

## Tick Bites, Disease Exposure Risk and Prevention

*This WorkCare Fact Sheet describes types of ticks, their habitats, tick-borne diseases and ways to reduce exposure risk.*

### Disease Risk

Some types of ticks can transmit disease when they latch onto a human host.

Globally, the prevalence rate of diseases transmitted by ticks has risen significantly within the past decade. Contributing factors are under investigation. Scientists say the longevity, distribution, biting habits and propagation of ticks are influenced by environmental factors such as rainfall, temperature and shelter.

Bacteria cause most tick-borne diseases. Virus infections are also increasing and could cause serious illness and death, according to scientists at the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health.

### Lyme Disease

Lyme disease is among the most familiar of at least 14 tick-borne diseases that can afflict humans.

The U.S. Centers for Disease Control and Prevention (CDC) estimate that the true incidence rate of Lyme disease is 10 times greater than what is reported. This is partly attributed to limitations in surveillance and diagnostic methods. Researchers are being encouraged to explore ways to improve diagnostics and the development of vaccines to prevent tick-borne diseases.

In the U.S., researchers analyzed data reported to the National Notifiable Diseases Surveillance System by disease, vector type, location and year. During the study period 2004-2016, the number of annual reports of tick-borne bacterial and protozoan diseases more than doubled. Tick-borne diseases accounted for more than 75 percent of 642,602 reported cases; 82 percent of reported cases were for Lyme disease.

People with increased risk for Lyme disease:

- Live or travel to areas where Lyme disease is prevalent (northeastern, mid-Atlantic and north central states)
- Have a prior history of Lyme disease
- Work outdoors or participate in leisure activities such as hiking, camping, fishing and hunting
- Own dogs or cats that are allowed outdoors

*Refer to Page 4 for symptoms associated with Lyme and other tick-borne diseases.*



Laboratory tests may be used to confirm a diagnosis of Lyme disease. Patients treated with antibiotics in early stages of the disease usually recover rapidly and completely. However, in a small percentage of cases, symptoms can become chronic — a condition known as [post-treatment Lyme disease syndrome](#).

## Tick Habitats and Habits

Ticks are generally found in wooded, brushy or grassy areas. They favor moist, shaded areas with fallen leaves and low vegetation. They often sit on the tips of tall grass or on shrubs waiting for a human or animal host to pass by.

Ticks burrow into the host's skin using a barbed appendage in order to position themselves to withdraw blood. Infected ticks pass pathogens to the host through the bloodstream. Once imbedded, they may remain on the host for days. On humans, they frequently crawl to fleshy parts of the body and into difficult to reach spots such as the groin, armpit or scalp. Some have been found burrowed into the navel or between toes.

## Tick Removal

A fine-tipped tweezers is the recommended tick removal tool and should be in your first-aid kit. Follow these steps:

1. Pull upward with steady, even pressure. Do not twist or jerk the tick; this can cause mouth parts to break off and remain in the skin. If this happens, remove the parts with tweezers. If you are unable to remove the mouth parts easily with clean tweezers, leave them alone and let the skin heal.
2. After removing the tick, thoroughly clean the bite area and your hands with rubbing alcohol, an iodine scrub, or soap and water.
3. Dispose of a live tick by submersing it in alcohol, placing it in a sealed bag/ container, wrapping it tightly in tape or flushing it down the toilet. Never crush a tick with your fingers.
4. Do not attempt to use nail polish remover, petroleum jelly, lotion or heat to try to get the tick to back out of your skin. Swift removal is the goal.



## Prevention

The following measures are recommended to help prevent tick bites and reduce disease exposure risk:

1. Avoid tick-infested areas such as shortcuts through heavily wooded or grassy areas. Stay on designated paths. Watch for ticks on grass tips and other foliage.
2. Wear light-colored clothing so dark-colored ticks will stand out. Wear a shirt with long sleeves and long pants to reduce skin exposure. Tuck your shirt into your pants and tuck your pants into your socks.
3. Use [repellent](#) that contains 20 to 30 percent DEET (N, N-diethyl-m-toluamide) on exposed skin and clothing. Avoid the hands, eyes and mouth, especially when applying on children. Wash off the repellent when you are back indoors.
4. Treat clothing and gear such as tents with products containing 0.5 percent permethrin. It will remain protective through several washings. Pre-treated clothing is sold in recreational stores.
5. While outdoors, conduct frequent tick checks on your clothing and skin. Have someone check your back, scalp, and behind your ears and joints. Check your gear for "hitchhikers."
6. As soon as you return indoors, take a bath or shower (preferably within two hours) and do a full-body inspection using a handheld or full-length mirror. Parents should fully inspect their children.
7. Wash the clothes you wore outdoors and tumble them dry on high to kill any ticks that may be hidden in them.
8. Check your pets for ticks and ask a veterinarian about preventive products.



## Asian Tick Turns Up in U.S.

An invasive Asian long-horned tick (*Haemaphysalis longicornis*) is the first new tick species found in the U.S. in 50 years, public health officials report.

It was first discovered in New Jersey in August 2017. Within a year it turned up in seven states.

Based on studies, scientists said the tick does not yet appear to pose a threat of disease transmission to people. However, it is threatening to animals, partly due to blood loss.

In East Asia, long-horned tick species carry pathogens related to Lyme and other tick-borne diseases found in North America, as well as a syndrome that causes severe fever and affects the body's production of platelets. A severe drop in platelets, which help form clots, can trigger internal bleeding and organ failure, the *New York Times* reported.



## Tick Index

Types, locations, related diseases, signs/symptoms, and treatment



### American Dog Tick (aka Wood Tick)

- **Location:** East of the Rocky Mountains and some parts of the Pacific coast
- **Transmits:** Rocky Mountain spotted fever (RMSF), Tularemia



### Blacklegged Tick

- **Location:** Northeastern and upper midwestern U.S.; prevalent on the Pacific coast
- **Transmits:** Lyme disease, Anaplasmosis, Babesiosis, Powassan disease



### Brown Dog Tick

- **Location:** Worldwide
- **Transmits:** RMSF in Southwestern U.S. and along U.S.-Mexico border



### Groundhog Tick

- **Location:** Eastern U.S. and Canada
- **Transmits:** Powassan disease



### Gulf Coast Tick

- **Location:** Atlantic and Gulf coasts
- **Transmits:** Rickettsiosis



### Lone Star Tick

- **Location:** Southeastern and Eastern U.S.
- **Transmits:** Tularemia, Ehrlichiosis, Southern tick associated rash illness (STARI)



### Rocky Mountain Wood Tick

- **Location:** Rocky Mountain states, Southwestern Canada
- **Transmits:** RMSF, Tularemia, Colorado tick fever



### Soft Tick

- **Location:** Western U.S., Southwestern Canada
- **Transmits:** Tickborne relapsing fever

## Associated Diseases

### Anaplasmosis

- **Symptoms:** Fever, chills, headache, malaise, muscle aches, gastrointestinal distress, cough, rash (less common)
- **Treatment:** See RMSF

### Babesiosis (parasite)

- **Symptoms:** Fever, chills, sweats, malaise, muscle aches, headache, gastrointestinal distress, dark urine
- **Treatment:** Usually treated with a combination of two medications (atovaquone and azithromycin or clindamycin and quinine)

### Colorado tick fever

- **Symptoms:** Flu-like symptoms abate and recur in about 50% of cases, rash less common, prolonged weakness/fatigue
- **Treatment:** No specific antiviral treatment available; supportive care as appropriate

### Ehrlichiosis

- **Symptoms:** See anaplasmosis
- **Treatment:** See RMSF

### Lyme disease

- **Symptoms:** Circular, slowly expanding rash, flu-like symptoms, swollen lymph nodes, joint pain, cardiac abnormalities
- **Treatment:** Antibiotics regimen in accordance with guidelines

### Powassan disease (virus)

- **Symptoms:** Flu-like symptoms; may progress to serious illness including altered mental state and seizures
- **Treatment:** No specific antiviral treatment; supportive care as appropriate

### Rocky Mountain spotted fever (RMSF)

- **Symptoms:** Symptoms: Fever, chills, malaise, gastrointestinal distress, cough, disrupted vision, nerve paralysis, rash 2-5 days after onset
- **Treatment:** Doxycycline (as recommended); treatment delay may result in severe illness or death

### Rickettsiosis

See RMSF

### Southern tick associated rash illness (STARI)

- **Symptoms:** Rash, expanding red bull's-eye lesion, fatigue, headache, fever, muscle aches
- **Treatment:** Antibiotics may be given but benefit is undetermined

### Tickborne relapsing fever

- **Symptoms:** Fever, headache, muscle aches, chills, nausea/vomiting; small, painless bites difficult to detect
- **Treatment:** Tetracycline preferred oral regimen

### Tularemia

- **Symptoms:** May include fever and skin ulcer at bite site
- **Treatment:** Antibiotics; untreated can cause serious illness

Image source: [Mayo Foundation for Medical Education and Research](#)