Q&A MENINGOCOCCUS: WHAT YOU SHOULD KNOW

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Meningococcus can be devastating — claiming a life in hours. Although infants less than 1 year of age are at the highest risk of getting this disease, adolescents and teens are most likely to die from it. One meningococcal vaccine that protects against four of the five types of meningococcus is recommended for all adolescents and teens and for some infants. A second vaccine that protects against the fifth type (type B) is recommended for some high-risk groups as well as for teens between 16 and 18 years of age.

Q. What is meningococcus?

A. Meningococcus is a bacterium. Meningococcal bacteria live on the lining of the nose and throat and are spread from one person to another by close personal contact. Occasionally, the bacteria enter the bloodstream and cause severe disease.

Meningococcal bacteria are classified by the complex sugar that coats their surface (called a polysaccharide). The five types are called types A, B, C, Y, and W-135. These five types of meningococcal bacteria cause virtually all meningococcal disease in the world.

Q. Is meningococcus dangerous?

A. Yes. Every year in the United States, a few hundred people are infected with meningococcus and some die from the disease. Also, about 1 of every 5 survivors live the rest of their lives with permanent disabilities, such as seizures, loss of limbs, kidney disease, deafness and altered intellectual ability. Most cases of meningococcal disease occur in infants less than 1 year of age. In children between 2 and 10 years of age, the likelihood of having a meningococcal infection is low, but the risk increases again starting in adolescence. Although adolescents and teens are less likely to be infected than infants, they are more likely to die when infected. Meningococcal bacteria are particularly dangerous because they rapidly make large quantities of a poison called *endotoxin*. Endotoxin damages blood vessels and causes low blood pressure and shock. For this reason, meningococcal bacteria can kill people soon after entering the bloodstream. Someone can be perfectly healthy one minute and dead four to six hours later. The disease can be so rapid and overwhelming that even appropriate, early medical care may not be sufficient. Because outbreaks occur in colleges, schools, child care centers, army barracks and other areas where people are in close contact, meningococcal infections often cause panic in the community.

Q. What are the symptoms of meningococcus?

A. Meningococcus infects the bloodstream (causing sepsis) as well as the lining of the brain and spinal cord (causing meningitis). Symptoms of sepsis include fever, chills, rash, low blood pressure, and dark purple spots on the arms and legs. Symptoms of meningitis include fever, headache, confusion and stiff neck.

Q. Is there a vaccine to prevent meningococcus?

A. Yes. Two different vaccines are available. The vaccine recommended for all adolescents between 11 and 12 years of age protects against four of the five different types of meningococcus (A, C, Y, and W-135), but it does not protect against meningococcus type B. The second vaccine protects against meningococcus type B, which accounts for two-thirds of all meningococcal disease in infants and one-third of cases in adolescents and teens. Unfortunately, infants do not make a good immune response to this vaccine, so it is not generally recommended during infancy. Hopefully, in the future we can effectively prevent meningococcal type B in infants. For now, meningococcal B vaccine is recommended for high-risk groups, including those with complement deficiencies, no spleen or a spleen that does not function, lab personnel regularly exposed to the bacteria, and individuals or groups at risk during an outbreak, such as on a college campus. The meningococcal B vaccine has also been recommended for all teens between 16 and 18 years of age.

Q. How are the meningococcal vaccines made?

A. The meningococcal vaccine currently recommended for all 11- to 12-year-olds is made using the complex sugar (polysaccharide) that resides on the surface of the bacteria. Polysaccharides are stripped from the surface of four of the five different types of meningococcal bacteria that cause disease (types A, C, Y, and W-135), and each is linked (conjugated) to a harmless protein. The four conjugated polysaccharides are combined into a single shot that protects against the four different types of meningococcal bacteria (Menactra®, Menveo®, or MenQuadfi®). In some cases, high-risk infants also get the meningococcal ACWY vaccine.

The meningococcal serogroup B vaccines, Trumenba® and Bexsero®, contain two or four proteins, respectively, that reside on the surface of the bacteria.

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Q. Are the meningococcal vaccines safe?

A. Yes. The meningococcal vaccines can cause pain or redness at the site of injection as well as low-grade fever, but because they are not made from whole bacteria, they cannot possibly cause bloodstream infections or meningitis.

Q. Do the meningococcal vaccines work?

A. Yes. The meningococcal vaccine routinely recommended at 11 to 12 years of age protects recipients against most of the disease caused by four of five types of meningococcal bacteria (A, C, W, and Y). The type B vaccine protects against meningococcal type B, but not the other types of meningococcus.

Q. Who should get the meningococcal ACWY vaccine?

A. The meningococcal vaccine currently recommended for all 11- to 12-year-olds — the one containing types A, C, W, and Y — is given in two doses. The first dose is recommended to be given between 11 and 12 years of age, and a booster dose is recommended at 16 years of age. If the first dose is given between 13 and 15 years of age, a booster dose should be given between 16 and 18 years of age. Also, any 16- to 18-year-olds who have not previously received this vaccine should get a single dose, as should first-year college students through 21 years of age who are living in residence halls and did not get the vaccine between 16 and 18 years of age.

High-risk infants between 2 and 23 months of age are recommended to receive two to four doses of meningococcal ACWY vaccine depending upon which product is used. Infants considered to be at high risk include those with complement deficiencies, those with no spleen or with a spleen that is not functional, those who live in an institution or in a community currently experiencing an outbreak, and those who will be traveling to the Hajj or to a destination in Africa that is located in the meningitis belt.

Q. Who should get the meningococcal B vaccine?

A. People aged 10 years or older who are considered to be at higher risk of infection should get two or three doses of the meningococcal B vaccine depending on which one is used. High-risk groups include those with complement deficiencies, no spleen or a spleen that does not function, lab personnel regularly exposed to the bacteria, and individuals or groups at risk during an outbreak, such as on a college campus. In addition, the meningococcal B vaccine is recommended as two doses for all 16- to 18-year-olds. People up to 23 years of age who have not previously received this vaccine may also get two doses of the meningococcal B vaccine after talking with their doctor.

Q. Should college freshmen be vaccinated against meningococcus?

A. Yes. All college freshmen, especially students living in dormitories, should receive the meningococcal vaccine containing types A, C, W, and Y if they did not get it between 16 and 18 years of age. College freshmen living in dormitories are five times more likely to get meningococcal disease than people of the same age who do not attend college. Type B outbreaks of meningococcus have occurred in recent years on college campuses. Therefore, it would be of value for all incoming freshmen to receive the type B vaccine before college entry as well.

Q. If someone in my child's school gets meningococcal infection, what should I do?

A. Children in close contact with someone with meningococcal infection should receive an antibiotic to prevent the disease. Close contact with someone with meningococcal disease is defined as 1) living in the same house, 2) sharing the same preschool or day care classroom during the week before illness, 3) kissing or sharing utensils or toothbrushes or 4) sitting next to the person on an eight-hour or longer flight. Antibiotics used to prevent meningococcal infection include rifampin, ceftriaxone, azithromycin and ciprofloxacin.

Q. Does the meningococcal vaccine prevent all cases of meningitis?

A. Neither of the meningococcal vaccines will prevent all cases of meningococcal meningitis since no vaccine is 100% effective. In addition, other bacteria, such as pneumococcus and *Haemophilus influenzae* type b (Hib), cause meningitis. Fortunately, vaccines to prevent pneumococcus and Hib are routinely given to all children before 2 years of age. Some viruses also cause meningitis, but meningitis caused by most viruses is usually not as severe as meningitis caused by bacteria.

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