
Meningitis

Frequently Asked Questions

1. What is meningitis?

Meningitis is swelling and inflammation of the membranes (meninges) that surround the brain and spinal cord. Meningitis is most often caused by a viral, bacterial or fungal infection. Meningitis is a serious disease that can be fatal or cause long-lasting side effects.

2. What is the difference between meningitis and encephalitis?

Meningitis is an inflammation of the meninges (the covering surrounding the brain and spinal cord) and encephalitis is inflammation of the brain tissue. The both produce similar symptoms, however confusion and altered mental state are more common in encephalitis. Encephalitis is most often caused by viruses (particularly herpes virus), whereas meningitis can be caused by a range of viruses or bacteria.

3. What causes meningitis?

The three main causes of meningitis are viral, bacterial or fungal infections. These organisms usually cause a mild or asymptomatic infection in another part of the body (skin, throat, chest, gastrointestinal system) and then may spread through the bloodstream or lymphatic system to the nervous system/brain. Sometimes the organisms enter the nervous system directly following head surgery, head trauma or a severe infection of the ear canal, eyes or sinuses.

Meningitis caused by fungi usually occurs in those with weakened immune systems, i.e. those infected with HIV/AIDs, cancer patients, and very young babies. Other very rare causes of meningitis are protozoa, parasites and certain medications that may lead to inflammation of the meninges.

4. What is bacterial meningitis?

Bacterial meningitis is a very serious infection of the membranes around the brain and spinal cord caused by bacteria and can rapidly progress to severe illness and even death. This condition occurs more often in the winter months. It is caused by bacteria that are commonly found in the throat and nose of healthy people. It is still unknown why these bacteria move into the bloodstream and nervous system in some individuals. The 3 most common causes of bacterial meningitis are *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Neisseria meningitidis*. Bacterial meningitis should be treated urgently with antibiotics.

5. What is viral meningitis?

Viral meningitis is more common, but usually less serious, than bacterial meningitis. Most episodes resolve spontaneously and rarely result in death. It occurs more frequently in the warmer months (summer and autumn). Enteroviruses, such as

coxsackie and echovirus, usually cause a diarrhoea-like-illness but can often cause meningitis. Others viruses that lead to meningitis are those that cause mumps, chickenpox, mononucleosis and herpes. Clinically it may be difficult to differentiate between bacterial and viral meningitis as the symptoms can be similar.

6. What is fungal meningitis?

Meningitis may be caused by the fungus *Cryptococcus neoformans*. This type of meningitis is most commonly seen in people living with HIV infection, especially when a person's CD4 count is low and/or the person is not taking antiretroviral therapy. *Cryptococcal meningitis* should be treated with antifungal medication and by doing serial lumbar punctures to decrease the pressure in the brain. Meningitis due to other fungal organisms is very rare.

7. How is meningitis spread?

Most bacterial and viral causes of meningitis are spread from person to person through close contact with respiratory secretions or saliva (such as coughing, sneezing, and intimate kissing). Enteroviral meningitis is spread through the faecal-oral route. Sharing eating utensils, glasses, food, or sleeping together in the same room/hostel/barracks can also spread these bacteria and viruses. Cryptococcal meningitis is not infectious, and is not spread from one person to another.

8. What are the signs and symptoms of meningitis?

Persons with meningitis may start out with flu-like symptoms which may rapidly progress (sometimes within hours) causing severe illness or even death.

Symptoms may vary but the most common symptoms occurring in children and adults include: a high fever; severe headache; neck stiffness; dislike of bright lights (photophobia); vomiting, diarrhoea or stomach pains; painful joints; a purplish skin rash that does not disappear when pressed; cold hands and feet; seizures; and/or drowsiness that can deteriorate into a coma.

Symptoms in infants are harder to detect and could include: a fever with cold hands and feet, high pitched moaning or whimpering, blank staring, inactivity, drowsiness, poor feeding, neck retraction with arching of the back, and/or a bulging fontanelle (the soft spot on the baby's head).

9. What should I do if someone I know has symptoms of meningitis?

Call the doctor or take them to the nearest clinic or hospital right away. Call an ambulance if you do not have transport to the hospital/clinic. Bacterial meningitis needs to be treated urgently.

10. Can meningitis be treated?

Persons with meningitis will usually be hospitalised. Intravenous antibiotics are usually given to all meningitis sufferers whilst waiting for confirmation of the diagnosis. Bacterial

meningitis is usually treated for 3-7 days with intravenous antibiotics. Treatment of viral meningitis is aimed at relieving symptoms and does not require antibiotics. Fungal meningitis is treated with appropriate antifungal agents and often lifelong preventive therapy is needed.

Meningitis treatment may also include: anticonvulsants for any seizures; pain relievers; and other treatments for brain swelling. These may be administered in an intensive care unit.

11. What are the long-term effects following meningitis?

Persons who have meningitis may recover completely, without any long-term effects, however approximately 1 in 5 persons who survive an episode of meningitis may be left with long-term effects of the condition. This could include: tiredness/fatigue, behavioural and/or concentration problems, recurring headaches, varying degrees of deafness or blindness, ongoing seizures, weakness of leg(s)/arm(s), or loss of limb(s). The outcome of an episode of meningitis depends on the cause of the infection, how quickly treatment begins, and how severely ill the person becomes.

12. Who is at risk for meningitis?

A person may develop meningitis at any age or life-stage, however it is most common in infants aged <1 year. Fungal meningitis due to cryptococcosis typically occurs in HIV-infected adults with very low immunity. Certain medical conditions may put some people at greater risk of developing meningitis, such as not having a functioning spleen, or having a weakened immune system (due to HIV or terminal complement deficiency). People travelling to countries experiencing epidemics of meningococcal meningitis may also be at increased risk.

13. How can I prevent getting meningitis?

The routine infant vaccination programme (Expanded Programme on Immunisation) in South Africa includes vaccines against *Streptococcus pneumoniae* and *Haemophilus influenzae*, two of the most common bacterial causes of meningitis. Vaccines against meningococcal meningitis are available in South Africa and persons at increased risk (such as laboratory workers, students and military personnel living in hostels, persons with asplenia, persons with complement deficiency) are encouraged to get vaccinated. Other vaccines (available privately) which could prevent viral meningitis include: measles, mumps and varicella zoster (chicken pox) vaccines.

If you have been within close contact (same household, share eating utensils, intimate partners) of someone diagnosed with bacterial meningitis, the doctor may provide you with an antibiotic to clear the bacteria from your nose/throat.

Other steps to prevent meningitis would be to wash your hands carefully (especially after going to the toilet), wash your food carefully, do not share eating utensils, take your antiretroviral treatment if you are HIV-infected and eat healthily to boost your immunity.

14. Where can I find more information?

Guidelines and other documents:

- NICD webpage: www.nicd.ac.za "Diseases A-Z index" for specific causes of meningitis including 'Enteroviral meningitis', 'Meningococcal meningitis', 'Haemophilus influenzae type b', 'Cryptococcosis' and 'Pneumococcus'.

For Healthcare Workers:

- Medical/clinical related queries: NICD Hotline 0800 212552 (**for use by healthcare professionals only**).
- Laboratory related queries: Centre for Respiratory Diseases and Meningitis: Linda de Gouveia: +27 11 555 0327, lindad@nicd.ac.za; Mignon du Plessis: +27 11 555 0387, mignond@nicd.ac.za.