

Tickborne Diseases

This page is perforated for easy removal.

UNDERSTAND the problem

Some of the most common tickborne diseases in the United States include Lyme disease, Rocky Mountain spotted fever, tularemia, and babesiosis. In 2018, state and local health departments reported 47,743 cases of tickborne disease to the CDC. The most common reported disease is Lyme disease (70.5%), followed by anaplasmosis/ehrlichiosis (12.8%), spotted fever rickettsiosis (11.6%), and babesiosis (4.5%). These diseases have the potential to cause significant illness and even death if unidentified and/or untreated.

Ticks transmit pathogens that cause disease through the process of feeding. Depending on the tick species and its stage of life, preparing to feed can take from 10 minutes to 2 hours. When the tick finds a feeding spot, it grasps the skin and cuts into the surface to drink the host's blood. Ticks also can secrete small amounts of saliva with anesthetic properties so that the animal or person can't feel that the tick has attached itself. If the tick contains a pathogen, the organism may be transmitted to the host animal from this saliva.

WHO is at risk

Anyone, including infants and children, is at risk for tickborne disease after an exposure. Of the many different tick species found throughout the world, only a select few bite and transmit disease to people. Of the ticks that bite people, different species of ticks transmit different diseases. The characteristics of a few of the most common species in the United States are outlined below.

American Dog Tick (*Dermacentor variabilis*)

Where Found: Widely distributed east of the Rocky Mountains. Also occurs in limited areas on the Pacific Coast

Transmits: Tularemia and Rocky Mountain spotted fever

The highest risk of being bitten occurs during spring and summer. Dog ticks are sometimes called wood ticks. Adult females are most likely to bite humans.

Blacklegged or Deer Tick (*Ixodes scapularis*)

Where Found: Widely distributed across the eastern United States

Transmits: Lyme disease, *anaplasmosis*, *B. miyamotoi* disease (a form of relapsing fever), ehrlichiosis, babesiosis, and Powassan virus disease

The greatest risk of being bitten exists in the spring, summer, and fall. However, adults may be out searching for a host any time winter temperatures are above freezing. Stages most likely to bite humans are nymphs and adult females.

Patient Education Handout

A service for patients

Brown Dog Tick (*Rhipicephalus sanguineus*)

Where Found: Worldwide

Transmits: Rocky Mountain spotted fever (in the southwestern United States and along the U.S.-Mexico border)

Dogs are the primary host for the brown dog tick in each of its life stages, but the tick may also bite humans or other mammals.

Gulf Coast Tick (*Amblyomma maculatum*)

Where Found: Coastal areas along the Atlantic coast and the Gulf of Mexico

Transmits: *Rickettsia parkeri* rickettsiosis, a form of spotted fever. Larvae and nymphs feed on birds and small rodents, while adult ticks feed on deer and other wildlife. Adult ticks have been associated with transmission of *R. parkeri* to humans.

Lone Star Tick (*Amblyomma americanum*)

Where Found: Widely distributed in the southeastern and eastern United States

Transmits: *Ehrlichia chaffeensis* and *E. ewingii* (which cause human ehrlichiosis), Heartland virus, tularemia, and southern tick-associated rash illness (STARI)

A very aggressive tick that bites humans. The adult female is distinguished by a white dot or "lone star" on her back. Lone star tick saliva can be irritating; redness and discomfort at a bite site does not necessarily indicate an infection. The nymph and adult females most frequently bite humans and transmit disease.

Rocky Mountain Wood Tick (*Dermacentor andersoni*)

Where Found: Rocky Mountain states and southwestern Canada from elevations of 4,000 to 10,500 feet

Transmits: Rocky Mountain spotted fever, Colorado tick fever, and tularemia

Adult ticks feed primarily on large mammals. Larvae and nymphs feed on small rodents. Adult ticks are primarily associated with pathogen transmission to humans.

Western Blacklegged Tick (*Ixodes pacificus*)

Where Found: Along the Pacific coast, particularly northern California

Transmits: Anaplasmosis and Lyme disease

Nymphs often feed on lizards, as well as other small animals. As a result, rates of infection are usually low (~1%) in adults. Stages most likely to bite humans are nymphs and adult females.

WHAT are the signs and symptoms

Many tickborne diseases can have similar signs and symptoms. The most common symptoms of tick-related illnesses are fever/chills, aches and pains, and rash.

With all tickborne diseases, patients can experience fever at varying degrees and time of onset. Tickborne disease symptoms also include headache, fatigue, and muscle aches. With Lyme disease you may also experience joint pain. The severity and time of onset of these symptoms can depend on the disease and the patient's personal tolerance level.

Lyme disease, STARI, Rocky Mountain spotted fever, ehrlichiosis, and tularemia can result in distinctive rashes. In Lyme disease, the rash is usually a circular rash called erythema migrans. The rash of STARI is nearly identical to that of Lyme disease, with a red, expanding "bull's eye" lesion that develops around the site of a lone star tick bite. The rash seen with Rocky Mountain spotted fever varies greatly from person to person in appearance, location, and time of onset. In the most common form of tularemia, a skin ulcer appears at the site where the organism entered the body. The appearance of the rash of ehrlichiosis ranges from macular to maculopapular to petechial.

HOW are tickborne diseases treated and prevented

If you have been bitten by a tick and develop the symptoms described within a few weeks, a healthcare provider should evaluate the following before deciding on a course of treatment:

- Your symptoms
- The geographic region in which you were bitten
- Diagnostic tests, if indicated by the symptoms and the region where you were bitten

Tickborne diseases can result in mild symptoms treatable at home to severe infections requiring hospitalization. Although easily treated with antibiotics, these diseases can be difficult for physicians to diagnose. However, early recognition and treatment of the infection decreases the risk of serious complications. So, see your doctor immediately if you have been bitten by a tick and experience any of the symptoms described here.

Prevention of tick bites is the best approach. Especially during warmer months, all people should take steps when they go outdoors and return from time outdoors.

Before You Go Outdoors

- Know where to expect ticks. Ticks live in grassy, brushy, or wooded areas, or even on animals. Many people get ticks in their own yard or neighborhood.
- Treat clothing and gear with products containing 0.5% permethrin.
- Use EPA-registered insect repellents containing DEET, picaridin, IR3535, Oil of Lemon Eucalyptus (OLE), para-menthane-diol (PMD), or 2-undecanone.

While Outdoors

- Avoid wooded and brushy areas with high grass and leaf litter.
- Walk in the center of trails.

After You Come Indoors

- Check your clothing for ticks.
- Examine gear and pets.
- Shower soon after being outdoors.
- Check your body for ticks after being outdoors.

This information is reprinted from materials provided by the Centers for Disease Control and Prevention.

This handout is provided to you by NetCE and your healthcare provider. For more information, please consult your physician.