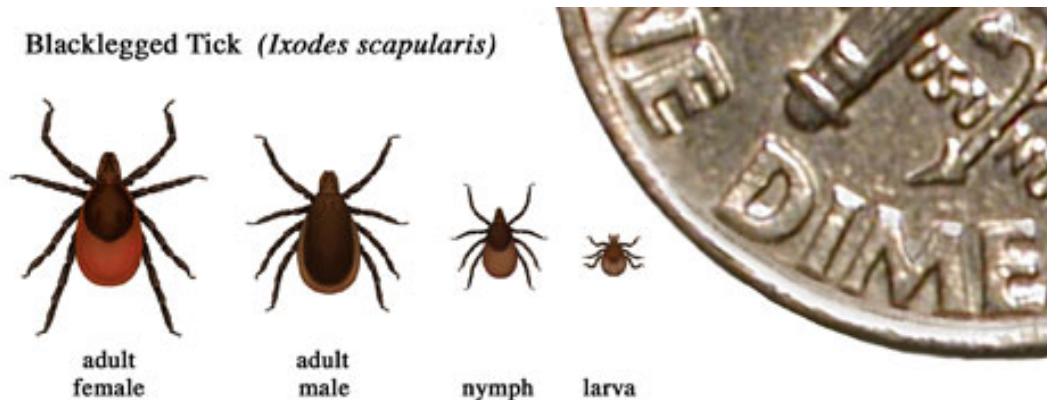


A high percentage of deer ticks in VT have an infection that can be transmitted to humans and other animals by a tick bite and can cause Lyme disease. Other diseases can also be transmitted to humans by a tick bite. Some argue not to treat people after a deer tick bite unless there is evidence of infection. In one study the rate of getting Lyme disease from a deer tick bite was only 2% even though 15-30% of deer ticks were infected. This finding indicates that many bites from infected ticks do not result in transmission of the infection. This is the reason some authorities have recommended not treating people after a deer tick bite unless they develop signs or symptoms of the infection. However, due to the facts that 1) the Lyme blood test can be falsely negative, 2) the characteristic skin rash may never develop, and 3) untreated Lyme disease can later lead to debilitating chronic Lyme disease, some providers offer prophylactic antibiotic treatment. A **controversial** preventative measure to prevent Lyme disease after a recognized deer tick bite, is a **single dose of doxycycline** for adults (200mg) and for children older than 8 years (4 mg/kg, up to a maximum dose of 200 mg) if certain criteria are met (not sensitive to doxycycline, confirmation that it is a deer tick, estimated attachment 36 hours or more or significantly engorged, and treatment is given within 72 hours after the deer tick was removed). This recommendation has come under fire recently and some providers are no longer following this recommendation as it is based on weak evidence and there is some fear that it may be ineffective and delay the diagnosis. <https://vtlyme.org/2017/04/24/problem-single-dose-doxycycline-tick-bites/>



Tick size compared to the size of a dime.

**Removing the tick, saving it for identification and possibly for testing** Grab the tick by the head, not the body, when removing with tweezers. Save the tick in a small zip-lock plastic bag so that it can be sent in for testing, particularly if signs or symptoms of illness develop. Learn more about tick identification and testing at: <https://tickcounter.org/tick-testing> Record the date the tick bite occurred and see a health care provider promptly if you become ill within 30 days of the bite.

**Avoid getting tick-borne disease** 1) Avoiding tick infested areas; steer clear of tall grass, shrubs and moist shaded areas. 2) Wear light colored clothing to find ticks more easily & do tick checks. 3) Wear clothing and foot wear that has been pretreated with permethrin insect repellent (available at Amazon.com and elsewhere). Cover up with clothing and tuck your pants into your socks. 4) Kill ticks that may be on your clothes by placing them in a hot clothes drier for 10-20 minutes. 5) Treat pets and keep them out of tick infested areas. For more info: <https://tickcounter.org/prevention>

**Be aware of other tick-borne diseases** <https://www.cdc.gov/ticks/diseases/index.html>

**Anaplasmosis** is now the second most common tick-borne disease in VT and can occur alone or along with Lyme disease. The first symptoms usually begin within 1-2 weeks after the bite of an infected tick. The signs and symptoms of anaplasmosis include fever, chills, headache, malaise, muscle aches, nausea, belly pain, cough and confusion. Skin rash is rare. **Babesiosis** is a less common tick borne disease in VT. And more recently the potentially deadly **Powassan virus** has

been reported as a tick borne disease in the area. For more information on tick borne illness in VT, see: <http://www.healthvermont.gov/health-environment/climate-health/tickborne-diseases>

## What are the symptoms of Lyme disease?

The symptoms of Lyme disease are quite variable and depend on the body system affected. The skin, joints, nervous system or cardiovascular system may be involved. Early symptoms are not always recognized, and many people will first present to a healthcare provider with disseminated or late disease.

Early symptoms (onset: 3 to 30 days, usually 7 to 10 days):

- Non-specific flu-like symptoms, such as fever, chills, muscle and joint aches, headache and fatigue are common. Swollen glands may also occur.
- An expanding red rash that grows outward, occurs in up to 80% of people. It usually appears as an expanding red rash at or near the site of the tick bite; it is at least 2 inches in diameter; the classic “bull’s-eye” appearance is less commonly present. For pictures of EM rashes go to <http://www.aldf.com/EMPoster.shtml> Note: The EM rash should be distinguished from a rash caused by an allergic reaction to a tick or insect bite. A rash due to an allergic reaction usually appears within a day or two after the bite, does not grow, and disappears within a couple of days.

Disseminated disease (onset: days to months):

- Joint pains, muscle aches, headache, and fatigue - common
- Multiple red round to oval rashes
- numbness and pain in the arms or legs
- Bell’s palsy
- meningitis
- heart block and inflammation in and around the heart (myopericarditis)
- arthritis - Up to 60% of people, who do not receive treatment, develop intermittent bouts of arthritis several months after infection. The arthritis is characterized by severe joint pain and swelling, usually of large joints, most commonly the knee.

Late disease (onset: months to years):

- Chronic nervous system manifestations occur in approximately 5% of untreated patients. Symptoms include shooting pains, numbness, memory loss, mood changes, or sleep disturbance

**From: Infectious Disease Bulletin, Spring Supplement on Lyme disease • healthvermont.gov • 800-640-4374**

### Treatment for acute Lyme disease in adults

**doxycycline** 100mg twice daily for 3 weeks; **amoxicillin** 500mg TID x 3 weeks; or **cefuroxime axetil** 500mg BID x 3 weeks. Fourth choice antibiotics include **azithromycin**, 500 mg orally per day for 10 days; **clarithromycin** 500 mg orally twice per day for 3 weeks (if the patient is not pregnant); or **erythromycin** 500 mg orally 4 times per day for 3 weeks.

### Treatment for acute Lyme disease in children

Doxycycline is relatively contraindicated in pregnant women and children <8 years old. Antibiotics recommended for children , <8 years old are **amoxicillin** (50 mg/kg per day in 3 divided doses [maximum of 500 mg per dose]), **cefuroxime axetil** (Ceftin)(30 mg/kg per day in 2 divided doses [maximum of 500 mg per dose]), or, if the patient is >8 years of age, **doxycycline** (4 mg/kg per day in 2 divided doses [maximum of 100 mg per dose]) Fourth choices for children are as follows: **azithromycin**, 10 mg/kg per day (maximum of 500 mg per day); **clarithromycin**, 7.5 mg/kg twice per day (maximum of 500 mg per dose); or **erythromycin**, 12.5 mg/kg 4 times per day (maximum of 500 mg per dose). Patients treated with macrolides should be closely observed to ensure resolution of the clinical manifestations.

Treatment of chronic Lyme disease with long term antibiotics is somewhat controversial.

<https://www.lymedisease.org/lyme-basics/lyme-disease/chronic-lyme/>

