**Tick Removal**
- Do not use nail polish, petroleum jelly, alcohol or heat.
- Do not twist, jerk or squeeze body of tick.
- Grasp tick close to skin surface with tweezers.
- Carefully pull tick straight upward and out.
- Place tick in a zip lock bag and have it tested by a lab.
- Use antiseptic on bite site and disinfect tweezers.
- See a physician for diagnosis, testing and treatment.

**Protect Yourself**
**Conduct Frequent Tick Checks**
- On yourself, your children and your pets
- Check for ticks after all outdoor activities

**Dress Appropriately**
- Wear light-colored clothing so that ticks are easier to see and remove.
- Tuck pant legs into socks and tuck shirt into pants.
- Dry clothes at high temperature for 30 minutes to kill ticks.

**Use Tick Repellent**
- Always follow directions on the label when using repellents and insecticides.
- There are products containing DEET for skin and PERMETHRIN for clothing.
- Pre-treat or purchase clothes treated with 0.5% permethrin, an insecticide that both kills and repels ticks.
- Use tick control products for pets that your veterinarian recommends.

*NatCapLyme does not make specific product recommendations or grant any warranties.

**Practice Tick-Safe Landscaping**
Reduce the Number of Ticks in Your Yard
- Keep lawn mowed short. Remove leaf litter and clear tall grass and brush.
- Lay down wood chips or gravel between lawns/recreational and wooded areas.
- Keep playground equipment, decks, and patios away from yard edges and trees.
- Use deer resistant plantings and fencing. Eliminate bird feeders.

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- See a physician for diagnosis, testing and treatment.

**Chemical Control**
- Permethrin is a common synthetic chemical effective in controlling ticks in your yard. It is widely used as an insecticide, acaricide, and insect repellent.
- Make the first application between late March and early May. Apply to ivy, shrubs, trees, grasses and other plants.
- Reapply as often as needed according to label.
- Permethrin will not harm your garden plants.
- Permethrin has low human toxicity and is available in garden centers and hardware stores.
- When looking for permethrin products, make sure to check label. Permethrin is the name of the active ingredient, not the product brand name.
- Always read and follow label instructions before applying insecticides.

**Biological Based Pest Control**
- These methods usually do not have toxic effects on animals or people.
- Biological pesticides are derived from plants, animals, fungi, lgi, bacteria, minerals, or other natural sources.

**Tick-Borne Diseases**

**Blacklegged Tick**
- Larva
- Nymph
- Adult Male
- Adult Female

*Actual Size

**Please visit our website for more information on ticks and tick-borne diseases**

Member Combined Federal Campaign

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TICKS and Tick-Borne Diseases

Lyme Disease
Lyme disease is an infection caused by the bacterium *Borrelia burgdorferi*. The bacteria is transmitted to humans by the bite of an infected tick. Ticks become infected after feeding on white-footed mice and other small mammals. Early symptoms of infection include fever, fatigue, headache, muscle and joint aches, and swollen lymph nodes. A skin rash called erythema migrans may develop at the site of the tick bite. Not all people will develop this rash. Left untreated, later symptoms may involve the joints, heart, and central nervous system. Antibiotic treatment can be effective if started early in the disease process. Delayed or inadequate treatment can lead to more serious symptoms, which can be disabling and difficult to treat.

Ehrlichiosis and Anaplasmosis
Human monocytic ehrlichiosis (HME) is caused by the bacterium *Ehrlichia chaffeensis*. Human granulocytic ehrlichiosis, renamed anaplasmosis (HGA), is caused by *Anaplasma phagocytophilum*. Symptoms for both HME and HGA respond rapidly to treatment with antibiotics.

Babesiosis
Babesiosis is an infection caused by the protozoan *Babesia microti*. Like malaria, the protozoan inhabits red blood cells and can cause anemia. The disease usually begins one to three weeks after an ixodid tick bite, and symptoms can include fever, chills, drenching sweats, headaches, muscle pain, fatigue, anemia, and jaundice. Babesiasis is treated with a combination of drugs.

Southern Tick Associated Rash Illness
*Borrelia lonestari* is a bacterium that is a possible causative agent for South Tick Associated Rash illness (STAR). STAR is a Lyme disease-like illness that often presents with a bull’s-eye rash (erythema migrans). Symptoms of STAR include fever, fatigue, headache, muscle and joint pain. Antibiotics are the treatment of choice.

Rocky Mountain Spotted Fever
Rocky Mountain Spotted Fever (RMSF) is caused by *Rickettsia rickettsii*, a species of bacteria that is spread to humans by loricid ticks. Symptoms include fever, chills, headache, muscle pain, upset stomach, and the development of a rash usually beginning on wrists, ankles, palms, and soles. Although the disease is highly curable, the clinical outlook of RMSF can become quite severe or even fatal if left untreated. Fatality rates drop markedly when antibiotic treatment is initiated immediately upon suspicion of RMSF and should not be delayed until laboratory confirmation is obtained.

Rickettsia parkeri
*Rickettsia parkeri* is a bacterium belonging to the spotted fever group that also includes the bacterium that causes Rocky Mountain Spotted Fever (RMSF). *R. parkeri* is transmitted by the Gulf Coast Tick (*Amblyomma maculatum*). Symptoms occur two to ten days after being bitten by an infected tick and may include mild fever, fatigue, rash, and muscle pain that is accompanied by weakness. Although symptoms closely resemble those of RMSF, patients with *Rickettsia parkeri* infection will usually find a sore at the site of the bite. Antibiotics are the preferred treatment.

Bartonella
*Bartonella* is a bacteria that can be transmitted either by the bite or scratch of a cat or the bite of a tick, flea, louse or mosquito. There are at least eight *Bartonella* species known to infect humans with *B. henselae* (cat-scratch fever) and *B. quintana* (trench fever) being the most common. Symptoms associated with Bartonella illness include fever, fatigue, headache, joint and muscle pain, swollen lymph nodes, encephalopathy, visual problems, liver and spleen involvement, abdominal pain, and neurological deficits.

Q Fever
Q Fever, caused by *Anaplasma phagocytophilum*, is a zoonotic disease that is primarily transmitted from animals to humans. The bacteria is transmitted through transfused blood or from infected animal bites. The disease can cause pneumonia and hepatitis in the early stage and infection of the heart valves in the late stage of the disease. Animals are the primary reservoirs of the bacteria. Humans contract the disease primarily by inhalation or ingestion of the pathogen and through the bite of an infected tick. Classic symptoms include fever, headache, muscle pain, sweats, vomiting, abdominal pain, and central nervous system complications. Antibiotics are the treatment of choice.

The type of antibiotic treatment depends on the strain of Bartonella found in a patient.

Tularemia
Tularemia or Rabbit fever is caused by the bacterium *Francisella tularensis* found in animals. Transmission of the bacteria can occur through direct contact with an infected animal, by breathing in the bacteria, or from the bite of an infected tick, deerfly, or other insects. Typically, an ulcer develops at the site of the tick bite, and surrounding lymph nodes become enlarged. Other symptoms include fever, headache, chills, vomiting, sweating, dry cough, eye irritation, sore throat, muscle and joint pain, diarrhea, and pneumonia. The disease can be fatal if not treated with the right antibiotics.