

Lyme Disease and Other Tick-Borne Illnesses

Lyme disease is spread to humans through the bite of infected **blacklegged** ticks. Symptoms include fever, headache, fatigue, and a skin rash called erythema migrans (EM). Left untreated, infection can spread to joints, the heart, and the nervous system. Most cases of Lyme disease can be treated successfully with antibiotics. Steps to prevent Lyme disease include using insect repellent, removing ticks promptly, applying pesticides, and reducing tick habitat. The ticks that transmit Lyme disease can occasionally transmit other tickborne diseases as well.



*Oh Boy!
They're small!*

Tick Removal

If you find a tick attached to you, remove it as soon as possible with a plain set of tweezers. Grasp the tick as close to the skin as possible. Pull upward with steady, even pressure. Don't twist or jerk the tick. If mouth parts remain do your best to remove them with the tweezers. If you cannot remove the mouth parts easily, *leave them alone* and let the skin heal. You cannot get tick-borne disease from mouth parts alone!

After removing the tick, thoroughly clean the bite area and your hands with soap and water. Never crush a tick with your fingers. Dispose of a live tick by:

1. Putting it in alcohol,
2. Placing it in a sealed bag/container,
3. Wrapping it tightly in tape, or
4. Flushing it down the toilet.

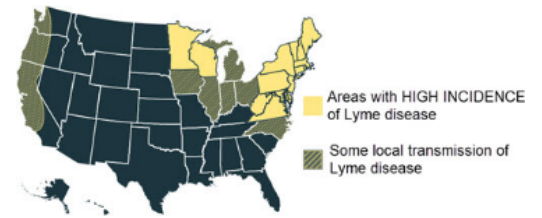
Do not paint the tick with nail polish or petroleum jelly. Do not use heat to make it detach. Just remove the tick as soon as possible!

Follow-up

See your healthcare provider if you develop any rash or fever within several weeks of removing a tick!

Lyme Prophylaxis After Tick Bite

In areas highly endemic for Lyme disease, a single prophylactic dose of doxycycline (200 mg for adults or 4.4 mg/kg for children of any age weighing less than 45 kg) may reduce the risk of acquiring Lyme disease after a high-risk tick bite.



This is done **only when all 5 criteria are met:**

1. Tick bite occurred where ticks are likely infected.
2. Tick was attached less than 72 hours.
3. Tick's body was engorged, not flat.
4. Tick was Ixodes (blacklegged)!
5. Doxycycline is safe for the patient (not allergic, pregnant, or breastfeeding).



*We do not test ticks but feel free to **show us a picture** or bring the tick in a **sealed plastic bag** if you want help with identification.*

Lyme Disease

Early signs of Lyme Disease develop within 3 to 30 days after tick bite and include fever, chills, headache, fatigue, muscle and joint aches, and swollen lymph nodes. 70-80% of infected persons will get the erythema migrans (EM) rash. Any red area that is 5 centimeters (2 inches) or more is suspicious for EM. It does not have to have a target or bull's-eye appearance. The rash does not itch or hurt. If you don't see it, you won't know it's there. Any redness smaller than 5 centimeters is probably not EM, especially if it's itchy, tender, and occurs in less than 3 days.



E.M. rash

Later signs include severe headaches, neck stiffness, more EM rashes, a droopy side of the face, painful swelling of a large joint (especially a knee), pain in tendons, muscles, joints, and bones, heart palpitations or an irregular heartbeat, dizziness, shortness of breath, inflammation of the brain and spinal cord, or nerve pain.

Other diseases can also be spread by ticks so see your healthcare provider if your rash or symptoms are different from Lyme disease.

Diagnosis is based on signs and symptoms, the likelihood of tick exposure, consideration of other causes, and sometimes laboratory testing. Testing should only be done using tests validated by the FDA and only if you have had enough time to make antibodies (at least 2 weeks). Tests can yield false positive results. Antibodies remain in the body for years, so testing cannot be used to determine cure or to diagnose another infection in the future.

Treatment of early disease is 10-14 days of an antibiotic (Doxycycline, Amoxicillin, or Cefuroxime); children are not treated with doxycycline. Earlier is better! Later stages may need I.V. antibiotics, longer treatment courses, and sometimes hospitalization. If you have a droopy face and cannot close your eye you will also need eyedrops or an eye patch to prevent dry eyes. Most cases are cured within 2-4 weeks with treatment.

Post-Treatment Lyme Disease Syndrome (PTLDS) consists of pain, fatigue, or difficulty thinking that lasts for more than 6 months after finishing treatment. The prevalence of PTLDS is difficult to estimate due to lack of specific diagnostic criteria but is estimated to be [about 27%](#) and rising. Some believe the Lyme bacteria triggers an auto-immune response that lasts long after the infection is gone (other diseases are known to do this). Unfortunately, we don't yet have a proven treatment for PTLDS. Patients who receive repeated courses of antibiotics do no better than those who don't. Patients with PTLDS usually get better but this can take many months. No one has died from PTLDS, but patients have died from [complications of unproven attempts to treat](#) PTLDS. If you develop PTLDS, work with your healthcare provider to find ways to cope until it resolves. Do not expose yourself to risks of unproven solutions being marketed for this.

The Best Way to Avoid Lyme Disease is to Prevent Tick Bites!

Before you go out, expect ticks will be in grassy, brushy, or wooded areas. They can also hitch a ride on pets, clothing, and equipment. Treat clothing and gear with 0.5% permethrin. Treat people with repellents that contain DEET, picaridin, IR3535, Oil of Lemon Eucalyptus, para-menthane-diol (PMD), or 2-undecanone. Check [the EPA list](#) or use this [search tool](#) if you are not sure. Avoid wooded and brushy areas with high grass and leaf litter. Walk in the center of trails.



After you come indoors, check your clothing for ticks. Tumble dry clothes in a dryer on high heat for 10 minutes to kill ticks. Check pets and gear. Showering within 2 hours of coming indoors has been shown to reduce risk of tick-borne illnesses. Finally, check everyone's body for ticks. A hand-help mirror can help with this. Check these areas in particular:

- Under arms
- Around ears
- Inside belly buttons
- Back of the knees
- In and around the hair
- Between legs

