

# Meningitis: Highlights

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Meningitis is an inflammation of the membranes (meninges) surrounding the brain and spinal cord. It causes a swelling which typically triggers symptoms such as headache, fever and a stiff neck.

Most cases of meningitis are caused by a viral infection, but bacterial, parasitic and fungal infections are other causes. Some cases of meningitis improve without treatment in a few weeks. Others can be life-threatening and require emergency antibiotic treatment. Early treatment of bacterial meningitis can prevent serious complications.

## Symptoms

Early meningitis symptoms may mimic the flu (influenza). Symptoms may develop over several hours or over a few days. Possible signs and symptoms in anyone older than the age of 2 include: sudden high fever, stiff neck, severe headache that seems different than normal, headache with nausea or vomiting, confusion or difficulty concentrating, seizures, sleepiness or difficulty waking, sensitivity to light, no appetite or thirst, skin rash (sometimes, such as in meningococcal meningitis).

## Signs in newborns

Newborns and infants may show these signs: high fever, constant crying, excessive sleepiness or irritability, inactivity or sluggishness, poor feeding, a bulge in the soft spot on top of a baby's head (fontanel), stiffness in a baby's body and neck.

Infants with meningitis may be difficult to comfort, and may even cry harder when held.

## When to see a doctor

Seek immediate medical care if you or someone in your family has meningitis symptoms, such as: fever, severe/unrelenting headache, confusion, vomiting, stiff neck.

Bacterial meningitis is serious, and can be fatal within days without prompt antibiotic treatment. Delayed treatment

increases the risk of permanent brain damage or death.

It's also important to talk to your doctor if a family member or someone you work with has meningitis. You may need to take medications to prevent getting the infection.

## Causes

Viral infections are the most common cause of meningitis, followed by bacterial infections and, rarely, fungal infections. Because bacterial infections can be life-threatening, identifying the cause is essential.

## Bacterial meningitis

Bacteria that enter the bloodstream and travel to the brain and spinal cord cause acute bacterial meningitis. But it can also occur when bacteria directly invade the meninges. This may be caused by an ear or sinus infection, a skull fracture, or, rarely, after some surgeries.

Several strains of bacteria can cause acute bacterial meningitis, most commonly:

- **Streptococcus pneumoniae (pneumococcus).** This bacterium is the most common cause of bacterial meningitis in infants, young children and adults in the United States. It more commonly causes pneumonia or ear or sinus infections. A vaccine can help prevent this infection.

- **Neisseria meningitidis (meningococcus).** This bacterium is another leading cause of bacterial meningitis. These bacteria commonly cause an upper respiratory infection but can cause meningococcal meningitis when they enter the bloodstream. This is a highly contagious infection that affects mainly teenagers and young adults. It may cause local epidemics in college dormitories, boarding schools and military bases. A vaccine can help prevent infection.

- **Haemophilus influenzae (haemophilus).** Haemophilus influenzae type b (Hib) bacterium was once the leading cause of bacterial meningitis in children. But new Hib vaccines have greatly reduced the number of cases of this type of meningitis.

- **Listeria monocytogenes (listeria).** These bacteria can be found in unpasteurized cheeses, hot dogs and lunchmeats. Pregnant women, newborns, older adults and people with



weakened immune systems are most susceptible. Listeria can cross the placental barrier, and infections in late pregnancy may be fatal to the baby.

## Viral meningitis

Viral meningitis is usually mild and often clears on its own. Most cases in the United States are caused by a group of viruses known as enteroviruses, which are most common in late summer and early fall. Viruses such as herpes simplex virus, HIV, mumps, West Nile virus and others also can cause viral meningitis.

## Chronic meningitis

Slow-growing organisms (such as fungi and Mycobacterium tuberculosis) that invade the membranes and fluid surrounding your brain cause chronic meningitis. Chronic meningitis develops over two weeks or more. The signs and symptoms of chronic meningitis — headaches, fever, vomiting and mental cloudiness — are similar to those of acute meningitis.

## Fungal meningitis

Fungal meningitis is relatively uncommon and causes chronic meningitis. It may mimic acute bacterial meningitis. Fungal meningitis isn't contagious from person to person. Cryptococcal meningitis is a common fungal form of the disease that affects people with immune deficiencies, such as AIDS. It's life-threatening if not treated with an antifungal medication.

## Other meningitis causes

Meningitis can also result from noninfectious causes, such as chemical reactions, drug allergies, some types of cancer and inflammatory diseases such as sarcoidosis.

## Prevention

Common bacteria or viruses that can cause meningitis can spread through coughing, sneezing, kissing, or sharing eating utensils, a toothbrush or a cigarette. Vaccination is very important.

These steps can help prevent meningitis:

- Wash your hands. Careful hand-washing helps prevent the spread of germs. Teach children to wash their hands often, especially before eating and after using the toilet, spending time in a crowded public place or petting animals. Show them how to vigorously and thoroughly wash and rinse their hands.
- Practice good hygiene. Don't share drinks, foods, straws, eating utensils, lip balms or toothbrushes with anyone else. Teach children and teens to avoid sharing these items too.
- Stay healthy. Maintain your immune system by getting enough rest, exercising regularly, and eating a healthy diet with plenty of fresh fruits, vegetables and whole grains.
- Cover your mouth. When you need to cough or sneeze, be sure to cover your mouth and nose.
- If you're pregnant, take care with food. Reduce your risk of listeriosis by cooking meat, including hot dogs and deli meat, to 74°C. Avoid cheeses made from unpasteurized milk. Choose cheeses that are clearly labeled as being made with pasteurized milk.