



Teacher's Guide  
Lyme Disease Program  
Grades 3-5

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## Introduction

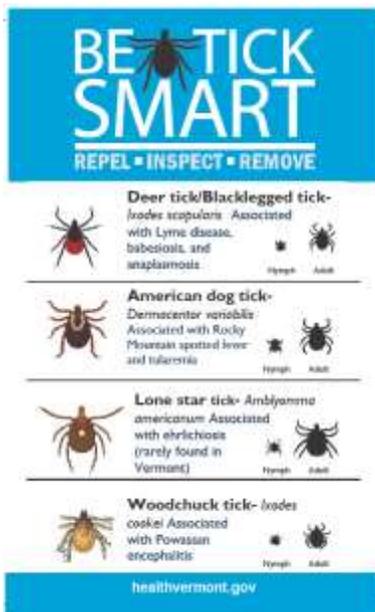
Lyme disease is the most commonly reported tickborne disease in Vermont, and children between the ages of 5 – 9 have the highest reported rates of Lyme disease. Lyme disease is an infection spread by the bite of an infected tick. It is caused by the bacterium called *Borrelia burgdorferi*. Ticks can get the bacteria by biting small animals, such as mice and chipmunks, that are infected. In the eastern U.S., Lyme disease is transmitted by black-legged ticks (*Ixodes scapularis*), also called deer ticks.

Lyme disease may affect the skin, heart, nerves, or joints. When it is diagnosed early, patients who are treated with antibiotics usually recover completely.

Young children can take care of themselves and prevent Lyme disease by following three simple steps:

- Ask an adult to apply tick repellent
- Inspect your skin for ticks after you were outside
- Remove ticks quickly

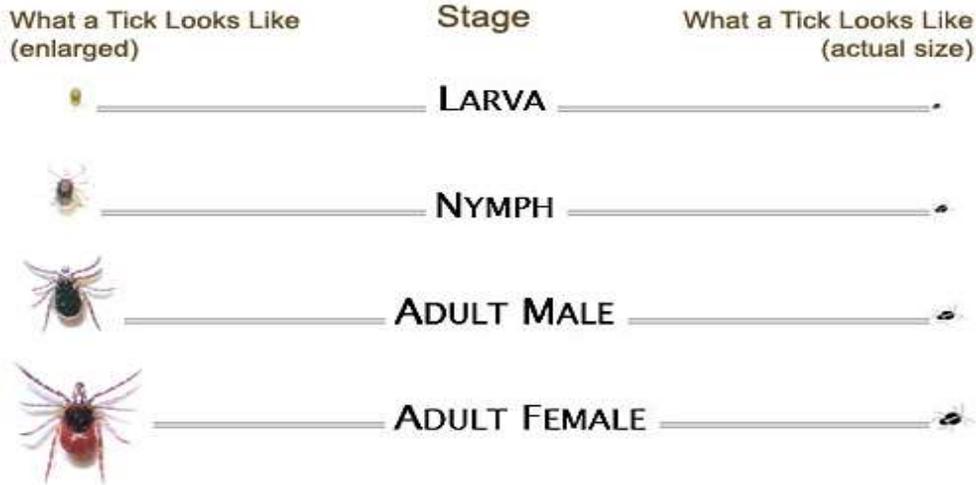
## Types of Ticks



- There are at least 13 different types of ticks in VT. These four may carry diseases.
- The **Deer tick** is common in Vermont and causes Lyme disease, babesiosis and anaplasmosis.
- The **Lone Star tick** is rarely found in Vermont.
- The **American Dog tick**, which is common in Vermont, can carry Rocky Mountain spotted fever. This disease is rare in New England.

- The **Woodchuck tick** is found in Vermont and surrounding states. It rarely bites people.

**What do deer ticks look like?**

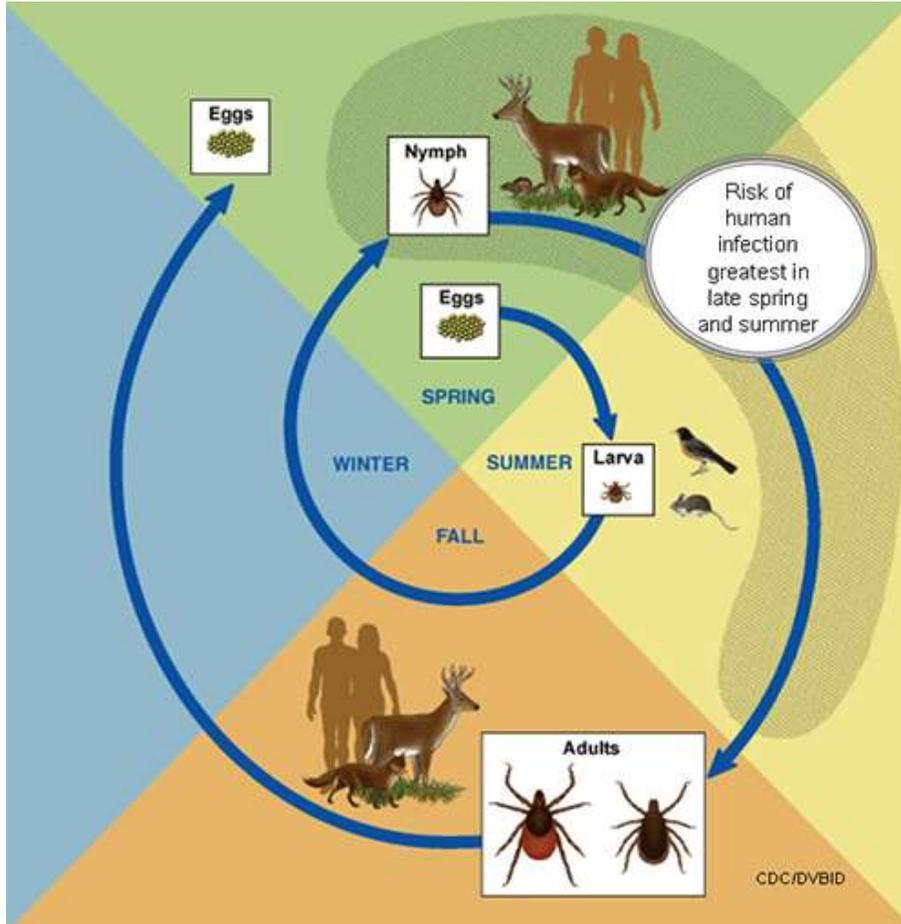


**Where are deer ticks found?**

Ticks usually live in tall grass, brushy or wooded areas. They can be active at any time of the year when the temperature is above freezing. Ticks do not jump or fly, but grab onto a potential host animal that comes into direct contact with them. Not all ticks carry the bacteria that cause Lyme disease. A deer tick can become infected by feeding on the blood of an infected mouse. Usually, a tick must be attached to a person for at least 36 hours in order to transmit the bacteria that cause Lyme disease.



## The Tick Lifecycle



Deer ticks go through three life stages as they develop: larvae, nymph and adult.

**Stage 1:** Adult female deer ticks lay eggs in the spring. In the summer, eggs hatch and become tiny larvae – the size of a period at the end of a sentence. The larvae will wait on the ground until a small mammal or bird brushes up against it. The larvae then attaches to its host, begin feeding, and over a few days, fill with blood.

If the host animal is already infected with the Lyme disease spirochete (a form of bacterium called *Borrelia burgdorferi*) from previous tick bites, the larvae will likely become infected as well. In this way, infected hosts in the wild (primarily white-footed mice, which exist in large numbers in Lyme-endemic areas of the northeast and upper mid-west) serve as spirochete reservoirs, infecting ticks that feed upon them.

**Stage 2:** The larvae drop off their host animal and transform into nymphs in the fall. They are inactive throughout the winter and early spring. Activity begins in May when nymphs sit on the ground and wait for a small mammal or bird to approach. The nymph

latches on to the host animal and takes a blood meal. It becomes engorged with blood, and swells.



If the tick was infected during its larval stage, the nymph may transmit the Lyme disease bacteria to its host. If not previously infected, the nymph can become infected if its host carries the Lyme disease bacteria from previous tick bites.

**Stage 3:** Once the nymph is engorged, it drops off the host, falls to the ground and molts into an adult. Adult ticks seek new hosts throughout the fall. They climb onto stalks of grass or the tips of leaves to find deer (the preferred host) or other larger mammals (including humans, dogs, cats, horses, and other domestic animals).

### **What are the signs of Lyme disease?**

The symptoms of Lyme disease usually appear between 3 and 30 days after a tick bite. A person infected with Lyme disease may get an expanding rash that looks like a bull's eye (called erythema migrans), but this is not always the case.

People with Lyme disease may experience flu-like symptoms such as fever, fatigue and aching muscles. Joint pain and swelling is also a common symptom.

### **Lyme disease Treatment**

People should contact their doctor if they experience any of the symptoms listed above, especially



following a recent tick exposure. It is important that treatment be started early Lyme disease can be treated effectively with antibiotics. If Lyme disease is not treated early, an infected person may develop more serious joint, heart or neurological problems.

## Prevent Lyme disease



### How to BE TICK SMART:

- Stay out of areas where ticks live.
- Wear light colored clothing & tuck pants into socks.
- **Repel** – Use insect repellents that contain DEET on exposed skin and/or products that contain permethrin on clothing. Repellents with DEET concentrations of 30% or lower for adults and children over 2 months of age provide protection. (Products containing DEET should not be used on children under 2 months of age.)
- **Inspect** – Check your whole body for ticks every day. Inspect children and pets thoroughly. After returning indoors, take a shower and wash clothing.
- **Remove** – Carefully remove ticks with a pair of fine point tweezers. Wash the bite with soap and water. Alcohol, gasoline, petroleum jelly, or a hot match should never be used to remove a tick.

### The following strategies can be used to reduce the number of ticks living around your home:

- Keep grass cut short
- Remove leaf litter and brush
- Use deer fencing (for yards greater than or equal to 15 acres)
- Keep woodpiles off the ground and away from the home
- Keep the plants around stone walls cut short