

# Lyme Disease Awareness and Prevention

Lyme disease is a bacterial infection that may develop after a bite from a Lyme-infected deer tick. The CDC estimates that more than 300,000 new cases of Lyme disease occur each year in the US. Many areas of the country are at high-risk for Lyme disease; this is especially true for wooded or forested regions. Here's how to prevent and recognize Lyme disease.

## Avoid Ticks



CDC

The best way to prevent Lyme disease is to avoid ticks. Stay out of tick habitat, especially areas with long grass, lots of brush or leaf litter, Stay in the center of hiking and biking trails; don't sit on fallen logs. Many people become infected around their home. Clear away brush and fallen leaves, keep your grass short. Place lawn furniture and play structures in sunny areas of the yard. Bird feeders and wood piles attract tick-carrying mice so keep them far from the house. Don't feed deer or use plants that attract them. Pets that go outdoors can bring ticks indoors, perform tick checks and ask your veterinarian for a list of appropriate tick products for your pets.

## Use Insecticides and Repellents

Insecticides and repellents reduce the risk of a tick bite. Insecticides kill ticks; repellents encourage them to leave before biting. Look for products with:

- **Permethrin** is an insecticide essential to prevention plans. Apply it to clothing, sleeping bags, tents and other gear, but not skin, before entering tick habitat. It remains effective for 2-6 weeks and through multiple washings. Permethrin-embedded clothing is good through 70 washings; Permethrin products are sold at outdoor stores and on-line.
- **Picaridin** is a newer repellent that's as effective as DEET, use concentrations of 20%. Apply it to unbroken skin, fabrics and materials. It is non-toxic and safe for children of all ages.
- **DEET** is the best known repellent, use concentrations of 30% or higher. DEET is safe to apply to unbroken skin, wool and cotton but it can damage other fabrics and materials, such as leather or rubber. The EPA considers DEET to be safe for kids over 2 months old but Canada's health department recommends against using DEET on children.
- **BioUD** is a newer repellent derived from wild tomato plants. A concentration of 7.75% is 2-4 times more active than 98% DEET against deer ticks. It can be used on clothing but doesn't last as long as permethrin. It's only available on-line at [www.homs.com/](http://www.homs.com/).

## Tick Checks are Vital

Check for ticks frequently while in tick habitat and for 1-2 days after potential exposure. Promptly remove and save attached ticks in a re-sealable container so your doctor can examine them. Wash the area with soap and water and report the bite immediately to your doctor, especially if you've been bitten by a deer tick.

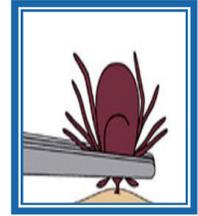


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The risk of contracting Lyme disease depends on how long the tick was attached and how likely it is to be infected. Few infected ticks transmit Lyme in less than 24 hours. At 48 hours, roughly 20% will transmit; at 60 hours, 50% pass on the infection and when infected ticks feed until full, 94% will transmit Lyme. In many high-risk areas, half of the deer ticks are infected with Lyme. Ticks may be infected with other diseases and these infections, often called co-infections, are also transmitted through bites. Anaplasmosis and babesiosis are known co-infections and bartonellosis may also be a tick-transmitted disease. All three may be transmitted more rapidly than Lyme disease.

## Tick Removal

Removing a tick is simple. Don't put anything on the tick; irritants like liquid soap don't make the tick release its bite but do make it harder to grasp. Specialized tick removers work well but so do finely pointed tweezers. Grasp the tick close to the skin (avoid squeezing its body) and use a steady motion to pull it straight out.



### Antibiotic Treatment of Deer Tick Bites

Certain antibiotics may reduce the risk of Lyme disease if taken within 2 days of a bite. Contact your doctor immediately after a bite to discuss this strategy. Following a “wait and see” strategy is risky because 30% of patients never develop a Lyme rash. Basing treatment decisions on blood tests done shortly after a bite isn't a good idea because the results are unreliable. Antibiotic approaches are changing; ask your doctor to review this paper published in April, 2011 in the Wisconsin Medical Journal and available at: [www.wisconsinmedicalsociety.org/WMS/publications/wmj/pdf/110/2/78.pdf](http://www.wisconsinmedicalsociety.org/WMS/publications/wmj/pdf/110/2/78.pdf) or Prescribers' Letter from June, 2012.

### Lyme disease Symptoms

Lyme disease causes a wide variety of symptoms. Symptoms come and go, vary in intensity, change over time and differ from patient to patient. These variations sometimes make it difficult to recognize the infection.

- **Early Lyme disease** occurs within 2-30 days of a bite. In 70% of CDC reported cases, patients develop a rash at the site of the tick bite. The most commonly, the rash, called an erythema migrans or EM, appears as a solid-colored oval. The classic “bull's-eye” is seen in less than 20% of cases. Patients may also have fever, chills, muscle and joint pains, neck stiffness, headaches, fatigue and sore throat. When the EM rash is absent, these flu-like symptoms may be the only clue of the infection. Some patients are asymptomatic in early disease.
- **Early disseminated disease** develops weeks to months after a bite. In this stage, the infection has spread beyond the skin to other body sites. Multiple EM rashes, fatigue, muscle and joint pain, generalized pain, severe headaches and stiff necks (indicating meningitis), Bell's palsy, sleep and/or concentration difficulties may be seen. A small percentage of patients experience abnormalities in their heart rate.
- **Late Lyme disease** occurs months to years after the bite. Patients may notice several seemingly unrelated problems, including: arthritis, nervous system abnormalities or non-specific problems with fatigue, headaches, generalized pain or muscle pain, recurrent fevers, difficulty thinking or and changes in mood.

### A Tricky Diagnosis

Because symptoms are variable and lab tests are not always reliable, Lyme disease can be a tricky diagnosis to make. If you spend time in tick habitat or areas known to have Lyme disease or co-infections and develop symptoms of Lyme disease, be sure to let your doctor know about your exposures.



This information, courtesy of Partnership for Healing and Health, Ltd. and was updated on April 8, 2014. It is intended for educational purposes only and not to replace or supersede patient care by a healthcare provider. If you suspect you have a tick-borne illness, consult a healthcare provider familiar with the diagnosis and treatment of tick-borne diseases and the illnesses which mimic them.

PHH offers evidence-based education and programs on Lyme disease and other tick-borne illnesses for the general public and health care professionals. For information, contact [md@phhmd.com](mailto:md@phhmd.com).