



**NJ Department of Health
Vaccine Preventable Disease Program**

Meningococcal Disease Frequently Asked Questions

March 28, 2014

OVERVIEW

Is the NJ Department of Health (NJDOH) considering there to be an outbreak of meningococcal disease at Princeton University?

Yes. As of March 18, 2014 the NJDOH is aware of 9 cases of invasive meningococcal disease associated with Princeton University. NJDOH has considered this to be an outbreak of meningococcal disease since the 4th case was identified in May 2013.

- The first case was a female student who was away from campus for spring recess and developed symptoms of meningococcal disease on March 22, 2013 when returning to the area. This student has recovered.
- The second case was a visitor on Princeton University campus from April 6-8, 2013 who was diagnosed with bacterial meningitis after returning to another state. This case is being followed by another state's health department.
- The third case is a male student diagnosed with bacterial meningitis on May 7. This student has recovered.
- The fourth case is a male student who resides out of state. The case developed symptoms on May 19, 2013 on his way home for summer recess. This case has recovered.
- The fifth case is a male student who developed symptoms on June 29, 2013 while traveling abroad. This student has recovered.
- The sixth case is a female student who developed symptoms of meningococcal disease on October 1, 2013. This student has recovered.
- The seventh case is a male student who developed symptoms of meningococcal disease on November 8, 2013. This student is recovered.
- The eighth case is a female student who developed symptoms of meningococcal disease on November 20, 2013. This student is recovered.
- The ninth case is a female student from Drexel University who had close contact with students from Princeton University about a week before becoming ill. The case developed symptoms on March 9 and died on March 10. This case is being followed by the Philadelphia Department of Public Health.

- Centers for Disease Control and Prevention (CDC) laboratory analysis shows that the Princeton University's outbreak strain and the strain that caused the Drexel University student's death match by "genetic fingerprinting". This information suggests that the outbreak strain may still be present in the Princeton University community. However, it does not indicate whether or not more cases will occur at Princeton University or Drexel University.
- Antibiotic prophylaxis was recommended and administered to close contacts to prevent additional cases of meningococcal disease. To date, no related cases among Drexel University students have been reported.

What has been done to control this outbreak?

The NJDOH, local health officials, Princeton University Health Services (UHS), in consultation with the CDC, continue to work together to closely monitor the situation. Health care providers and local health authorities remain vigilant to recognizing and promptly treating any new cases. Antibiotics are promptly administered to all identified close contact of persons suspected or known to have meningococcal disease. A serogroup B meningococcal vaccine, which is licensed for use in Europe, Canada, and Australia, was used at Princeton University. The first dose of vaccine was administered in December 2013; the second dose was administered in February 2014. Uptake of both doses of the serogroup B vaccine among the recommended risk groups at Princeton University was high. Those who received the vaccine have likely protected themselves from getting sick (there have been no new cases among Princeton University students since the vaccination campaign). This new case in a Drexel student suggests that the outbreak strain may still be present in the Princeton University community. We do not know if transmission will continue to occur at Princeton University or if more cases will be seen at Drexel University.

NJDOH continues to stress the same basic infection prevention activities such as covering your mouth and nose when coughing or sneezing, cleaning your hands, and practicing healthy habits. Individuals should remain vigilant (have increased awareness) for signs and symptoms of meningococcal disease. Individuals who are ill should not attend school or work to prevent the spread of disease to others.

At this time, there are no recommendations to cancel any activities or scheduled events on the Princeton University Campus. There are also no recommendations for the surrounding community to avoid contact with Princeton or Princeton students.

What type of bacteria is causing the infection?

All nine cases were caused by *Neisseria meningitidis* serogroup (type) B. Eight cases had the identical strain of the bacteria. One case has similar strain characteristics but it cannot be determined whether it was an exact match to the strain identified in the previous cases due to limitations in testing capabilities. This infection is also referred to as invasive meningococcal disease.

Is there a vaccine against this infection?

The meningococcal vaccine provides protection against four different serogroups (types) of the meningococcal infection - A, C, Y and W-135. There is currently no vaccine licensed in the United States that covers serogroup B. As such, even students who have been vaccinated against bacterial meningitis may still be vulnerable to infections with serogroup B.

Due to the nature of this outbreak, a two-dose serogroup B meningococcal vaccine was administered at Princeton University for eligible students. Uptake of both doses of the serogroup B vaccine among the recommended risk group at Princeton University was high. Those who have received the vaccine have likely protected themselves from getting sick (there have been no new cases among Princeton University students since the vaccination campaign). Available data show most adolescents that get two doses of this vaccine are protected from getting meningococcal disease. However, vaccinated individuals may still be able to carry the bacteria in their throats. We do not know if transmission will continue to occur at Princeton University or if more cases will be seen at Drexel University. NJDOH continues to work with our public health partners to closely monitor the situation. Individuals should remain vigilant (have increased awareness) for signs and symptoms of meningococcal disease.

If you have further questions about the serogroup B meningococcal vaccine, please email meningvaccine@cdc.gov.

For further information about Princeton University's vaccine campaign, please visit <http://web.princeton.edu/sites/emergency/meningitis.html> or <http://www.cdc.gov/meningococcal/index.html>.

Is there a link between the cases?

No common link has been identified among the cases. Cases of meningococcal disease can occur sporadically in college settings since this population has an increased risk for meningococcal disease.

How does meningococcal disease spread?

Meningococcal disease can be spread from person to person. The bacteria are spread by exchanging respiratory and throat secretions like saliva (spit) during close (for example, coughing or kissing) or lengthy contact, especially if living in the same dorm or household. Many people carry the bacteria in their throats without getting meningococcal disease. Since so many people carry the bacteria, most cases of meningococcal disease appear to be random and aren't linked to other cases. Although anyone can get meningococcal disease, adolescents and college students who live in dormitories are at an increased risk. The bacteria that cause meningococcal disease are less infectious than the viruses that cause the flu.

What can be done to prevent the spread of this disease on campus and in the community?

You can help prevent the spread of illnesses by:

Covering your mouth and nose when coughing or sneezing.

Cover your mouth and nose with a tissue or your sleeve when coughing or sneezing. It may prevent those around you from getting sick.

Cleaning your hands.

Washing your hands will help protect you against infections. If soap and water are not available, use an alcohol-based hand rub. You should clean your hands before eating.

Practice healthy habits.

Avoid sharing utensils, water bottles or other items contaminated by saliva or respiratory secretions. Avoid smoking and excessive alcohol intake. Eat healthy foods and get plenty of rest.

Individuals should remain vigilant (have increased awareness) for signs and symptoms of meningococcal disease. Individuals who are ill should not attend school or work to prevent the spread of disease to others.

Should people avoid attending Princeton University during this time?

No. There is no recommendation to cancel any activities or scheduled events on campus.

Why isn't NJDOH recommending cancelling activities or events at Princeton?

Restricting travel to areas with an outbreak, closing schools or universities, or cancelling sporting or social events are not recommended measures for outbreak control in the United States. A crucial part of managing suspected meningococcal disease outbreaks and promoting early case recognition is educating communities, physicians and other healthcare workers about meningococcal disease.

Should residents from the surrounding community avoid contact with Princeton or Princeton students?

No. There is no recommendation for the surrounding community to avoid contact with Princeton or Princeton students. Sporadic cases of meningococcal disease are not unusual on residential campuses. Although anyone can get meningococcal disease, adolescents and college students who live in dormitories are at an increased risk. The bacteria that cause meningococcal disease are less infectious than the viruses that cause the flu. To prevent the spread of any respiratory disease, it is always recommended that you practice good hygiene habits. That means cover your cough to prevent the spread of infection to others, engage in hand hygiene often with soap and

water or hand sanitizer (especially before eating), and don't share items like utensils and water bottles that are contaminated with saliva (spit).

Should I take antibiotics before going to Princeton University for an event or activity?

No. There is no recommendation to take antibiotics before attending events or activities at Princeton University. Only people who have been in close contact with a suspect or confirmed case of meningococcal need to be considered for preventive treatment. The infectious period for meningococcal disease is considered to be from 10 days before the person becomes ill to 1 day after he or she starts on antibiotics. This means that people who were in close contact with the sick person during this time are at higher than average risk to get meningococcal disease. You must be in close contact with a sick person's secretions like saliva (spit) in order for the bacteria to spread.

Close contact includes activities such as:

- living in the same household or sleeping in the same dwelling
- kissing
- sharing eating utensils or food
- sharing drinks
- sharing cigarettes
- uncovered face-to-face sneezing or coughing

The bacteria are NOT SPREAD by casual contact activities like being in the same work or school room as the sick person, or handling books or other items that the sick person has touched. Likewise, being around a person who was in contact with the sick person does not put you at risk for catching meningococcal disease.

Is special cleaning of rooms being done when cases of meningitis are diagnosed?

The bacteria are spread person to person and cannot live outside the body for very long. There are no special environmental cleaning recommendations to prevent infection.

Is there any test that can be done to see if I have been exposed to meningococcal bacteria?

There is no recommendation to test people without symptoms who might have been exposed to someone with meningitis. If you think you might have had close contact with someone who has been diagnosed with or has symptoms of meningitis, call your health care provider. He or she can work with public health officials to determine if you should receive antibiotics to prevent infection.

ROLE OF ANTIBIOTICS IN MENINGOCOCCAL OUTBREAKS

Why can't antibiotics be used for everyone?

Antibiotics are only given to close contacts of those who have been diagnosed with meningococcal disease; this practice is known as prophylaxis. Anyone who is a close contact of a person with meningococcal disease is at highest risk for getting the infection. Close contacts are identified by asking people about the extent of their contact and interactions with the person who got meningococcal disease. For example, living with the person who got sick puts you at high risk, but working together in an office or attending class together generally does not.

Recommending antibiotics to an entire student body is not an effective strategy to stop an outbreak. To understand why, it is important to know how this disease spreads in a community. Meningococcal bacteria are spread from person to person and can cause "carriage" in the nose and throat rather than disease. Carriage means that the bacteria live in the nose and throat, but do not invade your body and make you sick. Since you do not have any symptoms you would not know if you are a carrier. At any given time only a very small number of people may carry the outbreak strain (possibly as few as 1 or 2 people out of 100).

If you wanted to try and control an outbreak with antibiotics, you would have to treat every single person at risk in the outbreak at the same time. Otherwise, if one carrier doesn't receive antibiotics, then the bacteria can continue to spread since antibiotics do not give people lasting protection. Antibiotic prophylaxis only protects someone for about 2 days after finishing the medicine. In addition, antibiotics are only about 85% effective at eliminating the carried bacteria in the nose and throat. This means that even if you do treat everyone at the same time, the bacteria could still survive and continue circulating among the population. Lastly, treating many people unnecessarily with antibiotics also carries risks, possibly causing more harm than good. About 1 in every 100 people is allergic to an antibiotic. Some may not even know it. To help prevent the growing threat of antibiotic resistance, it is critical that antibiotics only be used when necessary and appropriate. For those reasons, antibiotic prophylaxis is not an effective or recommended strategy to stop a meningococcal disease outbreak.

Should we test and treat people for carriage to stop an outbreak?

No, CDC does not recommend routine testing for and treating people with antibiotics who are carriers of meningococcal bacteria. Finding meningococcal bacteria in your nose and throat is not usually considered dangerous. When you carry meningococcal bacteria in the back of your nose and throat, it is rare for these bacteria to move and invade other parts of your body and make you sick. Plus, by the time someone got their test results back, their carriage status may have changed (e.g., those who tested negative may now be carriers, and vice versa). If antibiotics were recommended, this would result in some people unnecessarily getting treatment since they would no longer be a carrier, (see risks of antibiotic use in previous question) while new carriers would not get treatment. Spread of the bacteria would continue.

People who have been carriers for more than a week or so are at low risk for disease from the carried strain (even if it is a strain known to cause disease) because of the immunity they have developed. We are not certain how long someone can carry these bacteria; and the length of time may vary from case to case. But we do know that if you are exposed, you either develop disease within a few days or you develop immunity and the carried bacteria eventually disappear from your nose and throat.

Should people at institutions currently experiencing an outbreak take antibiotics before travelling home in order to protect their family and friends in case they are carrying meningococcus bacteria?

No. CDC does not recommend that students, staff, or faculty take antibiotics based on concern for exposing others back home. We know from prior experience with meningococcal disease outbreaks at universities that the risk of the outbreak spreading outside to the community or to family members is very low. Public health authorities carefully investigate all reported cases of meningococcal disease.

At any given time during an outbreak, very few individuals carry the outbreak strain of these bacteria in their noses and throats. Treating many people unnecessarily with antibiotics carries risks, possibly causing more harm than good. To help prevent the growing threat of antibiotic resistance, it is critical that antibiotics only be used when necessary and appropriate. The resistance might occur in meningococcus bacteria or in other bacteria the person carries. In addition, antibiotics wipe out the "good" bacteria that protect us from colonization and infection with more harmful microbes. Plus, about 1 in every 100 people is allergic to an antibiotic.

DISEASE INFORMATION

What is meningococcal disease?

Meningococcal (muh-nin-jo-cok-ul) disease is a severe infection of the blood or the meninges (the covering of the brain and spinal cord). When the infection is in the blood, it is called meningococemia (muh-nin-jo-cok-see-me-ah). When the infection is in the meninges, it is called meningococcal meningitis. Both of these infections are caused by a bacterium (germ) called *Neisseria meningitidis*.

Meningococcal disease is caused by the bacterium *Neisseria meningitidis*. This bacterium has at least 13 different serogroups (types). Five of these serogroups, A, B, C, Y, and W-135, cause almost all invasive disease.

What are the symptoms of meningococcal disease?

Because early symptoms may be mild and similar to those of less serious viral illnesses like a common cold, it would not be unusual for people to delay seeking treatment.

The early symptoms of meningococcal disease include:

- Fever
- Headache
- Body aches
- Feeling very tired or sleepy

Other symptoms that may occur are:

- Stiff neck
- Nausea
- Vomiting
- Confusion
- Sensitivity to light

In newborns and infants, the classic symptoms of fever, headache, and neck stiffness may be absent or difficult to notice. The infant may appear to be slow or inactive, irritable, vomiting or feeding poorly. In young children, doctors may also look at the child's reflexes, which can also be a sign of meningitis. If you think you, your infant or child has any of these symptoms, call the doctor right away.

The National Meningitis Association created a poster that may be useful for identifying possible symptoms, which is available on their website, <http://www.nmaus.org/meningitis/symptoms.htm>

How serious is meningococcal disease?

Left untreated, the disease can progress rapidly, often within hours of the first symptoms, and can lead to shock, death or serious complications, including hearing loss, brain damage, kidney disease, or limb amputations. Individuals with symptoms of meningococcal disease should seek medical care immediately. Please contact your health care provider with questions.

How do people get meningococcal disease?

The bacteria are spread from person to person through saliva (spit) or other respiratory secretions. The infectious period for meningococcal disease is considered to be from 10 days before the person becomes ill to 1 day after he or she starts on antibiotics. This means that people who were in close contact with the sick person during this time are at higher than average risk to get meningococcal disease. You must be in close contact with a sick person's secretions like saliva (spit) in order for the bacteria to spread.

Close contact includes activities such as:

- living in the same household or sleeping in the same dwelling
- kissing
- sharing eating utensils or food
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The bacteria cannot live outside the body for very long, so the disease is not easily transmitted.

When are people with meningococcal disease infectious to others?

The infectious period for meningococcal disease is considered to be from 10 days before the person becomes ill to 1 day after he or she starts on antibiotics. This means that people who were in close contact with the sick person during this time are at higher than average risk to get meningococcal disease. People who are identified as close contacts should receive antibiotics to prevent them from getting the disease.

If I am exposed to meningococcal disease, how long will it take to develop symptoms?

Most people who become ill develop symptoms 1 to 10 days after exposure to someone with meningococcal disease.

How is meningococcal disease diagnosed?

A health care provider diagnoses meningococcal invasive disease by observing symptoms and examining blood and spinal fluid.

What is the treatment for meningococcal disease?

It is important that treatment be started as soon as possible. Most people with meningococcal disease are hospitalized and treated with antibiotics. (NOTE: It is very important to finish your antibiotics even if you begin to feel better, unless otherwise directed by your health care provider.)

Depending on the severity of the infection, other treatments may also be necessary. These can include such things as breathing support, medications to treat low blood pressure, and wound care for parts of the body with damaged skin.

Who is at risk for meningococcal disease?

Adolescents and young adults have an increased incidence of meningococcal disease compared to the general population, accounting for nearly 15 percent of all U.S. cases annually. However, the majority of cases among adolescents may be vaccine preventable.

The disease is especially significant among college students, since studies show freshmen living in dorms are particularly vulnerable to meningococcal disease. Adolescents and young adults may be at increased risk for infection due to certain lifestyle factors, such as:

- Crowded living conditions (such as dormitories, boarding schools and sleep-away camps)
- Moving to a new residence
- Attendance at a new school with students from geographically diverse areas
- Going to bars
- Active or passive smoking
- Irregular sleeping patterns

Other risk groups include infants and young children, refugees, household contacts of case patients and military personnel.

How can meningococcal disease be prevented?

Vaccination offers the best protection against the disease.

Two types of meningococcal vaccine are available:

- Meningococcal polysaccharide vaccine
- Meningococcal conjugate vaccines (known as MCV4)

Both vaccines are effective in protecting against four of the five types of the bacteria that cause meningococcal disease in the U.S. MCV4 is preferred for routine vaccination of adolescents and persons 2 through 55 years of age who are at increased risk of meningococcal disease. You should check with your healthcare provider to determine which vaccine is appropriate for you. No vaccine is currently licensed in the United States to protect against type B, although scientists and pharmaceutical manufacturers are conducting studies of vaccines against the B serogroup.

Who should receive meningococcal vaccine?

The CDC recommends routine MCV4 vaccination for adolescents as follows:

- An initial vaccination at age 11-12
- A booster dose at age 16
 - For those who receive the first dose at 13 through 15 years of age, a booster is recommended at 16 through 18

CDC recommends that adolescents receive the vaccine less than five years before starting college.

There are others recommended for meningococcal vaccination, including younger children and adults with certain medical conditions, travelers and military recruits. For the full list of persons recommended by the CDC for meningococcal vaccination, please visit:
<http://www.cdc.gov/vaccines/vpd-vac/mening/who-vaccinate.htm>

Does the NJDOH require students to receive meningococcal vaccine?

Per the NJ Immunization of Pupils in School (N.J.A.C. 8:57-4), all students born on or after January 1, 1997 who are at least 11 years of age and in Grade 6 (or a comparable age level for special education programs) must receive one dose of a meningococcal-containing vaccine. This requirement also applies to all students born on or after January 1, 1997 who are attending/transferring into a New Jersey school at the sixth grade or higher grade level.

In addition, one dose of meningococcal vaccine is required for students entering a four-year institution and who reside in a campus dormitory as per Higher Education Immunization regulations, (N.J.A.C. 8:57-6). All four-year institutions are required to provide information on meningococcal disease to all new students (including those students who are commuters) prior to matriculation. This information will need to include the nature and severity, causes, disease prevention and treatments, and the availability of a meningococcal vaccine to prevent disease.

What are the side effects of vaccination?

Meningococcal vaccines are very safe and effective. As with all vaccines, there can be minor reactions, including pain and redness at the injection site or a mild fever, which typically last for one to two days. Severe side effects, such as a serious allergic reaction, are very rare.

ADDITIONAL INFORMATION

Where can I get additional information?

- Your health care provider
- Your local health department
<http://www.state.nj.us/health/lh/directory/lhdselectcounty.shtml>
- NJ Department of Health
<http://nj.gov/health/cd/index.shtml>
<http://www.nj.gov/health/cd/meningo/index.shtml>
- Centers for Disease Control and Prevention
<http://www.cdc.gov/meningococcal/index.html>
- Princeton University
<http://web.princeton.edu/sites/emergency/meningitis.html>

This information is for educational purposes only and is not intended to replace consultation with a health care professional.