



Education

Lyme Disease

What is Lyme disease?

Lyme disease is an infection caused by the bite of an infected tick. The tick is so small that you may not notice the tick or its bite. Many ticks do not carry Lyme disease. Even if a tick is infected, it may not transfer the disease to you. An infected tick that is attached for less than 36 hours is less likely to transmit infection. For these reasons, most tick bites do not cause Lyme disease.

The disease often begins as a rash. If you don't get treatment, the infection can cause serious nerve or heart problems as well as a disabling type of arthritis (pain and swelling in one or more joints caused by inflammation).

How does it occur?

Bacteria called *Borrelia burgdorferi* cause Lyme disease. The disease is spread to human beings by the bite of a tiny tick infected with the bacteria. These ticks are found in vegetation and on animals in woodlands, grasslands, and marshlands. Wild birds, mice, raccoons, and deer, as well as cats, dogs, horses, and cows, can carry the infected ticks. Ticks may climb on humans from leaf litter and low-lying vegetation in wooded, brushy, or grassy areas. Ticks cannot jump or fly.

People usually become infected during the summer, when they are more likely to be exposed to ticks. Hikers, campers, hunters, and people living in wooded or rural areas have a higher risk for Lyme disease.

This infection has been found on all continents except Antarctica. In the US the infection is more common in the northern states.

What are the symptoms?

Lyme disease is hard to diagnose because its symptoms can vary greatly from person to person. The first symptoms may not even be noticed.

Untreated Lyme disease may progress through these 3 stages:

Stage 1:

In the first month after a bite by an infected tick, a skin rash, called a bull's-eye or target rash, occurs at the site of your bite. The rash begins as a large red spot that may be flat or bumpy. The area of the rash feels warm, but it is not painful or itchy. The rash slowly expands after several days, often in a circular pattern. The center usually clears, creating what is called a bull's-eye rash. Sometimes the rash may blister or scab in the center. The thigh, groin, and armpit are common sites for the rash, but it can appear anywhere.

Although most infected people develop a rash, you may not have this symptom, or you may overlook it.

You may feel like you have the flu, with such symptoms as:

- fatigue and extreme drowsiness
 - pain or stiffness in muscles and joints
 - headache
 - chills and fever
 - stiff neck
 - jaw discomfort.
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Less common symptoms of early Lyme disease are:

- inflammation of the eye, making it red
- sore throat
- cough
- in men, a swelling of the testicles.

Even if you don't get treatment, the early symptoms usually improve or go away within several weeks. However, fatigue, drowsiness, and sometimes vague muscle or joint pain may last for months after the rash has gone.

Stage 2:

Several weeks to several months after the first symptoms appear, as many as 15% of infected people may develop problems with their nervous system. These problems may include:

- Meningitis, which is inflammation of the covering of the brain and spinal cord.
- Encephalitis, which is inflammation of the brain.
- Cranial neuritis, which is inflammation of the cranial nerves. These nerves pass from the brain to other parts of the body through openings in the skull. Inflammation of these nerves can cause weakness or paralysis of one or both sides of the face (Bell's palsy).

About 8% of infected people develop heart problems, such as carditis (inflammation of the heart) and problems with the rhythm of the heart.

During this second stage, you may have pain in your joints, tendons, muscles, or bones, usually without joint swelling. These symptoms usually disappear within a few weeks.

Stage 3:

Within a few weeks to 2 years after the start of the infection, about 60% of people develop arthritis, with joint pain and swelling. The knee is the joint most often affected.

In stage 3 you may have temporary bouts of arthritis or you may feel the arthritis all the time. You may have ongoing nervous system problems, but this is less likely. Symptoms of nervous system problems during stage 3 may include:

- numbness or tingling in your hands and feet
- trouble concentrating
- weakness in your arms or legs
- depression.

How is it diagnosed?

Lyme disease can be hard to diagnose. Your health care provider will ask about your symptoms and medical history. He or she will examine you.

You may have a blood test for Lyme disease. Or you and your provider may decide to start treatment without the test.

If you were recently bit by a tick, saving the tick may help your provider diagnose your symptoms.

How is it treated?

Lyme disease is treated with antibiotics. Early treatment can help prevent possible complications. The choice of antibiotic may depend on such factors as the stage of the disease and whether your joints are inflamed.

If you are in stages 2 or 3 of the disease, you may also need other treatments. This is especially true if you have infection or inflammation of the heart, central nervous system, or joints.

Pregnant and nursing women:

If you are pregnant and have Lyme disease, you may pass the disease to your baby. Although this happens rarely, you should call your health care provider right away if you are pregnant and have symptoms of Lyme disease. Also, if you are a nursing mother and are bitten by a tick and develop symptoms of infection, contact your provider for advice.

How long will the effects last?

While you have the disease the symptoms may occur in cycles lasting a week or so.

In most cases the symptoms go away a few weeks or months after antibiotic treatment, but sometimes the symptoms last several years. For example, after treatment for stage 1 of the disease, you may have minor recurrences of headaches, muscle or joint pain, or fatigue, but eventually you should recover completely.

If the disease is not diagnosed and treated, the symptoms can last for several years, but they will gradually lessen.

Permanent problems caused by the disease depend on your situation. Meningitis, which can strike in stage 2, can be life threatening, but this is rare.

How can I take care of myself?

To help take care of yourself, follow the full course of treatment prescribed by your health care provider. You need to take all of your antibiotic therapy. Do not stop taking antibiotics because you start to feel better or your symptoms go away. If you have side effects from the antibiotic, call your provider about possibly getting a different prescription.

What can be done to help prevent Lyme disease?

To avoid getting Lyme disease, follow these measures:

- Be aware of the areas where ticks live. Do not walk, camp, or hunt in the woods of tick-infested areas without precautions.
- In areas of thick underbrush, try to stay near the center of trails.
- When you are outdoors, wear long-sleeved shirts tucked into your pants. Wear your pants tucked into your socks or boot tops if possible. A hat may help, too. Wearing light-colored clothing may make it easier to spot the small tick before it reaches your skin and bites.
- Use approved tick repellents on exposed skin and clothing. Do not use more than recommended in the repellent directions. Do not put repellent on open wounds or rashes. Wash the spray off your hands. Be careful with children because the repellents can make them ill. DEET is a very effective repellent, but adults should use products with no more than 35% DEET. Children should use repellents with no more than 10% DEET. DEET should be washed off your body when you go back indoors. Picaridin is another repellent recently made available in the US. It can be less irritating to the skin than DEET. Some products containing permethrin are recommended for use on clothing, shoes, bed nets, and camping gear. Do not put permethrin on your skin.
- Treat household pets for ticks and fleas. Check pets after they've been outdoors.
- Brush off clothing and pets before entering the house.
- After you have been outdoors, undress and check your body for ticks. They usually crawl around for several hours before biting. Check your clothes, too. Wash them right away to remove any ticks.
- Shower and shampoo after your outing.
- Inspect any gear you have carried outdoors.
- Remove an attached tick with tweezers by grasping the tick as close to your skin as possible and gently pulling it straight away from you until it releases its hold. Don't twist the tick as you pull, and don't squeeze its body. Thoroughly wash your hands and the bite area and apply an antiseptic such as rubbing alcohol.
- If you spend much time hiking, you may want to include a pair of tick tweezers in your first-aid kit. The tweezers are available at many sporting goods stores.
- If you do get bitten, see your health care provider. Save the tick in case you later start having symptoms of disease and need to know what kind of tick bit you. Put the tick in a clean dry jar, small plastic bag, or other sealed container and keep it in the freezer. Identification of the tick may help your provider diagnose and treat your symptoms. If you do not have any symptoms of disease after 1 month, you can discard the tick.
- If you had a shot against Lyme disease (shots were available until 2002) you are probably no longer protected because the vaccine loses its effect over time.

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