

UNIVERSITY STUDENT HEALTH SERVICES • Fact Sheet

LYME DISEASE

WHAT IS IT?

Lyme disease is a bacterial illness transmitted by deer ticks. It was first discovered in Lyme, Connecticut, in the 1970s. It is caused by a type of bacterium called a spirochete. In the United States, the most common cause of Lyme disease is the spirochete *Borrelia burgdorferi*.

HOW COMMON IS IT?

Lyme disease is the most common tick-borne disease in the United States. In 2018, the CDC reported 1,139 confirmed cases of Lyme disease in Virginia.

HOW IS IT TRANSMITTED?

Lyme disease is transmitted by deer ticks that harbor the Lyme disease bacteria in their stomachs. The deer tick is the size of a pinhead, much smaller than the common dog tick. Deer ticks can pass the bacteria to humans when they bite our skin. However, the tick needs to remain attached to the skin for at least 36 hours in order to transmit the bacteria.

While animals can become infected in the same manner, the disease cannot be transmitted from human to human or from animal to human.

WHAT ARE THE SYMPTOMS?

Lyme disease affects different areas of the body in varying degrees depending on the stage of infection. Early in infection, an expanding red rash can develop as Lyme bacteria spread away from the site of the tick bite. This rash is often accompanied by "flu-like" symptoms. Left untreated, the infection can spread to the heart, the nervous system, and the joints. There are 3 phases of Lyme disease which can overlap:

- ❖ **Early localized disease** is characterized by a classic rash called erythema migrans (EM) in up to 80% of cases. Only about 25% of people with early Lyme disease recall a tick bite.
 - The rash develops at the site of the tick bite and is often described as a "bull's eye" lesion because it begins as a flat, red circle that enlarges, with an outer ring of redness and a central area of clearing. It can feel warm but usually does not hurt or itch.
 - EM usually occurs 7-14 days after a tick bite but can appear anywhere from 3-30 days later.
 - Associated "flu-like" symptoms can include fatigue, fever, chills, muscle aches, and lymph node swelling in the area of the bite.
- ❖ **Early disseminated disease** develops if no treatment is given during the first phase of illness. It occurs weeks to months following a tick bite.
 - Patients may develop multiple areas of EM.
 - They may continue to have "flu-like" symptoms and develop conjunctivitis (pink eye).
 - The infection may affect the nervous system, causing facial muscle paralysis (Bell's palsy) and severe headaches and neck stiffness due to meningitis (inflammation of the lining of the brain and spinal cord).
 - It may also affect the heart, leading to irregular heartbeats and dizziness.
 - Patients may also experience joint pain that moves from joint to joint.
- ❖ **Late disease** is characterized by arthritis and rare neurologic problems that occur months to years after a tick bite.
 - 60% of those left untreated can experience episodes of severe joint pain and swelling, most commonly in the knee.
 - Up to 5% of those left untreated can develop chronic neurologic complications, including numbness or tingling in the hands or feet and problems with short-term memory and concentration.

HOW IS IT DIAGNOSED?

Diagnosis is usually based on the patient's symptoms, physical exam findings, and the likelihood of a tick bite. Specific laboratory tests for Lyme disease are only recommended in certain cases:

- Blood tests for antibodies made in response to the infection are negative early in the disease course, such as when EM (single or multiple) is present. Therefore, testing is reserved for patients who present with other symptoms found in the early disseminated or late disease stage. In these cases, the CDC recommends a 2-step testing process.
- Lyme testing is not recommended if symptoms are not typical or if symptoms are nonspecific (eg. prolonged muscle/joint pain, fatigue).

WHAT IS THE TREATMENT?

In the early stages of illness, antibiotics taken by mouth for a few weeks are highly effective in curing the infection. If the disease has progressed to a later stage (with involvement of the heart or nervous system), antibiotics administered intravenously are often necessary.

Doxycycline is the antibiotic most commonly used for treatment.

- The recommended dose is 100mg taken by mouth twice a day for 10 days.
- To avoid injury to the esophagus, doxycycline should be taken with a full glass of water. Avoid lying down for 30 minutes after taking the medication.
- You can get sunburned more easily while taking doxycycline. Limit your time outdoors and wear sunscreen with an SPF of 30 or more to protect your skin.

Most patients respond quickly and completely to treatment if given early during the illness. However, a small percentage of patients may have symptoms (such as muscle pain, arthritis, fatigue, and cognitive deficits) that last months to years after treatment. This may be due to an autoimmune response, in which the patient's immune system continues to react even after the infection has cleared.

HOW IS IT PREVENTED?

The following precautions can greatly reduce your chances of getting Lyme disease:

- Stay on trails when hiking. Avoid walking through low bushes and tall grass.
- Wear long sleeves and tuck pants into your socks when in wooded areas.
- Use products containing at least 20% DEET (such as Off! Deep Woods or Backwoods Cutter) or permethrin to prevent tick bites. **Follow directions on the product label for safe use.**
- Thoroughly check yourself and your pets for ticks after leaving wooded areas. Look carefully as deer ticks are very small and may be easily overlooked.
- If you find a tick, remove it gently with tweezers, grasping it as close to the skin as possible. Pull upward firmly without twisting or jerking. The body of the tick contains the infectious material, not the head. Therefore, do not crush or squeeze the body of the tick. If the head or mouth is still attached to the skin, leave it alone as it will typically fall off on its own. Wash the area well, and apply an antiseptic. Also remember to wash your hands afterwards.

WHAT IF I HAVE A TICK BITE BUT NO OTHER SYMPTOMS?

Antibiotic prophylaxis with a single dose of doxycycline 200mg can be given to prevent Lyme disease if ALL of the following criteria are met:

- The tick is identified as an adult or nymphal deer tick.
- The tick has been attached for ≥ 36 hours.
- Prophylaxis is started within 72 hours of tick removal.
- The tick bite occurs in a highly endemic area (as identified by the CDC).
- Doxycycline is not contraindicated.

RECOMMENDED WEBSITES: www.cdc.gov, www.mayoclinic.org