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Q. What is Polio? Its causes, symptoms, treatment and preventive measures?

Introduction :-

What is polio:

Polio or poliomyelitis is an illness caused by a virus that mainly affects nerves in the spinal cord or brain stem. In its most severe form, it can lead to a person being unable to move certain limbs, also called paralysis. It can also lead to trouble breathing and sometimes death.

Historical Context:

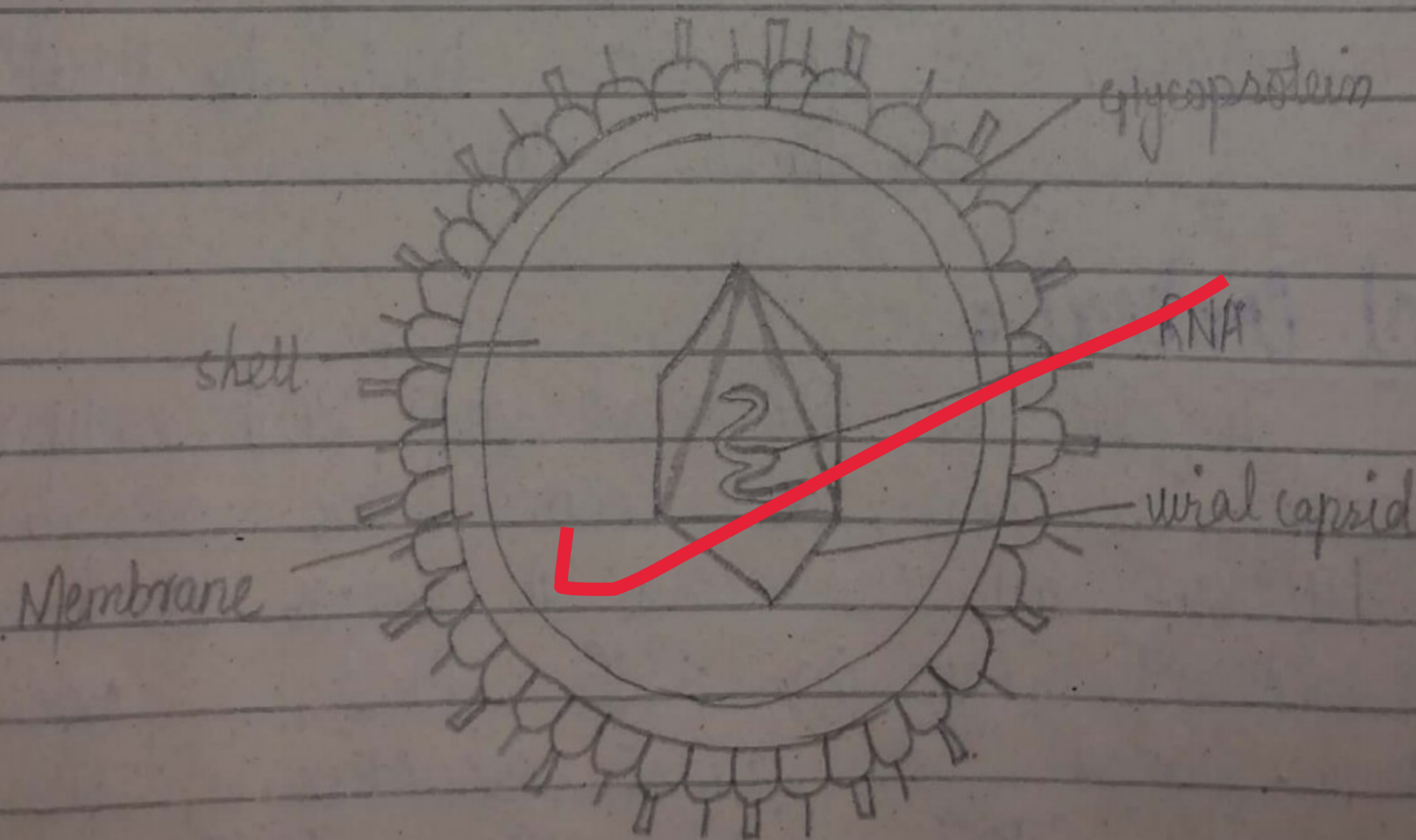
In the late 19th and early 20th century, frequent epidemics saw polio become the most feared disease in the world. A major outbreak in the New York City in 1916 killed over 2000 people, and the worst recorded US outbreak in 1952 killed over 3000 people. By the mid-20th century, the poliovirus could be found all over the world and killed or paralysed over half a million people every year. So, the introduction of effective vaccines in

the 1950s and 1960s, polio was brought under control and practically eliminated as a public health problem in many countries.

Causative Agent and Transmission :-

Causative Agent:

The causative agent of polio is poliovirus, a member of the Enterovirus genus within the Picornaviridae family. It is composed of an RNA genome and a protein capsid.



Modes of Transmission:

The mode of transmission

include :-

1. Direct Person to Person Transmission :

It can spread directly from person to person through contact with respiratory and throat secretions or fecal matters.

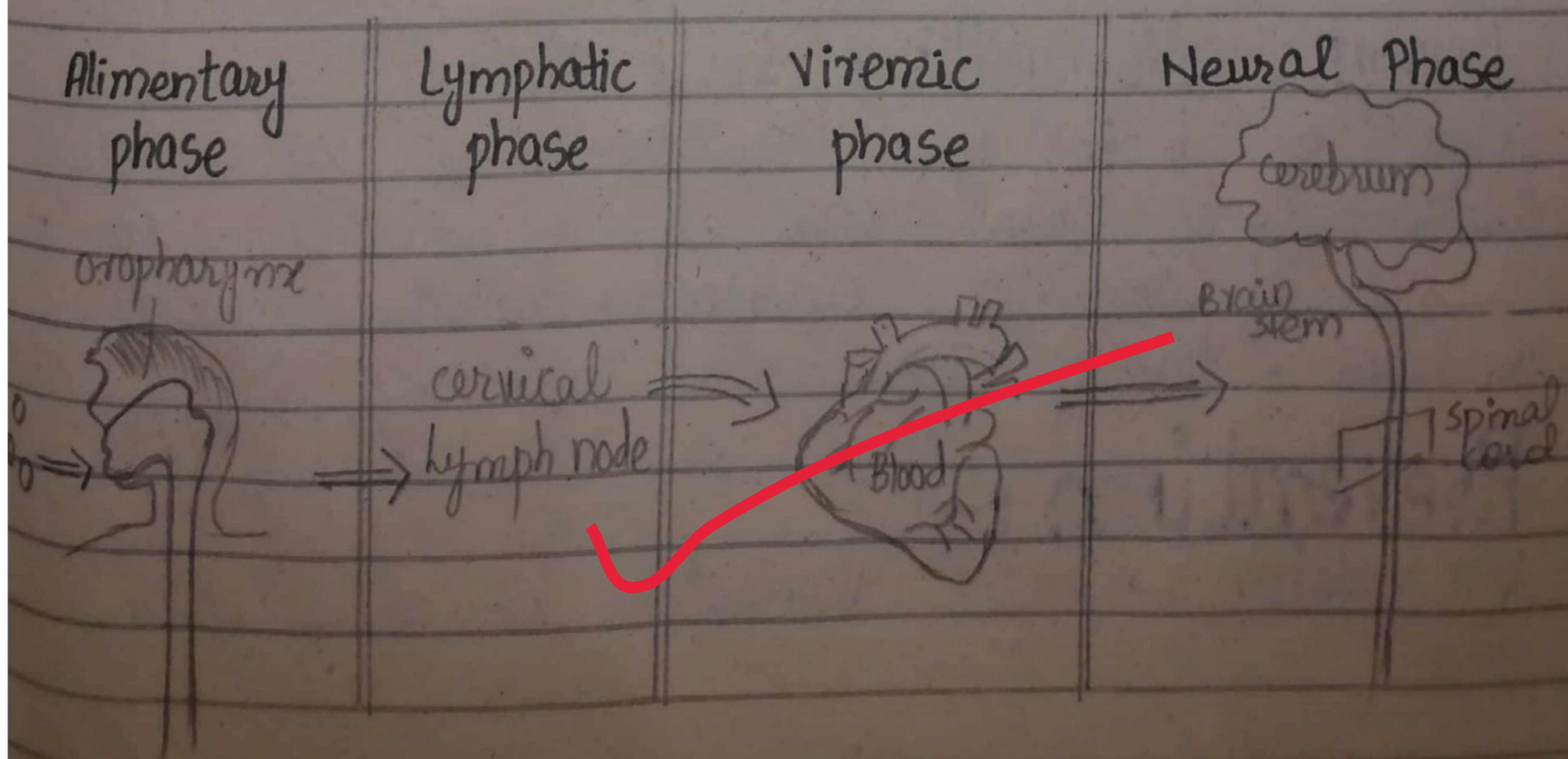
2. Transmission through contaminated Water & Food :

The virus can be present in contaminated water sources and food items, facilitating transmission when ingested. In areas with inadequate sanitation practices, waterborne transmission is a significant risk.

3. Fomite Transmission :

Inanimate objects or surfaces contaminated with the virus, such as toys, utensils, or bathroom fixtures, can serve as intermediaries in the transmission process.

"Poliovirus Pathogenesis"



Symptoms of Polio :-

People infected with polio virus have varying symptoms but can spread the disease to others while asymptomatic. Polio systems are of the following four groups.

1. **Asymptomatic** : 70-90% of those infected with the polio virus are asymptomatic but can infect others.
2. **Abortive Poliomyelitis** : [a minor illness]
5% of patients presenting with flu-like symptoms like fatigue, low grade fever, sore throat, headache, loss of appetite, & gastrointestinal symptoms of vomiting, abdominal pain, diarrhea or constipation.
3. **Non-paralytic Poliomyelitis** : In 1% of cases, which begins with the symptoms of abortive poliomyelitis followed by symptoms due to aseptic meningitis with neck pain, stiff neck, severe headache, muscle pain, decreased muscle reflexes and muscle weakness.
4. **Paralytic poliomyelitis** : It is the most disabling form of Polio when the poliovirus infects the brain and spinal cord, occurring in 1-2% of cases. Its symptoms include muscle weakness, loss of reflexes and paralysis.

Prevention :-

Vaccination :-

Vaccination is a biological

intervention to prevent polio infection. Vaccination introduces weakened or inactivated poliovirus, prompting the immune system to produce antibodies. If exposed, these antibodies quickly recognize and neutralize the virus, preventing its ability to cause infection and paralysis.

Types of Polio Vaccine :

There are two types of vaccines, that protect against polio.

1. Inactivated Poliovirus vaccine :

It was developed by Dr. Jonas Salk and first used in 1955. It uses killed virus and induces systemic immunity, preventing the spread of poliovirus in the bloodstream and protecting against paralysis caused by virus.

2. Oral Poliovirus Vaccine :

A live attenuated (weakened) oral polio vaccine developed by Dr. Albert Sabine and first used in 1961. It contains weakened live virus and provides intestinal immunity. It is administered orally to induce immunity against polio.

Treatment :-

Treatment of poliovirus involves a multifaceted approach to address the varying manifest

tations of the disease.

1- Supportive care for Mild cases:

Supportive care includes

- a. Bed rest and adequate hydration
- b. Pain relievers to manage fever and discomfort.

2. Respiratory Support for Severe cases:

It includes the mechanical ventilation, if the virus affects the respiratory muscles, leading to breathing difficulties.

3. Physical therapy for Paralysis:

It focuses on exercises and interventions to improve mobility, strengthen muscles, enhance balance and enable individuals to regain functional independence. This includes range of motion exercises, balance training and use of assistive devices when needed.

Very good answer!!

But the answer is lengthy and will affect your time management. So shorten it a bit.