

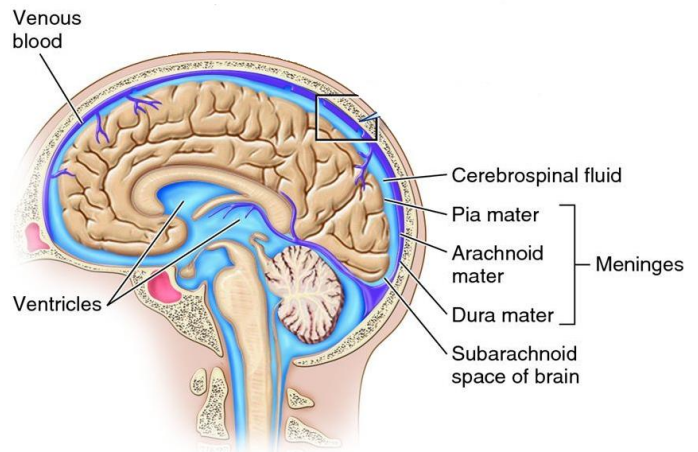
## Meningitis

### Overview

The word meningitis means swelling of the meninges. The meninges are protective membranes covering the brain and spinal cord.

There are several different types of meningitis and they vary in severity.

Although meningitis can be life threatening due to its proximity to the brain and spinal cord, it depends on the causative factor as to how dangerous it is. You may have already suffered from meningitis and not known about it.



### Causes

Meningitis can have a bacterial, viral or fungal origin. It can also be caused by conditions which cause swelling of body tissues without infection. The main types of meningitis are as follows:

Causative Agent	Description
<b>Bacteria</b>	Bacterial meningitis is usually the most serious form. The most common types of bacterial meningitis seen today are meningococcal disease and pneumococcal meningitis. Some types of bacterial meningitis are more likely to infect a patient at a certain age. In babies, group B streptococcus, Escherichia coli and Listeria monocytogenes are more common. In older children, Streptococcus pneumoniae or Neisseria meningitidis are more often the cause. The bacteria can spread to the meninges through severe head trauma, serious localised infection in the nose or ears or through the blood stream.
<b>Virus</b>	Viral meningitis, though unpleasant, is rarely life threatening. Patients may acquire viral meningitis whilst suffering from influenza and never even know about it. As with bacterial meningitis, there are many types of virus that can cause viral meningitis. Enteroviruses are a common cause of viral meningitis, they also cause colds and flu type sickness. Other viral infectors include herpes simplex virus, mumps and measles, and flaviviruses.
<b>Fungal</b>	Fungal meningitis can be caused by several types of fungus. Candida albicans is a type of fungus that usually causes thrush, however it can cause a dangerous form of meningitis in neonates. Cryptococcus neoformans is a fungus found in the environment. It is the most common cause of fungal meningitis and is particularly prevalent in individuals with a weakened immune system.

Both viral and bacterial meningitis are contagious, and the affected individual can pass on the infection through body fluid including saliva and mucous.

## Symptoms

Symptoms of meningitis vary between babies, children and adults. Common symptoms include:

Babies	Children and Adults
<ul style="list-style-type: none"><li>•• A rash that does not fade under pressure</li><li>•• Fever, possibly with cold hands and feet</li><li>•• Refusing feeds or vomiting</li><li>•• High pitched moaning cry or whimpering</li><li>•• Dislike of being handled, or fretful</li><li>•• Neck retraction with arching of back</li><li>•• Blank and staring expression</li><li>•• Difficult to wake, lethargic</li><li>•• Pale, blotchy complexion</li></ul>	<ul style="list-style-type: none"><li>•• A rash that does not fade under pressure</li><li>•• Fever</li><li>•• Stiff neck</li><li>•• Headache</li><li>•• Vomiting</li><li>•• Light sensitivity</li><li>•• Drowsiness or confusion</li><li>•• Joint pain</li><li>•• Convulsions/seizures</li><li>•• Photophobia – increased sensitivity to light</li><li>•• Confusion and irritability</li></ul>

Complications associated with the infection can develop quickly, such as septicaemia, gangrene, and inflammation affecting brain tissue and nerves, and can cause a range of neurological symptoms affecting sight, hearing and movement.



## Diagnosis and Treatment

Meningitis can progress rapidly and needs to be treated quickly for treatment to be successful in preventing serious complications and death, particularly in cases of bacterial meningitis.

If meningitis is suspected, urgent medical attention is required. A doctor will order blood tests and possibly perform a lumbar puncture, which is the extraction of cerebrospinal fluid which is then examined to look for signs of inflammation or infection. If bacterial meningitis is suspected or diagnosed doctors will start intravenous antibiotics immediately. Extra fluids may also be given if



the patient is sweating or vomiting excessively. Corticosteroids can also help to reduce inflammation and anticonvulsants may be necessary if the patient is having seizures. Viral meningitis tends to clear up of its own accord within seven to ten days. Fungal meningitis is treated with high dose antifungal medication for an extended period.

## Prevention

It is possible to get vaccinated against meningitis. Routine measles, mumps and rubella vaccines can protect against those strains of viral meningitis, whilst meningococcal and pneumococcus vaccinations are recommended for individuals at high risk of bacterial infection. These individuals include children going on holiday camps, young people going off to college or people of any age with a suppressed immune system.



In Australia, two hundred and eighty one cases of meningococcal infections were notified to the National Notifiable Diseases Surveillance System. The highest state or territory rate in the 2000s was 12.9 per 100,000 population in the Northern Territory in 2017. Rates in other states ranged from 0.5 to 3.1 per 100,000 population. These overall rates are similar to those seen in other developed countries.

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