



Tick-Borne Infections Council
of North Carolina, Inc.

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Improving the Recognition, Treatment, Control
& Understanding of Tick-Borne Diseases in NC

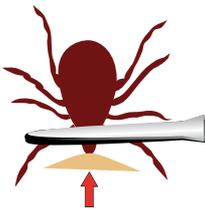
THE TICK-BORNE INFECTIONS COUNCIL OF NORTH CAROLINA, INC. (TIC-NC), a 501(c)(3) non-profit organization, was formed in 2005 to help educate the public and medical, veterinary, and public health professionals about ticks and tick-borne illnesses (TBIs) in NC. We are an all volunteer, non-profit organization. Through our board member activity, we keep up-to-date on all issues related to ticks in NC and the southeast. We pass this information on to our members, the public, and health professionals via presentations; booths at various markets, fairs and expos; our website; quarterly newsletters; Facebook; and printed material. Education on the various ticks in NC, the identification and risks of TBIs, proper tick removal, protection from tick bites, and the importance of recognizing the symptoms of TBIs and seeking medical attention is paramount to our organization. Visit tic-nc.org to learn more.

Proper Tick Removal

 Do not burn or use any substance on the tick, as it may cause the tick to regurgitate infected materials into the wound.



 Do not use bare fingers. Do not squeeze or twist the body.

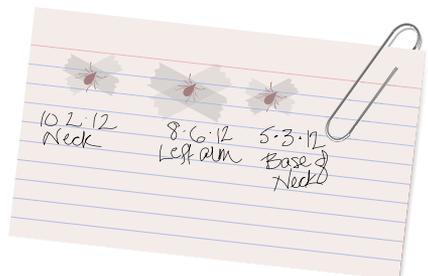


 Grasp the tick with sharp-pointed tweezers, as close to the skin as possible and pull straight out with an even pressure.

 Use alcohol on tweezers and wound.

 Wash hands thoroughly.

 **KEEP THE TICK** – tape it to a card and jot down the date and bite site on your body. If you do develop an infection, this information could be very helpful. Watch for flu-like symptoms and/or rashes for 30 days.



See further information on our website tic-nc.org.

Protect Humans and Pets Outdoors

Walk on wide trails.

Avoid tall grass and wooded, dense landscapes especially from March through October. Year round tick protection is important.

In southern climates, winter months have fewer ticks with the exception of blacklegged tick adults.

Keep your yard as safe a possible. For information on yard safety, visit www.cdc.gov/ticks/avoid/in_the_yard.html.

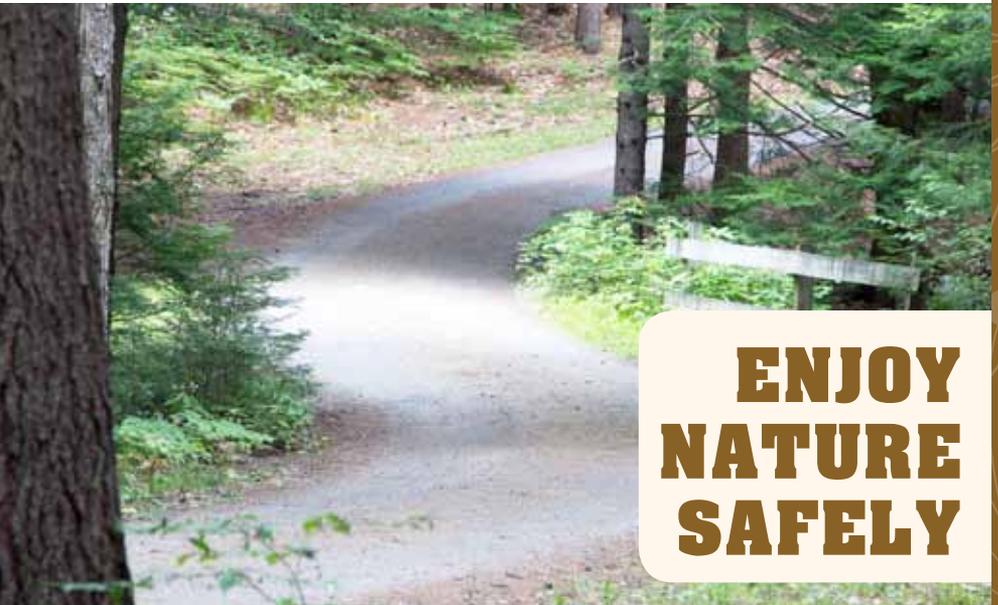
Use repellents and treated clothing consistently and correctly.

Do frequent tick checks - visit our website for complete instructions on the correct method - www.tic-nc.org.

Avoid jumping in leaves or sitting on logs.

Wear long pants. Tuck your pants into your socks and your shirt into your pants to avoid ticks getting under your clothing.

Pets that go outdoors are at greater risk of tick-borne illnesses. Protect your pets with tick prevention products and regular tick checks. Watch for TBI symptoms such as fever, lethargy, and swollen joints.



**ENJOY
NATURE
SAFELY**

North Carolina Ticks Most Likely to Bite Humans

Ticks	Diseases in Humans
<p>Lone Star Tick <i>Amblyomma americanum</i></p> 	<p>Ehrlichiosis, Southern Tick Associated Rash Illness (STARI), spotted fever rickettsiosis (such as Rocky Mountain spotted fever [RMSF]), tularemia, Heartland virus, Bourbon virus, red meat allergy, tick paralysis. Research is still examining whether the lone star tick can transmit Lyme disease.</p>
<p>American Dog Tick <i>Dermacentor variabilis</i></p> 	<p>spotted fever rickettsiosis tularemia tick paralysis Rocky Mountain spotted fever</p>
<p>Blacklegged Tick <i>Ixodes scapularis</i></p> 	<p>Lyme disease <i>Anaplasma phagocytophilum</i> infection babesiosis <i>Ehrlichia muris</i>-like infection Powassan encephalitis tick paralysis <i>Borrelia miyamotoi</i></p>
<p>Brown Dog Tick <i>Rhipicephalus sanguineus</i></p> 	<p>spotted fever rickettsiosis tick paralysis Rocky Mountain spotted fever</p>
<p>Gulf Coast Tick <i>Amblyomma maculatum</i></p> 	<p>spotted fever rickettsiosis (<i>R. parkeri</i>) tick paralysis</p>
<p>Engorged lone star nymph</p> 	<p>All developmental stages of lone star ticks bite humans - larval, nymph, and adult.</p>

Ticks in North Carolina

In NC you can become infected with a number of diseases through tick bites. Pets can get these diseases, too. Five kinds of ticks in NC bite humans. Not all ticks carry infections.

Since the 1980s, the most common and aggressive tick in the state is the lone star tick. The majority of bites to NC residents are from this tick. Dog ticks, blacklegged (deer) ticks and others bite less frequently. The brown dog tick will occasionally infest dwellings and bite humans. The Gulf Coast tick, recently arrived, is currently found in the eastern part of the state. The density of ticks and risk of bites and disease transmission vary from year to year according to location, season, and environmental conditions.

Ticks and the Role of the State

Until 2011, the Public Health Pest Management (PHPM) section of NC Department of Environmental & Natural Resources was charged with helping to protect the public from vector-borne diseases. Historically focusing on mosquitoes, they received additional funding in 2008 to expand their focus on ticks and tick-borne disease. From 2008 until 2011, PHPM conducted extensive tick work, aiding the public with disease prevention. Legislative action abolished the section in July 2011 leaving the state without any public health branch to continue these activities.

Therefore, since 2011, in spite of growing problems from ticks and tick-borne infections, the only tick-related state public health function is reporting of certain tick-borne infections as required by the Communicable Disease law - www.publicheath.nc.gov/cd.

Visit Our Website - tic-nc.org

Our website has a wealth of information. Some of the highlights:

- Tick slide shows, newsletters, links to additional sites containing tick information, membership forms.
- **Become a member** and stay informed on the latest news.

www.tic-nc.org/join-donate.html

Like us on Facebook - [Facebook.com/TICNC](https://www.facebook.com/TICNC)

Tick Infections

Basic Information

The Pathogens - Lyme disease, Southern Tick Associated Rash Illness (STARI), RMSF (now included under spotted fever rickettsiosis), and other tick-borne infections are prevalent in NC. As of 2015, six counties are endemic for Lyme disease: Wake, Guilford, Haywood, Alleghany, Wilkes, and Buncombe. Ticks travel on people, animals, and birds. There are regional differences in types of ticks and what proportions carry various diseases. Knowledge of the human pathogens that ticks carry is constantly changing as emerging diseases are discovered.

Rashes - Diseases caused by ticks do not always cause rashes. When present, the appearance may help with the diagnosis. Even with Lyme disease or STARI many people may not have a rash (or it could be in a place that is not noticed). The Lyme/STARI rash is usually circular or oval, and often solid red. Less frequently it has a “bull’s eye” appearance. RMSF may cause spots all over the body including the palms and soles of the feet. Rashes from infections usually take at least several days to develop. A red, often itchy rash up to the size of a quarter is a normal reaction to the lone star tick bite and does not indicate disease.

Diagnosis - Forty percent or more of people with tick diseases do not recall a bite. The diagnosis of acute Lyme disease, STARI, RMSF, and other tick-borne infections must be made on the basis of clinical rather than laboratory findings. Clinical findings may include the patient’s history and physical signs and symptoms (which vary according to the disease) such as exposure to ticks, fever, chills, headache, rash, swollen lymph nodes, fatigue, muscle aches, joint pains, abdominal pain, facial nerve paralysis, signs of brain inflammation, and others. Waiting for lab tests before treatment could cause severe impairment or even death. There are no blood tests that can be used for diagnosis during the immediate acute phase of an infection. Laboratory tests currently available for Lyme disease are not highly accurate. The two-tiered test recommended by the Centers for Disease Control (CDC) is

for public health surveillance and should not be used for clinical diagnosis, though it often is. Tests for RMSF or ehrlichiosis may cross-react with other rickettsias. No test is available for STARI. Testing issues are complex and often controversial.

Treatment - Prompt treatment with antibiotics begun during the first few days of infection will usually cure most infections. For Lyme disease, some clinicians believe 4 to 6 weeks of antibiotics ensures a better cure rate than the commonly prescribed two to three weeks. Ticks may carry more than one human pathogen so possible co-infections must be identified and treated as well, especially if illness persists. Until more is known, STARI should be considered a Lyme-like disease and treated accordingly.

Failure or Delay of Treatment - The mortality rate for untreated RMSF is 20% to 30%. Even with treatment, death may occur in about 5% of cases, especially if there is a delay in beginning antibiotics. Ehrlichiosis must also be diagnosed and promptly treated to avoid serious complications, even death. For Lyme disease, if treatment is delayed or inadequate, recovery may be long and difficult and may require complex treatment regimens. Occasionally, total disability or death may occur. No long-term studies on untreated STARI patients have been conducted, but several studies suggest that serious problems may occur.

Controversy - Diagnostic and treatment strategies for Lyme disease are controversial. The International Lyme and Associated Diseases Society (ILADS) and the Infectious Diseases Society of America (IDSA) each have published guidelines for Lyme disease. See links to each of these organizations on our website.



Red Meat Allergy - Lone Star tick bites are associated with an allergic reaction to red meat. Eating mammalian meat such as beef, pork, or lamb can trigger the reaction which is usually delayed for several hours after eating the meat. The reaction is known as the alpha-gal allergy.

Our Mission

The Tick-Borne Infections Council of North Carolina, Inc. is a 501(c)(3) non-profit organization working to improve the recognition, treatment, control, and understanding of tick-borne diseases in North Carolina.

Our Goals

Educate the public, medical and veterinary professionals, school health nurses, and the public health system about tick-borne diseases in North Carolina, including risk factors, emerging infections, and prevention.

Encourage state public health agencies to conduct ongoing surveillance of the prevalence of tick-borne infections in North Carolina citizens and in ticks and vectors, and make this information available to the public and the medical sector.

Work with the public health sector to ensure all tick-borne infections are reported at both county and state levels.

Support the public health sector in identifying and characterizing newly emerging tick-borne infections in the Southeast.

Foster improved communication between the public and health professionals with respect to tick-borne diseases.

Maintain a registry of persons reporting North Carolina acquired tick-borne disease to TIC-NC.

Tick-Borne Infections Council of North Carolina, Inc.

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Member, NC Center for Nonprofits

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