# Poliomyelitis

## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epidemiology in New Zealand</td>
<td>2</td>
</tr>
<tr>
<td>Case definition</td>
<td>2</td>
</tr>
<tr>
<td>Clinical description</td>
<td>2</td>
</tr>
<tr>
<td>Laboratory test for diagnosis</td>
<td>2</td>
</tr>
<tr>
<td>Case classification</td>
<td>3</td>
</tr>
<tr>
<td>Spread of infection</td>
<td>4</td>
</tr>
<tr>
<td>Incubation period</td>
<td>4</td>
</tr>
<tr>
<td>Mode of transmission</td>
<td>4</td>
</tr>
<tr>
<td>Period of communicability</td>
<td>4</td>
</tr>
<tr>
<td>Notification procedure</td>
<td>4</td>
</tr>
<tr>
<td>Notifying cases of polio</td>
<td>4</td>
</tr>
<tr>
<td>Notifying cases of acute flaccid paralysis as part of the WHO global</td>
<td></td>
</tr>
<tr>
<td>eradication programme</td>
<td></td>
</tr>
<tr>
<td>Management of case</td>
<td>5</td>
</tr>
<tr>
<td>Investigation</td>
<td>5</td>
</tr>
<tr>
<td>Restriction</td>
<td>5</td>
</tr>
<tr>
<td>Treatment</td>
<td>6</td>
</tr>
<tr>
<td>Counselling</td>
<td>6</td>
</tr>
<tr>
<td>Management of contacts</td>
<td>6</td>
</tr>
<tr>
<td>Definition</td>
<td>6</td>
</tr>
<tr>
<td>Investigation</td>
<td>6</td>
</tr>
<tr>
<td>Restriction</td>
<td>6</td>
</tr>
<tr>
<td>Prophylaxis</td>
<td>6</td>
</tr>
<tr>
<td>Other control measures</td>
<td>7</td>
</tr>
<tr>
<td>Identification of source</td>
<td>7</td>
</tr>
<tr>
<td>Hygiene</td>
<td>7</td>
</tr>
<tr>
<td>Disinfection</td>
<td>7</td>
</tr>
<tr>
<td>Health education</td>
<td>7</td>
</tr>
<tr>
<td>Reporting</td>
<td>7</td>
</tr>
<tr>
<td>References and further information</td>
<td>7</td>
</tr>
</tbody>
</table>
Epidemiology in New Zealand

Wild poliovirus has been eliminated from New Zealand and worldwide in all but three endemic countries: Nigeria, Pakistan and Afghanistan. There is an extremely low risk of cases being imported to New Zealand from these remaining endemic areas and occasional spread elsewhere. However, unimmunised New Zealanders who travel to endemic areas are at risk of infection.

No cases of vaccine-associated paralytic poliomyelitis (VAPP) have occurred since New Zealand introduced the inactivated polio vaccine (IPV) in 2002.


Case definition

Clinical description

Poliomyelitis is caused by wild poliovirus types 1, 2 and 3 or by live vaccine derived poliovirus. Infection is established in the gastrointestinal tract. A minor illness (fever, malaise, headache, vomiting) occurs in about 10 percent of infections. Over 90 percent of infections are asymptomatic or involve non-specific fever. In a minority of cases, infection spreads to the central nervous system and is characterised by:

- having no other apparent cause
- acute flaccid paralysis (AFP) of one or more limbs with decreased or absent deep tendon reflexes in affected limbs
- no sensory or cognitive loss
- a possible effect on bulbar muscles.

Laboratory test for diagnosis

Laboratory confirmation requires isolation of poliovirus or detection of poliovirus nucleic acid from a clinical specimen.

Different types of poliovirus will need to be tested for depending on the type of polio suspected (for example, wild poliomyelitis or vaccine-associated strains).

Collect two faecal specimens at least 24 hours apart, 0–14 days after the onset of paralysis and send to the national poliovirus reference laboratory (address below). Throat swab and cerebrospinal fluid samples may also be collected if clinically indicated.
All specimens must be tested in a laboratory accredited by the World Health Organization (WHO). The national poliovirus reference laboratory at ESR is accredited for poliomyelitis testing. ESR tests for poliovirus by polymerase chain reaction (PCR) with a turnaround time of 48 hours and by viral culture with a turnaround time of 10 days.

Contact ESR for specific advice on specimens required and on packing and transporting the specimens.

WHO National Poliovirus Reference Laboratory
Institute of Environmental Science and Research
National Centre for Biosecurity and Infectious Disease
Wallaceville Science Centre
PO Box 40158
66 Ward Street
Wallaceville
Upper Hutt 5140
New Zealand

Case classification

- **Under investigation:** A case that has been notified, but information is not yet available to classify it as probable or confirmed.
- **Probable:** A clinically compatible illness with an epidemiological link.¹
- **Confirmed:** A clinically compatible illness that is laboratory confirmed.
- **Not a case:** A case that has been investigated and subsequently found not to meet the case definition, including cases under the age of 15 years who have been deemed to have a non-polio paralytic illness by the National Certification Committee for the Eradication of Polio.

Cases can be further classified as follows.

- **Vaccine-associated paralytic poliomyelitis:** VAPP is a rare event where neurological damage is caused by a virus ingested from the oral polio vaccine (OPV). A mutation of the vaccine virus known as a reversion causes previously attenuated poliovirus to revert to a more neurovirulent form. The paralysis that results is identical to that caused by wild poliovirus.

- **Wild virus-associated poliomyelitis:** Any case not meeting the criteria for being vaccine associated. Such cases will be imported since New Zealand was declared free of poliomyelitis by WHO in 2000.

¹ An epidemiological link for polio is defined in the National Poliomyelitis Response Plan as ‘a history within the past 35 days of one of more of: an OPV; travel to high-risk countries (wild poliovirus endemic countries, see http://www.polioeradication.org/casecount.asp for an up to date list); exposure to high-risk individuals (a person with polio infection; a person immunised with OPV within the last two months; a person with a history of travel to high-risk countries within the last three months; or a person working with poliovirus in a laboratory; or exposure to poliovirus in a laboratory’.
Poliomyelitis

- **Imported**: A case occurring in a person who has travelled or resided in a polio-endemic area within 30 days of disease onset or who is epidemiologically linked to a person who has done so. Surveillance should be intensified at both local and national levels to detect any additional cases without delay.

- **Vaccine derived poliomyelitis infection (VDPV)**: Vaccine-derived poliovirus is the live, attenuated strain of the poliovirus contained in the OPV that has changed and reverted to a form that can cause paralysis in humans and has the capacity for sustained circulation. Vaccine-derived polioviruses differ from the parental (original) Sabin strains found in the vaccine by 1 percent to 15 percent of VP1 nucleotides. This is a measurement of genetic change that scientists use to monitor the circulation of viruses.

**Spread of infection**

**Incubation period**
3–35 days, commonly 7–14 days for paralytic cases.

**Mode of transmission**
Direct close contact, principally via the faecal-oral route but potentially also via respiratory droplets. There have been rare reports of milk, foodstuffs and other faecally contaminated materials being vehicles of transmission.

**Period of communicability**
Not known accurately. The virus has been detected in the throat as early as 36 hours and in faeces within 72 hours of exposure. Poliovirus persists in the throat for 1 week and in the faeces for 3–6 weeks or longer. Cases are most infectious during the few days before and after onset of symptoms.

**Notification procedure**

**Notifying cases of polio**
Attending medical practitioners or laboratories must immediately notify a medical officer of health of suspected cases. Notification should not await confirmation.

Any case of poliomyelitis in New Zealand must be notified to WHO via the National Focal Point (Office of the Director of Public Health) under the International Health Regulations 2005, and therefore the Director of Public Health, Ministry of Health, should be contacted urgently.
Notifying cases of acute flaccid paralysis as part of the WHO global eradication programme

As part of the WHO initiative to eradicate poliomyelitis, New Zealand has a programme of surveillance and investigation of all cases of acute flaccid paralysis (AFP) in children under the age of 15 years.

All cases of AFP are notified as suspected poliomyelitis and have a full clinical, epidemiological and virological investigation. The paediatrician reports the case to the New Zealand Paediatric Surveillance Unit (NZPSU), coordinated by the Department of Paediatrics and Child Health, University of Otago, and the local medical officer of health. The NZPSU collects detailed information on the child’s illness and progress from the paediatrician.

Two faecal samples are required at least 24 hours apart, 0–14 days after the onset of paralysis from every case of AFP, and the child must be re-evaluated 60 days after the onset of paralysis. The National Certification Committee for the Eradication of Poliomyelitis reviews the NZPSU information.

For more detailed information on AFP surveillance, see the NZPSU website at www.otago.ac.nz/nzpsu

Management of case

The occurrence of a single non-vaccine-associated paralytic case in a community warrants immediate investigation.

Investigation

Obtain a history of vaccination, travel and contact with recently returned travellers. Collect acute and convalescent specimens for poliomyelitis serology. Ensure laboratory confirmation has been attempted.

Restriction

Apply contact/enteric precautions (and droplet if in pre-paralytic phase with pharyngeal symptoms) for cases of wild-type polio for the duration of an acute hospital stay and thereafter according to expert advice. At home, a high standard of hygiene will be necessary, though it is recognised that other household members may already be infected. The usual bathroom and wash facilities may be used. The case should stay at home for 6 weeks after onset of symptoms. Contact with others should be limited, but strict isolation is not necessary.

Exclude from early childhood services, school or work for at least 7 days from onset and until the fever subsides.
Treatment
Supportive.

Counselling
Advise the case and their caregivers of the nature of the infection and its mode of transmission.

Management of contacts

Definition
A contact is defined as any individual potentially exposed to infectious faecal material either from close physical contact or shared toilet facilities with a probable or confirmed case of polio.

Investigation
Laboratory investigation is needed for all household contacts and for close social contacts who are in any of the following situations:

- are under 12 years of age
- are at high risk of transmitting infection (for example, food handlers)
- work with susceptible groups (for example, young children, immunocompromised, elderly).

Laboratory investigation of other contacts is not necessary.

Restriction
Contacts requiring laboratory investigation should be excluded from early childhood services, school or work for 6 weeks after contact with a case, or until two stool specimens, at least 24 hours apart, are negative for poliovirus.

Other contacts will be advised of the importance of hand hygiene and advised to see a medical practitioner for any illness but will not be restricted.

Prophylaxis
While post-exposure immunisation is not protective, it is recommended that unimmunised contacts be immunised with IPV. More general immunisation in the community will be implemented if required. See the Immunisation Handbook (Ministry of Health 2011) for further information.
Other control measures

Identification of source
Early identification of other cases will help to control spread. Review of possible recent cases may provide evidence of the source of an indigenous case.

Hygiene
Hand hygiene is the single most important means of preventing spread of infection. People should wash their hands well with soap and warm water for 15–20 seconds, then dry them thoroughly, preferably with a disposable hand towel. An antiseptic hand gel, rubbed in for 15–20 seconds, is a good alternative when hands are not visibly soiled.

Disinfection
A disinfecting solution should be used to wipe down surfaces used by people who are ill. In areas with modern and adequate disposal systems, faeces and other body fluids or secretions can be discharged into sewers.

Health education
In early childhood services or other institutional situations, ensure that satisfactory facilities and practices are in place for hand cleaning; nappy changing; toilet use and training; food preparation and handling; and cleaning of sleeping areas, toys and other surfaces.

Reporting
Ensure complete case information is entered into EpiSurv.

On receiving a notification, medical officers of health should immediately notify the Ministry of Health, including the Director of Public Health, and check that the paediatrician has notified the case to the NZPSU.

References and further information