

# typhoid

## CDC RECOMMENDS FOR PEOPLE TRAVELING TO SOUTH ASIA ESPECIALLY INDIA, PAKISTAN, OR BANGLADESH

There are two manufacturers approved by the FDA in the United States

**Vivotif** is a live vaccine taken orally for persons 6 years or older.

**Typhim Vi** is an inactivated vaccine that is injected for persons 2 years or older.

**Please note: In December 2020, the maker of the oral typhoid fever vaccine (Ty21a) will temporarily stop making and selling it. This vaccine may be in limited supply or unavailable.**

### Vivotif can cause:

- + Abdominal pain
- + Nausea
- + Headache
- + Fever
- + Diarrhea
- + Vomiting
- + Skin rash
- + Urticaria (hives)
- + Anaphylactic reaction

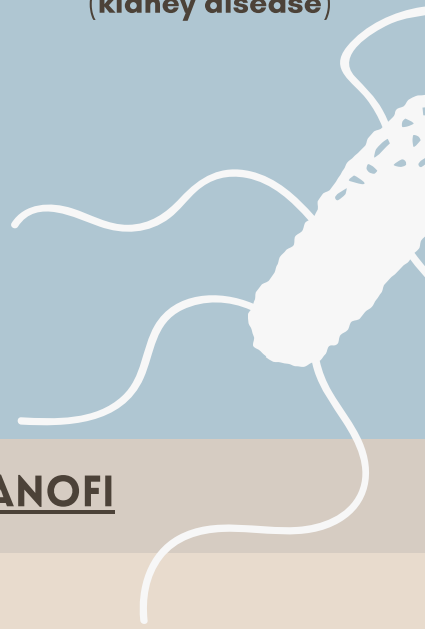
### Typhim Vi can cause:

- + Syncope (fainting) with or without convulsions
- + Nausea
- + Vomiting
- + Diarrhea
- + Abdominal pain
- + Injection site pain
- + Lymphadenopathy
- + Fever
- + Asthenia
- + Malaise
- + **Flu-like episode**
- + Anaphylaxis
- + Pruritus (itchy skin)

- + Rash
- + Urticaria (hives)
- + Angioedema (swelling)
- + **Difficulty breathing**
- + Hypotension
- + Serum sickness
- + Myalgia (muscle pain)
- + Arthralgia (joint pain)
- + **Cervical pain**
- + Headache
- + Loss of consciousness
- + Tremor
- + **Asthma**
- + Neutropenia

- + Bilateral retinitis
- + Polyneuritis (**nerve damage**)
- + Glomerulonephritis (**kidney disease**)

SOURCES FROM CDC + BERNA BIOTECH + SANOFI



## THE CDC ON TYPHOID FEVER

Typhoid fever and paratyphoid fever are similar diseases caused by bacteria. *Salmonella Typhi* bacteria cause typhoid fever. *Salmonella Paratyphi* bacteria cause paratyphoid fever.

People infected with these bacteria can spread them to others. This typically happens when an infected person uses the bathroom and does not wash their hands. The bacteria can stay on their hands and contaminate everything that the person touches, including any food and drinks.

In countries with poor sanitation, the water used to rinse and prepare food and beverages can also be contaminated with these bacteria. Travelers who eat foods or drink beverages contaminated with these bacteria can then get sick.

Typhoid fever and paratyphoid fever cause similar symptoms. People with these diseases usually have a fever that can be as high as 103–104°F (39–40°C). They also may have weakness, stomach pain, headache, diarrhea or constipation, cough, and loss of appetite. Some people have a rash of flat, rose-colored spots. Internal bleeding and death can occur but are rare.

Why does the CDC recommend a product that can **cause** the very symptoms it is meant to **prevent**?

Typhoid vaccines are not 100% effective. Always practice safe eating and drinking habits to help prevent infection.

<https://www.cdc.gov/typhoid-fever/typhoid-vaccination.html>

## ACCORDING TO THE MANUFACTURER

Long-term studies in animals with Vivotif have not been performed to evaluate carcinogenic potential, mutagenic potential or impairment of fertility.

Animal reproduction studies have not been conducted with Vivotif. It is not known whether Vivotif can cause fetal harm when administered to pregnant women or can affect reproduction capacity. Vivotif should be given to a pregnant woman only if clearly needed.

There is no evidence to support the use of typhoid vaccine to control common source outbreaks, disease following natural disasters or in persons attending rural summer camps.

#### Drug-Interactions

Several anti-malaria drugs, such as mefloquine, chloroquine and proguanil (not approved for use in US) possess anti-bacterial activity which may interfere with the immunogenicity of Vivotif (17,18).

The CDC recommends this product for those traveling to South Asia especially India, Pakistan, or Bangladesh. Each of these destinations are also on the CDC's recommended list for travelers to take **anti-malaria drugs**. Why does the CDC recommend the typhoid vaccine for those places when it also recommends anti-malaria drugs which are known to interfere with the effectiveness of the typhoid vaccine?

[cdc.gov/malaria/travelers/country\\_table/b.html](https://cdc.gov/malaria/travelers/country_table/b.html)

No studies have been conducted in the US to evaluate interactions or immunological interference between the concurrent use of Typhim Vi vaccine and drugs (including antibiotics and antimalarial drugs), immune globulins or other vaccines (including common travelers vaccines such as tetanus, poliomyelitis, hepatitis A, and yellow fever).

The manufacturer states there has not been any studies on immunological interference between the Typhoid shot and other shots recommended by the CDC when traveling internationally. Why does the CDC recommend this product if there is not a study to determine if it interferes with the other shot's effectiveness?

Typhim Vi vaccine has not been evaluated for its carcinogenic potential, mutagenic potential or impairment of fertility.

As with any vaccine, vaccination with Typhim Vi vaccine may not protect 100% of individuals.

**Typhoid vaccination is not required for international travel,**

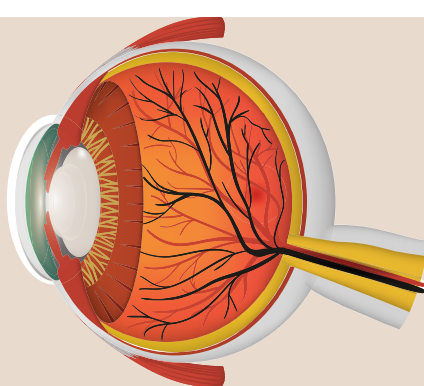
Be sure to check the vaccination requirements of your destination prior to traveling.

## LET'S LOOK AT ADVERSE REACTIONS

People with neutropenia have an unusually low number of cells called neutrophils. Neutrophils are cells in your immune system that attack bacteria and other organisms when they invade your body.

Neutrophils are a type of white **blood** cell. Your bone marrow creates these cells. They then travel in your bloodstream and move to areas of infection where they ingest and then neutralize the offending bacteria.

**Retinitis** is a disease that threatens **vision** by damaging the retina -- the light-sensing tissue at the back of your **eye**.

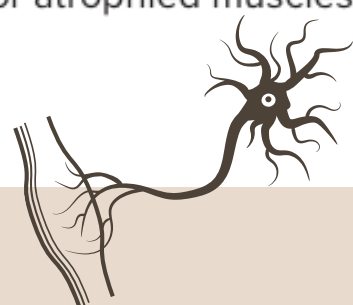


# POLYNEURITIS

Polyneuropathy is a condition in which a person's peripheral nerves are damaged. These are nerves that run throughout your body. Polyneuropathy affects the nerves in your skin, muscles, and organs. When nerves are damaged, they can't send regular signals back to your brain. This condition does not affect the nerves in your brain or spine, however.

Symptoms can vary depending on what's causing them. The most common symptoms include:

- random, odd sensations, known as paresthesia
- sudden sharp pains
- burning or tingling sensations, especially in your feet and hands, known as distal polyneuropathy
- feeling extremely sensitive to touch, known as allodynia
- numbness
- feeling weak in your legs or arms (sometimes due to weak or atrophied muscles)
- inability to walk straight, leading to stumbling or falling
- trouble swallowing



# GLOMERULONEPHRITIS

Glomerulonephritis (GN) is inflammation of the glomeruli, which are structures in your kidneys that are made up of tiny blood vessels. These knots of vessels help filter your blood and remove excess fluids. If your glomeruli are damaged, your kidneys will stop working properly, and you can go into kidney failure.

Sometimes called nephritis, GN is a serious illness that can be life-threatening and requires immediate treatment. GN can be both acute, or sudden, and chronic, or long-term. This condition used to be known as Bright's disease.

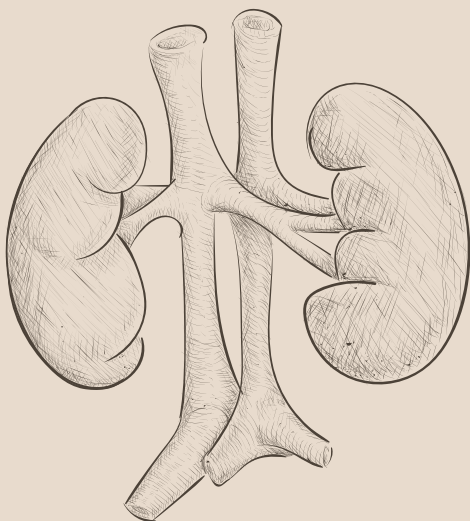
Early symptoms of acute GN include:

- puffiness in your face
- urinating less often
- **blood in your urine**, which turns your urine a dark rust color
- extra fluid in your lungs, causing coughing
- **high blood pressure**



The chronic form of GN can creep up without any symptoms. There may be slow development of symptoms similar to the acute form. Some symptoms include:

- blood or excess protein in your urine, which may be microscopic and show up in urine tests
- high blood pressure
- swelling in your ankles and face
- frequent nighttime urination
- **bubbly or foamy urine**, from excess protein
- abdominal pain
- frequent **nosebleeds**



# KIDNEY FAILURE

Your GN may be so advanced that you develop **kidney failure**. Some of the symptoms of this include:

- **fatigue**
- lack of appetite
- **nausea and vomiting**
- **insomnia**
- **dry, itchy skin**
- **muscle cramps** at night

