

What is meningitis?

Meningitis is an inflammation of the tissues that cover the brain and spinal cord. Bacteria, viruses, or fungi may cause meningitis. Viral meningitis is the most common form of meningitis and is caused by an infection with one of several types of viruses. Meningococcal meningitis is caused by the bacteria *Neisseria meningitidis*, and causes a more severe disease that requires prompt treatment of the patient with antibiotics. There are other types of bacterial meningitis, so it is also important to confirm which type of bacteria is causing the meningitis to determine if antibiotics are needed to prevent possible illness in exposed people.

What are the symptoms of meningitis?

Symptoms of meningitis may include fever, rash, headache, stiff neck, nausea, vomiting, and fatigue. These symptoms are often difficult to identify in infants, who, when suffering from viral meningitis may become irritable, lethargic, inconsolable, or refuse to eat. Since viral and bacterial meningitis often have similar symptoms, it is important to see a healthcare provider immediately if you or your child has these symptoms.

What causes meningitis and how is it spread?

Approximately 90% of viral meningitis cases are due to a group of common intestinal viruses called enteroviruses. These viruses are typically spread from person-to-person through direct or indirect contact with fecal material, usually on unclean hands or contaminated environmental items. Viruses can be passed on to others beginning about three days after someone is infected until about 10 days after symptoms occur, although very few exposed persons develop meningitis. Bacterial meningitis can be caused by bacteria such as *Haemophilus*, *Streptococcus* or *Neisseria meningitidis*, which are spread by direct contact with saliva or respiratory droplets from the nose and throat of an infected person.

How is meningitis diagnosed and treated?

The type of meningitis can be confirmed through laboratory tests performed on spinal fluid if needed. There is no specific treatment for viral meningitis, most patients will completely recover on their own with bed rest and plenty of fluids, however health care providers often will recommend medicine to relieve fever and headache. For bacterial meningitis, antibiotics are needed that treat the specific bacterial cause.

Should people who have been around a person infected with meningitis receive any treatment?

Antibiotics are only recommended as a preventive measure for those persons exposed to a person with meningitis caused by the bacteria *Neisseria meningitidis* or certain forms of *Haemophilus*. When a single instance of *Neisseria meningitidis* occurs, the state and county health departments work together to insure that appropriate contacts obtain antibiotics. Only people who have been in close contact with saliva or respiratory secretions such as household members, intimate contacts, health care personnel performing mouth-to-mouth resuscitation, and day care center playmates are recommended to obtain a prescription for a specific antibiotic (rifampin, ciprofloxacin, ceftriaxone, or azithromycin) from their physician or through the health department. Casual contacts including classmates, co-workers, or those in a workplace setting are not usually at an increased risk of disease and do not need treatment with the antibiotic. When clusters or outbreaks occur, the health department may expand the recommendations for which groups need to receive antibiotics to prevent possible spread. Antibiotics do not protect people from future exposure to *Neisseria meningitidis*. For persons exposed to a person with viral meningitis or meningitis caused by most bacteria, antibiotics are not a necessary preventive measure.

How do you prevent the spread of meningitis?

Hand hygiene is the single most important action to prevent the spread of infection to others and to you. Wash visibly soiled hands with soap and water, after using the toilet, after changing diapers, and before preparing and eating food. Use alcohol based hand gels when hands are not visibly soiled. Routine environmental cleaning is recommended, with focus on items that have been soiled with saliva or nose/throat secretions. In institutions such as child care centers, washing objects and surfaces with a diluted bleach solution is recommended. For hard surfaces such as diaper-changing areas and bathrooms, use a 1:10 dilution of bleach (mix one cup of bleach with one gallon of water). For other objects such as toys and eating utensils, use a weaker form of bleach solution (mix one tablespoon of bleach with one gallon of water).

What are the vaccines recommended to prevent meningitis?

The routine recommended childhood vaccines protect children from some of the common causes of meningitis such as *Haemophilus influenzae* type b (Hib) and *Streptococcus pneumoniae*. These and other vaccines are also recommended for certain people at increased risk of complications from a bacterial infection such as elderly or immunocompromised persons or people living in certain group settings.

Three types of meningococcal vaccines are available in the US. They are protective against four of the five most common disease-causing types of meningococcal disease: A, C, Y, and W-135. The vaccines do not protect against type B which accounts for about 1/3 of the meningococcal illness that occurs in adolescents in the US. Consult with your primary care physician or the local health department about receiving the vaccine.

Because the vaccine is not protective against all types of meningococcal infections, people who have been exposed to a person with meningococcal disease are still recommended to receive antibiotics to prevent infection.

The vaccine is not used to prevent illness in persons who have been exposed, but does protect from future exposures.

