



Ticks are tiny arachnids that cannot jump or fly.

Ticks dwell in grass, leaf matter and wood; they latch onto your feet or lower legs, crawling upwards on your body, seeking warm dark areas to attach

Tick Prevention

DID YOU KNOW?

- ◇ Pennsylvania is #1 in confirmed Lyme disease cases.
- ◇ Ticks and risk of Lyme exist in every PA county
- ◇ When caught early, Lyme can be treated more easily.
- ◇ Lyme and other tick born diseases can be serious but also preventable by avoiding high risk habitat areas; wearing the proper clothing and repellent; carefully examining yourself and your pets; and properly removing ticks, if found.



Lyme disease is often a misunderstood illness. It is caused by *Borrelia burgdorferi*, a tiny bacterial corkscrew shaped spirochete. These spirochetes can be passed from an infected tick to a human in a single bite. Ticks can also carry and transmit more than a dozen other serious diseases, called tick borne diseases or co-infections. The longer an infected tick is attached, the more likely it is to transmit the disease it is carrying to you. Current research shows that 45% of ticks tested are infected with at least one pathogen. 32% are co-infected with two or more, 9% carry 3 or more, and 3% of the ticks tested carry 4 or more infectious agents.



Before You Go Outdoors

- Treat clothing and gear with products containing 0.5% permethrin. Permethrin can be used to treat boots, clothing and camping gear and remain protective through several washings. Alternatively, you can buy permethrin-treated clothing and gear.
- Use Environmental Protection Agency (EPA)-registered insect repellents. EPA's helpful search tool can help you find the product that best suits your needs. Always follow product instructions.
 - Do not use insect repellent on babies younger than 2 months old.
 - Do not use products containing OLE or PMD on children under 3 years old.
- Avoid Contact with Ticks and Mosquitoes
 - Avoid wooded and brushy areas with high grass and leaf litter.
 - Walk in the center of trails.

How ticks survive

Most ticks go through four life stages: egg, six-legged larva, eight-legged nymph, and adult. After hatching from the eggs, ticks must eat blood at every stage to survive. Ticks that require this many hosts can take up to 3 years to complete their full life cycle, and most will die because they don't find a host for their next feeding.

How ticks find their hosts

Ticks find their hosts by detecting animals' breath and body odors, or by sensing body heat, moisture, and vibrations. Some species can even recognize a shadow. In addition, ticks pick a place to wait by identifying well-used paths. Then they wait for a host, resting on the tips of grasses and shrubs. Ticks can't fly or jump, but many tick species wait in a position known as "questing".

While questing, ticks hold onto leaves and grass by their third and fourth pair of legs. They hold the first pair of legs outstretched, waiting to climb on to the host. When a host brushes the spot where a tick is waiting, it quickly climbs aboard. Some ticks will attach quickly and others will wander, looking for places like the ear, or other areas where the skin is thinner.

How ticks spread disease

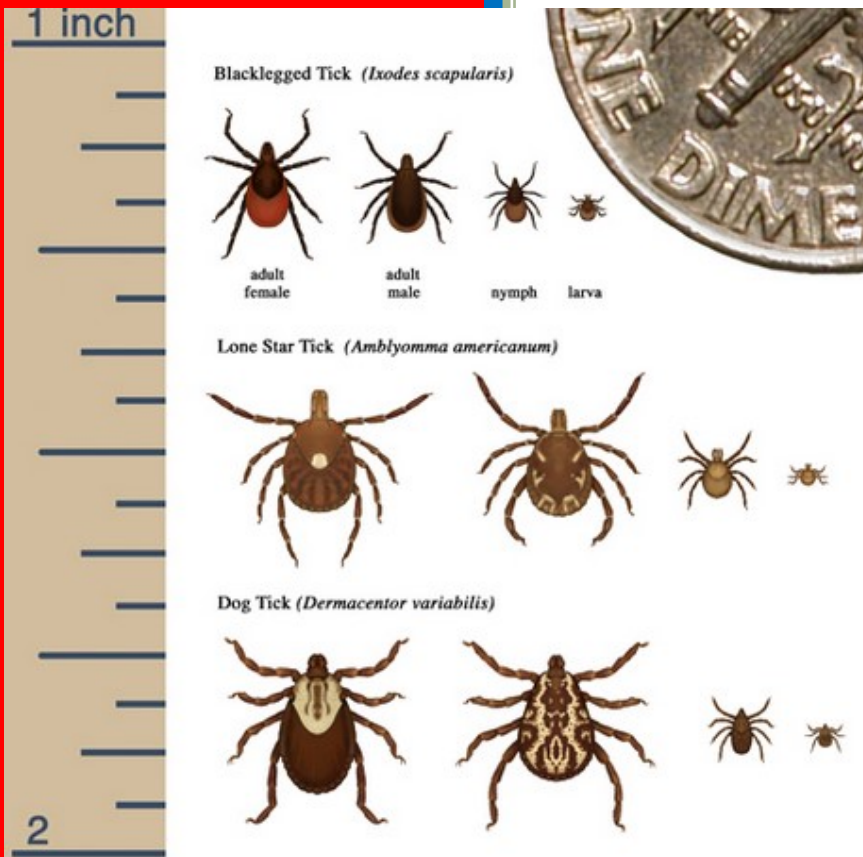
Ticks transmit pathogens that cause disease through the process of feeding.

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.

The tick then inserts its feeding tube. Many species also secrete a cement-like substance that keeps them firmly attached during the meal. The feeding tube can have barbs which help keep the tick in place.

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 is in a sheltered spot, it can go unnoticed.

A tick will suck the blood slowly for several days. If the host animal has a bloodborne infection, the tick will ingest the pathogens with the blood.



Relative sizes of several ticks at different life stages.



Lyme disease is transmitted mostly by the nymphal deer tick. At this stage, the ticks are the size of a period at the end of a sentence. Many people are not aware when they've been bitten by a tick and may not make a connection when they begin to experience symptoms, which can be weeks, months, or even years after a tick bite. There are published cases of Lyme bacteria entering the human bloodstream within the hour of a bite, and some infections (Powassan Virus) can be transmitted in minutes or hours. This does not happen in every case. The longer the tick is attached, the greater the probability of disease transmission.



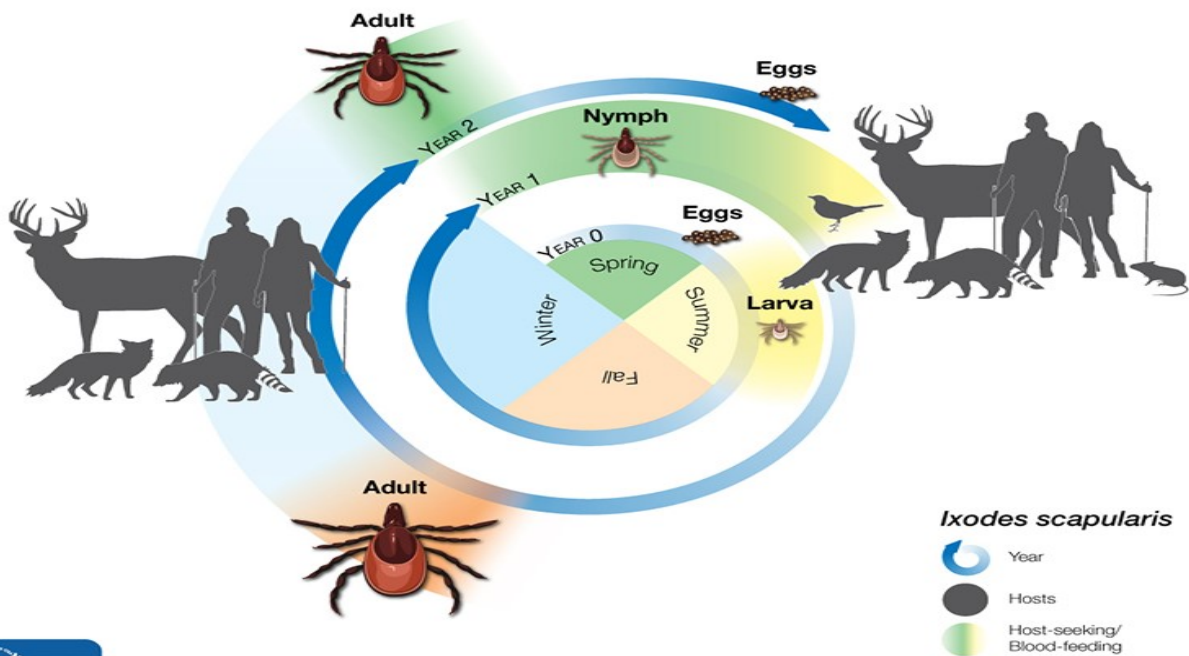
GET OUTDOORS PA
Ticks shouldn't keep you from enjoying nature!

Commonly Found Ticks in Pa.

<p>Black-legged "deer" tick</p> <p>This tick, a well-known carrier of Lyme disease, can feed on humans during any stage of its development. Adults tend to feed on deer, thus the name.</p>	<p>American dog tick</p> <p>Feeding on most mammals, this tick is the most commonly found tick in Pa. and is a major carrier of Rocky Mountain spotted fever.</p>	<p>Groundhog tick</p> <p>This tick tends to feed on groundhogs but occasionally is found on birds small animals or humans. Not likely to carry Lyme disease.</p>	<p>Lone star tick</p> <p>Although this tick is found on various animals, including humans, it is not likely to transmit Lyme disease. It is a carrier of Rocky Mountain spotted fever.</p>
--	--	---	---

Source: Penn State Cooperative Extension

The lifecycle of *Ixodes scapularis* ticks generally lasts two years. During this time, they go through four life stages: egg, larva, nymph, and adult. After the eggs hatch, the ticks must have a blood meal at every stage to survive. Blacklegged ticks can feed from mammals, birds, reptiles, and amphibians. The ticks need a new host at each stage of their life.



After You Come Indoors

Check your clothing for ticks. Ticks may be carried into the house on clothing. Any ticks that are found should be removed. Tumble dry clothes in a dryer on high heat for 10 minutes to kill ticks on dry clothing after you come indoors. If the clothes are damp, additional time may be needed. If the clothes require washing first, hot water is recommended. Cold and medium temperature water will not kill ticks.

Examine gear and pets. Ticks can ride into the home on clothing and pets, then attach to a person later, so carefully examine pets, coats, and daypacks.

Shower soon after being outdoors. Showering within two hours of coming indoors has been shown to reduce your risk of getting Lyme disease and may be effective in reducing the risk of other tickborne diseases. Showering may help wash off unattached ticks and it is a good opportunity to do a tick check.

Check your body for ticks after being outdoors. Conduct a full body check upon return from potentially tick-infested areas, including your own backyard. Use a hand-held or full-length mirror to view all parts of your body. Check these parts of your body and your child's body for ticks:

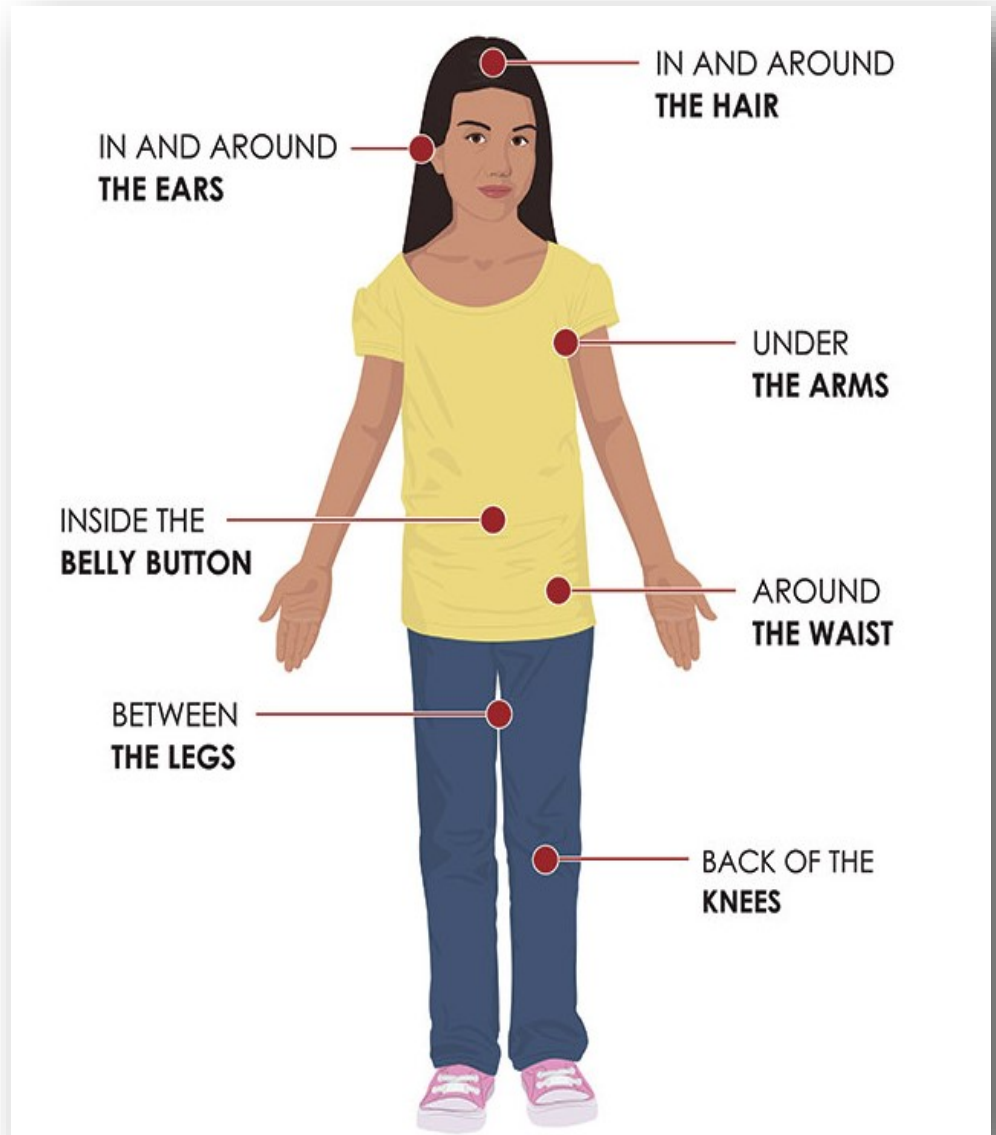
- ◆ Under the arms
- ◆ In and around the ears
- ◆ Inside belly button
- ◆ Back of the knees
- ◆ In and around the hair
- ◆ Between the legs
- ◆ Around the waist

◆ Removing a tick

If you find a tick attached to your skin, simply remove the tick as soon as possible. There are several tick removal devices on the market, but a plain set of fine-tipped tweezers works very well.

CDC's Tick Bite Bot is an interactive tool that will assist individuals on removing attached ticks and determining when to seek health care, if appropriate, after a tick bite.

The online mobile-friendly tool asks a series of questions covering topics such as tick attachment time and symptoms. Based on the user's responses, the tool then provides information about recommended actions and resources.

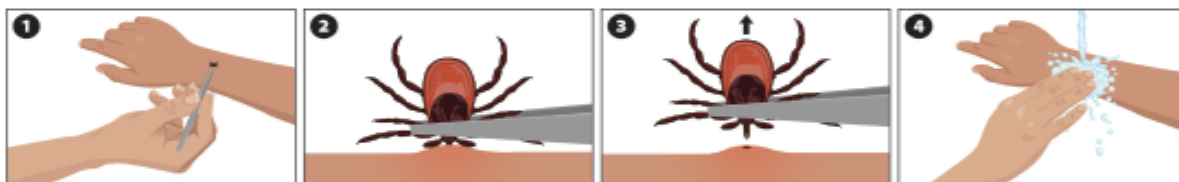


Tick Bite: What to Do

Ticks bites can make people sick. Below are some steps that you can take after a tick bite to reduce your chances of getting sick and how to get treatment promptly if you do get sick.

Remove the tick as soon as possible

1. Use fine-tipped tweezers to grasp the tick as close to the skin as you can.
2. Pull upward with steady, even pressure. Don't twist or jerk the tick.
3. After removing the tick, clean the bite area and your hands with rubbing alcohol or soap and water.
4. Dispose of the tick by flushing it down the toilet. If you would like to bring the tick to your healthcare provider for identification, put it in rubbing alcohol or place it in a sealed bag/container.



Consider calling your healthcare provider

In general, CDC does not recommend taking antibiotics after tick bites to prevent tickborne diseases. However, in certain circumstances, a single dose of doxycycline after a tick bite may lower your risk of Lyme disease. Consider talking to your healthcare provider if you live in an area where Lyme disease is common.

Watch for symptoms for 30 days

Call your healthcare provider if you get any of the following:

- Rash
- Headache
- Fever
- Muscle pain
- Fatigue
- Joint swelling and pain

Treatment for tickborne diseases should be based on symptoms, history of exposure to ticks, and in some cases, blood test results. Most tickborne diseases can be treated with a short course of antibiotics.



Avoid folklore remedies such as “painting” the tick with nail polish or petroleum jelly, or using heat to make the tick detach from the skin.

Your goal is to remove the tick as quickly as possible—not waiting for it to detach.



LYME DISEASE SYMPTOMS

Initial symptoms may occur within a day or a week, and often people think they just have a flu or virus. Symptoms include fever, headache, general achiness, swollen glands, fatigue and a possible rash. But some patients may present with only neurological symptoms (headache, sleep disruption, memory or concentration problems). The rash is typically a bulls eye rash, but it may also present in other forms like a round or oval red-dish rash. If the bulls-eye rash is seen, it is a definitive diagnosis of Lyme disease and treatment should begin immediately. Untreated Lyme disease can produce a wide range of symptoms, depending on the stage of infection. These include fever, rash, facial paralysis, and arthritis.

Seek medical attention if you observe any of these symptoms and have had a tick bite, live in an area known for Lyme disease, or have recently traveled to an area where Lyme disease occurs.



Early symptoms– between 3 –30 days:

- Fever, chills, headache, fatigue, muscle and joint aches, and swollen lymph nodes may occur in the absence of rash
- Erythema migrans (EM) rash
- Occurs in approximately 70 to 80 percent of infected persons
- Begins at the site of a tick bite after a delay of 3 to 30 days (average is about 7 days)
- Expands gradually over several days reaching up to 12 inches or more (30 cm) across
- May feel warm to the touch but is rarely itchy or painful
- Sometimes clears as it enlarges, resulting in a target or “bull’s-eye” appearance
- May appear on any area of the body
- Does not always appear as a “classic” erythema migrans rash



Later Signs and Symptoms (days to months after tick bite) Severe headaches and neck stiffness

Early diagnosis and proper antibiotic treatment of Lyme disease is important and can help prevent late Lyme disease.

- ◇ Additional EM rashes on other areas of the body
- ◇ Facial palsy (loss of muscle tone or droop on one or both sides of the face)
- ◇ Arthritis with severe joint pain and swelling, particularly the knees and other large joints.
- ◇ Intermittent pain in tendons, muscles, joints, and bones
- ◇ Heart palpitations or an irregular heart beat (Lyme carditis)
- ◇ Episodes of dizziness or shortness of breath

- ◇ Inflammation of the brain and spinal cord

- ◇ Nerve pain

- ◇ Shooting pains, numbness, or tingling in the hands or feet

Some patients report persistent symptoms of pain, fatigue, or difficulty thinking even after treatment for Lyme disease. The state of the science relating to persistent symptoms associated with Lyme disease is limited, emerging, and unsettled.

Post-Treatment Lyme Disease Syndrome

Lyme disease is caused by infection with the bacterium *Borrelia burgdorferi*. Although most cases of Lyme disease can be cured with a 2- to 4-week course of oral antibiotics, patients can sometimes have symptoms of pain, fatigue, or difficulty thinking that lasts for more than 6 months after they finish treatment. This condition is called Post-Treatment Lyme Disease Syndrome (PTLDS).

Why some patients experience PTLDS is not known. Some experts believe that *Borrelia burgdorferi* can trigger an “auto-immune” response causing symptoms that last well after the infection itself is gone. Other experts hypothesize that PTLDS results from a persistent but difficult to detect infection. Finally, some believe that the symptoms of PTLDS are due to other causes unrelated to the patient’s *Borrelia burgdorferi* infection.

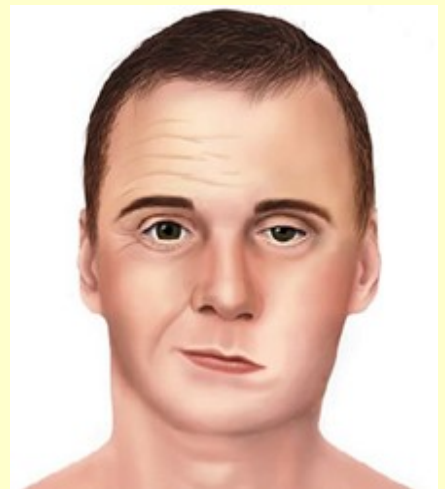
Unfortunately, there is no proven treatment for PTLDS. Although short-term antibiotic treatment is a proven treatment for early Lyme disease, funded by the National Institutes of Health (NIH) have found that long-term outcomes are no better for patients who received additional prolonged antibiotic treatment than for patients who received placebo. Patients with PTLDS usually get better over time, but it can take many months to feel completely well.

Information brought to you by:

NIH CDC

GetOutdoors PA.org

PA Lyme Prevention Program



Selinsgrove Area School District

500 N. Road S
Selinsgrove, Pa 17870



Don't Let a Tick Make You Sick!



Keep ticks away!

- Wear repellent on your bare skin or wear clothes that have repellent built-in.
- Check for ticks at the end of each day.
- Take a shower too! It will help wash off the ticks you can't see.
- Change clothes. Don't put on your old clothes that might have ticks still crawling on them.
- Avoid taking short cuts through thick brush and grass.

Hey Grown-Ups!

- Make sure that the repellent you're using contains 20% or more of the active ingredient (like DEET).
- Help younger kids apply repellent and keep it away from eyes, mouth and hands.

Illustrations courtesy of: Jerome Mayo