

# Beware of Ticks ... & LYME DISEASE

**W**hile everyone is susceptible to tick bites, campers, hikers, and people who work on gardens and in other leafy outdoor venues are at the greatest risk of being bitten by them.

This is important because Lyme disease, an infection caused by the bacterium *Borrelia burgdorferi*, or *B. burgdorferi*, is transmitted via the bite of infected ticks.

Lyme disease is named after a town in Connecticut where, in 1975, it was first recognized. It is transmitted by a group of closely related species of ticks known as *Ixodes*.

Ticks in this group—deer ticks, western black-legged ticks, and black-legged ticks—are much smaller than the common dog or cattle ticks, and attach to any part of the body, often to moist or hairy areas such as the groin, armpits, and scalp.

The Centers for Disease Control and Prevention (CDC) reported 23,305 cases of Lyme disease in the United States in 2005. Most occurred in the coastal northeast, the Mid-Atlantic States, Wisconsin and Minnesota, and northern California.

The overwhelming majority of cases are reported in the summer months when ticks are most active and people spend more time outdoors.

The Food and Drug Administration regulates products that are used to help diagnose and treat this complex disease in humans. There are no licensed vaccines in the United States to aid in the prevention of Lyme disease in people.

Here's a look at what you need to know to protect yourself.



CDC

Ticks of the species *Ixodes* (shown here) are known vectors of the pathogen that causes Lyme disease.

## WHAT ARE THE SYMPTOMS?

Lyme disease can cause fever, headaches, fatigue, and a characteristic skin rash called erythema migrans. Left untreated, infection can spread to joints, the heart, and the nervous system. Permanent damage to the joints or the nervous system can develop in patients with late Lyme disease. It is rarely, if ever, fatal.

## Lyme disease has different stages.

Erythema migrans is a key early-stage symptom. This circular red patch usually appears at the bite site 3 to 30 days after the bite. It expands to 5 to 6 inches in diameter, and persists for 3 to 5 weeks. As the rash enlarges, it may take on a "bull's-eye" appearance. In some people this rash never forms, or it is not noticed.

## Other symptoms of early Lyme disease include:

- muscle and joint aches
- headache
- chills and fever
- fatigue
- swollen lymph nodes

## Other symptoms may not appear until weeks or months after a tick bite occurs. They include:

- arthritis (usually as pain and swelling in large joints, especially the knee)
- nervous system abnormalities
- heart-rhythm irregularities

## WHAT PRECAUTIONS CAN I TAKE?

Educate yourself about Lyme disease, and try not to get bitten by ticks. More specifically:

- Avoid wooded, brushy, and grassy areas, especially in May, June, and July. (Contact the local health department or park/extension service for information on the prevalence of ticks in specific areas).
- Wear light-colored clothing so that you can see ticks that get on you.
- Wear long pants and long-sleeved shirts.
- Wear shoes that cover the entire foot.
- Tuck pant legs into socks or shoes, and tuck shirts into pants.
- Wear a hat for extra protection.
- Spray insect repellent containing DEET on clothes and exposed skin other than the face, or treat clothes with permethrin, which kills ticks on contact.
- Walk in the center of trails to avoid brush and grass.
- Remove your clothing, and wash and dry them at high temperatures after being outdoors.
- Do a careful body check for ticks after outdoor activities.

**THERE'S A TICK ATTACHED TO ME. WHAT DO I DO?**

Remove it! Using tweezers, grasp the tick close to the skin, pull straight back, and avoid crushing the tick's body. Save the tick for possible identification by a doctor or the local health department.

**I THINK I MAY HAVE LYME DISEASE. NOW WHAT?**

There's diagnosis. And then there's treatment.

**Diagnosis**

Sally Hojvat, Ph.D., Director of the Division of Microbiology Devices at FDA's Center for Devices and Radiological Health (CDRH), says that health professionals need to consider the following while making a diagnosis of Lyme disease:

- a history of exposure to potentially infected ticks, especially in areas of the country

- known to have Lyme disease
- symptoms, including physical findings such as the characteristic rash
- results of blood tests that check for antibodies to the bacterium that causes Lyme disease.

**About blood tests ...**

- FDA regulates diagnostic tests for Lyme disease.
- Tests that use a blood sample for detecting antibodies to the bacterium that causes the disease have been cleared by FDA for commercial sale and distribution.
- Tests for Lyme disease that use urine or other body fluids to diagnose infection by the bacterium *HAVE NOT* been cleared by FDA.

"It's important to know that blood tests that check for antibodies to the bacterium that causes Lyme disease are not useful if done soon after a tick bite," says Hojvat. "It takes 2 to 5 weeks after a tick bite for initial antibodies to develop."

There are two types of blood tests that should be performed on patients suspected of having Lyme disease, she says.

"The first is an ELISA (enzyme-linked immunosorbent assay) to measure antibody levels," Hojvat says. "The second test, the Western blot assay, identifies antibodies particular to the bacterium *B. burgdorferi*."

This approach is consistent with CDC's recommended guidelines.

**Treatment**

According to CDC, patients treated with antibiotics in the early stages of the infection usually recover rapidly and completely.

Antibiotics commonly used for oral treatment include doxycycline, amoxicillin, or cefuroxime axetil (Ceftin). Patients with certain neurological or cardiac forms of illness may require intravenous treatment with drugs such as ceftriaxone or penicillin.

The National Institutes of Health funded studies of longer courses of antibiotics for patients with some chronic symptoms several months after successful antibiotic therapy. Longer courses of antibiotic treatment have not been shown to be beneficial and have in fact been linked to serious complications, including death.

**WHAT ABOUT PETS?**

Household pets can get Lyme disease, too. Typical symptoms in animals include joint soreness and lameness, fever, and loss of appetite.

Regularly checking pets for all types of ticks reduces the risk of infection for both pet and owner.

Preventing tick exposure with topical and/or collar products is very important in preventing Lyme disease in dogs.

Experts in FDA's Center for Veterinary Medicine (CVM) say that dogs with Lyme disease occasionally develop serious kidney disease that can be fatal.

CVM says there are two basic types of Lyme disease vaccines available for dogs: the killed bacteria and a genetically engineered (recombinant) vaccine. Talk to your veterinarian, since vaccinating against Lyme disease may not be appropriate for all dogs. There is no vaccine for cats, which do not seem to be susceptible to Lyme disease.

For more information about Lyme disease, talk with a doctor, healthcare professional, or local health department. Or visit:

FDA's Center for Devices and Radiological Health  
[www.fda.gov/cdrh/consumer/lymedisease.html](http://www.fda.gov/cdrh/consumer/lymedisease.html)

The Centers for Disease Control and Prevention  
[www.cdc.gov/ncidod/dvbid/lyme/index.htm](http://www.cdc.gov/ncidod/dvbid/lyme/index.htm) 