



TYPHOID FEVER

Although it's common for people to think typhoid fever is caused by a virus, typhoid fever and paratyphoid, so-called enteric fevers, are caused by *Salmonella* bacteria. Thousands of different types of *Salmonella* bacteria can be found in wild and domestic animals and birds, causing them to become ill, but they are not the same as the severe diseases typhoid fever and paratyphoid which only affect humans.

Some human gastroenteritis infections are due to *Salmonella* species, but there are two very different and specific types of *Salmonella* that cause typhoid fever and paratyphoid which produce a different kind of illness to 'gastro'. Typhoid fever and paratyphoid are not common in Australia and most cases are imported by travellers returning from overseas.

WHAT IS TYPHOID FEVER?

Typhoid fever is a potentially fatal systemic infection caused by *Salmonella* bacteria (subspecies enterica serovar Typhi). It is one of the enteric fevers (along with paratyphoids A, B and C) and is typically acquired through consuming food or water contaminated by the faeces of an infected person or chronic human carrier (humans are the only reservoirs of infection).

WHAT ARE THE SYMPTOMS?

The incubation period can vary depending on how much bacteria was consumed, ranging from 1 – 3 weeks, but it may also be longer. Early symptoms can be non-specific and resemble other travel-related infections, such as dengue fever or malaria: fever, malaise, anorexia, headache, rash, abdominal pain and constipation or diarrhoea. Some people have only a mild illness, but untreated infections can deteriorate resulting in intestinal haemorrhage, bowel perforation and death. Others may be asymptomatic, although the individual can still carry the typhoid organism long-term and is capable of transmitting the infection. Some 5% of people suffering from typhoid fever become chronic carriers.

WHERE IS IT FOUND?

Once universally prevalent, improved sanitation and higher standards of hygiene have meant that typhoid fever is now mostly a public health concern in resource-poor regions. Still, the WHO reports that between 11 and 20 million typhoid infections occur every year, resulting in more than 120,000 deaths.

RISK TO TRAVELLERS

The areas of the world where sanitation is sub-standard are those with the highest risk of infection and include in particular India, Pakistan and Bangladesh, but also parts of Africa, the Middle East, the Caribbean, and Central and South America. Typhoid vaccination is one of the recommendations for travel to developing countries and is highly advisable for people visiting friends and relatives, visiting rural areas, and if engaged in prolonged travel. In addition, the typhoid vaccine is important for those with adventurous eating habits and for people with some medical conditions (such as lowered gastric defences).

HOW IS TYPHOID FEVER TREATED?

While the disease can generally be cured if treated with appropriate medications, resistance to many of the antibiotics used to treat typhoid infections is spreading and there are now extensively drug-resistant forms, resistant to several classes of antibiotics. Due to such cases, which are more prevalent in South Asia, getting a typhoid vaccine may be even more crucial if you're planning to travel to these or other affected areas.

OUR RECOMMENDATION

The typhoid vaccine is recommended for most people travelling to developing countries. Anyone travelling to countries where typhoid fever is common should discuss vaccination to prevent typhoid fever infection. Our typhoid vaccination process is as follows:

WHAT IS TYPHOID FEVER VACCINATION?

- Oral live-attenuated vaccine
- Injectable, synthetic
- Injectable, combined with hepatitis A

In some typhoid-endemic countries, new longer-lasting typhoid vaccines are now available to prevent typhoid fever. This formulation is given to adults aged 45 years old down to infants from 6 months of age, offering longer than the 3 years of protection offered by the other available vaccines. These typhoid fever vaccines are not yet licensed in Australia.

SCHEDULE

ORAL (REFRIGERATED) TYPHOID VACCINE:

- One capsule is taken on an empty stomach one hour before food on alternate days i.e. days 1, 3 and 5 – it should be taken with water and not chewed or opened. The vaccine is licensed for children 6 years of age and older, and adults. It confers protection for three years; a 4-dose schedule given on alternate days (1, 3, 5 & 7) confers five year's cover.

NB: As this is a live vaccine, it is not suitable for the following groups and the injectable form should be given:

- pregnant women
- immunocompromised people.

The oral typhoid vaccine may be inactivated if taken with some antibiotics and antimalarial medications – check with the prescribing doctor. Also, if the oral cholera vaccine is also prescribed, at least 8 hours should lapse between the 2 vaccine doses.

INJECTABLE TYPHOID VACCINE:

- This is an injectable, synthetic vaccine. A single dose gives 3 years protection for children aged 2 years and over, and adults. Combined with hepatitis A, a single dose gives 3 years of protection for children aged 16 years and over, and adults. It also provides a single dose of the hepatitis A vaccine (a separate dose of the Hep A vaccine is given 6-12 months later to complete that course).

Booster doses for both typhoid vaccination types, oral and injectable, do not apply. If at continued risk after 3 years (or 5 years for the 4-dose oral schedule), the vaccine dose is repeated.

LEVEL OF PROTECTION

- **The oral vaccine** - approx. 70% up to 1.5 years after vaccination, falling to 50% after 3 years; food and water precautions are important.
The injectable vaccine has ~75% protection; food and water precautions are important.

POSSIBLE SIDE EFFECTS

Side effects are usually infrequent and mild:

- **The Oral vaccine:**
 - Stomach pain, nausea, vomiting, diarrhoea and rash.
- **The Injectable vaccine:**
 - Fever and headache (9% of recipients)
 - Redness, soreness, swelling and itching around the injection site.
 - General malaise, nausea.

As with all vaccines and medications, there are side effects and there is a small risk of an allergic reaction from typhoid vaccination.

WHERE CAN I GET A TYPHOID FEVER VACCINATION FROM?

If you require vaccination against typhoid fever, head to a Travelvax clinic [near you](#). Staffed by trained professionals who have access to state-of-the-art equipment, we can help keep you safe on your next trip. **Note:** Typhoid vaccination is not funded under the [National Immunisation Program](#) (NIP), nor by [states and territories](#), but may be covered in part by your health fund (Extras cover).

References:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3959940/#:~:text=It%20was%20Karl%20Joseph%20Eberth,incluing%20Robert%20Koch>

FAQS

~~IS THE TYPHOID VACCINE NECESSARY?~~

Unless you are travelling to a typhoid-prone area overseas, work in the military or in a laboratory that works with *Salmonella typhi* bacteria you generally don't need to be vaccinated in Australia.

~~HOW LONG DOES A TYPHOID VACCINATION LAST?~~

The effectiveness of the typhoid vaccines wanes over time so if you have had the injectable version and are at risk of the infection, you need a booster every 3 years. If you had the oral vaccine you need a booster every 3-5 years (depending on the initial course of 3 or 4 doses). If you are still concerned about how long the typhoid fever vaccination is good for, then consult your travel doctor or GP for more information.

~~IS TYPHOID INJECTION OR ORAL BETTER?~~

The main differences are the duration of coverage and the contraindications or precautions for receiving a live vaccine. See above.

~~WHEN SHOULD A TYPHOID VACCINE BE GIVEN?~~

Ideally, the typhoid vaccine should be administered at least one month before any travel to endemic areas, however you can get typhoid vaccines closer to the departure date.

~~WHAT CAUSES TYPHOID FEVER?~~

Infection with *Salmonella typhi* bacteria causes the disease. An identical illness is caused by infection with *Salmonella paratyphi*. Typhoid fever is then known as *Enteric Fever*. There is some evidence that the oral, live attenuated vaccine

may provide some protection against infection from a paratyphi strain, whereas the injectable vaccine does not. In Australia, most cases have been caught overseas by people travelling to endemic parts of the world or areas where there is poor hygiene and from consuming contaminated food or water when visiting developing countries.

HOW LONG DOES TYPHOID STAY IN YOUR BODY?

With appropriate antibiotic treatment of non-drug resistant strains, people typically recover after a week or 10 days. Several antibiotics can be used to treat typhoid fever, but their effectiveness is dependent on the infecting strain. Still, around 5% of people who contract typhoid fever will become chronic carriers and can shed the bacteria for a year or more. Travellers heading to typhoid-endemic regions should visit a travel doctor or GP to discuss typhoid vaccination and for information about treating typhoid fever.

WHAT ARE THE STAGES OF TYPHOID FEVER?

There are four stages of typhoid fever and each lasts for up to a week.

In the first stage, there is a headache, malaise and an intermittent fever. The second stage brings a high fever, rash (rose spots on the torso), constipation (diarrhoea in children) and dry cough.

Third stage symptoms include a distended stomach, slow heart rate, hallucinations, agitation and drowsiness in turn. The fourth, toxic stage is characterised by an extremely high fever and rapid pulse, with the risk of complications such as intestinal perforation and peritonitis which can be fatal.

HOW SAFE IS THE TYPHOID VACCINE?

Like most other vaccines, typhoid fever vaccination side effects are generally minor with allergic reactions in very rare cases.

IS TYPHOID CONTAGIOUS BY TOUCH?

If a person with typhoid or a carrier (someone who has the disease but shows no symptoms and doesn't become ill) goes to the toilet and fails to wash their hands afterwards, then touches food that others may eat, the bacteria can be transmitted to others.

WHERE IS TYPHOID FEVER COMMON?

One of the highest risk factors for contracting the disease is not being vaccinated or failing to follow safe food and water precautions while living in or travelling to parts of the world where typhoid fever is endemic (or common) such as:

- South Asia - Pakistan, Bangladesh and India
- Africa
- South-East Asia
- South and Central America
- The Middle East

WHO IS AT RISK OF CONTRACTING TYPHOID?

Those who are more at risk of being infected with either paratyphoid or typhoid include the following:

- Those at greater risk of infection with typhoid are young children and immunocompromised adults.
- Close contact with a person infected with typhoid.
- Anyone who lives or travels to or from regions where typhoid and paratyphoid are endemic or there is an outbreak.

CAN YOU GET TYPHOID AFTER VACCINATION?

The typhoid vaccines work by stimulating your body's immune system to make antibodies which are proteins that fight infection. The vaccine teaches your body to recognise the typhoid bacteria and the antibodies set to work destroying the bacteria should you become infected. However, neither type of typhoid vaccine is 100% effective so our travel doctor will advise you to take the proper precautions when eating food and drinking water while in countries where typhoid and paratyphoid are endemic. It's also a good idea to be careful of what you consume and to practice good hygiene when you visit any country abroad.

WHEN WAS TYPHOID FEVER FIRST RECOGNISED?

The bacillus responsible for typhoid fever was identified by doctor Karl Joseph Eberth, a student of Rudolf Virchow who first discovered the bacillus in spleen and stomach lymph nodes in 1879. German and English bacteriologists, including Robert Koch, confirmed Eberth's findings.

WHO WAS "TYPHOID MARY"?

Irishwoman Mary Mallon emigrated to the United States in 1884 and worked for wealthy families before taking up a career as a cook. Mary was a healthy woman, but she was a carrier of *Salmonella typhi*. Despite denying she was ill, she infected at least 120 people, including five who died. She became infamous, with newspaper articles written about her calling her "Typhoid Mary". Mary was forced into quarantine twice for a total of 26 years and died alone. Mary's case shows how social attitudes towards carriers of disease can be worsened by health care systems which can provoke shame and prejudice, as happened in the early days of HIV/AIDS.

CAN TYPHOID AND YELLOW FEVER VACCINES BE GIVEN TOGETHER?

Yes, the oral typhoid vaccine for typhoid and yellow fever can be administered at the same time as other live parenteral vaccines. Both adults and children can receive the yellow fever vaccine and MMR (measles-mumps-rubella) vaccine at the same time.

**More information on Typhoid fever is available during your pre-travel consultation with Travelvax.
Call 1300 360 164 for the location of the clinic nearest to you.**