THE TWO MAIN BACTERIAL FORMS

In the UK there are two main types of bacterial meningitis which cause most of the reported bacterial cases. They are meningococcal and pneumococcal meningitis. *Haemophilus influenzae* type b (Hib) which was recently a major cause of bacterial meningitis has now been almost eliminated by vaccination of infants.

WHERE THE BACTERIA ARE FOUND AND HOW THEY ARE SPREAD

The bacteria which cause both meningococcal and pneumococcal meningitis are very common and live naturally in the back of the nose and throat, or the upper respiratory tract.

People of any age can carry the germs for days, weeks or months without becoming ill. In fact, being a carrier helps to boost natural immunity. At any one time, around 10 to 25 per cent of the population are carriers. Only rarely do the bacteria overcome the body’s defences and cause meningitis.

The bacteria are spread between people by prolonged close contact and by coughing, sneezing and intimate kissing. They cannot live for long outside the body, so they cannot be picked up from water supplies, swimming pools, buildings or factories.

The incubation period is between two and ten days.

TREATMENT OF BACTERIAL MENINGITIS

Urgent treatment with antibiotics is essential for someone with bacterial meningitis. The sooner they are diagnosed and treated, the greater chance there is they will make a full recovery.

WHO IS AT RISK?

Anyone, anywhere can contract meningitis, but those most at risk are children under five, teenagers and young adults, and older people. Most cases are isolated and not related to another case or an “outbreak”.

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_Bacterial meningitis is fairly uncommon, but it can be extremely serious. It is fatal in one in 10 cases and one in seven survivors is left with a serious disability, such as deafness or brain injury._
MENINGOCOCCAL MENINGITIS

Meningococcal meningitis (caused by the bacterium *Neisseria meningitidis*) is the most common bacterial form in the UK, accounting for more than half the cases. There are several different groups. Group B is the most common (around two-thirds of cases), followed by group C (one-third).

Most cases are isolated incidents, but clusters of cases (ie two or more cases) of meningococcal meningitis have been recorded in many different parts of the country. It is not always clear why these clusters happen, but they do not seem to be related to environmental factors, eg air conditioning, water supplies. Possible explanations may be that some bacterial strains are more prevalent and that some people are more prone to the disease than others.

PNEUMOCOCCAL MENINGITIS

Caused by the bacterium *Streptococcus pneumoniae*, pneumococcal meningitis usually occurs in older adults and young children. It causes about a tenth of bacterial meningitis cases, has a high fatality rate (about 20%) and is associated with a higher risk of permanent neurological damage.

The bacteria are commonly found in the respiratory tract and may be transferred via the bloodstream or as a result of an infection of the middle ear or sometimes through a tiny fracture or defect in the linings of the brain. Very rarely, this may result in recurring cases of pneumococcal meningitis and surgery may be needed to repair the defect.

HIB (HAEMOPHILUS INFLUENZAE TYPE B) MENINGITIS

About two-fifths of bacterial meningitis cases were due to Hib before the introduction of the Hib vaccine into the routine immunisation programme in October 1992. This has dramatically reduced the number of Hib meningitis cases. Hib was the most common form of bacterial meningitis in infants, and very few cases occur after the age of four. This type of meningitis is now rare.
NEONATAL MENINGITIS

Some forms of bacterial meningitis particularly affect new-born babies. The most common are E.coli (properly called Escherichia coli) and group B streptococcus (Streptococcus agalactiae). Fatality rates can be as high as 20%, but these forms are rare. Many babies are exposed to the bacteria, but few become ill. The risks are higher for premature babies, or those born after a long or difficult labour.

E. coli - These bacteria are commonly found in the intestines. They can often cause urinary tract infections and diarrhoea. More rarely they cause meningitis in new-born babies.

Streptococcal - Severe illness caused by group B streptococcal bacteria can affect babies soon after birth. The bacteria are found naturally in the vagina of about one in five expectant mothers and may occasionally infect the baby before or during labour.

The illness can also occur later, up to two months after delivery, when infection may be from other people. (The bacteria can be found in the throats and intestines of people of all ages.)

TB MENINGITIS

TB meningitis is comparatively rare. People at particular risk include the elderly, those already ill and people from the Indian sub-continent, in whom TB infections are more frequent.

The infection starts somewhere else in the body, usually the lungs, and travels to the brain via the bloodstream. It develops much more slowly than other bacterial forms and can be difficult to diagnose.

FUNGAL MENINGITIS

Some fungi, especially Cryptococcus, can occasionally cause meningitis, but the disease is very rare. It usually only occurs in patients whose immune system has been severely depressed by disease (eg AIDS or leukaemia) or by drug therapy (eg following organ transplantation or treatment of cancer). Fungal meningitis may be slow in onset and difficult to diagnose and treat.

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TREATMENT

Viral meningitis cannot be helped by antibiotics and treatment is based on good nursing care. Recovery is normally complete, but headaches, tiredness and depression may persist for weeks or even months.

CAUSES

The commonest causes of viral meningitis are coxsackie and echoviruses (often known as enteroviruses). Meningitis can also develop as a result of infection with herpes simplex, measles, polio or chickenpox. Meningitis used to be a complication of mumps, but has virtually been eliminated following the introduction of the MMR (Measles, Mumps and Rubella) vaccine.

COXSACKIE

These viruses are the commonest causes of viral meningitis and they can be found in the intestines of humans, and therefore in faeces and sewage-polluted water. Most cases occur in the summer months.

HERPES SIMPLEX

The herpes virus is widespread and usually produces cold sores, but can occasionally cause viral meningitis or encephalitis, which is inflammation of the brain itself.

VIRAL MENINGITIS

Viral meningitis is more common than the bacterial form, but generally less serious although it can be very debilitating. It can be caused by many different viruses. Some are spread between people by coughing or sneezing, or through poor hygiene. Others can be found in sewage-polluted water. The incubation period can be up to three weeks.

In mild cases of viral meningitis, people may not even go to their doctor. Therefore it is difficult to say exactly how many cases there are of viral meningitis. The symptoms can be similar to the bacterial form and someone with a severe case of viral meningitis will need to be admitted to hospital for tests to find out which form they are suffering from. Diarrhoea can also occur with mild viral meningitis.

National Meningitis Trust

Fighting meningitis through research, information and support

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**VACCINES**

**Meningococcal**

The meningococcus has three main strains - A, B and C. No vaccine yet exists for all of them, but there is a vaccine against the A and C strains. Group A strains are rare in the UK but can cause epidemics in some countries, especially in sub-Saharan Africa. Vaccination is sometimes recommended for travellers to those areas.

If someone becomes ill with A or C strain, household and very close contacts of the patient should be offered the vaccine. It is not very effective in young children and protection for adults only lasts for three years. Trials of more effective vaccines against the A and C strains are going well. A new vaccine should be available by the year 2001.

*Haemophilus influenzae type b (Hib)*

A vaccine against Hib disease has formed part of the routine immunisation programme for all babies in the UK since October 1992. It is given in three doses, at two, three and four months at the same time as diphtheria, tetanus and polio immunisations. The vaccine also protects against other severe infections caused by the Hib bacteria, such as epiglottitis, cellulitis and septic arthritis. As a result of immunisation, Hib meningitis cases have fallen dramatically.

*The vaccine does not protect against any other forms of meningitis.*

**Pneumococcal**

A vaccine to protect against pneumococcal disease is recommended for those at particularly high risk - those with sickle cell disease, thalassemia or whose spleen has been removed, the elderly and others affected by illnesses such as heart disease, liver disease and diabetes. However meningitis is an uncommon presentation of pneumococcal infection. More effective pneumococcal vaccines are currently being tested in trials.

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**PREVENTION OF MENINGITIS**

Apart from vaccines, there is no known way to protect against meningitis. However, it is not highly infectious and only the patient's close family contacts are at any significant risk of becoming ill. With meningococcal disease and sometimes with Hib, antibiotics are offered to these contacts. Other contacts, like school friends or colleagues, are rarely at higher risk so do not normally need treatment.

Awareness of the signs and symptoms of meningitis and septicaemia, and being prepared to take action is very important.

Research shows that exposure to smoking in the household setting can increase the chances of a child contracting meningitis.

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SIGNS AND SYMPTOMS

Patients suffering from septicaemia will develop a rash, called a haemorrhagic rash. This starts as a cluster of tiny blood spots, which look like pin-pricks in the skin. If untreated, these gradually get bigger and become multiple areas of obvious bleeding under the skin surface, like fresh bruises. These “bruises” then join together to form large areas of purple skin damage and discolouration.

Septicaemia can develop quickly. In severe cases, the rash may spread as you watch it. The patient rapidly becomes unwell, loses interest in food and surroundings, becoming feverish and cold with cool hands and feet, followed by coma and sometimes death. Patients who become unwell more slowly may also develop some of the signs of meningitis.

WHY SOME PATIENTS GET SEPTICAEMIA AND OTHERS GET MENINGITIS

If the meningococcus invades the body, it enters from the throat, gets into the bloodstream and travels via the blood to the meninges (the lining of the brain). In some cases, the bacteria multiply in the blood and this results in septicaemia before the bacteria can infect the meninges. In other cases, infection in the blood and in the meninges develops at the same time, and these patients get both meningitis and septicaemia.

In a minority of cases, it seems the body can stop the bacteria multiplying in the blood but not in the meninges, and these patients develop meningitis.

Fatality rates for septicaemia are high – around 20 per cent.

Septicaemia is a medical emergency and needs urgent treatment with antibiotics.