

Meningococcal Disease and College Students

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What is meningococcal disease?

Meningococcal disease is caused by infection with bacteria called *Neisseria meningitidis*. These bacteria can infect the tissue (the “meninges”) that surrounds the brain and spinal cord and cause meningitis, or they may infect the blood or other body organs. 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 symptoms of meningococcal disease?

Signs and symptoms of meningococcal disease include sudden onset of fever, stiff neck, headache, nausea, vomiting, sensitivity to light and/or mental confusion. A rash may also be present. Changes in behavior such as confusion, sleepiness, and unresponsiveness are important symptoms of illness. Anyone who has these symptoms should be seen by a healthcare provider immediately. In fatal cases, death can occur in as little as a few hours, even with appropriate medical treatment. 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?

These bacteria are passed 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 an infected person who is coughing or sneezing.



Who is at most risk for meningococcal disease?

High-risk groups include anyone with a damaged spleen or whose spleen has been removed, those with persistent complement component deficiency (an inherited immune disorder), HIV infection, those traveling to countries where meningococcal disease is very common, microbiologists who routinely work with the bacteria and people who may have been exposed to meningococcal disease during an outbreak. People who live in certain settings such as college dormitories and military housing are also at greater risk of disease from some serotypes.

Are students in college at risk for meningococcal disease?

In the 1990s, college freshmen living in residence halls were identified as being at increased risk for meningococcal disease. Meningococcal disease and outbreaks in young adults were primarily due to serogroup C. However, following many years of routine vaccination of young people with quadrivalent meningococcal conjugate vaccine (for serogroups A, C, W and Y), serogroup B is now the primary cause of meningococcal disease and outbreaks in young adults. Among the approximately 9 million students aged 18-21 years enrolled in college, there are an average of 20 cases and 2-4 outbreaks due to serogroup B reported annually.

Although incidence of serogroup B meningococcal disease in college students is low, college students aged 18-21 years are at increased risk compared to non-college students. The close contact in college residence halls, combined with certain behaviors (such as alcohol consumption, exposure to cigarette smoke, sharing food or beverages, and other activities involving the exchange of saliva), may put college students at increased risk.

Is there a vaccine against meningococcal disease?

Yes, there are 2 different meningococcal vaccines.

Quadrivalent meningococcal conjugate vaccine (Menactra and Menveo) protects against four serogroups, 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 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, microbiologists working with *N. meningitidis*, and people who may have been exposed during an outbreak). Other 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.

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



How complete is the protection with the vaccine?

The incidence of meningococcal disease of all serogroups has been declining in the U.S. since the late 1990s, in part due to vaccination. Strains C, W and Y, which are included in quadrivalent meningococcal conjugate vaccine, account for 73% of meningococcal disease among people >11 years in the U.S. Because effectiveness of quadrivalent meningococcal conjugate vaccine wanes over time, a booster is recommended at age 16, after the initial dose at age 11-12. This protects young people during their late teens and early twenties, when they are most at risk. Unfortunately, no vaccine is 100% effective in preventing disease. If your child is exposed to meningococcal disease, antibiotics may be recommended to keep your child from getting sick.

Meningococcal B vaccines are expected to provide short-term protection against most strains of serogroup B meningococcal disease. Studies are being conducted to verify and further describe the effectiveness of these vaccines.

Is the meningococcal vaccine safe?

Yes. Getting meningococcal vaccine is much safer than getting the disease. Some people who get meningococcal vaccine have mild side effects, such as redness or pain where the shot was given. These symptoms usually last for 1-2 days. A small percentage of people who receive the vaccine develop a fever. The vaccine can be given to pregnant women. A vaccine, like any medicine, is capable of causing serious problems such as severe allergic reactions, but these are rare.

Are students required to get meningococcal vaccine before college?

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 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.

Immunizations should be obtained prior to enrollment or registration; however, students may be enrolled or registered provided that the required immunizations are obtained within 30 days of registration. There is no requirement for meningococcal B vaccination. However, 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.

The law allows exemptions. Students may begin classes without a certificate of immunization against meningococcal disease if: 1) the student has a letter from a physician stating that there is a medical reason why he/she can't receive the vaccine; 2) the student (or the student's parent or legal guardian, if the student is a minor) presents a statement in writing that the vaccination is against his/her sincere religious belief; or 3) the student (or the student's parent or legal guardian, if the student is a minor) signs a waiver stating that the student has received information about the dangers of meningococcal disease, reviewed the information provided and elected to decline the vaccine.



More information about requirements and exemptions may be found in the MDPH document *“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.

Where can a college student get vaccinated?

Students and their parents should discuss meningococcal disease, the benefits and risks of vaccination and the availability of vaccine with their healthcare 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)

