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## Polio and polio vaccine

Polio (poliomyelitis), is a serious illness that can be debilitating and life-threatening. There is no cure but thanks to vaccinations, the illness is rare.

All children and adults should be immunised against polio. See your practice nurse if you think that you are not fully vaccinated.

### What is polio?

Polio (poliomyelitis) is a serious illness caused by a virus called poliovirus. Polio mainly affects children under 5 years of age. It is a very infectious disease.

### How is polio spread?

The infection usually spreads from person to person through contact with the stools (faeces) of an infected person or by droplets from coughing or sneezing. If even a tiny amount of the virus gets on to another person's hands, food or drinking water and into the mouth of an unvaccinated person, they can also become infected. The virus can then travel to the gut (bowel) to cause an infection. From there it can multiply and go into the bloodstream or nervous system causing serious symptoms.

The incubation period (the time from being infected to showing symptoms) is between 3 to 21 days. The virus can stay in the body for a while and it can still be present in the stools for up to six weeks, and in the saliva for up to two weeks.

### What are the symptoms of polio?

Most people (about 7 out of 10) with polio won't have any symptoms. Others, about 1 in 4 people, will have mild symptoms that last 2 to 5 days. These symptoms can be:

- High temperature ([fever](#)).
- Tiredness.
- Headache.
- Sore throat.
- Stomach pain.
- Nausea or vomiting (feeling or being sick).
- Neck stiffness.
- Pain in the arms and legs.

These symptoms usually go away on their own.

In about 1 in 200 people with polio infection the virus travels to the nervous system. Here it can cause [pins and needles](#) in the limbs, [meningitis](#) or even permanent paralysis, (usually in the legs). This permanent paralysis is called paralytic polio.

The most infectious period of time is one day before and up to two weeks after paralytic polio. Between 5% and 10% of people with paralytic polio will die because the breathing muscles stop working properly.

## Long-term effects of polio

Those with no or mild symptoms are unlikely to get long-term effects. Those who have paralytic polio may have problems that can last a long time, such as:

- Tight joints.
- Muscle shrinking (often called muscle wasting or atrophy).
- Muscle weakness.
- Limb deformities.
- Ongoing tiredness.
- Ongoing pain.
- Breathing difficulties.

- Sleep problems such as [sleep apnoea](#).

## **Post-polio syndrome**

About 15 to 40 years after infection with polio, some survivors (about 25 to 40 in 100) develop post-polio syndrome. This is not infectious.

It starts with some weakening of muscles that had been infected, new joint pain and feeling tired. Some people only have mild symptoms but in others, it can be severe and, rarely, cause death if they have breathing difficulties.

## **How is polio treated?**

There is currently no cure for polio so it is mainly treated based on symptoms. These include:

- Pain relief.
- Bed rest and fluids.
- Physiotherapy.
- Ventilators to help breathing, if needed.
- Medications to help with muscle spasms.
- Mobility aids.

## **What types of vaccine are there?**

There are two types of vaccine:

- An injected vaccine containing the inactivated or dead form of the virus. This cannot infect anyone or spread disease.
- An oral one containing a tiny amount of the weakened, live virus. This can be shed into stools and cause infections known as vaccine-associated paralytic polio.

The vaccine stimulates your body to make antibodies. These antibodies protect you from illness should you become infected with the polio virus.

From 2004, the vaccine has been delivered by injection in the UK. Before this, the oral vaccine was given. Worldwide, every country now uses the injected vaccine. However, in outbreaks, the oral vaccine performs better to contain the disease, and this is used.

Since 1988, the World Health Organization (WHO) has organised an immunisation programme to remove polio virus from every country in the world. This programme has been very successful and poliovirus is now only a problem in a few countries, such as Pakistan and Afghanistan. Polio has been virtually eradicated in the UK because of the success of the polio vaccination.

If the immunisation programme doesn't continue to be successful then polio could return to many countries, including the UK.

## The UK vaccine programme

- **For young children**, polio vaccine is normally part of the combined DTaP/IPV(polio)/Hib/Hep B injection - this stands for 'diphtheria, tetanus, pertussis (whooping cough)/polio/*Haemophilus influenzae* type b and hepatitis B', which is given as part of the routine childhood immunisation programme. This called the 6-in-1 vaccine.
- **For adults and teenagers** who receive polio immunisation, the combined Td/IPV(polio) vaccine is normally used - this stands for 'tetanus, diphtheria/polio'.

As discussed earlier, the polio vaccine was given as drops into the mouth. In the UK, it is now always given as an injection. If you have previously started a course of polio immunisation with oral vaccine you can finish off the course with polio injections. You do not need to start again.

The vaccine is safe to be given if you are pregnant or breastfeeding.

## Polio vaccine schedule

All children are offered polio immunisation as part of the routine immunisation programme. A full course of polio immunisation consists of five doses of vaccine as follows:

	Children	Adults (who have not been immunised as a child)
<b>Primary Course</b>	Three doses of vaccine - as DTaP/IPV(polio)/Hib at 2, 3 and 4 months of age.	Three doses of vaccine - as Td/IPV(polio), each one month apart.
<b>Fourth dose</b>	Three years after the primary course - as part of the DTaP/IPV(polio) pre-school booster at 3 years and 4 months to 5 years.	Five years after the primary course - as Td/IPV(polio).
<b>Fifth dose</b>	Aged 13-18 years - the school leaver booster - as Td/IPV(polio).	10 years after the fourth dose - as Td/IPV(polio).

## Can you get polio after being vaccinated?

The first three injections given in childhood gives good protection (nearly 100%) for a number of years. The fourth and fifth doses ('boosters') are needed in later years to maintain protection. After the fifth dose, immunity remains for life and you do not need any further boosters (apart from some travel situations - see 'Travellers', below).

## Are there any side-effects from the polio vaccine?

- Slight swelling and redness at the injection site are common.
- A little area of hard skin may form at the injection site, which usually disappears in time.
- Sometimes a high temperature occurs a few hours after the injection.
- Serious reactions, such as severe allergy or [anaphylaxis](#), are extremely rare.

## Adults – are you immunised?

Polio is not just a childhood illness, it can affect anyone. Children in the UK have been immunised against polio since 1958. If you were born before 1958 you may not have been immunised. All adults who are not immunised against polio should start by having the primary course of three polio vaccines at monthly intervals and then have the booster doses as described above.

## Travellers

Polio has been practically destroyed in much of the world, due to immunisation. However, it is still a problem in some regions, particularly in Pakistan and Afghanistan. Your GP or practice nurse can advise if your travel destination is an at-risk area for polio. If you are travelling to an at-risk area:

- Many people will already be fully immunised from their routine childhood immunisations and do not need a booster.
- If you have not had a booster within the previous 10 years, you may be advised to have a booster dose of vaccine if you travel to certain countries. This is particularly important for health workers who intend to work in at-risk areas.
- Adults – see notes above. If you are not immunised, you should be immunised before you travel.

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## Further reading

- [Polio: guidance, data and analysis](#); Public Health England
- [Immunisation against infectious disease – the Green Book \(latest edition\)](#); UK Health Security Agency.
- [NHS complete routine immunisation schedule](#); GOV.UK
- [Minor PD](#); An Introduction to Poliovirus: Pathogenesis, Vaccination, and the Endgame for Global Eradication. *Methods Mol Biol.* 2016;1387:1–10. doi: 10.1007/978-1-4939-3292-4\_1.
- [Immunizations – childhood](#); NICE CKS, March 2022 (UK access only)
- [Centers for Disease Control and Prevention– Polio](#)

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