

You may not be aware that you have been bitten by a tick.

Three common tick species in our area can transmit disease. Tick activity is seasonal, with higher tick activity in the spring and summer. Ticks feed slowly and will not transmit disease (if they are infected) until they have been attached for several hours. Remember to check yourself often for ticks and remove any that you find as soon as possible.

Black-legged (Deer) Tick

(Ixodes scapularis)



Lyme Disease: Black-legged (Deer) Tick

Lyme disease is an inflammatory illness caused by *Borrelia burgdorferi*, a corkscrew-shaped bacterium. The disease is transmitted to humans via the bite of ticks infected with the bacteria. Ticks become infected after feeding on white-footed mice and other small mammals, which are the reservoirs for the bacteria. Deer do not harbor *B. burgdorferi* and therefore do not pass the Lyme disease bacteria to ticks.

The first sign of infection is usually a red rash called erythema migrans that begins at the site of the tick bite after a delay of three to 30 days. The rash gradually expands over several days, and gives the appearance of a bull's-eye — a spot with a ring around it. However, not all persons develop this rash. Patients may also experience fatigue, chills, fever, headache, muscle and joint aches, and swollen lymph nodes.

If untreated, the infection may spread to other parts of the body. This can produce a number of other symptoms that may appear separately, including loss of muscle tone on one or both sides of the face, severe headaches and neck stiffness, shooting pains, heart palpitations, dizziness, and pain that moves from joint to joint.

After several months, approximately 60% of patients with an untreated infection may begin to have intermittent bouts of arthritis with severe joint pain and swelling. Up to 5% of untreated patients may develop neurological complaints months after infection.

Anaplasmosis: Black-legged (Deer) Tick

The symptoms of human granulocytic anaplasmosis (HGA) can vary, but most patients have a moderately severe fever and exhibit symptoms such as headache, muscle pain, and malaise. These symptoms will typically appear after an incubation period of one week after tick exposure. Anaplasmosis can be fatal in some cases if left untreated.

Babesiosis: Black-legged (Deer) Tick

Babesiosis is caused by a protozoan called *Babesia microti*. Most people who are infected, however, do not display any symptoms. The disease is more severe in the elderly and in people with suppressed immune systems and those who have had their spleen removed. The symptoms of babesiosis include fever, chills, sweating, muscle pain, and fatigue. They typically occur after an incubation period of one to four weeks, and can last several weeks.

Lone Star Tick

(Amblyomma americanum)



Ehrlichiosis: Lone Star Tick

Human monocytic ehrlichiosis (HME) is caused by the bacteria *Ehrlichia chaffeensis*, which infect white blood cells. Symptoms usually appear within a few weeks of infection. Early symptoms may include a sudden high fever, headache, muscle aches, chills, and a general feeling of weakness and fatigue. Typically, the disease is more severe in people with weakened immune systems.

Southern Tick Associated Rash Illness: Lone Star Tick

Borrelia lonestari is a bacterium that is a possible causative agent for STARI. STARI is a Lyme disease-like illness that often presents with a bull's-eye rash (erythema migrans) that is also typically seen in the early stages of Lyme disease. Other symptoms of STARI include fever, fatigue, headache, muscle and joint pain.

American Dog Tick

(Dermacentor variabilis)



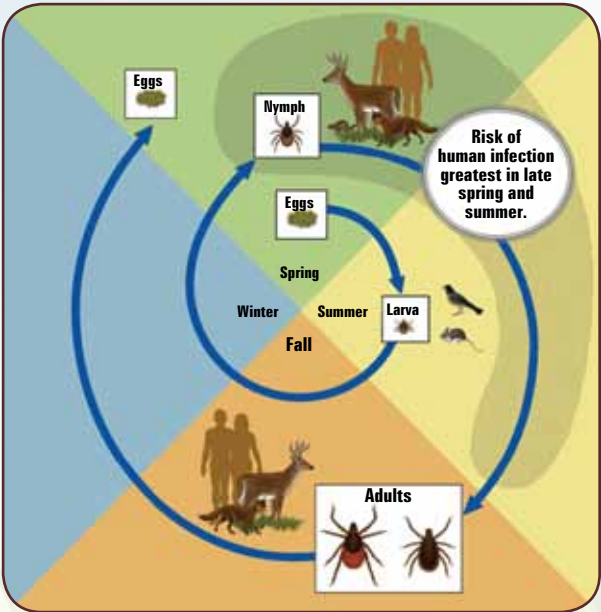
Rocky Mountain Spotted Fever: American Dog Tick

Rocky Mountain spotted fever is caused by the bacteria *Rickettsia rickettsii*. It can be very difficult to diagnose in its early stages, even by experienced physicians who are familiar with the disease. The combination of a fever, rash, and history of tick bite is a strong indication, but it is not always easy to detect. People infected with *R. rickettsii* generally develop symptoms 2 to 14 days after a tick bite, and the symptoms are generally severe enough to cause them to visit a physician in the first week of their illness. Initially, Rocky Mountain spotted fever may resemble a variety of other infectious and non-infectious diseases. Other symptoms may include: (initially) nausea, vomiting, muscle pain, and lack of appetite; and (as the disease progresses) abdominal pain, joint pain, and diarrhea.

The Tick Life Cycle

- There are four stages in the two-year life cycle of a tick: egg, larva, nymph and adult.
- The eggs hatch into larvae, often called “seed ticks”.
- Larvae attach to a host, take a blood meal and change into nymphs.
- Nymphs will attach to another host, take another blood meal and change into adults.
- Adult females will take yet another blood meal from a third host, become engorged (sometimes to the size of a small grape) and fall off. Each female will eventually lay about 3,000 eggs on the ground.

Black-legged tick life cycle



Courtesy of CDC

Your Children and DEET

Everyone, especially children, likes to spend time outdoors. It's a good idea to protect yourself and your family from disease-carrying insects.

The Loudoun County Health Department recommends wearing DEET and the American Academy of Pediatrics Committee on Environmental Health has reported that products containing up to 30% DEET are safe to use on anyone over two months of age.

Parents should choose the type and concentration of repellent to be used on their children based on the amount of time the child will be outdoors.

Apply DEET to Your Children



Photo Courtesy of R. Castañeda

DEET	
Repels Mosquitoes	Yes
Repels Ticks	Yes
Hours of Protection (25% formula)	5
Use in Children	Over 2 months
CDC Recommended	Yes

DEET-based repellents have provided effective, dependable protection since the 1950s. They are available in various concentrations and their length of effectiveness is usually related to concentration. These products are available as aerosols, pump sprays or wipes. DEET is the most effective and best studied repellent available.

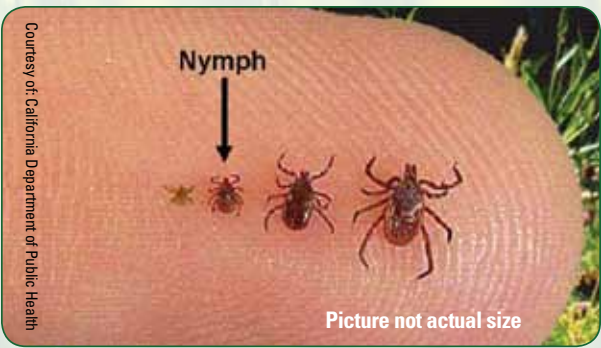
The EPA has additional information about the use and effectiveness of repellents at cfpub.epa.gov/oppref/insect/index.cfm.

Protect yourself, use repellents containing DEET	
DEET Concentration	Hours of Protection
23.8%	About 5 hours
20%	About 4 hours
6.65%	About 2 hours

All of these diseases are treatable if detected early, and remember — not all ticks are infectious!

If you have been in a tick-infested area and experience any of the symptoms described above, you should contact your doctor.

Identify Your Tick



During the nymph stage, Lyme disease transmission risk is greatest

Reduce the Number of Ticks in Your Yard

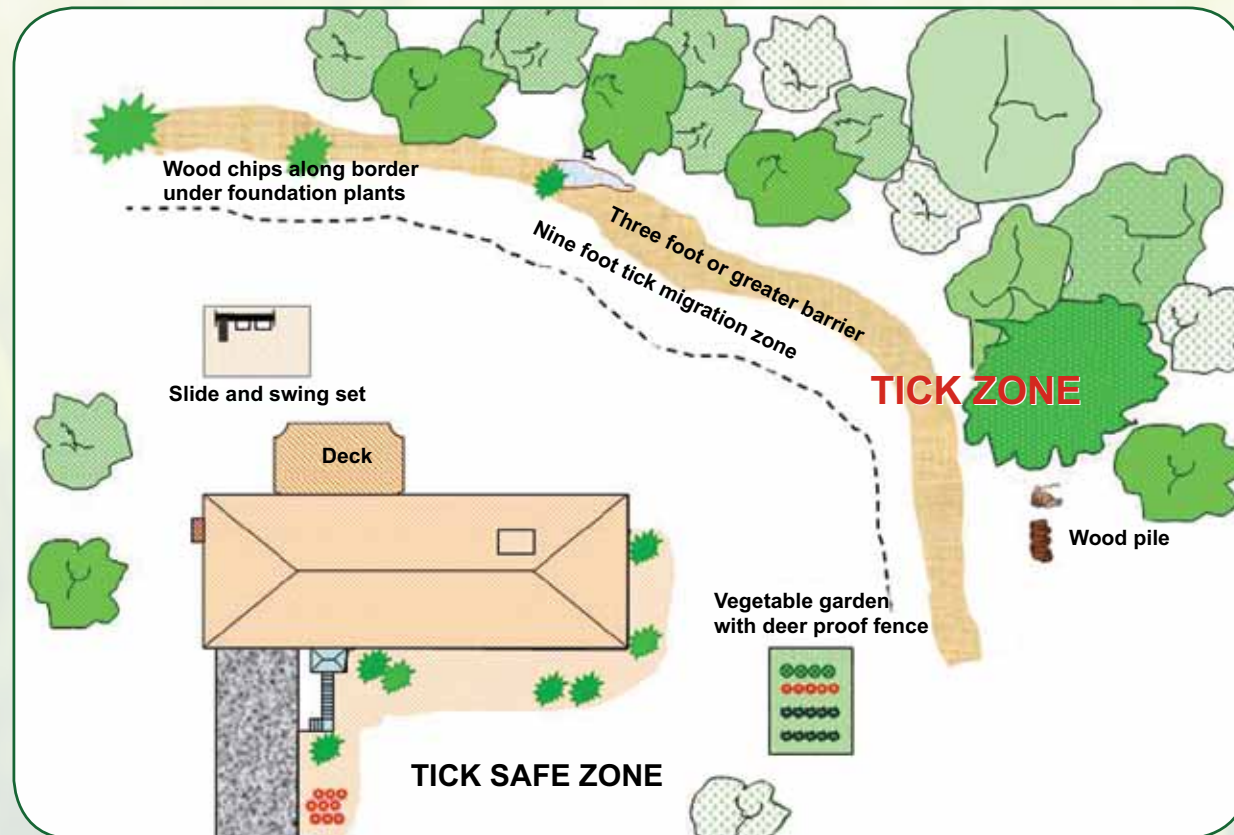
PRACTICE TICK-SAFE LANDSCAPING

- Ticks need high humidity levels to survive.
- Create a sunny and dry area where ticks cannot survive:
 - 🦋 Remove leaf litter and clear tall grass and brush around houses and at the edges of lawns.
 - 🦋 Lay down wood chips or gravel between lawns/recreational areas and wooded areas.
 - 🦋 Keep playground equipment, decks and patios away from yard edges and trees.

DISCOURAGE DEER

- Deer bring ticks into your yard.
 - 🦋 Remove plants that attract deer.
 - 🦋 Plant deer-resistant shrubs and plants.
- Build a fence to keep deer out.
 - 🦋 Deer can jump up to 8 feet.
 - 🦋 Deer will not jump over a fence they can't see through.

Landscape to create Tick Safe Zones



Adapted from CT Agricultural Experiment Station

Applying Permethrin to Vegetation and Grass



USE CHEMICAL CONTROL

- Use **permethrin** to effectively control ticks in your yard.
 - 🦋 If properly timed, a single application at the end of May or beginning of June can reduce tick populations by 68-100%.
 - 🦋 Applying a permethrin barrier spray to your yard will provide temporary relief from ticks.
 - 🦋 Permethrin is an insecticide that kills ticks.
 - 🦋 Permethrin has low human toxicity and is readily available in garden centers and hardware stores.

- 🦋 When looking for permethrin products, make sure to check the labeling—permethrin is the name of the active ingredient, not the product brand name.
- 🦋 Apply permethrin to ivy, shrubs, trees, grasses and to other plants.
- 🦋 Permethrin will not harm your garden plants.
- 🦋 Always read and follow the label instructions before applying insecticides.

For more information on ticks in Loudoun County, please visit
www.loudoun.gov/lyme

Tick Removal

Prompt removal of any attached tick that you find may help prevent infection.

- Use fine-tipped tweezers or shield your fingers with a tissue, paper towel or rubber gloves, when removing the tick; otherwise infectious agents may enter through mucous membranes or breaks in the skin.



- Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure.
- Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin.
- Do not squeeze, crush or puncture the tick body, because its fluids may contain infectious organisms.
- Do not use nail polish, petroleum jelly, alcohol or heat to remove the tick.
- After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.

Preventing Tick-Borne Disease

Preventing tick-borne disease is as easy as:

1 DRESSING APPROPRIATELY

- Wear light-colored clothing so that ticks are easier to see and remove.
- Tuck pant legs into socks; tuck shirt into pants.

2 CONDUCTING FREQUENT TICK CHECKS

- On yourself, your children and your pets.
- Check for ticks after all outdoor activities.

3 USING TICK REPELLENT

- Apply 20%-30% DEET (or other effective tick repellent) to exposed skin.
- Pre-treat (or purchase) clothes treated with 0.5% permethrin, an insecticide that both kills and repels ticks.
- Always follow directions on the label when using repellents and insecticides.

DOGS CAN GET SICK AS WELL. Don't forget to ask your veterinarian about tick control methods for your pets.

Loudoun County Health Department



703.777.0234
www.loudoun.gov/lyme

*Photos Courtesy of James Gathany (CDC),
CDC Image Library, and Texas A&M University*

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Ticks and Tick-Borne Diseases in Loudoun County



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