Polio, a debilitating and potentially deadly viral disease, affects the nervous system. The most recent case involves the detection of Vaccine-Derived Poliovirus (VDPV) in sewage samples from Kolkata, which likely originated from an immune-deficient individual's gut. This is not a case of person-to-person transmission.

VDPV is a weakened strain of poliovirus initially included in Oral Poliovirus Vaccines (OPV). Over time, it can change to resemble more of a wild or naturally occurring virus.

Understanding Polio: Strains, Symptoms and Spread

There are three distinct strains of wild poliovirus: WPV1, WPV2, and WPV3. Despite their identical symptoms, including irreversible paralysis or death, genetic and virological differences distinguish these strains into separate viruses that require individual eradication.

The virus spreads mainly via the faecal-oral route or through a common vehicle like contaminated water or food. It primarily affects children under five years old. Once the virus multiplies in the intestine, it can invade the nervous system and cause paralysis.

Many polio-infected people remain asymptomatic. In some cases, minor symptoms occur, such as a fever, tiredness, nausea, headache, or limb pain. Rarely, polio results in permanent loss of muscle function (paralysis) or can lead to fatal outcomes if the breathing muscles get paralyzed or the brain gets infected.

Prevention Through Immunization

Although there is no cure for polio, it can be prevented through immunization. The Oral Polio Vaccine (OPV) is given orally as a birth dose and then as primary doses at 6, 10, and 14 weeks, followed by a booster dose at 16-24 months. The Injectable Polio Vaccine (IPV) is additionally provided along with the 3rd dose of DPT under the Universal Immunisation Programme (UIP).

Vaccine-Derived Polio Outbreaks

In 2019, vaccine-derived polio outbreaks were recorded in multiple countries, resulting from a rare strain of the virus mutating from the vaccine strain. The World Health Organisation (WHO) reports that if the oral vaccine-virus circulates in an unimmunised or under-immunised population for at least 12 months, it can mutate to cause infections.

India's Journey to a Polio-Free Certification

India achieved WHO's polio-free certification in 2014 after three years without a single case. This success was facilitated primarily by the Pulse Polio Campaign, which entailed administering polio drops to all children. The last case of wild poliovirus in India was detected on January 13, 2011.

Eradicating Polio: Global and National Measures

At the global level, the Global Polio Eradication Initiative (launched in 1988) has led to 80% of the world's population now living in certified polio-free regions. An

estimated 1.5 million childhood deaths have been prevented due to vitamin A administration during polio immunization activities. World Polio Day is observed annually on October 24th, urging countries to maintain vigilance in their fight against the disease.

India-specific polio eradication initiatives include the Pulse Polio Programme and the Intensified Mission Indradhanush 2.0. The latter marked 25 years of the Pulse Polio programme (2019-20) with a nationwide immunisation drive. The Universal Immunization Programme (UIP), introduced in 1985, aims to increase immunization coverage, enhance service quality, establish a reliable cold chain system, introduce a district-wise performance monitoring system, and achieve vaccine production self-sufficiency.

UPSC Civil Service Exam: Previous Year's Question

In the 2016 UPSC Civil Services Examination, candidates were asked about the 'Mission Indradhanush,' an immunization scheme launched by the Ministry of Health and Family Welfare on December 25, 2014. The mission aims to cover, by 2020, all children who are either unvaccinated or partially vaccinated against seven vaccine-preventable diseases, including polio. This initiative receives technical support from WHO, UNICEF, Rotary International, and other donor partners.