

Meningococcal Disease

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What is meningococcal disease?

Meningococcal disease is caused by infection with bacteria called *Neisseria meningitidis*. There are two major types of meningococcal disease: Meningococcal meningitis and meningococemia.

Meningococcal meningitis is an infection of the tissue (called the “meninges”) that surrounds the brain and spinal cord. Meningococemia is an infection of the blood and may also involve other parts of the body. Onset of illness may be very sudden, and 10-15% die despite receiving antibiotic treatment. Of those who survive, 10-20% may lose limbs, become hearing impaired or deaf, have problems with their nervous system, including long-term neurologic problems, or have seizures or strokes.

What are the signs and symptoms of illness?

Meningococcal meningitis: Signs and symptoms of meningitis include sudden onset of high fever, stiff neck, headache, nausea, vomiting, sensitivity to light and/or mental confusion. Changes in behavior such as confusion, sleepiness, and being hard to wake up are important symptoms of this illness. A rash may be present, often involving the hands and feet. In babies, the only signs of this illness may be acting more tired than usual, acting more irritable than usual, and eating less than usual. Babies with meningitis will usually have a fever, but this is not a reliable sign of illness. Anyone who has these symptoms should be seen by a health care provider right away.

Meningococemia: Signs and symptoms of meningococemia include a sudden onset of fever, chills, and feeling unusually weak and tired. A rash may be present, often on the hands and feet. Anyone who has these symptoms should be seen by a health care provider right away.

Less common presentations include pneumonia and arthritis.

How common is meningococcal disease?

Meningococcal disease is becoming much less common. Over the past 20 years, the overall incidence of meningococcal disease in the US has declined 10-fold. Twenty years ago in Massachusetts there were 80-100 cases of meningococcal disease per year. In contrast, for the past decade the average is approximately 12 cases per year. Declining rates of meningococcal disease may be due in part to the introduction of meningococcal vaccines (initially recommended routinely in 2005 for adolescents aged 11-12 years, unvaccinated college freshmen living in residence halls) as well as other factors such as the decline in cigarette smoking, which may impact susceptibility to this disease.

What are *Neisseria meningitidis*?

Neisseria meningitidis are bacteria that may be found normally in people's throats and noses. About 5 to 15% of people carry these bacteria and do not get sick from them. These people may be referred to as “colonized.” Colonized people only have bacteria for a short time. Usually, the bacteria go away and these people may have increased resistance to infection in the future. In rare cases, the bacteria may get into the blood and go to the tissue surrounding the spinal cord and brain, causing severe illness. It is not known why this occurs in certain people and not in others. A recent upper respiratory illness may be a contributing factor.



How are the bacteria spread?

The bacteria are spread from person-to-person through saliva (spit). You must be in close contact with an infected person's saliva in order for the bacteria to spread. Close contact includes activities such as kissing, sharing water bottles, sharing eating/drinking utensils, or sharing cigarettes (including e-cigarettes) with someone who is infected; or being within 3-6 feet of someone who is infected and is coughing or sneezing.

How is meningococcal disease diagnosed?

Persons showing signs and symptoms of illness are diagnosed by growing the bacteria from their spinal fluid (meningitis) or blood (meningococcemia) in the laboratory. It may take up to 72 hours to have test results. Sometimes an earlier diagnosis can be made by looking at a person's spinal fluid under a microscope. Often a preliminary diagnosis is made on the basis of signs and symptoms before laboratory results are available.

How are these illnesses treated?

Antibiotics are used to treat people with both meningococcal meningitis and meningococcemia. People who have had close contact with the sick person any time during the two weeks before she/he became ill may also need to take antibiotics. Preventive treatment of all close contacts should be started as soon as possible but ideally within 24 hours of identifying the case.

Why do close contacts of a sick person need to be treated?

Close contacts of a person who has meningococcal disease are treated with antibiotics because the disease-causing bacteria may be spread from the infected person to other people through contact with the saliva (spit) of the infected person. The antibiotics will kill the bacteria and prevent illness.

Is there a vaccine to protect me from getting sick?

Yes, there are 2 different meningococcal vaccines.

- Quadrivalent meningococcal conjugate vaccine (Menactra and Menveo) protects against 4 serotypes (subgroups), A, C, W, and Y, of meningococcal disease. It is recommended for all children 11-12 years of age and for some younger children with certain health conditions like asplenia (including sickle cell disease), or prior to travel to certain parts of the world where meningococcal disease is common. A second dose of quadrivalent meningococcal conjugate vaccine is routinely recommended at 16 years of age.

Adolescents and young adults who have not been vaccinated according to routine recommendations should talk to their healthcare provider about vaccination according to the "catch up" schedule. College freshmen, military recruits and other newly enrolled college students living in dormitories who are not yet vaccinated are also recommended to receive quadrivalent meningococcal conjugate vaccine.

- Meningococcal serogroup B vaccine (Bexsero and Trumenba) protects against serogroup B meningococcal disease. It is recommended for people with certain relatively rare high-risk health conditions age 10 or older (examples: persons with a damaged spleen or whose spleen has been



removed, those with persistent complement component deficiency (an inherited disorder), microbiologists working with *N. meningitidis*, and people who may have been exposed during an outbreak).

Adolescents and young adults (16 through 23 years of age) who do not have high risk health conditions **may** also be vaccinated with a serogroup B meningococcal vaccine, preferably at 16 through 18 years of age, to provide short term protection for most strains of serogroup B meningococcal disease.

If you have questions about whether or not you or your child should receive any of these vaccines, talk to your healthcare provider.

Are students required to get meningococcal vaccine?

Yes. Massachusetts law requires the following students receive quadrivalent meningococcal conjugate vaccine (unless they qualify for one of the exemptions allowed by the law):

- Secondary school (those schools with grade 9-12): newly enrolled full-time students who will be living in a dormitory or other congregate housing licensed or approved by the secondary school must provide documentation of having received a dose of quadrivalent meningococcal conjugate vaccine at any time in the past.
- Postsecondary institutions (e.g., colleges): newly enrolled full-time students 21 years of age and younger must provide documentation of having received a dose of quadrivalent meningococcal conjugate vaccine on or after their 16th birthday, regardless of housing status.

Adolescents and young adults (16 through 23 years of age) **may** also be vaccinated with a serogroup B meningococcal vaccine, preferably at 16 through 18 years of age, to provide short term protection for most strains of serogroup B meningococcal disease. More information may be found in the MDPH documents “*Meningococcal Disease and College Students*” and “*Information about Meningococcal Disease, Meningococcal Vaccines, Vaccination Requirements and the Waiver for Students at Colleges and Residential Schools*.”

Shouldn't meningococcal B vaccine be required?

CDC's Advisory Committee on Immunization Practices has reviewed the available data regarding serogroup B meningococcal disease and the vaccines. At the current time, there is no routine recommendation and no statewide requirement for meningococcal B vaccination before going to college (although some colleges might decide to have such a requirement). As noted previously, adolescents and young adults (16 through 23 years of age) may be vaccinated with a serogroup B meningococcal vaccine, preferably at 16 through 18 years of age, to provide short term protection against most strains of serogroup B meningococcal disease. This would be a decision between a healthcare provider and a patient. These policies may change as new information becomes available.



What should I do if I have had close contact with a person who has meningococcal disease?

If you have had close contact with a person who has been diagnosed with meningococcal disease you should call your health care provider and get an antibiotic. If you have had contact with an ill person, but have not had close contact, you should be aware of the symptoms of illness and contact your health care provider right away if you have any of these symptoms.

Are there times when I would not have to take antibiotics after close contact with a sick person with meningitis?

Yes. Meningitis can be caused by many different types of germs, including other bacteria and viruses. Only certain types of meningitis require treatment of the infected person's close contacts. If you have questions about meningitis or your exposure to a sick person, contact your health care provider.

Where can I get more information?

- Your healthcare provider
- The Massachusetts Department of Public Health, Division of Epidemiology and Immunization at (617) 983-6800 or on the MDPH website at <http://www.mass.gov/dph/>
- Your local health department (listed in the phone book under government)

