
Typhoid and paratyphoid

Summary

- Typhoid and paratyphoid fevers are bacterial infections of the intestinal tract and bloodstream.
 - Almost every Australian case is acquired during overseas travel, with about 50 to 60 Victorians treated each year.
 - Symptoms and signs include diarrhoea, fever, tiredness, enlarged spleen and liver, and characteristic skin rash.
 - Without prompt medical treatment, typhoid and paratyphoid fevers can be fatal.
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Typhoid and paratyphoid (also known as typhoid and paratyphoid fever) are bacterial infections of the intestinal tract and bloodstream. The bacterium responsible for typhoid is called *Salmonella typhi* and the bacterium responsible for paratyphoid is *Salmonella paratyphi*.

The infections may occur anywhere in the world, but are more common in places with unsafe water supplies and poor sanitation, such as:

- India, Pakistan and Bangladesh
- most countries of South-East Asia
- several countries of the South Pacific, including Papua New Guinea
- Central and South America
- the Caribbean
- African countries
- countries of the Middle East.

About 28 million people are affected globally every year, but typhoid and paratyphoid are very rare in Australia. Almost every Australian case is caught during overseas travel, with around 200 cases reported in Australia every year. About 50 to 60 Victorians are treated annually. Typhoid (or typhoid fever) is also known as enteric fever.

The *Salmonella typhi* bacterium is carried only by humans – no other animal carrier has been found. The *Salmonella paratyphi* bacterium is carried by humans and, rarely, domestic animals.

Transmission of typhoid and paratyphoid

An infected person has the bacteria in their faeces (poo) and sometimes in their urine. If the person with the infection does not carefully wash their hands after going to the toilet, they may spread the bacteria from their hands to surfaces and objects that may then come into contact with food or be touched by other people.

Hands can also become contaminated when changing the nappy of an infected infant. Water sources that are contaminated with infected faeces are another common way that the infection is transmitted.

Without treatment, about one person in 20 who recovers from typhoid becomes a 'carrier'. Despite having no symptoms of illness, they have bacteria in their faeces and urine, and can infect others for a period of about three months (sometimes up to one year). About two to five per cent of carriers are permanently infectious. People who recover from paratyphoid without medical treatment may become carriers too, although this is less common.

Incubation period for typhoid and paratyphoid

The incubation period for typhoid is usually seven to 14 days, but ranges from three to 60 days. For paratyphoid, the incubation period is about one to 10 days. The onset of symptoms may be slow, gradually worsening over about three or four days. Untreated, the illness typically lasts about four weeks. Any complications tend to occur after about two or three weeks.

People at high risk of developing typhoid and paratyphoid

People at highest risk of developing typhoid and paratyphoid include:

- people who travel to areas where typhoid and paratyphoid are widespread
- people who come to visit or live in Australia from areas where typhoid and paratyphoid are widespread
- anyone who has had close contact with an infected person
- young children, who are at greater risk of infection than adults.

People who have been vaccinated against typhoid are at lower risk, but vaccination is not 100 per cent effective. Between 20 and 50 per cent of people who have been vaccinated may still develop typhoid following exposure.

Symptoms of typhoid and paratyphoid

Symptoms and signs of typhoid range from mild to severe, can last for about one month without treatment, and may include:

- fever
- fatigue or tiredness
- malaise (general feeling of unwellness)
- sore throat
- persistent cough
- headache
- slower than usual heart rate
- sweating
- abdominal pains
- changes in bowel habits, such as constipation or diarrhoea
- lack of appetite and weight loss
- reddened skin rash on the chest and stomach
- mental changes such as confusion
- blood poisoning (**septicaemia**)
- enlarged spleen (**splenomegaly**)
- enlarged liver (hepatomegaly).

Compared to typhoid, paratyphoid generally has similar but milder symptoms, a faster recovery time and fewer complications.

Complications from typhoid and paratyphoid

The serious and potentially lethal complications of typhoid and paratyphoid include:

- intestinal haemorrhage – bleeding from the intestine (signs include a sudden drop in blood pressure, and blood in the faeces)
- intestinal perforation – a hole in the intestine that allows intestinal contents and blood to leak into the abdominal cavity
- meningitis – inflammation of the membranes surrounding the brain and the spinal cord
- inflammation of other organs – such as the heart or pancreas
- infection – such as infection of the lungs (pneumonia), kidneys, bladder or spine.

Diagnosis of typhoid and paratyphoid

Diagnosis of typhoid or paratyphoid fever may include:

- physical examination
- medical history
- travel history

- blood test
- stool (faeces) test
- urine test
- bone marrow test.

Treatment of typhoid and paratyphoid

Without prompt medical treatment, typhoid and paratyphoid fevers can be fatal. Treatment options may include:

- hospitalisation – patients may need specialised and supportive medical care for a few days
- antibiotics – to kill the bacteria, reduce the risk of complications and speed recovery
- plenty of fluids – to counter the dehydration caused by the diarrhoea and fever.

Ways to avoid infecting other people with typhoid and paratyphoid

If you have had typhoid or paratyphoid, you are infectious until all of your symptoms have cleared and you have been well for at least 24 hours.

In the meantime, to avoid infecting others:

- Do not go to work, school or childcare.
- Do not handle or prepare food for others in your household.
- Avoid sharing towels, food utensils or food with others.
- Wash your hands thoroughly with soap and water after visiting the toilet.
- Speak with your doctor for more detailed instructions.

Children with typhoid or paratyphoid must be excluded from school and children's services centres until given approval by the Department of Health and Human Services to return.

About five to 10 per cent of people relapse (become sick again), usually two to three weeks after they have recovered from typhoid. Speak with your doctor if you have any symptoms. In Australia, healthcare professionals are required to notify the authorities about cases of typhoid.

Prevention of typhoid and paratyphoid

Travellers can take a number of precautions before and during travel to reduce the risk of catching typhoid and paratyphoid fever.

Immunisation for typhoid

Anyone travelling overseas should visit their doctor or travel health clinic to find out what vaccinations they need. Even if you think your travel destination is safe, keep in mind that disease outbreaks can and do happen.

Three types of typhoid vaccine are available in Australia, plus a combination vaccine that also includes hepatitis A. Typhoid vaccination offers good protection, but is not 100 per cent effective. About 20 to 50 per cent of vaccinated people may still contract typhoid following exposure. There is no paratyphoid vaccine.

Vaccinations should be performed at least two weeks before you travel. Protection does not last forever, so ask your doctor if you need another vaccination before you travel in the future.

Other precautions with typhoid and paratyphoid

Vaccination is not a guarantee that you will not catch typhoid fever. Strict attention to eating habits and personal hygiene is very important while travelling in countries with unsafe water supplies and poor sanitation.

Suggestions include:

- Avoid buying food from street vendors.
- Eat only hot foods and avoid meals that are served cold or at room temperature.
- Avoid seafood, particularly shellfish.
- Do not eat raw fruits or vegetables – including fresh fruit juice and salads. Fruit or vegetables that can be peeled and that you peel yourself are usually safe.

- Avoid raw or runny eggs.
- Avoid unpasteurised milk and dairy products, including ice-cream.
- Do not have ice in your drinks.
- Drink bottled water.
- Use bottled water to brush your teeth.
- Wash your hands thoroughly with soap after going to the toilet, before preparing food, and before eating. Carry a bottle of alcohol-based hand sanitiser for those times when soap and clean water are unavailable.

Where to get help

- Your **GP (doctor)**
- In an emergency, always call triple zero (000)
- The emergency department of your nearest hospital
- **Travel Clinics Australia** Tel. **1300 369 359** – for advice from a travel clinic doctor before and after you travel
- **smartraveller** – for travel advice
- Department of Health and Human Services Victoria – Immunisation Program Tel. **1300 882 008**
- **National Immunisation Hotline** Tel. **1800 671 811**
- **NURSE-ON-CALL** Tel. **1300 60 60 24** – for expert health information and advice (24 hours, 7 days)

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