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Meningitis

What is meningitis?

Meningitis is an inflammation of the membranes that cover the brain and spinal cord. It can be caused by a number of infectious agents including viruses and bacteria. The type of meningitis and its cause can only be determined by conducting laboratory tests.

Viral meningitis (also called aseptic meningitis) is the most common type of meningitis and is less severe than bacterial meningitis. In Illinois, an average of 600 cases of aseptic meningitis is reported annually, with most occurring in late summer and early autumn. The majority of cases of aseptic meningitis are due to viruses called enteroviruses that can infect the stomach and small intestine. A small number of cases are caused by different viruses, which can be transmitted by infected mosquitoes; these are called arboviruses. Fatal cases of viral meningitis are rare and complete recovery is the rule.

Bacterial meningitis is often more severe than aseptic meningitis, particularly in infants and the elderly. Before antibiotics were widely used, 70 percent or more of bacterial meningitis cases were fatal; with antibiotic treatment, the fatality rate has dropped to 15 percent or less. Bacterial meningitis is most common in the winter and spring. Three bacteria cause the majority of cases: *Haemophilus influenzae*, *Neisseria meningitidis* or *Streptococcus pneumoniae*.

- *Haemophilus meningitis* is most frequently caused by *Haemophilus influenza* type b, also known as Hib. Before effective vaccines became available and widely used, Hib was the most frequent cause of bacterial meningitis in children 5 years of age and younger. In Illinois, an average of 230 cases was reported annually. However, from 1985 to 1996, there was an 82 percent reduction of *Haemophilus influenzae* meningitis. Currently, there is an average of 50 cases per year; the fatality rate is about 5 percent. This large decrease is believed to be due to routine use of Hib vaccines.
- Meningococcal meningitis, caused by *Neisseria meningitidis*, is primarily a disease of young children, with the incidence of cases declining in those older than 1 year of age. The disease is most common during winter and spring. In some persons, the bacteria can cause a severe blood infection called meningococcemia. Illinois averages 115 cases of meningococcal disease annually; approximately 10 percent are fatal.
- Pneumococcal meningitis, caused by *Streptococcus pneumoniae* (pneumococci), generally affects infants, the elderly and individuals with certain chronic medical conditions. An average of 100 cases occurs in

Illinois each year. In general, 5 percent to 10 percent of cases are fatal; however, in persons with significant underlying disease the fatality rate can be 20 percent to 40 percent.

How is it spread?

Meningitis is not highly contagious. **Both viral meningitis and bacterial meningitis can be spread through direct contact with nose and throat secretions.** Healthy persons, who have no signs of illness, can have these bacteria in their nose or throat and spread them to others. Sharing a glass, cup or eating utensil, coughing or sneezing into the face of another person, or sharing a cigarette are examples of how contact with another person's respiratory secretions might occur.

Viral meningitis can be transmitted by fecal contamination (in addition to respiratory secretions) when an infected person sheds or excretes virus in his/her stool.

What are the symptoms of meningitis?

Meningitis can produce mild symptoms — such as headache, low-grade fever and tiredness lasting two to three days — in some patients. In other patients, the symptoms can be severe and begin suddenly with fever, headache and stiff neck accompanied by some combination of other symptoms: decreased appetite, nausea, vomiting, and sensitivity to bright light, confusion and sleepiness.

In newborns and infants, the classic findings of fever, headache and stiff neck may or may not be present. An infant may have no other symptoms than being listless, irritable and sleepy, having little interest in feeding and possibly vomiting. Also, a purplish red rash may appear with meningococcal meningitis.

How is meningitis diagnosed?

Cerebrospinal fluid can be tested to determine the type of meningitis causing the symptoms. Such identification is important in selecting effective antibiotics for treating bacterial meningitis cases.

How is meningitis treated?

Treatment for persons who have viral (or aseptic) meningitis usually consists of reducing fever and making sure they take plenty of liquids. All three forms of bacterial meningitis, however, require the immediate medical attention of a physician and can be treated with a number of antibiotics. Appropriate antibiotic treatment of the most common types of bacterial meningitis should reduce the fatality rate to approximately 10 percent though the fatality rate is higher in infants, the elderly and persons with certain underlying medical conditions.

How is meningitis prevented?

Transmission of viral and bacterial meningitis can be prevented by raising the level of hygiene among persons at risk of infection and among those who might be spreading the disease. Of primary importance is proper hand washing technique: Wet hands with soap and warm water. Rub hands for 10 to 20 seconds, making sure you clean under fingernails. Rinse under warm running water. Dry hands on a clean towel or paper towel. When paper towels are available, use a paper towel to turn off the water faucet and throw the towel away.

Persons should cover their noses and mouths when sneezing or coughing and discard used tissues promptly. Wash hands thoroughly following exposure to respiratory secretions, including handling of soiled tissues and handkerchiefs. Persons should not share straws, cups, glasses, water bottles used during sports or recreation, eating utensils, cigarettes, etc. Eating and drinking utensils should not be shared and should be used by others only after they have been washed. Discouraging persons from kissing an infant, toddler or child on the mouth also can help prevent the spread of illness.

Preventing viral meningitis also requires proper hand washing to remove fecal contamination after toileting, changing diapers, assisting toddlers with toileting and so forth.

For meningococcal meningitis, household contacts and others who have had close personal contact with infected persons are recommended to receive a preventive antibiotic, often rifampin, which kills bacteria living in nose and throat secretions. For contacts to certain cases of *Haemophilus influenzae* meningitis, rifampin also may be recommended. Illness seldom occurs in close contacts to *Streptococcus pneumoniae* meningitis. Since the recommendations for use of rifampin and other preventive antibiotics vary according to the specific situation, it is best to consult with a physician or local health department for recommendations. Even if rifampin or another preventive antibiotic is taken, close contacts should be observed for any signs of disease and should be promptly evaluated by a physician if symptoms occur.

The American Academy of Pediatrics and the Advisory Committee on Immunizations Practices both recommend vaccination against Hib for all infants beginning at 2 months of age. *Neisseria meningitidis* can attack persons of any age but it is relatively uncommon in the United States. Meningococcal vaccine is generally recommended only for persons traveling to other countries where epidemics are in progress, for military recruits and, rarely, in other circumstances. A vaccine against the pneumococcus is recommended for certain children and adults with chronic or specified medical conditions and for persons 65 years of age or older.

Menu Link:

[Diseases A-Z \(/topics-services/diseases-and-conditions/diseases-a-z-list\)](/topics-services/diseases-and-conditions/diseases-a-z-list)

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