RAMA UNIVERSITY

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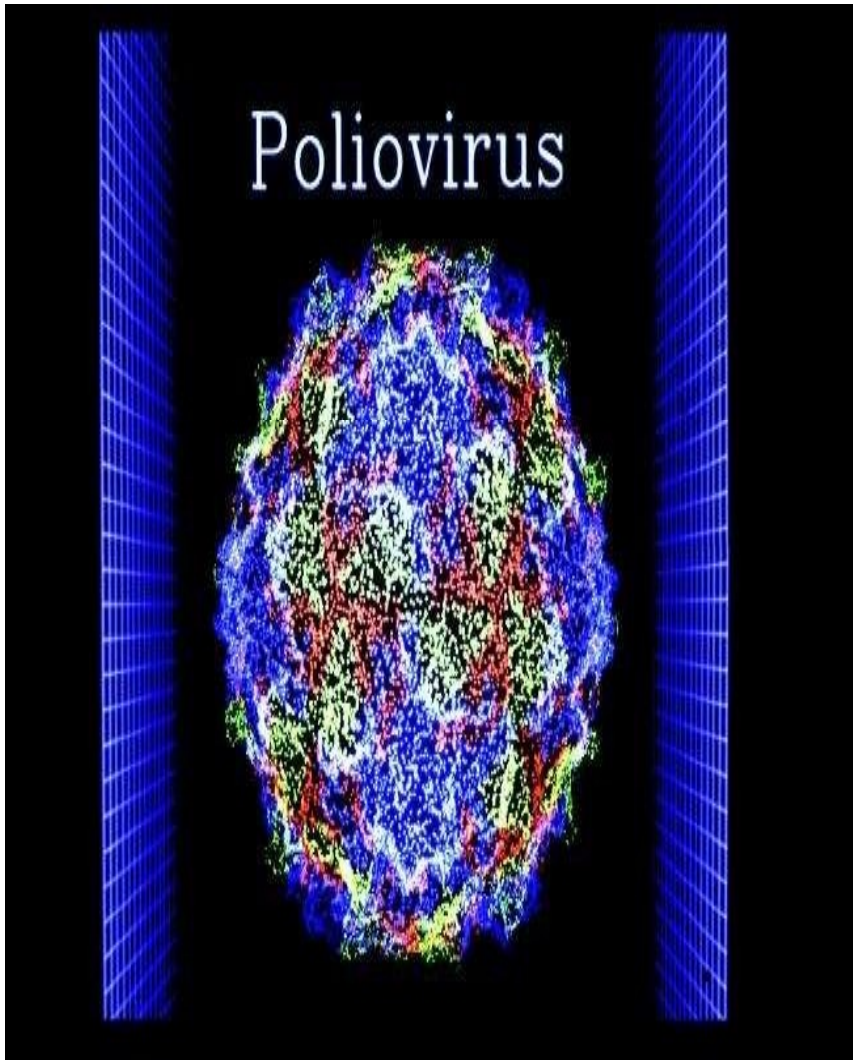
FACULTY OF NURSING

EPIDEMIOLOGY OF POLIO

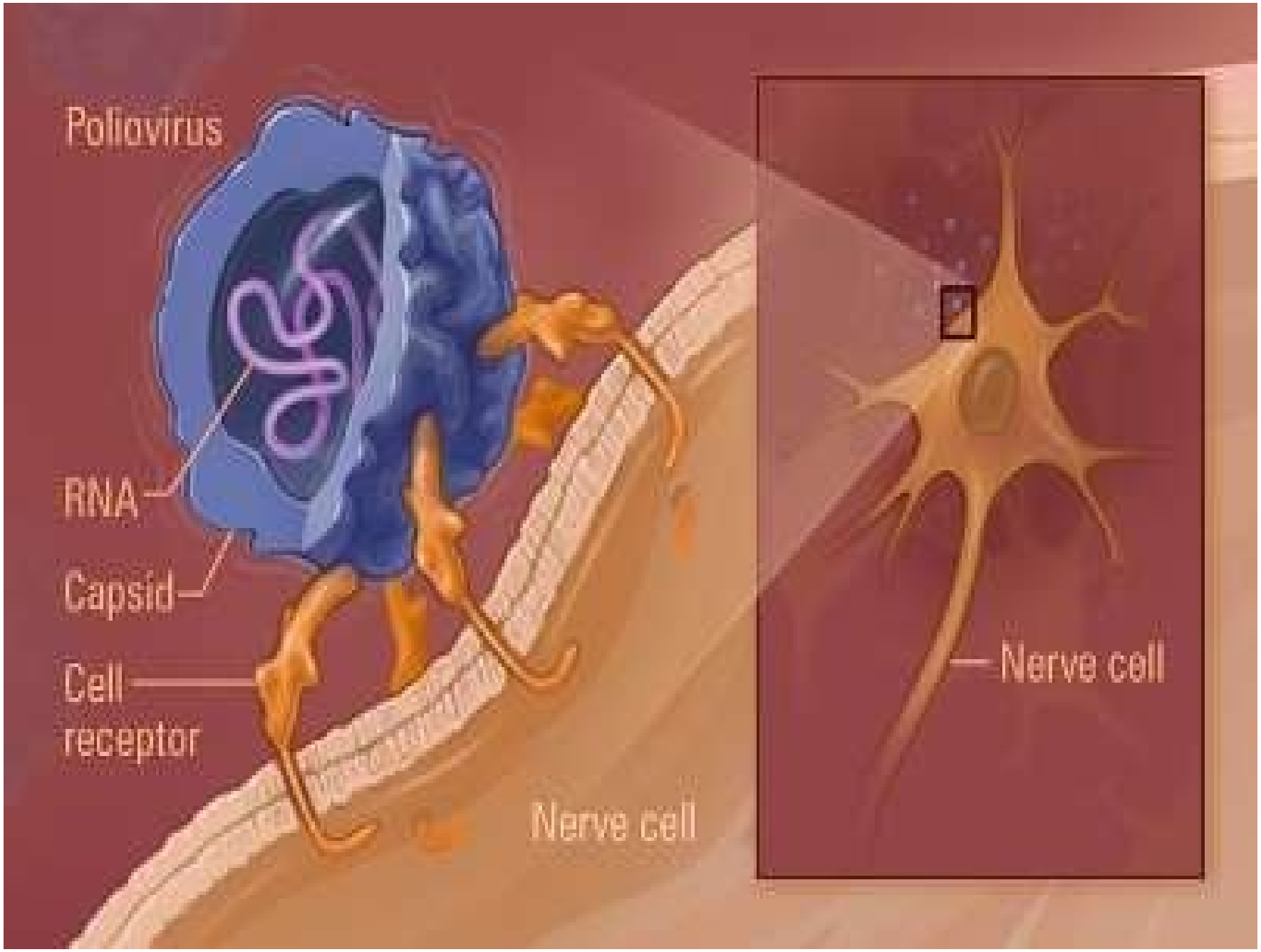
Mrs. Namita Batra Guin
Associate Professor

POLIO

- **Poliomyelitis is an acute viral infection caused by an RNA virus.**



- **It is primarily an infection of the human alimentary tract but the virus may infect the central nervous system.(1%) of cases resulting in varying degree of paralysis, and possible death.**


Poliovirus
RNA
Capsid
Cell receptor
Nerve cell
Nerve cell

EPIDEMIOLOGICAL DETERMINANTS

AGENT

- The causative agent is the poli virus which has three serotypes 1,2 and 3.

- Most outbreaks of paralytic polio are due to type 1 virus.

RESERVOIR OF INFECTION

- **Man is the only known reservoir of infection.**

- **Most infections are subclinical.**

INFECTIOUS MATERIAL

- **The virus is found in the faeces and oropharyngeal secretions of an infected person.**

PERIOD OF COMMUNICABILITY

- The cases are most infectious 7 to 10 days before and after the onset of symptoms.

HOST FACTORS

- **AGE : The disease occurs in all age groups, but children are more susceptible.**

- **In India polio is essentially a disease of infancy and childhood.**

GENDER

- **Gender differences have been noted in the ratio of 3 males to one female.**

RISK FACTORS

- **Certain provocative or risk factors have been have been found to precipitate an attack of paralytic polio in individuals already infected with polio virus.**

- **They are fatigue, trauma, intramuscular injections, operative procedures such as tonsillectomy undertaken during polio epidemics, administering of immunizing agents such as alum containing DPT.**

IMMUNITY

- **The maternal antibodies gradually disappear during the first 6 months of life.**

ENVIRONMENTAL FACTORS

- Polio is likely to occur during the rainy season.
- The environmental sources of infection are contaminated water, food, flies.

- **Polio virus survives for a long time in a cold environment.**
- **Overcrowding and poor sanitation provide opportunities for exposure to infection.**

MODE OF TRANSMISSION

1. FAECAL-ORAL ROUTE.

2. DROPLET INFECTION.

FAECAL-ORAL ROUTE

- This is the main route of transmission in developing countries.

- **The infection may spread directly through contaminated fingers where hygiene is poor, or indirectly through contaminated water, milk, foods, flies and articles of daily use.**

DROPLET INFECTION

- This may occur in the acute during the acute phase of the disease when the virus occurs in the throat.

- **Close personal contact with an infected person facilitates droplet spread.**
- **This mode of transmission may be relatively more important in developed countries where faecal transmission is remote.**

INCUBATION PERIOD

- **USUALLY 7 TO 14 DAYS (3 TO 35 DAYS)**

CLINICAL SPECTRUM

- When an individual susceptible to polio is exposed to infection, one of the following responses may occur.

INAPPARENT (SUBCLINICAL) INFECTION

This occurs approximately in 91 to 96% of polio virus infections.

- **There are no presenting symptoms and recognition is done only by virus isolation or rising antibody titres.**

2. ABORTIVE POLIO

- **Is also called as minor illness.**

- **Occurs approximately 4 to 8 % of the infections.**

- **It causes only a mild or self limiting illness due to viraemia.**
- **The patient recovers quickly. Diagnosis cannot be made clinically.**

3. NON PARALYTIC POLIO

- Occurs in approximately 1% of all infections.

- The presenting features are stiffness and pain in the neck and back.

- **The disease lasts for 2 to 10 days.**

- **Recovery is rapid. The disease is synonymous with septic meningitis.**

4. PARALYTIC POLIO

- Occurs in less than 1% of infections.

- The virus invades CNS and causes varying degrees of paralysis.

The predominant sign is asymmetrical flaccid paralysis.

A history of fever at the time of onset of paralysis is suggestive of polio.

The other associated symptoms are malaise, anorexia, nausea, vomiting, headache, sore throat, constipation and abdominal pain.

There might be signs of meningeal irritation, i.e., stiffness of neck and back muscles.

ipod sign may be present. (child
nds difficulty in sitting and sits by
upporting hands at the back and by
artially flexing the hips and knees).
rogression of the paralysis to reach its
aximum in the majority of cases occur in
ss than 4 days (may take 4-7 days).
he paralysis is characterized as
escending.

PREVENTION

- Immunization is the sole effective means of preventing polimyelitis.
- Both killed and live attenuated vaccines are available.

- **Both are safe and effective when used correctly.**
- **It is essential to immunize all children by 6 months of age to protect them against polio.**

- **Two types of vaccines are used globally.**

1. **INACTIVATED (SALK) POILO VACCINE (IPV).**

2. **ORAL (SABIN) POLIO VACCINE (OPV).**

IPV

- **IPV is made from inactivated WPV strains- namely, Mahoney (Salk type-1), MEF-1 (Salk type-2) and Saukett (Salk type-3).**

OPV

- Oral Polio vaccine was described by Sabin in 1957.
- It contains live attenuated virus (type 1,2, and 3) grown in primary monkey kidney or human diploid cell cultures.

NATIONAL IMMUNIZATION SCHEDULE

- 3 doses of OPV at one month interval is recommended to infants under the national

- **Following these three doses booster dose is administered at one and half a year 12 to 18 months.**

DOSE AND MODE OF ADMINISTRATION

- **The dose is 2 drops or as stated on the label.**