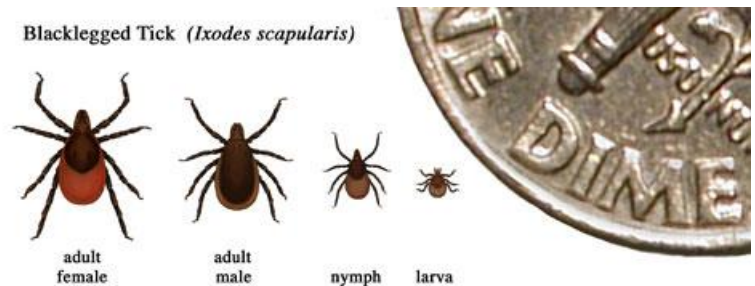


What is Lyme Disease

Lyme disease is caused by the bacterium, *Borrelia burgdorferi*. The bacteria are transmitted to humans by the bite of infected blacklegged ticks and cause more than 30,000 infections in the United States each year.

Spread of Disease

The Lyme disease bacterium, *Borrelia burgdorferi*, is spread through the bite of infected ticks. The blacklegged tick (*Ixodes scapularis*) spreads the disease in the northeastern, mid-Atlantic, and north-central United States, and the western blacklegged tick (*Ixodes pacificus*) spreads the disease on the Pacific Coast.



Ticks can attach to any part of the human body but are often found in hard-to-see areas such as the groin, armpits, and scalp. In most cases, the tick must be attached for 36-48 hours or more before the Lyme disease bacterium can be transmitted.

Remove a tick as soon as possible with tweezers. Gently grasp the tick near its head or mouth. Don't squeeze or crush the tick, but pull carefully and steadily.

Once the entire tick is removed, dispose of it and apply antiseptic to the bite area.

Most humans are infected through the bites of immature ticks called nymphs. Nymphs are tiny (less than 2 mm) and difficult to see; they feed during the spring and summer months. Adult ticks can also transmit Lyme disease bacteria, but they are much larger and may be more likely to be discovered and removed before they have time to transmit the bacteria. Adult *Ixodes* ticks are most active during the spring and autumn months of the year.

Signs and Symptoms

The signs and symptoms of Lyme disease vary and usually affect more than one system. The skin, joints and nervous system are affected most often.

These signs and symptoms may occur within a month after you've been infected:

- **Rash** – A small, red bump may appear at the site of the tick bite. This small bump is normal after a tick bite and doesn't indicate Lyme disease. However, over the next few days, the redness may expand forming a rash in a bull's-eye pattern, with a red outer ring surrounding a clear area. The rash, called erythema migraine, is one of the hallmarks of Lyme disease. Sometimes, Lyme disease skin lesions are red or reddish blue in color.
- **Flu-like symptoms** – Fever, chills, fatigue, body aches and a headache may accompany the rash.

In some people, the rash may spread to other parts of the body and, several weeks to months after being infected, a person may experience:

- **Joint pain** – Bouts of severe joint pain and swelling may develop. Knees are especially likely to be affected, but the pain can shift from one joint to another.
- **Neurological problems** – Weeks, months or even years after infection, a person may experience inflammation of the membranes surrounding the brain (meningitis), temporary paralysis of one side of the face (Bell's palsy), numbness or weakness in limbs, and impaired muscle movement.

Several weeks after infection, some people may develop heart problems (such as an irregular heartbeat), eye inflammation, liver inflammation (hepatitis), and severe fatigue.

Diagnosis

The variable signs and symptoms of Lyme disease are nonspecific and often are found in other conditions, so diagnosis can be difficult. In addition, the ticks that transmit Lyme disease also can, in some cases, spread other diseases at the same time.

If a person does not have the characteristic Lyme disease rash, a doctor may ask detailed questions about medical history, including whether time has been spent outdoors in the summer when Lyme disease is common, and do a physical exam. Lab tests to identify antibodies to the bacteria may be used to help confirm the diagnosis. These tests are most reliable a few weeks after an infection, after the body has time to develop antibodies.

Treatment and Complications

People treated with appropriate antibiotics in the early stages of Lyme disease usually recover rapidly and completely. Antibiotics commonly used for oral treatment include, doxycycline, amoxicillin or penicillin. People with certain neurological or cardiac forms of illness may require intravenous antibiotics.

Left untreated the disease can cause chronic joint inflammation (Lyme Arthritis), neurological symptoms such as facial palsy and neuropathy, and heart rhythm irregularities.

People at Risk

Where a person lives or vacations can affect the chances of getting Lyme disease, as well as the profession and the type of outdoor activities a person enjoys.

In the United States, blacklegged ticks are most prevalent in the Northeast and Midwest regions, which have heavily wooded areas where blacklegged ticks thrive. Children who spend a lot of time outdoors in these regions are especially at risk. Adults with outdoor occupations are also at increased risk. In the first two stages of life, black legged ticks in the United States feed on mice and other rodents, which are a prime reservoir for Lyme disease bacteria. Adult blacklegged ticks feed primarily on white-tailed deer.

Prevention

The best way to prevent Lyme disease is to avoid areas where blacklegged ticks live, especially wooded, bushy areas with long grass. A person can decrease the risk of getting Lyme disease with some simple precautions:

- **Wear long pants and long sleeves** – When walking in wooded or grassy areas, wear shoes, long pants tucked into socks, a long-sleeved shirt, a hat and gloves. Clothes should be light-colored so ticks can be spotted more easily and removed. Sandals are not recommended. Try to stick to trails and avoid walking through low bushes and long grass.
- **Use insect repellents** – Apply insect repellents such as DEET to clothes and exposed skin, and applying permethrin to clothes can reduce the risk of tick attachment. Parents should apply to children, avoiding hands, eyes and mouth. Keep in mind that chemical repellents can be toxic, so follow directions carefully. Apply products with permethrin to clothing or buy pretreated clothing.

- **Tick-proof yard as much as possible** – Clear brush and leaves where ticks live. Keep woodpiles in sunny areas.
- **Check for ticks after spending time outdoors** – Be especially vigilant after spending time in wooded or grassy areas. Blacklegged ticks are often no bigger than the head of a pin, so a person may not discover them unless they search carefully. It's helpful to shower as soon as coming indoors. Ticks often remain on the skin for hours before attaching themselves. Showering and using a washcloth may be enough to remove any unattached ticks. Do not forget to check children and pets for ticks.
- **Don't assume a person is immune** – Even after having had Lyme disease before, a person can get it again.

Tick Screening

The Michigan Department of Health and Human Services (MDHHS) provides tick identification to Michigan citizens. Ticks identified as a blacklegged tick, found on a person, and alive will be forwarded to the MDHHS Bureau of Laboratories for Lyme disease screening. There is no charge for identification and testing. Ticks that are dead or found on an animal (dog, cat, horse, etc.) will not be screened for Lyme disease.

MDHHS has a kit available for submitting ticks for testing. The kit consists of a screw cap plastic vial, a self-addressed, padded return envelope, a submission form, instructions for submission, and the Ticks and Your Health brochure.

The kit is available at no charge to the public, local health departments, healthcare facilities, and veterinary clinics, and can be ordered at www.michigan.gov/documents/emergingdiseases. Kits are also available at the St. Clair County Health Department.



For more sources of information on this topic visit:

ST. CLAIR COUNTY HEALTH DEPARTMENT www.scchealth.co

MICHIGAN DEPARTMENT OF HEALTH AND HUMAN SERVICES www.michigan.gov/mdhhs

CENTERS FOR DISEASE CONTROL AND PREVENTION www.cdc.gov

THE MAYO CLINIC www.mayoclinic.org