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Poliomyelitis

Introduced in 1957

NOTIFIABLE

Introduction

Poliomyelitis is an acute illness which may result from invasion of the gastro-intestinal tract by one of three types of polio virus (1, 2 and 3). The virus has a high affinity for nervous tissue. Inactivated poliomyelitis vaccine (Salk) was introduced to Ireland in 1957 and replaced by attenuated live oral polio vaccine (Sabin) in the early 1960s. Inactivated polio vaccine was reintroduced into the primary immunisation schedule in 2001. Individuals born before 1958 may not have been immunised.

One case of polio can potentially infect up to 5 non-immune contacts.

Epidemiology

Poliomyelitis is endemic in some low-income countries where epidemics of poliomyelitis occur. In countries where the disease incidence is low, but where transmission still exists, polio cases are seen sporadically or as outbreaks among unimmunised individuals. Outbreaks have recently occurred in Afghanistan, Angola, India, Namibia, Nigeria and Pakistan. This shows the ongoing threat of wild polio virus, and the need to maintain high immunisation levels and to report cases of acute flaccid paralysis (AFP).

The most recent case of wild poliomyelitis notified in Ireland was in 1984. If current trends continue, and polio is eradicated in the near future, there will be no need for polio vaccines.

Transmission is through contact with the faeces or pharyngeal secretions of an infected person. The incubation period ranges from 3-21 days, but may be longer. Cases are most infectious from about 10 days before to 7 days after the onset of symptoms. However, carriers and some immunocompromised persons may shed virus in the faeces for longer than 6 weeks.

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Effects of poliomyelitis

Most infections are clinically inapparent. Clinical disease may range in severity from a non-paralytic fever to aseptic meningitis or paralysis. Symptoms include headache, gastro-intestinal disturbance, malaise and stiffness of the neck and back, with or without paralysis. The proportion of inapparent to paralytic infections may be as high as 1,000:1 in children and 75:1 in adults. A case-fatality rate of more than 50% can occur in young adults.

At present an active surveillance system for acute flaccid paralysis is in operation in Ireland. This commenced in September 1998. In any case of acute flaccid paralysis, it is essential to obtain two faecal samples 24-48 hours apart for viral culture, as soon as possible after the onset of paralysis.

Poliomyelitis vaccine

Poliomyelitis vaccine is available in two forms: Inactivated Polio Vaccine (IPV) and live Oral Polio Vaccine (OPV).

1 Inactivated Polio Vaccine (IPV)

IPV contains polioviruses of all three types which have been inactivated by formaldehyde. The primary course consists of 3 injections at least 1 month apart. An up-to-date list of licensed vaccines is contained in Appendix 1, or can be accessed on the IMB website, www.imb.ie

Indications

Recommendations for IPV vaccination

Children

- All children should receive four doses of IPV at 2, 4 and 6 months, and 4-5 years of age.
- The preferred interval between the first 3 doses is 2 months. If accelerated protection is needed, the minimum interval between doses is 4 weeks.
- No additional doses are necessary if more time than recommended elapses between doses.
- Those who started the vaccine series with one or more doses of OPV should receive IPV to complete the series. A minimal interval of 4 weeks should elapse between OPV and IPV but a gap of at least 2 months is preferable.
- IPV can be administered simultaneously with all other routinely recommended childhood vaccines.

These recommendations may differ from recommendations contained in the manufacturer's literature.

Unimmunised adults

Three doses are recommended, the second 1-2 months after the first dose, and the third dose 6-12 months later. If protection is needed more rapidly, doses can be given at 4 weekly intervals. If protection is needed in less than 4 weeks, OPV can be used, as one dose of OPV results in enhanced mucosal immunity when compared with one dose of IPV. The course should be completed as recommended above with IPV.

Incompletely immunised adults

The course should be completed with IPV, regardless of the interval since the last dose or the type of vaccine previously given. Fully vaccinated adults at increased risk of exposure to wild poliovirus should be given a single dose of IPV. Such persons include:

- Those travelling to areas where poliomyelitis is epidemic or endemic
- Those in contact with patients who may be excreting wild poliovirus
- Those in contact with specimens that may contain wild poliovirus.

Contraindications

A previous anaphylactic reaction to IPV, Neomycin or Streptomycin

Precaution

Acute severe febrile illness, defer until recovery.

Even though there is no convincing evidence of an increased rate of adverse events, IPV should not be administered to a pregnant female unless the benefits of vaccination outweigh theoretical risks.

2 Live Oral Polio Vaccine (OPV)

The risks of vaccine-associated paralytic polio (VAPP) following OPV of approximately 1 case per 2.5 million doses are greater than the risks of wild virus poliomyelitis except in those travelling to areas where polio virus is endemic.

Indications

Unvaccinated persons travelling to areas or countries where polio is endemic or epidemic, and who cannot receive a full course of IPV (see Chapter 19).

In the rare instances where OPV is given to children, unimmunised contacts should be vaccinated against polio.

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Contraindications

- 1 An anaphylactic reaction to a previous dose of OPV or any of its constituents, including neomycin.
- 2 Immunodeficiency states (see Chapter 2). Such persons can be given IPV, although a protective response cannot be assured.
- 3 Household contacts of those with immunodeficiency disorders should not be given OPV. They can be given IPV.
- 4 Pregnancy, even though there is no convincing evidence of an increased rate of adverse effects from OPV or IPV in either the pregnant mother or her foetus.
- 5 HIV positive individuals should only be given IPV.

Precautions

- 1 Immunisation should be postponed if the recipient has:
 - (a) Vomiting or diarrhoea
 - (b) An acute febrile illness with a temperature above 38°C.
- 2 OPV should be given **not less than** 3 weeks before or **not less than** 3 months after an injection of normal immunoglobulin (e.g. for hepatitis A). This may not always be possible in the case of travellers going abroad. However, in such cases the OPV is likely to be a booster dose and the possible inhibiting effect of immunoglobulin is less important.
- 3 OPV may be given at the same time as inactivated vaccines and with other live viral vaccines except oral typhoid vaccine unless time constraints exist. If not given at the same time as other live viral vaccines, an interval of 3 weeks is recommended.
- 4 OPV should not be given within 3 weeks of oral typhoid vaccine.

Adverse reactions

Allergic reactions occur very rarely. Vaccine-associated poliomyelitis (VAPP) has been reported in 1 recipient case and 1 contact case per 2 million doses of OPV. The greatest risk of paralysis occurs with the first dose of OPV.

To minimise the risks of VAPP in contact of those recently immunised with OPV, strict hygiene after changing or toileting should be observed for 6 weeks after vaccination.

Bibliography

American Academy of Pediatrics (2006). Red Book: 2006 Report of the Committee on Infectious Diseases. 27th ed. Elk Grove Village, IL: American Academy of Pediatrics.

Department of Health UK (2006). Immunisation against infectious disease (the Green Book). 3rd ed. London: The Stationery Office.

