

## Meningitis Q&A

### **What is meningitis?**

Meningitis is an inflammation of the meninges — the membranes that surround the brain and spinal cord. Meningitis can be caused by an infection with several different viruses or bacteria. Sometimes even fungi or parasites can cause meningitis.

- **Viral meningitis** usually occurs during the summer months and can be caused by many kinds of viruses, such as enteroviruses. It is less severe than other forms of meningitis, running its course in three to five days without any specific treatment.
- **Bacterial meningitis** is more dangerous than viral meningitis, and in some cases it may result in brain damage, hearing loss, learning disability or death. There are three main types of bacterial meningitis:
  1. **Pneumococcal meningitis** is caused by the bacterium *Streptococcus pneumoniae*. It is the leading cause of bacterial meningitis in the United States. Pneumococcal meningitis has a high fatality rate and occurs sporadically in infants, the elderly, and people with immunological disorders.
  2. **Haemophilus influenzae meningitis**, caused by *Haemophilus influenzae* type b (Hib), was once the leading cause of meningitis in children, but has been greatly reduced by use of the Hib vaccine since the late 1980's. Vaccinations required for infants to prevent Hib are highly effective. Although similar in name, Hib is not related to influenza, sometimes called the "flu." Influenza is a viral illness.
  3. **Meningococcal meningitis** is caused by the bacterium *Neisseria meningitidis*. Most cases of meningococcal meningitis in the United States are caused by three groups of the bacteria – B, C, and Y.

### **How does meningococcal meningitis spread?**

The disease is spread by droplets from an infected person's mouth or nose, usually through coughing,

sneezing or kissing. Most people who become infected were in close or intimate contact with an infected person for at least 24 hours. The contact usually involves living in the same household with the infected person, or caring for or playing with a small child. Symptoms may appear within two to ten days after exposure. Although close contact with an ill person is associated with increased risk of illness, meningococcal bacteria are commonplace and are not necessarily dangerous. At any given time, up to 15 percent of all adults carry the bacteria in their noses and throats but do not become ill. The bacteria cannot live outside the human body. Public water systems, pets, and other animals do not spread the bacteria.

### **What are the symptoms of bacterial meningitis?**

All types of meningitis share many symptoms so a clinical diagnosis cannot always distinguish what type of meningitis a patient has. Laboratory analysis of spinal fluid is the only sure way that doctors can diagnose bacterial meningitis. Symptoms include fever, intense headache and a stiff neck. People with meningococcal meningitis sometimes show other symptoms such as nausea, vomiting and occasionally a rash that looks like purple spots. If not treated immediately, the disease can cause delirium and coma, sometimes within hours of the onset of symptoms.

### **How soon do symptoms appear?**

Although symptoms can appear between 2-10 days after exposure, they usually develop suddenly within three to five days.

### **When and for how long is a person able to spread meningococcal meningitis?**

Meningococcal meningitis is not highly contagious. A child in Georgia is more likely to die in a car accident than die from this disease. Even close family members of a meningitis

patient have only a 1 in 300 chance of developing the disease from the infected person. If there is a second case in a family, one-third of these “secondary” cases occur within 48 hours, and three-quarters will occur within 2 weeks. This shows that the risk for illness after an exposure not only is rare, but decreases dramatically over a short period of time.

### ***How is bacterial meningitis treated?***

Once symptoms appear, antibiotics will be necessary to stop the progression of the disease. Antibiotic therapy is effective, but immediate medical attention is crucial since the disease can progress quickly. As a preventive measure, close contacts of cases should receive rifampin or another antibiotic to prevent the development of symptoms.

### ***Are there vaccines that prevent against bacterial meningitis?***

There is a safe and highly effective vaccine available for *Haemophilus influenzae* type b (Hib), which can be given to anyone over the age of two months. Because Hib is primarily a disease of childhood, the Hib vaccine is usually given at 2 months, 4 months, and 6 months, and a booster is given between 12 and 15 months.

A vaccine exists to prevent disease (including meningitis) due to 23 types of *Streptococcus pneumoniae* (pneumococcal disease). The 23-valent pneumococcal polysaccharide vaccine is recommended for all persons age 65 or older, and for younger persons with certain chronic medical problems. The pneumococcal polysaccharide vaccine is not effective for children under 2 years of age.

A new conjugate pneumococcal vaccine that has recently been approved is effective for young children and protects against 7 types of pneumococcus.

The vaccine for meningococcal disease (including meningococcal meningitis) is recommended for at-risk populations during selected outbreaks of meningococ-

cal meningitis, but is not routinely recommended in the U.S. because it is not effective in controlling the spread of sporadic disease. The vaccine is a polysaccharide vaccine, and is not effective in children less than 2 years old, who are the group at highest risk for disease. The vaccine is not effective against serogroup B meningococcal disease, which causes about 25 to 33% of meningococcal disease. The immunity that results from the vaccine is short lived, lasting about 4 years. Please contact the Georgia Immunization Program (404) 657-3158 for current recommendations. Newer vaccine formulations are under development that may offer better protection.

### ***Why don't public health officials recommend meningococcal vaccines for everyone?***

Unlike the Hib vaccine, the vaccine for meningococcal meningitis is not effective in controlling the spread of the disease.

- Meningococcal vaccines do not protect children under 2 years of age. Most meningococcal infections occur in this age group, and so vaccines do not help the children most at risk.
- Meningococcal vaccines do not protect against Group B disease, which accounts for up to one third of all meningococcal cases.
- Meningococcal vaccines do not provide permanent protection. Children are protected for only one or two years, and adults are protected for about four years.
- Meningococcal vaccines cannot eliminate carriage of meningococcus from the nose and throat — a condition that exists in up to 15% of the population.

Meningococcal disease prevention is best achieved by preventive treatment of close contacts of cases. Soon after a case is reported, the local health department identifies

people who were in close contact with the infected person and gives them an antibiotic that will prevent them from developing the disease or transmitting the bacteria to others. Widespread use of the vaccine is rarely recommended.

### ***Who is at risk for meningococcal disease?***

The risk to the general population is small, about 1/100,000 per year, with most cases occurring in children less than age 2 years. Factors that increase the risk of meningococcal disease include crowded living conditions, certain immune deficiencies (absence of the spleen or complement deficiency), and cigarette smoke exposure. College students, particularly freshmen living in dormitories, are at modestly increased risk for meningococcal disease. Lifestyle factors common among college students may play a role as well; studies have shown that college students who smoke or who frequent campus bars are also at increased risk.

### ***What can I do to reduce my child's chances of getting meningitis?***

To reduce exposure to viruses and bacteria that cause meningitis, teach your child to wash his or her hands frequently, to cover coughs and sneezes, and to avoid sharing drinking or eating utensils with others. To protect against Hib, have your child vaccinated starting at two months of age. Don't wait until the child is ready to enter school. Children less than 3 years old are now offered the conjugate pneumococcal vaccine, and older children with high-risk medical conditions may also benefit from this new vaccine. College students and their parents should be educated about the risks, benefits, and cost of meningococcal vaccine, and students who wish to be vaccinated should be offered meningococcal vaccine.

### ***Where can I get additional information on meningococcal meningitis?***

Contact the Georgia Division of Public Health, Epidemiology Branch, by email at [gaepinfo@dhr.state.ga.us](mailto:gaepinfo@dhr.state.ga.us). If you have internet access, the following sites may be useful:

- CDC Meningococcal Disease Fact Sheet – [http://www.cdc.gov/ncidod/dbmd/diseaseinfo/meningococcal\\_g.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/meningococcal_g.htm)
- Guidelines for Travelers – <http://www.cdc.gov/travel>
- National Immunization Program Vaccine Information Statements – <http://www.cdc.gov/nip/publications/VIS/default.htm>
- Recommendations of the Advisory Committee on Immunization Practices (ACIP) – <http://www.cdc.gov/nip/publications/acip-list.htm>

### Suggested Recommendations for Meningococcal Disease Contacts

If one is exposed to a case of meningococcal meningitis, a few simple precautions are necessary:

1. Observe household members and other close contacts for early signs of illness. Check any children in the household for fever twice a day for the next five days. If you do not have a thermometer, feel their forehead and ask them if they have chills or fever.
2. During the next ten days, immediately report to a physician any symptoms of disease, such as sudden onset of fever, intense headache, stiff neck, backache, nausea and vomiting affecting contacts of the index case. Inform the physician about the history of meningitis exposure.
3. Preventive medication is ordered only when your physician or the health department feels it would be helpful. Report symptoms whether or not preventive medicine was ordered.

## **GLOSSARY OF TERMS USED IN DISCUSSING MENINGITIS**

**Bacterial meningitis** — Meningitis caused by any of several bacteria. Some common bacteria that cause meningitis are *Neisseria meningitidis* (meningococcus), *Streptococcus pneumoniae* (pneumococcus), and *Haemophilus influenzae* type b (Hib).

**Hib** — *Haemophilus influenzae* type b, a bacterium that causes a serious type of bacterial meningitis. The Hib vaccine, which is one of the vaccines required by law for children entering school or daycare, prevents this disease. The vaccine is very effective, and the disease is now rare in children under five. Despite its name, Hib is not related to influenza or “flu,” a viral illness.

**Meningitis** — A serious infection resulting from inflammation of the membranes that surround the brain. Meningitis can be caused by any of several bacteria or viruses, and in rare cases other organisms such as fungi or parasites.

**Meningococcal meningitis** — Meningitis caused by the *Neisseria meningitidis* bacteria.

**Menomune** — A vaccine that protects against several types of *Neisseria meningitidis* (Groups A, C, W-135, and Y). Because the vaccine is not very effective at protecting children most at risk for disease, routine or widespread vaccinations are not usually recommended.

***Neisseria meningitidis*** — A bacterium that can cause a serious type of meningitis. There are several groups — A, B, C, Y and W-135.

**Outbreak** — A cluster of cases of infectious disease occurring within a limited geographical area and within a short period of time, that exceeds the expected number of cases. The exact definition can vary according to how the disease is transmitted, its incubation period and other factors.

**Rifampin** — One of several antibiotics that may be given to people who have been in close contact with individuals with bacterial meningitis. The antibiotic will prevent the contacts from developing the disease.

**Viral meningitis** — A type of meningitis caused by a virus. The initial symptoms are very similar to those of bacterial meningitis; however, it is rarely fatal or disabling and does not require an antibiotic.

- 1 Recommended for contacts under age 18.
- 2 Recommended for all pregnant women.
- 3 Use only if organism is known to be sensitive. Sulfadiazine is no longer manufactured in the USA, and assistance from CDC may be needed to obtain this drug.
- 4 Use only if organism is known to be sensitive.