

BACTERIAL MENINGITIS

- Bacterial meningitis is a serious infection of the fluid in the spinal cord and the fluid that surrounds the brain.
- Bacterial meningitis is most commonly caused by one of three types of bacteria: *Haemophilus influenzae* type b, *Neisseria meningitidis*, and *Streptococcus pneumoniae* bacteria.
- The bacteria are spread by direct close contact with the discharges from the nose or throat of an infected person.
- Bacterial meningitis can be treated with antibiotics.
- Prevention depends on use of vaccines, rapid diagnosis, and prompt treatment of close personal contacts.

What is meningitis?

Meningitis is an infection of the fluid in the spinal cord and the fluid that surrounds the brain. Meningitis is usually caused by an infection with a virus or a bacterium. Knowing whether meningitis is caused by a virus or a bacterium is important because of differences in the seriousness of the illness and the treatment needed.

Viral meningitis is usually relatively mild. It clears up within a week or two without specific treatment. Viral meningitis is also called aseptic meningitis.

Bacterial meningitis is much more serious. It can cause severe disease that can result in brain damage and even death.

What bacteria cause bacterial meningitis?

Bacterial meningitis is most commonly caused by one of three types of bacteria: *Haemophilus influenzae* type b (Hib), *Neisseria meningitidis*, and *Streptococcus pneumoniae*.

Before the 1990s, Hib was the leading cause of bacterial meningitis, but new vaccines being given to children as part of their routine immunizations have reduced the occurrence of serious Hib disease. Today, *Neisseria meningitidis* and *Streptococcus pneumoniae* are the leading causes of bacterial meningitis. Meningitis caused by *Neisseria meningitidis* is also called **meningococcal meningitis**. Meningitis caused by *Streptococcus pneumoniae* is called **pneumococcal meningitis**.

It is important to know which type of bacteria is causing the bacterial meningitis because antibiotics can prevent some types from spreading and infecting other people.

Where is bacterial meningitis found?

Bacterial meningitis is found worldwide. The bacteria often live harmlessly in a person's mouth and throat. In rare instances, however, they can break through the body's immune defenses and travel to the fluid surrounding the brain and spinal cord. There they begin to multiply quickly. Soon, the thin membrane that covers the brain and spinal cord (meninges) becomes swollen and inflamed, leading to the classic symptoms of meningitis.

How do people get bacterial meningitis?

The bacteria are spread by direct close contact with the discharges from the nose or throat of an infected person. Fortunately, none of the bacteria that cause meningitis are very contagious, and they are not spread by casual contact or by simply breathing the air where a person with meningitis has been.

What are the signs and symptoms of bacterial meningitis?

In persons over age 2, common symptoms are high fever, headache, and stiff neck. These symptoms can develop over several hours, or they may take one to two days. Other symptoms can include nausea, vomiting, sensitivity to light, confusion, and sleepiness. In advanced disease, bruises develop under the skin and spread quickly.

In newborns and infants, the typical symptoms of fever, headache, and neck stiffness may be hard to detect. Other signs in babies might be inactivity, irritability, vomiting, and poor feeding. As the disease progresses, patients of any age can have seizures.

Who is at risk for bacterial meningitis?

Anyone can get bacterial meningitis, but it is most common in infants and children. People who have had close or prolonged contact with a patient with meningitis caused by *Neisseria meningitidis* or Hib can also be at increased risk. This includes people in the same household or day-care center, or anyone with direct contact with discharges from a meningitis patient's mouth or nose.

How is bacterial meningitis diagnosed?

The diagnosis is usually made by growing bacteria from a sample of spinal fluid. The spinal fluid is obtained by a spinal tap. A doctor inserts a needle into the lower back and removes some fluid from the spinal canal. Identification of the type of bacteria responsible for the meningitis is important for the selection of correct antibiotic treatment.

What complications can result from bacterial meningitis?

Advanced bacterial meningitis can lead to brain damage, coma, and death. Survivors can suffer long-term complications, including hearing loss, intellectual disability, paralysis, and seizures.

What is the treatment for bacterial meningitis?

Early diagnosis and treatment are very important. If symptoms occur, the patient should see a doctor right away. Bacterial meningitis can be treated with a number of effective antibiotics. It is important, however, that treatment be started early.

How common is bacterial meningitis?

In the United States, bacterial meningitis is relatively rare and usually occurs in isolated cases. Clusters of more than a few cases are uncommon.

In parts of Africa, widespread epidemics of meningococcal meningitis occur regularly. In 1996, the biggest wave of meningococcal meningitis outbreaks ever recorded hit West Africa. An estimated 250,000 cases and 25,000 deaths in Niger, Nigeria, Burkina Faso, Chad, Mali, and other countries paralyzed medical care systems and exhausted vaccine supplies.

Is bacterial meningitis an emerging infectious disease?

With the decline in Hib disease, cases of bacterial meningitis have decreased since 1986. Meningococcal meningitis is a continuing threat in day-care centers and schools. Healthy children and young adults are susceptible, and death can occur within a few hours of onset.

How can bacterial meningitis be prevented?

- Vaccines -- There are vaccines against Hib, some strains of *Neisseria meningitidis*, and many types of *Streptococcus pneumoniae*.
The vaccines against Hib are very safe and highly effective. By age 6 months of age, every infant should receive at least three doses of an Hib vaccine. A fourth dose (booster) should be given to children between 12 and 18 months of age.
The vaccine against *Neisseria meningitidis* (meningococcal vaccine) is not routinely used in civilians in the United States and is relatively ineffective in children under age 2 years. The vaccine is sometimes used to control outbreaks of some types of meningococcal meningitis in the United States. New meningococcal vaccines are under development.
The vaccine against *Streptococcus pneumoniae* (pneumococcal vaccine) is not effective in persons under age 2 years but is recommended for all persons over age 65 and younger persons with certain medical problems. New pneumococcal vaccines are under development.
- Disease reporting -- Cases of bacterial meningitis should be reported to state or local health authorities so that they can follow and treat close contacts of patients and recognize outbreaks.
- Treatment of close contacts -- People who are identified as close contacts of a person with meningitis caused by *Neisseria meningitidis* can be given antibiotics to prevent them from getting the disease. Antibiotics for contacts of a person with Hib disease are no longer recommended if all contacts 4 years of age or younger are fully vaccinated.
- Travel precautions -- Although large epidemics of bacterial meningitis do not occur in the United States, some countries experience large, periodic epidemics of meningococcal disease. Overseas travelers should check to see if meningococcal vaccine is recommended for their destination. Travelers should receive the vaccine at least 1 week before departure, if possible.

Where can I find more information about bacterial meningitis?

<http://www.cdc.gov/ncidod/dbmd/bactmen.htm>

This fact sheet is for information only and is not meant to be used for self-diagnosis or as a substitute for consultation with a health-care provider. If you have any questions about the disease described above, consult a health-care provider.

Source : **Association of State and Territorial Directors of Health Promotion and Public Health Education**

<http://www.astdhppe.org/infect/bacmeningitis.html>