

## **Meningococcal Disease (Bacterial Meningitis) Fact Sheet**

### **Overview**

Meningococcal disease is an infection caused by the bacteria *Neisseria meningitidis*, also known as the meningococcus bacteria. Common types of invasive meningococcal disease include meningitis (infection of the meninges, which is a system of membranes surrounding the brain and spinal cord), septicemia (blood infection), pneumonia (lung infection) and septic arthritis (joint infection).

### **Signs and Symptoms**

The incubation period of meningitis is three to four days, with a range of two to 10 days. Most people who come into contact with meningococcus bacteria do not get sick. When illness does occur, the onset can be very rapid and the resulting disease very severe. The symptoms vary by site of infection. High fever, headache and stiff neck are common symptoms of meningitis in anyone over the age of 2 years. These symptoms can develop over several hours, or they may take one to two days. Other symptoms of meningitis might include nausea, vomiting, sensitivity to light, confusion and sleepiness. In newborns and small infants, the classic symptoms of fever, headache and neck stiffness might be absent or difficult to detect; the infant may only appear slow or inactive, or be irritable, have vomiting or be feeding poorly. As the disease progresses, patients of any age might have seizures. The most common signs and symptoms of meningococcal sepsis (bloodstream infection) are high fever, joint pain, a purplish rash, an elevated white blood cell count and organ failure. Even with prompt treatment, the severe forms of meningococcal disease are fatal in 9 percent to 12 percent of cases, and many survivors have long-term health problems, including limb loss, mental impairment and hearing loss.

### **Causes and Transmission**

*N. meningitidis* bacteria are normally spread through the exchange of respiratory and throat secretions (i.e., coughing, kissing or the sharing of eating utensils). They are not spread by casual contact or by simply breathing the air where a person with meningococcal disease has been. The bacteria can spread to people who have had close or prolonged contact with a patient with disease caused by *N. meningitidis*. People in the same household or day care center or anyone with direct contact with a patient's saliva (such as a boyfriend or girlfriend) would be considered at increased risk of acquiring the infection. These bacteria do not live long outside the human body, so people will not get sick from touching door knobs, telephones or other surfaces that have been contaminated with the bacteria.

Covering the mouth when one coughs or sneezes is the best way to prevent transmission of *N. meningitidis* bacteria, as well as many other disease agents carried in the nose and throat. Since *N. meningitidis* bacteria do not live long once

they leave the human body, only those who are directly coughed or sneezed upon are at increased risk of infection. Because these people would be considered close contacts, antibiotics would be recommended. However, since coughing and sneezing are not usually a part of meningococcal disease, this is an uncommon way to be exposed.

The period of time one is infectious is typically from the time one is infected until bacteria are eliminated from the body. However, persons can carry and transmit *N. meningitidis* without exhibiting any symptoms.

### **Risk Factors**

Certain people are at increased risk for bacterial meningitis. Some risk factors include:

- Age -- Babies are at increased risk for meningitis. However, people of any age can develop bacterial meningitis.
- Community setting -- Infectious diseases tend to spread where large groups of people gather together. Outbreaks of meningococcal disease due to *N. meningitidis* have been reported from college campuses.
- Certain medical conditions -- There are certain medical conditions, medications and surgical procedures that put people at increased risk for meningitis.
- Working with meningitis-causing pathogens -- Microbiologists routinely exposed to meningitis-causing bacteria are at increased risk for meningitis.
- Travel -- Travelers to the meningitis belt in sub-Saharan Africa, particularly during the dry season, or to Mecca during the annual Hajj and Umrah pilgrimage may be at increased risk for meningococcal meningitis.

### **Complications**

Even with prompt treatment, the severe forms of meningococcal disease are fatal in 9 percent to 12 percent of cases, and many survivors have long-term health problems, including limb loss, mental impairment and hearing loss.

### **Tests and Diagnosis**

Diagnosis is usually made by growing *N. meningitidis* bacteria from a normally sterile site in the body, such as from a sample of blood or spinal fluid.

### **Treatments**

It can be treated with a number of antibiotics; however, treatment must be started as early as possible.

### **Prevention**

Meningococcal disease can be prevented in close contacts of cases by taking preventive (prophylactic) antibiotics. When a case of meningococcal disease is reported to the Department of Health or a local health department, an investigation is conducted to identify the close contacts and to recommend antibiotic prophylaxis as appropriate. In order to be effective, antibiotic prophylaxis should be administered as soon as possible after exposure. Prophylaxis more than 10 days after exposure is not effective and is not recommended.

In addition, there are three kinds of meningococcal vaccines available in the United States:

- Quadrivalent meningococcal polysaccharide vaccine (Menomune®);
- Quadrivalent meningococcal conjugate vaccines (Menactra®, MenHibrix® and Menveo®); and
- Serogroup B meningococcal vaccines (Bexsero® and Trumenba®).

The meningococcal polysaccharide vaccine provides only short-term (several years) immunity. Its use has been largely phased out in favor of the newer, meningococcal conjugate vaccine (MCV), but it is an acceptable alternative in situations where MCV is not available.

The meningococcal conjugate vaccine, licensed in 2005, provides longer-term immunity. It is recommended for all college freshmen living in dormitories, for all adolescents 11 to 18 years of age, and for 2 to 10-year-olds at increased risk of meningococcal disease.

- Children at increased risk include travelers to or residents of countries with high rates of meningococcal disease and countries that experience meningococcal epidemics, children without a spleen and children with terminal complement immune deficiencies. Health care providers may also vaccinate children aged 2 to 10 years of age who are infected with human immunodeficiency virus (HIV).
- The above vaccines are sometimes used to control disease outbreaks of some types of meningococcal meningitis in the United States.
- Overseas travelers should check to see if MCV is required for their destination. Travelers should receive the vaccine at least one week before departure, if possible.

The meningococcal serogroup B vaccine (MenB), licensed in 2015, is recommended for certain persons 10 years of age and older who are at increased risk for meningococcal disease. These include:

- Persons with persistent complement immune deficiencies;
- Persons without a functioning spleen; and
- Persons identified as at increased risk because of a serogroup B meningococcal disease outbreak.

In addition, the CDC's Advisory Committee on Immunization Practices states that: "A MenB vaccine series may be administered to adolescents and young adults aged 16–23 years to provide short-term protection against ... serogroup B meningococcal disease. The preferred age for MenB vaccination is 16–18 years."

### **Additional Information**

Centers for Disease Control and Prevention:

<http://www.cdc.gov/meningitis/bacterial.html>

*This fact sheet provides general information. Please contact your physician for specific clinical information.*

Last reviewed/updated: September 22, 2016