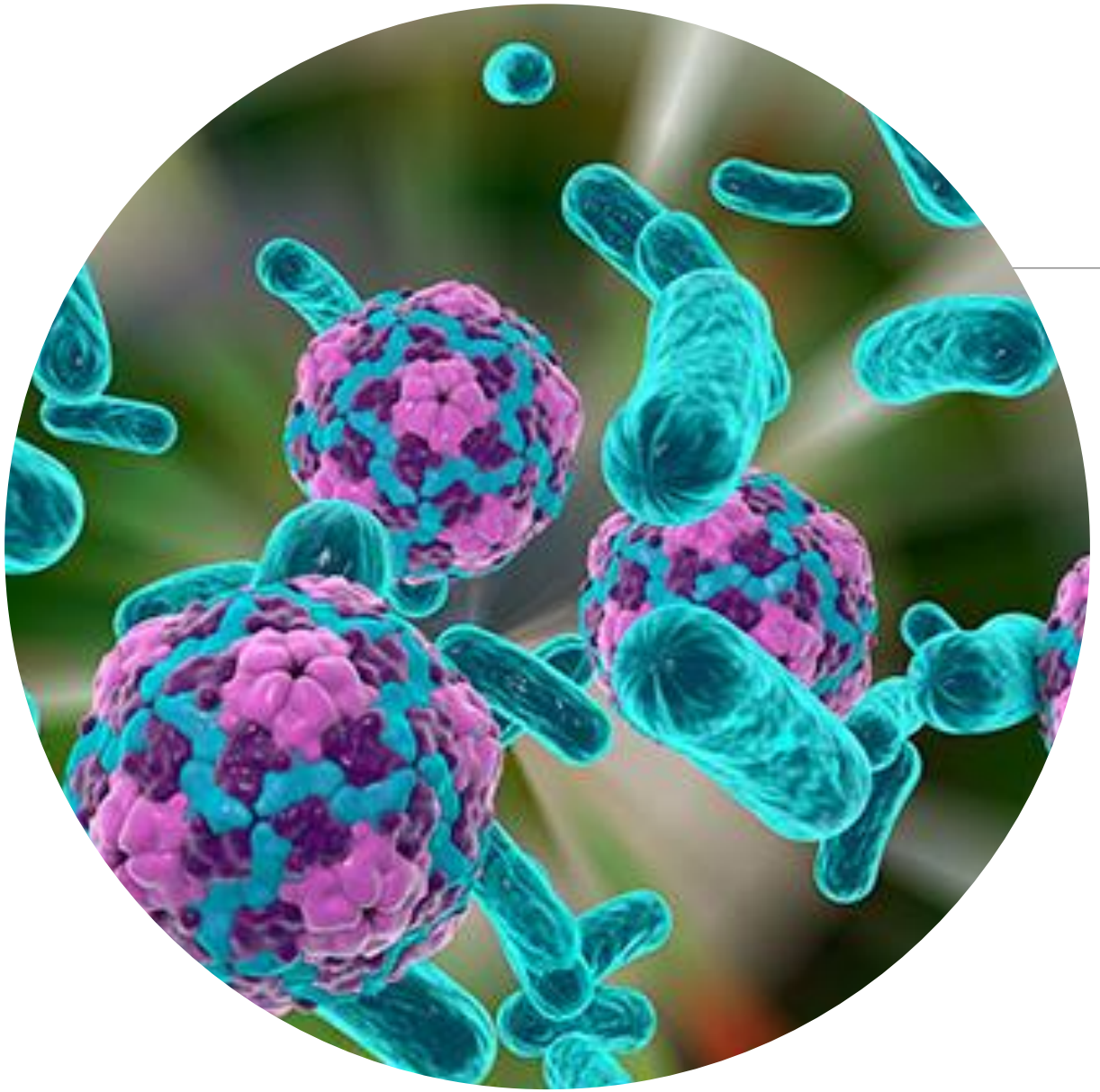
Spreads through person-to-person contact.

- Contact with the feces of an infected person.
- Droplets from a sneeze or cough of an infected person.

Viral shedding persists for approximately 1 week in the throat, and 3-6 weeks in feces.

Infected persons are most likely to transmit poliovirus in the days immediately before and after the onset of illness.

Transmission is possible as long as the virus is excreted.



Pathogenesis

Fecal-oral transmission.

Infection occurs in the pharynx and gastrointestinal tract, with rare spread to the central nervous system.

Virus commonly present in feces 7-14 days after infection for paralytic cases, with a range of 3-35 days.

Clinical Features

Incubation Period

- Nonparalytic poliomyelitis 3-6 days
- Paralytic poliomyelitis 7-21 days

- Abrupt onset of flaccid paralysis (< 1% of cases)
- Fever, malaise, headache, nausea, and vomiting (~10% of cases)
- Asymptomatic or nonspecific fever (90%)
- Many persons with paralytic poliomyelitis recover completely and, in most, muscle function returns to some degree.
- Weakness or paralysis still present 12 months after onset is usually permanent.

Risk Factors/Groups

Groups that refuse immunization or at high risk of being under vaccinated

Children and adults living in intermediate endemicity areas.

Susceptible persons traveling to, or working in, polio endemic countries.

Complications

- Aseptic meningitis in about 1-5% of cases
- Severe muscle pain and neck/back stiffness
- In paralytic polio, death (2-5%) in infants and children, 15-30% among adolescents and adults
- Approximately 70% of children with acute paralysis continue to have some residual motor weakness.

Treatment/Prevention

Treatment

- No cure exists for polio.
- Focus is on increasing comfort, speeding recovery, and preventing complications.
- Bed rest.
- Pain relievers.
- Portable ventilators to help with breathing.
- Physical therapy exercises.

Prevention

- Vaccination.
- Good hand hygiene with soap and water. Alcohol-based hand sanitizers do not kill poliovirus.

Polio

Inactivated poliovirus (IPV) vaccine

- Contains wild poliovirus strains inactivated with formaldehyde.
- Administered by either subcutaneous or intramuscular injection.
- Contains neomycin, streptomycin, polymyxin B, 2-phenoxyethanol.
- Included in combination vaccines (DTaP-HepB-IPV (Pediarix), DTaP-IPV/Hib (Pentacel), DTaP-IPV (Kinrix), DTaP-IPV (Quadracel). May also be given individually.

Oral poliovirus (OPV) vaccine

- Contains live attenuated polioviruses
- Vaccine viruses are excreted in the stool of the vaccinated person for up to 6 weeks after a dose and may spread from the recipient to contacts.

Poliovirus Vaccination Schedule (IPV)

- Typically administered at age 2, 4, 6 through 18 months, and 4 through 6 years
- Recommended interval between each of the first 3 doses is 2 months
- Recommended interval between dose 3 and dose 4 is at least 6 months
- Minimum interval between doses is 4 weeks*
- Minimum age for dose 1 is 6 weeks*
- A dose on or after age 4 years is recommended regardless of number of previous doses

*Recommended only if vaccine recipient is at risk for imminent exposure to circulating poliovirus (e.g. outbreak or travel to endemic region)

https://www.cdc.gov/vaccines/pubs/pinkbook/polio.html#vaccination-schedule

School Exclusion

Reporting

- IMMEDIATELY notify LHD regarding evaluation and treatment of close contacts; encourage good hand hygiene
- Contact LHD for a “letter to parents”

Exclusion

- At least 14 days from onset and until 2 stool samples taken 7 days apart are negative.
- Exclude contacts lacking documentation of immunity.

Source: MDHHS - Managing Communicable Diseases in Schools

Sources

CDC Pink Book - Poliomyelitis

CDC - Poliomyelitis

Control of Communicable Diseases Manual – 20th Edition- pages 503-513

MDHHS - Managing Communicable Diseases in Schools