

WHAT TO DO IF BITTEN BY A TICK

Remove the tick as soon as possible. The easiest method is to grasp the tick with fine tweezers, as near to the skin as you can, and to gently pull it out. You may want to save the tick in a small jar for later identification. Check to see whether the mouthparts broke off in the wound. If they did, seek medical attention to get them removed. If you get any symptoms of Lyme disease in the following week to several months, see a physician immediately. Be sure to tell the doctor that you were bitten by a tick. A blood test can help determine if you have been exposed to Lyme disease.

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TICKS AND LYME DISEASE IN THE NATIONAL PARKS



LYME DISEASE

Lyme disease is an illness caused by corkscrew-shaped bacteria called spirochetes that are transmitted to people by tick bites. Not all ticks carry the disease. However, local infection rates can be quite high in some tick species. The disease gets its name from the town of Old Lyme, Connecticut, where it was first described in 1975.

In 1984, there were 1,498 cases of Lyme disease reported from 22 states to the Centers for Disease Control. Over 90% of all reported cases have been acquired in seven states: the Northeast seaboard (Connecticut, Massachusetts, Rhode Island, New Jersey, and New York) and the upper Midwest (Wisconsin and Minnesota). An increasing number of cases have also been reported from California and Oregon, Texas, and parts of the Southeastern United States.

SYMPTOMS AND TREATMENT

A characteristic rash or lesion called erythema chronicum migrans (ECM, for short) develops a few days to a few weeks after the bite of an infected tick. The rash generally looks like an expanding red ring with a clear center, but it can vary from a blotchy appearance to red throughout. Sometimes there are two or more lesions. Unfortunately, some patients never get a rash, making diagnosis difficult. At about this time, flu-like symptoms may appear along with headache, stiff neck, fever, muscle aches, and/or general malaise. It is important to seek medical attention if any of these symptoms appear. Tell the physician that you have been or may have been bitten by a tick. Timely treatment (with appropriate antibiotics) can cure the disease or lessen the severity of any later



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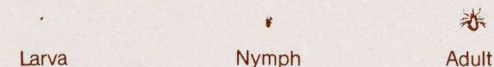
symptoms. If left alone, these early symptoms may disappear, but more serious problems may follow.

Some patients apparently have no further symptoms, especially if treatment is sought. However, for others later complications can be quite severe. The most common later problem is arthritis, usually of the large joints (e.g., knees, hips, ankles). This can occur a few weeks to over a year after the tick bite, and can recur several times over the following years (occasionally, it can become chronic). Meningitis may also occur, with fever, severe headache and stiff neck weeks to months after the tick bite. Other complications include neurological problems such as numbness, tingling in the extremities, loss of concentration and ability to have memory retention, loss of confidence and withdrawal, lethargy, and/or Bell's palsy (loss of control of one side of the face), or cardiac symptoms such as heart palpitations or heart block. Remember, some patients do not get a rash, and progress directly to these later manifestations. Treatment of later symptoms is more difficult than for early symptoms and is less often successful. Therefore, early treatment is very important. If you develop any of these symptoms after being bitten by a tick, or after visiting an area where Lyme disease is

common, see a doctor and mention the possibility of Lyme disease. Don't put it off!

TICKS THAT CARRY LYME DISEASE

The deer tick (*Ixodes dammini*) is responsible for most cases of Lyme disease in the northeastern and northcentral United States. Adults are found in grassy, shrubby, and woodland habitats in the fall and spring, and even on warm winter days. They feed mostly on white-tailed deer, *Odocoileus virginianus*, but will also attack other large mammals. If infected, they can transmit the Lyme disease spirochete to their hosts. After engorging, females apparently drop to the ground to lay eggs. The larvae that hatch from the eggs seek hosts from July through September. They are very small and difficult to spot.



Some of the larvae acquire the Lyme disease spirochete while feeding on infected hosts. After engorging, they molt into nymphs, which appear the following spring and early summer (May through July). Nymphs that were infected as larvae can now transmit spirochetes to their new hosts. Both immature stages attach to a variety of small mammals, but mostly to white-footed mice, *Peromyscus leucopus*. The nymphs molt into adult ticks, completing the life cycle. In the north, therefore, a generation apparently lasts two years. However, some individuals may complete the life cycle in one year, especially in southern parts of the range.

The lone star tick (*Amblyomma americanum*), a common southern species, and the California black-legged tick (*Ixodes pacificus*), a western tick, can also transmit Lyme disease.

The common American dog tick (*Dermacentor variabilis*) does not transmit Lyme disease, but carries other diseases such as Rocky Mountain Spotted Fever.



HOW TO AVOID TICK BITES

When in tick habitat (grassy, brushy, or woodland areas), several precautions can minimize your chances of being bitten by a tick.

- Tuck your pant legs into your socks. Tuck your shirt into your pants. Deer ticks grab onto feet and legs and then climb up. This precaution will keep them on the outside of your clothes, where they can be spotted and picked off.
- Wear light colored clothing. Dark ticks can most easily be spotted against a light background.
- Inspect your clothes for ticks often while in tick habitat. Have a companion inspect your back.
- Wear repellents, applied according to label instructions. Application to shoes, socks, cuffs, and pant legs are most effective against deer ticks.
- Inspect your head and body thoroughly when you get in from the field. Have a companion check your back, or use a mirror.
- When working in tick habitat on a regular basis, do not wear work clothing home. This will reduce the chances of bringing ticks home and exposing family members.