

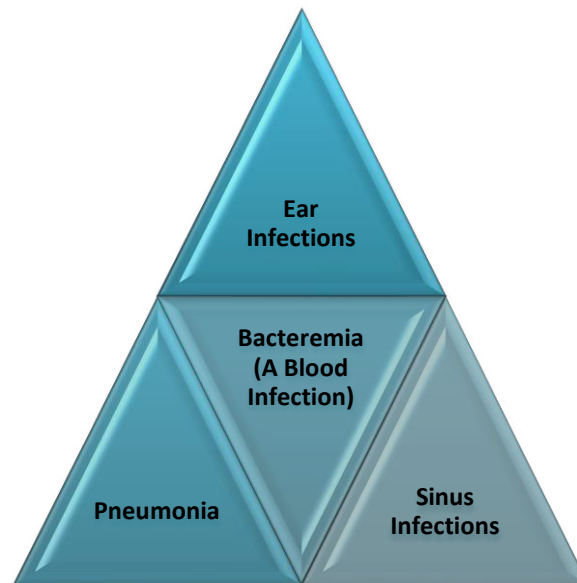
# Pneumococcal Meningitis

**M**eningitis is an inflammation of the lining around the brain and spinal cord. Most severe cases are caused by bacteria. Pneumococcal bacteria (*Streptococcus pneumoniae*) are the second biggest cause of bacterial meningitis in the UK and Ireland. Pneumococcal meningitis occurs when the bacteria that have invaded the bloodstream move across to infect the 'meninges' (the membranes that surround and protect the brain and spinal cord). The meninges are filled with a liquid called cerebrospinal fluid (CSF), which is there to bathe the brain and cushion it against physical damage. Most forms of meningitis are caused by viral infections. Pneumococcal meningitis, however, is a bacterial form of meningitis. It's a serious disease that can cause death even with proper treatment. If you suspect you may have pneumococcal meningitis, see a doctor right away.

According to the Meningitis Research Foundation of Canada, up to 40 percent of the population may carry the type of bacteria that causes pneumococcal meningitis. However, it is dormant in the vast majority of cases. However, when it is not dormant, this infection is very dangerous. Even with speedy diagnosis and treatment, the death rate is around 20 percent, according to the Meningitis Foundation of America. In addition, 50 percent of those who contract the disease will suffer long-term health issues.

## Causes of Pneumococcal Meningitis

Pneumococcal infection can less commonly cause full-blown septicaemia. Septicaemia is blood poisoning caused by bacteria in the bloodstream. The bacteria give off poisons which attack the blood vessels so that they leak. As a result of these leaky vessels, there is a smaller volume of blood being transported around the body to the vital organs. Reduced blood supply means that oxygen carried by the blood is not reaching the tissues and organs of the body where it is needed. In order to maintain sufficient oxygen supply to the vital organs the circulatory system reduces blood supply to the hands, feet and skin surface. This is how symptoms of septicaemia such as cold hands and feet, pale skin and rapid breathing develop. If treatment is not successful, septicaemia can ultimately lead to severe damage to vital organs, including heart failure, collapse, and death. Pneumococcal meningitis is caused by bacteria called *Streptococcus pneumoniae*. These bacteria do not always cause meningitis. In some cases, they may cause other illnesses such as:



It is important to note that not everyone gets all the symptoms, and no two cases are exactly the same. People with pneumococcal disease do not often get the rash that is typical of the more common kind of meningitis and septicaemia, meningococcal disease.

## Transmission of Pneumococcal Meningitis

Pneumococcal meningitis is transmitted from person to person. The bacteria are spread through the tiny droplets from an infected person's mouth, throat, or nose. *Neisseria meningitidis* bacteria are spread through the exchange of respiratory and throat secretions like spit (e.g., by living in close quarters, kissing). Fortunately, these bacteria are not as contagious as germs that cause the common cold or the flu. The bacteria are not spread by casual contact or by simply breathing the air where a person with meningococcal disease has been.

Sometimes *Neisseria meningitidis* bacteria spread to people who have had close or lengthy contact with a patient with meningococcal disease. People in the same household, roommates, or anyone with direct contact with a patient's oral secretions, meaning saliva or spit, (such as a boyfriend or girlfriend) would be considered at increased risk of getting the infection

For example, if someone with the infection coughs or sneezes on or near you, you may contract the disease. Up to 40 percent of the population may carry *Streptococcus pneumoniae*(MRFC). In most of these people, the bacteria are dormant. However, the bacteria can be transmitted even when it's dormant. Close living situations such as dormitories can increase your risk for infection.

## Symptoms of Pneumococcal Meningitis

Symptoms of pneumococcal meningitis usually come on rapidly. An infected person may develop the following common symptoms:

Common Symptoms	Other Possible Symptoms
Chest Pain	Agitation
Chills	Irritability
Confusion	Rapid Breathing
Cough	Stiff Neck
Headache	-----
High Fever	-----
Vomiting	-----
Weakness	-----

In infants, the soft spot on the head (called the fontanelle) may bulge outward.

## Diagnosis of Pneumococcal Meningitis

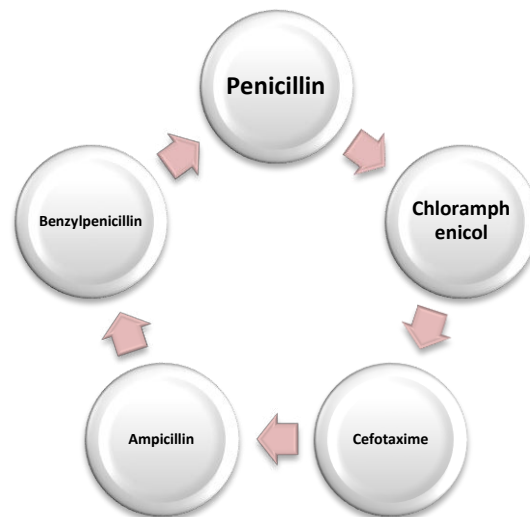
Pneumococcal meningitis is generally diagnosed through a spinal tap. This involves your doctor collecting a sample of the fluid in your spine. By testing this fluid, your doctor or healthcare provider can figure out whether you have pneumococcal meningitis. For diagnosis of Pneumococcal meningitis patient may undergo the following diagnostic tests:

- **Blood cultures.** Blood drawn from a vein is sent to a laboratory and placed in a special dish to see if it grows microorganisms, particularly bacteria. A sample may also be placed on a slide to which stains are added (Gram's stain), then examined under a microscope for bacteria.
- **Imaging.** X-rays and computerized tomography (CT) scans of the head, chest or sinuses may reveal swelling or inflammation. These tests can also help your doctor look for infection in other areas of the body that may be associated with meningitis.
- **Spinal tap (lumbar puncture).** The definitive diagnosis of meningitis requires an analysis of your cerebrospinal fluid (CSF), which is collected during a procedure known as a spinal tap. In people with meningitis, the CSF fluid often shows a low sugar (glucose) level along with an increased white blood cell count and increased protein.

CSF analysis may also help your doctor identify the exact bacterium that's causing the illness. If your doctor suspects viral meningitis, he or she may order a DNA-based test known as a polymerase chain reaction (PCR) amplification or a test to check for antibodies against certain viruses to check for the specific causes of meningitis. This helps to determine proper treatment and prognosis.

## Treatment for Pneumococcal Meningitis Infection

Ceftriaxone is a very common choice as an antibiotic for this condition. However, it is not the only option. Other possible antibiotics for bacterial meningitis include:



Pneumococcal meningitis can be difficult to recognise in the early stages because there is usually no rash, and if the patient already has a milder pneumococcal infection, such as ear ache or bronchitis, this can confuse the diagnosis. Once in hospital, treatment may begin immediately if the doctor suspects meningitis. Alternatively, if the doctor suspects a possible bacterial infection, but the signs and symptoms of meningitis are not clear enough, the patient may be kept under observation to try to assess the problem further.

Observation of the patient will involve a physical examination and normally blood will be taken for tests. The quantity of certain cells and components of the blood can help to show that the patient has a bacterial infection.

There are two vaccines available to protect against different types of pneumococcal meningitis. These vaccines are usually recommended for children under 2 years old, adults age 65 or over, and older children and adults at high risk for disease. People who smoke or have asthma may also be candidates for the vaccine.

## Reference

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