

Meningitis



This fact sheet provides information on meningitis. Our fact sheets are designed as general introductions to each subject and are intended to be concise. Sources of further support and more detailed information are listed in the Useful Contacts section. There are different types of meningitis and each person is affected differently. You should speak with your doctor or specialist for individual advice.

Please note that this fact sheet focuses on meningitis in adults. You should contact one of the organisations in the Useful Contacts section for information on meningitis in children.

What is meningitis?

Meningitis is an inflammation of the meninges (the protective membranes that cover the brain and spinal cord) caused by an infection. The inflammation can cause damage to the brain and spinal cord.

The meninges

The meninges are the three protective membranes which surround and enclose the brain and spinal cord: the dura (dura mater), the arachnoid, and the pia mater.

The dura is the tough, fibrous outermost membrane. The arachnoid is the fine, delicate middle membrane. The pia mater is the delicate innermost membrane.

What are the symptoms of meningitis?

The initial symptoms of meningitis can be similar to the symptoms of flu:

- headache
- fever (high body temperature)
- tiredness and irritability
- general feeling of being unwell

You might also experience nausea (feeling sick), vomiting (being sick), diarrhoea, and other symptoms such as a sore throat.

If you have a mild case of viral meningitis might only experience these flu-like symptoms before beginning to recover.

After the initial symptoms, in more serious cases of meningitis you might experience:

- severe headache
- a rash of either small red / purple spots or large purple / black bruises that does not whiten or disappear when pressed (a simple test is to press a glass against the rash)
- sensitivity to bright light (photophobia)
- neck stiffness (if you have moderate to severe meningitis, you will not be able to touch your chest with your chin)

- confusion
- drowsiness
- seizures (epilepsy)

Other more severe symptoms can include reduced levels of consciousness or coma and swelling of the nerves behind the eyes. These particular symptoms are likely to be caused by increased pressure in the head.

Suspected meningitis is a medical emergency. If you suspect anyone of having meningitis call 999 for an ambulance immediately. Meningitis can be a life-threatening condition and the symptoms can develop very quickly. The sooner someone receives treatment, the better their chance of making a good recovery. is a medical emergency. If you suspect anyone of having meningitis call 999 for an ambulance immediately. Meningitis can be a life-threatening condition and the symptoms can develop very quickly. The sooner someone receives treatment, the better their chance of making a good recovery.

What causes meningitis?

Meningitis is usually caused by bacteria or a virus. There are other possible causes, such as a fungus, but they are very rare.

Bacterial meningitis is less common but more serious and should be treated as a medical emergency. Without treatment, bacterial meningitis can cause severe brain damage and is potentially life-threatening. The bacteria that cause meningitis can also cause septicaemia (blood poisoning).

The main bacteria that can cause meningitis are:

- *Neisseria meningitidis* (meningococcal meningitis)
- *Streptococcus pneumoniae* (pneumococcal meningitis)
- *Haemophilus influenzae* (haemophilus meningitis)

The bacteria that cause meningococcal and pneumococcal meningitis can be spread via close contact with other people and there is a risk of outbreaks of bacterial meningitis in places where large groups of people live together (for example, colleges or universities).

Viral meningitis (also known as viral meningo-encephalitis) is the most common, and less serious, form of meningitis. With this form, symptoms may be so mild that they can be mistaken for flu. This makes the number of cases hard to estimate.

This form of meningitis is most prevalent in children and more widespread during summer.

The main viruses that can cause meningitis are:

- enteroviruses
- mumps and measles
- glandular fever
- herpes simplex virus
- human immunodeficiency virus (HIV)
- cytomegalovirus (CMV)
- Flaviviruses

Fungal meningitis is rare and usually only affects you if your immune system has been weakened, for example, those with conditions such as diabetes or HIV, or very elderly people.

Chemical meningitis is rare. You might experience inflammation in the meninges after surgery or other invasive treatments and procedures on the brain or spine.

Tests and investigations

Blood tests

If meningitis is suspected, you are likely to have blood tests to check for bacteria or viruses.

Lumbar puncture

The brain and spinal cord are surrounded by a clear liquid called cerebrospinal fluid (CSF). The bacteria or viruses that can cause meningitis might be found in the CSF.

To take a sample of this fluid, a needle is passed between two vertebrae (spinal bones) at the lower end of the spine into the space containing the CSF. A small amount is drawn off in a syringe and sent to a laboratory to be analysed.

CT / MRI scan

A CT scan (computerised tomography scan) is a special type of X-ray which takes pictures of the brain from different angles. An MRI scan (magnetic resonance imaging scan) produces detailed pictures of the brain using strong magnetic fields and radio waves. Doctors will check the results of the scan for inflammation of the meninges and to rule out other problems which could potentially be causing your symptoms such as stroke, subarachnoid haemorrhage, an abscess or a tumour.

Sometimes, during a CT or MRI scan, a dye (contrast agent) is injected into a vein in your arm. The dye travels through your bloodstream to your brain and can help to highlight in the pictures any areas where there is inflammation (swelling).

What are the treatments?

If you have viral meningitis, you will need careful medical attention in quiet, darkened, calm surroundings.

General medical care will include close monitoring and pain relief drugs for headaches. Fever (high temperature) will be reduced using electric fans, sponging with lukewarm water, or medication.

Nausea (feeling sick) and vomiting (being sick) can be treated with anti-sickness drugs. You might receive fluids via a drip into a vein in your arm.

If you have bacterial meningitis, you will receive the same general care and treatment as is given for viral meningitis (see above). As soon as bacterial meningitis is suspected, antibiotics will be given via a drip into a vein in your arm. You might receive several different types of antibiotics until the specific bacterium causing your meningitis is identified.

If your symptoms are severe, you are likely to need treatment in an intensive care unit. You might receive help with breathing (oxygen through a face mask) and help with feeding and hydration (via a drip).

Anti-fungal treatments will be given to people with fungal meningitis.

Epilepsy

If you are experiencing epilepsy (seizures) as a symptom of meningitis, you will be given anti-epilepsy drugs (AEDs) to control seizures.

Other medication

If you have meningitis, you might receive other drugs such as steroids (to reduce inflammation), diuretics (to reduce pressure inside the head), and sedatives (to calm people if they are agitated and to help control seizures).

Recovery

If you are diagnosed with viral meningitis, you will usually find that symptoms improve within a few days and most recover fully after one to four weeks. It is common for you to experience tiredness for a longer period following this.

If bacterial meningitis is treated early there is usually a gradual improvement in symptoms in the first two to three days. However, although headache and fever (high body temperature) can improve quickly, if you have a serious case, you can experience longer-term problems. These might include hearing problems (due to damage to the acoustic nerves), epilepsy (seizures), hydrocephalus (a build-up of CSF in the brain), memory problems, changes in personality and behaviour, speech problems, and weakness on one side of the body.

If bacteria get into the bloodstream and cause septicaemia (blood poisoning), body tissue can be damaged. If the damage is severe, you might experience gangrene where the tissue begins to die. In very serious cases, fingers, toes or limbs might need to be amputated.

If you have hydrocephalus you might need a shunt (a surgical treatment to implant a small tube to drain away the excess CSF from your brain). If you experience epilepsy you might need anti-epilepsy drugs (AEDs) to control your seizures.

Depending on your individual situation, you might benefit from physiotherapy to help with mobility and physical problems or speech and language therapy to help with speech problems. A neuropsychologist or a clinical psychologist can help with memory problems and personality changes. Many people find that these services are an important part of longer-term recovery and rehabilitation.

Useful contacts

Brain & Spine Helpline

0808 808 1000

www.brainandspine.org.uk

Run by neuroscience nurses, providing support and information on all aspects of neurological conditions for patients, their families and carers, and health professionals.

Meningitis Now

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Meningitis Research Foundation

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www.meningitis.org

The Brain & Spine Foundation provides support and information on all aspects of neurological conditions. Our publications are designed as guides for people affected by brain and spine conditions - patients, their families and carers. We aim to reduce uncertainty and anxiety by providing clear, concise, accurate and helpful information, and by answering the common questions that people ask. Any medical information is evidence-based and accounts for current best practice guidelines and standards of care.

Brain & Spine Foundation

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