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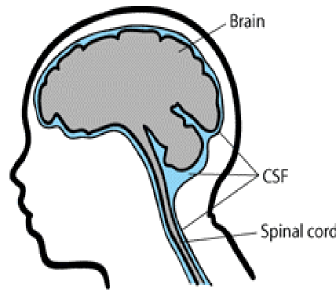
information

Bacterial Meningitis

What is meningitis?

Meningitis is an inflammation of the lining around the brain and spinal cord. Many types of bacteria can cause meningitis, but meningococcal bacteria (*Neisseria meningitidis*) and pneumococcal bacteria (*Streptococcus pneumoniae)* are the two biggest causes of bacterial meningitis in the UK.

Bacterial 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.



Bacteria can multiply freely in CSF, and there they release poisons, causing inflammation and swelling in the meninges and the brain tissue itself. This increases pressure on the brain, producing symptoms of meningitis such as headache, stiff neck and dislike of bright lights. Babies become irritable, may have a high-pitched or moaning cry, be stiff or floppy, and develop a bulging soft spot on their head. As the disease progresses the patient becomes drowsy, confused, and delirious. They may have seizures and eventually lose consciousness. If inflammation and damage to the brain cannot be successfully stopped with antibiotics and other treatments, the infection can be fatal.

The bacteria that cause meningitis can also cause septicaemia. Septicaemia is blood poisoning caused by bacteria in the bloodstream.

For symptoms information go to www.meningitis.org/symptoms or phone our 24 hour Freefone helpline 080 88003344 for a leaflet. It is important to note that not everyone gets all the symptoms, and no two cases are exactly the same.

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How do you catch bacterial meningitis?

Many of the bacteria that cause meningitis, including meningococcal and pneumococcal bacteria live naturally in the back of our noses, and we pass them around by coughing, sneezing and close contact.

Carriage of the bacteria is completely harmless most of the time. Only a small fraction of people who are exposed to these bacteria fall ill with disease. Illness occurs when bacteria break through the protective lining of the nose and throat and enter the bloodstream.

How is bacterial meningitis treated?

Prompt recognition of the symptoms and rapid treatment offer the best chance of a good recovery. Anyone who gets bacterial meningitis needs to be treated in hospital.

Once in hospital, treatment will 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.

The doctor may do a lumbar puncture (LP). This is when a sample of CSF is taken from the spinal canal (the passageway through the back bones which contains the spinal cord). The sample of CSF will be examined and then sent for further laboratory testing. An LP is important to confirm the diagnosis of meningitis, and to show which germ is causing the illness so that the most appropriate antibiotics (drugs used to treat infection caused by bacteria) can be chosen. If a patient with meningitis is very severely ill, it might not be safe to do an LP immediately, so this may be postponed. Having the diagnosis confirmed in this way can be helpful after recovery, for example when seeking long-term medical advice and follow-up care.

If the doctor suspects meningitis, antibiotics will be given even if it has not been possible to do an LP, or if the LP results are delayed. Antibiotics are given intravenously, through a needle inserted into a vein (usually in the back of the hand or on the arm). Steroids may also be given in this way to reduce inflammation around the brain. In addition the patient is often put on an intravenous drip to give fluids, which stops them getting dehydrated and ensures the correct balance of sugars and other components in the blood.

Most patients are treated on a regular hospital ward, but the most severely ill patients will need intensive care treatment.

What happens after bacterial meningitis?

Most people who catch bacterial meningitis recover, but approximately 25% of survivors are left with some type of after effect. These after effects may be mild or temporary and improve with time although some survivors may end up with a moderate or severe disability. Most serious problems can be identified whilst the patient is still in hospital.

What after effects can bacterial meningitis cause?

Behavioural and emotional effects are quite common: children can be clingy and have temper tantrums, adults can feel despondent and irritable. Although these feelings usually resolve themselves, lasting psychological problems can be serious enough to need referral to mental health services or to a counsellor.

Hearing loss is probably the most common serious physical after effect. Approximately 4% of children who survive meningococcal and 21% of those who survive pneumococcal meningitis have some degree of hearing impairment[1-2]. Damage to the brain and other parts of the nervous system can also cause severe learning difficulties, problems with movement and coordination that can be as severe as palsy and paralysis, speech and language problems, epilepsy and visual impairment. Although bacterial meningitis is a very serious illness, most people do survive without any permanent damage.

For more detailed information on after effects, ask for Meningitis Research Foundation's booklet Meningitis and Septicaemia, What Happens Next?

Is there any follow up care?

Once discharged, patients should be followed up and carefully assessed for signs of damage. All patients who have had bacterial meningitis should be offered a hearing test.
A hearing test will ideally be arranged by the hospital as soon as the patient is well enough, usually before discharge from hospital and certainly within 4 weeks of recovery. If the test results show severe or profound hearing loss in both ears, the patient will be offered an assessment for cochlear implantation. Cochlear implantation involves surgery to insert a bionic ear.

All children who recover from bacterial meningitis should have a follow up appointment with their hospital paediatrician 4-6 weeks after discharge from hospital to assess their need for referral to further follow up care.

Many people find that it helps to talk to someone who has been through a similar experience. The Foundation's helpline team and befriending network are always available to listen and talk things over.

Am I at risk of spreading or contracting the disease if I have been in contact with a patient with bacterial meningitis?

Meningococcal infection is contagious, but 97% of cases have no link to any other cases. Each case is reported to the local Public Health Doctor who traces close contacts and decides whether any control measures are necessary, following national public health guidelines[3] . Usually household contacts are offered antibiotics and may be vaccinated. This may also be necessary for *Haemophilus influenza*e b (Hib) meningitis (which is now rare due to the success of Hib vaccine). Other kinds of meningitis do not normally require public health action.

Can bacterial meningitis be prevented?

Many types of bacterial meningitis are preventable and vaccines in the routine childhood immunisation progamme have almost eliminated meningococcal C infection, Hib meningitis and the thirteen most common strains of pneumococcal infection in the UK. However, there is still no vaccine available against meningococcal B, which for decades has been the leading cause of bacterial meningitis in the UK. Many of the less common causes of

bacterial meningitis are not preventable. More information about current vaccines is available from Meningitis Research Foundation's "Preventing meningitis and septicaemia" factsheet.

Support for you

If you have been affected by meningitis or septicaemia, trained staff and nurses on the **Free***fone* 24 hour helpline are here to listen, answer your questions and offer support whenever you need us.

Free*fone* **24 hour helpline**

080 8800 3344 (UK)

Information is also available through the Foundation's website www.meningitis.org
Join us on Facebook or Twitter for current discussions about meningitis and septicaemia or to share experiences with one another http://www.meningitis.org/helping-you

References

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3. HPA Meningococcus Forum. Guidance for public health management of meningococcal disease in the UK. Health Protection Agency Meningococcus and Haemophilus Forum. Updated January 2011. www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947389261

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