Polio and the late effects of polio

Summary

- Polio is a preventable life-threatening disease.
- All adults and children need to be immunised to protect against polio.
- People who are infected with polio but don't have any symptoms are still contagious.
- Symptoms vary from mild, flu-like symptoms to paralysis and possibly death.
- People who have had polio may experience effects later in life called the late effects of polio.
- The late effects of polio are when physical symptoms return 15 years or more after the first polio infection.
- It is important to avoid too much physical exertion if you experience the late effects of polio.
- Aids and equipment (including orthoses, braces, walking sticks and electric scooters) can help relieve the symptoms of the late effects of polio.

Poliomyelitis (polio) is a serious disease caused by infection with 1 of 3 types of poliovirus. The virus is live for 6 weeks. It is spread via water, food or hands contaminated with the faeces (poo) or throat secretions of someone who is infected with the virus. The infected person may or may not have any symptoms, but can still spread the virus.

Symptoms vary from mild, flu-like symptoms to life-threatening paralysis. In less than 1% of cases, polio causes permanent paralysis of the arms, legs or breathing muscles. Between 5 and 10% of people who develop paralytic polio will die.

Physical symptoms may return 15 years or more after the first polio infection. These new symptoms are called the 'late effects of polio'. They include new muscle weakness, joint and muscle pain and fatigue.

Immunisation against polio

Immunisation is the best protection against polio. It is recommended for all infants, children and adults. The polio vaccine is given to children at 2, 4 and 6 months and at 4 years of age. This vaccine is combined with vaccines for other infectious diseases.

Protection against polio is available free of charge under the National Immunisation Program. In Victoria, immunisation against polio is free for:

- babies at 2, 4 and 6 months – immunisation in the form of a diphtheria, tetanus, whooping cough, hepatitis B, polio and *Haemophilus influenzae* type b (Hib) vaccine (6-in-1 vaccine)
- children at 4 years – a booster dose in the form of a diphtheria, tetanus, whooping cough, polio vaccine (4-in-1 vaccine)
- children up to and including 9 years of age – catch up immunisation with combination vaccines is available
- Aboriginal and Torres Strait Islander people, refugees and asylum seekers from 10 years of age – catch-up immunisations with a polio-only vaccine are available for people who have not been fully vaccinated.

It is recommended that all adults make sure that they have been vaccinated against polio. Polio vaccination is a course of 3 injections with an interval of 4 weeks between the doses. If you have not received at least 3 doses of polio vaccine, speak to your doctor about catch-up doses.

Adults do not need a booster dose unless they are at special risk. People who are at risk and may need a booster include:

- people intending to travel to Afghanistan, Nigeria or Pakistan, where polio is still endemic (known as wild poliovirus).
• people intending to travel to areas where there has been a recent outbreak of circulating vaccine-derived poliovirus (see the GPEI website for the current list of affected areas)
• healthcare workers who have been in contact with people who may have had the poliovirus in the past 10 weeks
• people who are likely to handle laboratory specimens that contain live poliovirus.

You can find more information about recent polio outbreaks through the World Health Organization and the Global Polio Eradication Initiative.

Read more about immunisation against polio.

Symptoms of polio

Polio symptoms generally appear between three and 21 days after infection. However, many people infected with poliovirus have no symptoms and may not even know they are affected.

In mild polio cases, symptoms include:
• fever
• tiredness and weakness (malaise)
• headache
• nausea and vomiting
• muscle stiffness.

If the virus spreads to the nervous system, it can cause major illness, such as:
• encephalitis (inflammation of the brain)
• meningitis (inflammation of membranes that surround the brain and spinal cord)
• paralysis.

The onset of paralysis is generally quite rapid – usually within three to four days. Symptoms include:
• severe muscle pain
• stiffness of the neck and back – with or without paralysis
• swallowing and breathing problems
• death – in severe cases, when breathing and swallowing muscles are paralysed.

Paralytic polio can cause long-term disability due to paralysis of the muscles.

How polio spreads

The poliovirus is spread when food, water or hands that are contaminated with the faeces (poo) or the throat or nasal secretions of an infected person enter the mouth of an uninfected person.

A person may develop symptoms within 3 to 21 days of coming into contact with the virus and will be most infectious 7 to 10 days before and after the beginning of symptoms. People remain infectious for as long as the virus continues to be excreted in their faeces (poo), which may continue for up to 6 weeks. Typically, the virus remains in the throat for 1 to 2 weeks.

Risk factors for polio

You are most at risk of infection with the poliovirus if you haven’t been immunised against polio. People who are particularly at risk of infection include:
• pregnant women
• the elderly
• the very young
• people with a weakened immune system, such as those with HIV.

This is especially the case in parts of the world where sanitation is poor and immunisation programs are not widespread.

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Factors that can increase your risk include:

- travelling to an area where polio is common or where an outbreak has recently occurred
- living with or caring for someone who may be currently infected with the poliovirus
- being unimmunised and having contact with someone recently immunised with the oral polio vaccine.

**Diagnosis of polio**

To diagnose polio, a doctor will:

- take a medical history
- perform a physical examination for symptoms such as:
  - neck and back stiffness
  - abnormal reflexes
  - swallowing and breathing problems.
- rule out other possible explanations for symptoms
- test for the poliovirus in a sample of:
  - throat secretions
  - faeces, or
  - cerebrospinal fluid (the fluid surrounding the brain and spinal cord).

**Treatment for polio**

There is no cure for polio. Treatment aims to manage the effects of the disease. Supportive treatment options include:

- antibiotics – for secondary infections
- pain-relieving medication
- portable ventilators to assist breathing
- medication to reduce muscle spasms
- moderate exercise
- massage
- physiotherapy
- heat treatments
- a nutritious diet.

**Late effects of polio (including post-polio syndrome)**

The 'late effects of polio' (LEoP) is an umbrella term used to describe symptoms related to a history of poliomyelitis. Post-polio syndrome (PPS) is a sub-category of LEoP and is a diagnosable neurological condition.

Anyone with a history of polio may develop LEoP, although not everyone does. People who were severely paralysed by polio are more commonly affected.

**Symptoms of late effects of polio**

The most common symptoms include:

- decreased strength and muscle endurance
- breathing, swallowing or speaking difficulties
- pain
- sleep problems
- fatigue
- a range of physical symptoms such as scoliosis or joint problems.

**Diagnosis of post-polio syndrome**

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Post-polio syndrome (PPS) is a sub-category of LEoP. It is a diagnosable condition, however there is no test that will definitely show that you have it. PPS is diagnosed on the basis of:

- new symptoms of pain and weakness, continuing for at least a year
- medical history – having had a polio infection in the past, with or without paralysis
- no other clinical explanations for the symptoms (known as diagnosis of exclusion).

**Causes of late effects of polio**

The late effects of polio are not caused by re-infection with the poliovirus, but by a range of factors related to the original polio infection. For example:

- muscle fatigue and pain due to reduced muscle tissue
- pain, and sleep or breathing problems, from postural abnormalities such as scoliosis or kyphosis
- increased stress on joints, leading to arthritis and pain (this may be worsened by weight gain)
- reduced bone density from long-term lack of weight-bearing activity due to weakened limbs
- increasing muscle weakness due to a greater loss of motor neurones than in the normal process of ageing

It is thought that PPS is caused by the breakdown of ‘sprouts’ (extra nerve branches that formed to compensate for nerves that were destroyed or damaged by the poliovirus). While this can occur at any time, it is believed that it may be triggered by a period of inactivity, trauma or surgery, or by inflammation.

**Treatment for late effects of polio and post-polio syndrome**

There is no specific treatment for LEoP or PPS. Symptoms may be controlled or improved if you:

- avoid physical overexertion or stress
- keep comfortably warm and avoid exposure to cold temperatures
- modify daily activities to conserve energy – for example, sit rather than stand where possible
- use aids and equipment – for example, orthoses, braces, walking sticks and electric scooters
- ensure that all exercise is pain free and does not cause excessive tiredness.

For some problems, surgery may be necessary. For example:

- a torn rotator cuff tendon in the shoulder – this can occur after years of using the arms to assist with walking (for example, using crutches) or to push up and out of chairs
- foot deformities that can cause falls
- replacing worn joints at the hip and knee on the stronger leg.

When undergoing surgery, people should ensure that all treating clinicians are aware of their polio history.

**Rehabilitation for post-polio syndrome**

After a full assessment with a rehabilitation specialist, you may be referred to:

- a physiotherapist or exercise physiologist – for weakness, pain or mobility problems
- a respiratory therapist – for breathing difficulties
- an orthotist – for leg braces
- an occupational therapist – for help with functioning at work, home or in the community
- a speech pathologist – for help with speaking or swallowing
- a pain clinic – for chronic pain
- a psychologist – for depression or other mood difficulties
- a social worker – to assist with advocacy and quality of life
- a podorthist – for help with footwear
- a podiatrist – for help with foot pain or other foot issues
- a dietitian – for help with nutrition to maintain a healthy weight.

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Support for people experiencing late effects of polio and post-polio syndrome

The onset of LEoP can cause many people to feel emotional about past polio experiences. Joining a support group may help.

Health professionals such as social workers, psychologists or occupational therapists can help you manage any concerns you have due to increased or changing needs brought on by LEoP.

Where to get help

- In an emergency, always call triple zero (000)
- **Your GP (doctor)** - to assist with ongoing management, advice, referrals to a rehabilitation specialist and other medical specialists and health professionals
- Emergency department of your nearest hospital
- Your local government immunisation service
- **Maternal and Child Health Line** (24 hours) Tel. 132 229
- **NURSE-ON-CALL** Tel. 1300 60 60 24 – for expert health information and advice (24 hours, 7 days)
- Immunisation Program, Department of Health and Human Services, Victorian Government Tel. 1300 882 008
- **National Immunisation Information Line** Tel. 1800 671 811
- **Your local pharmacist**
- **Post-Polio Victoria (advocacy and advice)** Tel. 0431 702 137
- **Polio Network Victoria (finding a support group)** Tel. 1300 704 456
- **Polio Services Victoria (polio-specific health services)** Tel (03) 9231 3900

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