



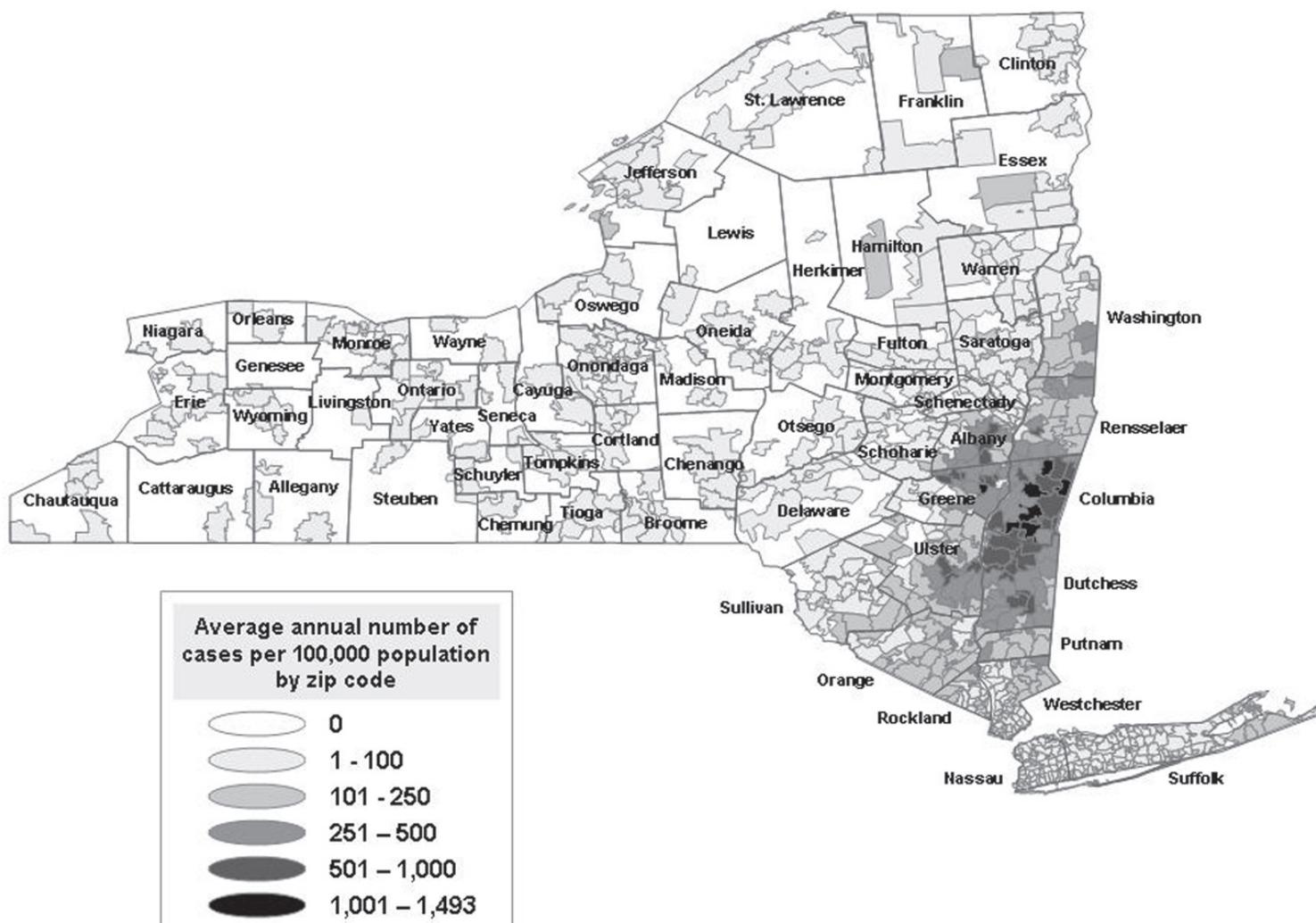
A GUIDE
for preventing
LYME DISEASE

New York State Department of Health

Lyme Disease in New York State

The New York State Department of Health (NYSDOH) and local health departments continue to investigate the spread of Lyme disease throughout New York State. Lyme disease is a bacterial infection caused by the bite of an infected deer tick. Untreated, the disease can cause a number of health problems. Patients treated with antibiotics in the early stage of the infection usually recover rapidly and completely. Since Lyme disease first became reportable in 1986, over 77,000 cases have been confirmed in New York State.

Lyme Disease in New York State 2004 - 2006



What is Lyme Disease?

Lyme disease is caused by bacteria transmitted by the deer tick (*Ixodes scapularis*). Lyme disease may cause symptoms affecting the skin, nervous system, heart and/or joints of an individual. Over 77,000 cases have been reported to the New York State Department of Health since Lyme disease became reportable in 1986.

Who gets Lyme disease?

Lyme disease can affect people of any age. People who spend time in grassy and wooded environments are at an increased risk of exposure. The chances of being bitten by a deer tick are greater during times of the year when ticks are most active. Young deer ticks, called nymphs, are active from mid-May to mid-August and are about the size of poppy seeds. Adult ticks, which are approximately the size of sesame seeds, are most active from March to mid-May and from mid-August to November. Both nymphs and adults can transmit Lyme disease. Ticks can be active any time the temperature is above freezing. Infected deer ticks can be found throughout New York State.

How is Lyme disease transmitted?

Not all deer ticks are infected with the bacteria that cause Lyme disease. Ticks can become infected if they feed on small animals that are infected. The disease can be spread when an infected tick bites a person and stays attached for a period of time. In most cases, the tick must be attached for 36 hours or more before the bacteria can be transmitted. Lyme disease does not spread from one person to another. Transfer of the bacteria from an infected pregnant woman to the fetus is extremely rare.

What are the symptoms of Lyme disease?

In 60-80 percent of cases, a rash resembling a bull's eye or solid patch, about two inches in diameter, appears and expands around or near the site of the bite. Sometimes, multiple rash sites appear. The early stage of Lyme disease is usually marked by one or more of the following symptoms: chills and fever, headache, fatigue, stiff neck, muscle and/or joint pain, and swollen glands. If Lyme disease is unrecognized or untreated in the early stage, more severe symptoms may occur. As the disease progresses, severe fatigue, a stiff aching neck, and tingling or numbness in the arms and legs, or facial paralysis can occur. The most severe symptoms of Lyme disease may not appear until weeks, months or years after the tick bite. These can include severe headaches, painful arthritis, swelling of the joints, and heart and central nervous system problems.



When do symptoms appear?

Early symptoms usually appear within three to 30 days after the bite of an infected tick.

Does past infection with Lyme disease make a person immune?

Lyme disease is a bacterial infection. Even if successfully treated, a person may become reinfected if bitten later by another infected tick.

What is the treatment for Lyme disease?

Early treatment of Lyme disease involves antibiotics and almost always results in a full cure. However, the chances of a complete cure decrease if treatment is delayed.

What can I do to prevent Lyme disease?

Deer ticks live in shady, moist areas at ground level. They will cling to tall grass, brush and shrubs, usually no more than 18-24 inches off the ground. They also live in lawns and gardens, especially at the edges of woods and around old stone walls.

Deer ticks cannot jump or fly, and do not drop onto passing people or animals. They get on humans and animals only by direct contact. Once a tick gets on the skin, it generally climbs upward until it reaches a protected area.

- In tick-infested areas, your best protection is to avoid contact with soil, leaf litter and vegetation. However, if you garden, hike, camp, hunt, work, or otherwise spend time in the outdoors, you can still protect yourself:
- Wear light-colored clothing with a tight weave to spot ticks easily.
- Wear enclosed shoes, long pants and a long-sleeved shirt. Tuck pant legs into socks or boots and shirt into pants.
- Check clothes and any exposed skin frequently for ticks while outdoors and check again once indoors.
- Consider using insect repellent. Follow label directions.
- Stay on cleared, well-traveled trails. Avoid contacting vegetation.
- Avoid sitting directly on the ground or on stone walls.
- Keep long hair tied back, especially when gardening.



Tick Life Cycle

Deer Tick Life Cycle

The deer tick passes through four life stages (egg, larva, nymph, adult), over a two year period

Egg to Larvae

Eggs are fertilized in the fall and deposited in leaf litter the following spring. They emerge as larvae in late summer of that year, seeking their first blood meal. The tiny larva crawls around the forest floor and onto low-lying vegetation looking for an appropriate host. Their first host is generally a mouse or other medium-sized mammal or bird. Once attached, the larvae embed their mouth parts and feed for several days. If the host is infected with a disease such as Lyme, the tick may be infected during this feeding. The larvae then drop off their host into the leaf litter where they molt into the next stage, the nymph, remaining dormant until the following spring.

Larvae to Nymph

During the spring and early summer of the next year the nymphs end their dormancy and begin to seek a host. Nymphs are commonly found on the forest floor in leaf litter and on low lying vegetation. Their host primarily consists of mice and other rodents, deer, birds and unfortunately humans. Most cases of Lyme disease are reported from May through August, which corresponds to the peak activity period for nymphs. This suggests that the majority of Lyme disease cases are transmitted by nymphal deer ticks. After feeding for several days the nymph ticks drop off to the forest floor.

Nymph to Adult

Over the next few months the nymph molts into the larger adult tick, which emerges in fall, with a peak in October through November. Both male and female adults find and feed on a host, then the females lay eggs sometime after feeding.

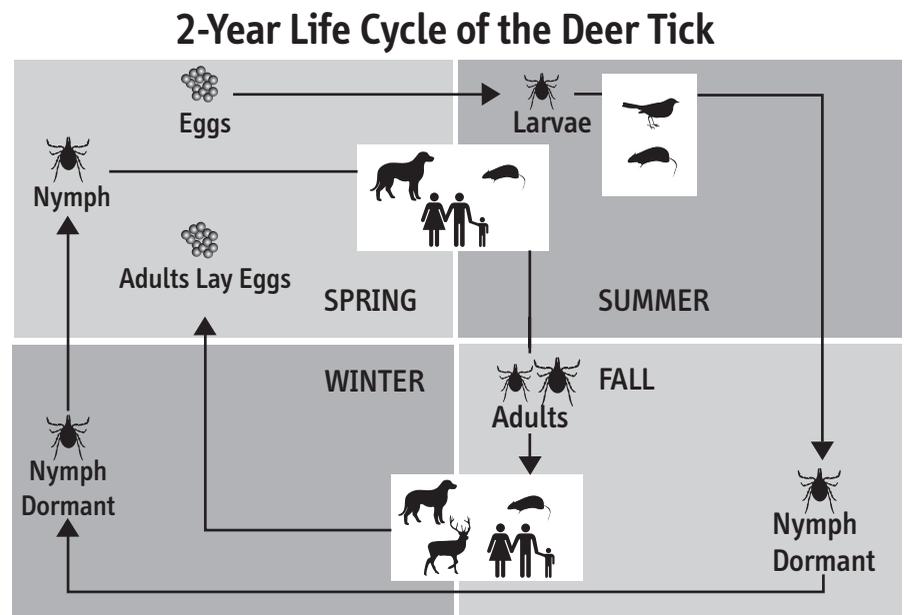
Adult ticks wait for host animals from the tips of grasses and shrubs approximately one meter above the ground. When an animal or person brushes by the vegetation, they quickly let go and climb onto the host. Adult ticks feed on their host for five to seven days. The female will become engorged with blood, providing nourishment for her developing eggs. After feeding and mating, the female tick drops into the leaf litter where she lays thousands of eggs. She will become dormant as the temperature drops below 40° F.

Tick Facts

Ticks can only crawl; they cannot fly or jump. Ticks found on the scalp have usually crawled there from lower parts of the body. Some species of ticks will crawl several feet toward a host. Ticks can be active on winter days when the ground temperatures are above 45 degrees Fahrenheit.

There are two groups of ticks, sometimes called “hard” ticks and “soft” ticks. Hard ticks, like the common dog tick and Deer tick, have a hard shield just behind the mouthparts (sometimes incorrectly called the “head”); unfed hard ticks are shaped like a flat seed. Soft ticks do not have the hard shield and they are shaped like a small raisin. Soft ticks prefer to feed on birds or bats and are seldom encountered unless these animals are nesting or roosting in an occupied building.

The most commonly encountered ticks in New York State are the deer tick, American dog tick, and lone star tick.



Courtesy American Lyme Disease Foundation

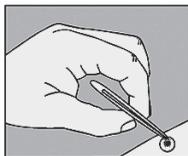


How to Remove a Tick

You find a tick attached to you or your child!

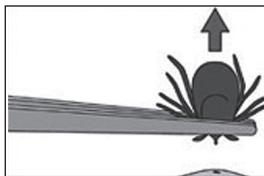
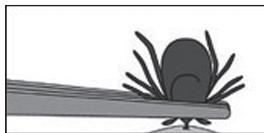
Now what?

Don't panic. Not all ticks are infected, and your risk of acquiring Lyme disease is greatly reduced if the tick is removed within the first 36 hours after attachment.



Remove the tick promptly and properly:

- Using tweezers, grasp the tick as close to the skin as possible.
- Gently pull the tick in a steady, upward motion.
- Wash the area with a disinfectant.
- When trying to remove the tick:



Courtesy CDC/Division of Viral and Rickettsial Diseases

- **DO NOT** touch the tick with your bare hands.
- **DO NOT** squeeze the body of the tick as this may increase your risk of infection.
- **DO NOT** put alcohol, nail polish remover or Vaseline on the tick.
- **DO NOT** put a hot match or cigarette on the tick in an effort to make it “back out.”
- **DO NOT** use your fingers to remove the tick.

These methods do not work and only increase the likelihood the tick will transmit Lyme disease to you. Applying alcohol, nail polish remover, or a hot match can irritate a tick and cause it to regurgitate its gut contents into your skin. The gut contents of a tick can contain the Lyme disease-causing bacterium.

While removing a tick, if the tick's mouthparts break off and remain in your skin, don't worry. The mouthparts alone cannot transmit Lyme disease, because the infective body of the tick is no longer attached. The mouthparts can be left alone. They will dry up and fall out by themselves in a few days, or you can remove them as you would a splinter.

After cleaning the area, watch the site of the bite for the appearance of a rash 3 to 30 days after the bite. The rash will

usually be at least 2 inches in diameter initially and will gradually expand to several inches in size. Rashes smaller than the size of a quarter are usually a reaction to the bite itself and do not mean you have Lyme disease.

If you develop this type of rash or flu-like symptoms, contact your health care provider immediately.

Although not routinely recommended, taking antibiotics within three days after a tick bite may be beneficial for some persons. This would apply to deer tick bites that occurred in areas where Lyme disease is common and there is evidence that the tick fed for more than one day. In cases like this you should discuss the possibilities with your doctor or licensed health care provider.

New York State Department of Health Tick Identification Service

Tick identification services are available through the NYS Department of Health. The NYS Department of Health Tick Identification Service will tell you the species of the tick, whether it is engorged with blood and, if so, how long it may have been feeding. The Tick Identification Service will also report whether the mouthparts are present (if not, they may have remained in the skin and need to be removed, as you would a splinter). There is no charge for this service.

The NYS Tick Identification Service will not tell you whether the tick is infected with disease-causing organisms. Once you send a tick to be identified it will not be returned. If you wish to have a tick identified, place it in a small jar containing rubbing alcohol. Seal the container to prevent leakage.

Complete the Tick Identification Submittal Form.

The submittal form is available on line at:
<http://www.nyhealth.gov/nysdoh/envirom/lyme/tickid.htm>

Mail the tick in the sealed container, along with the completed Tick Identification Submittal form to:

The New York State Department of Health
Tick I.D. Service
c/o HVCC Central Receiving
80 Vandenburg Ave, Troy, NY 12180



Creating a Tick-Free Zone Around Your Home

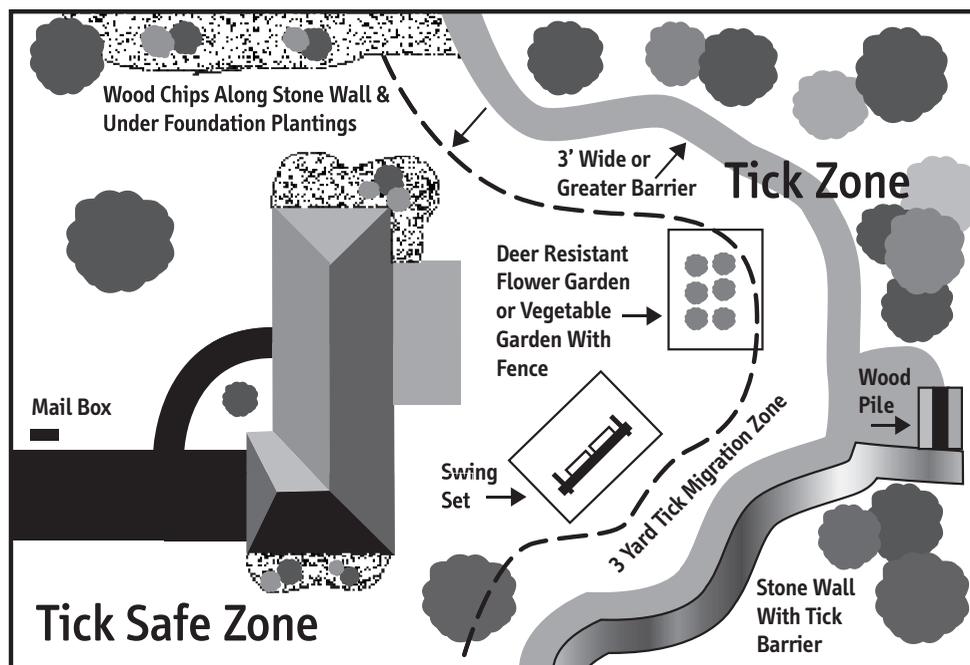
Creating a Tick-Free Zone Around Your Home

While deer ticks are most abundant in wooded areas, they are also commonly found in our lawns and shrubs. There are a number of measures homeowners can take to reduce the possibility of being bitten by a tick on their property.

Ticks and their primary hosts - mice, chipmunks and other small mammals - need moisture, a place away from direct sunlight and a place to hide. The cleaner you keep the area around the house, the less likely your chances of being bitten by a tick.

Although it may not be possible to create a totally tick-free zone, taking the following precautions will greatly reduce the tick population in your yard.

- Keep grass mowed.
- Remove leaf litter, brush and weeds at the edge of the lawn.
- Restrict the use of groundcover, such as pachysandra in areas frequented by family and roaming pets.
- Remove brush and leaves around stonewalls and wood piles.
- Discourage rodent activity. Clean up and seal stonewalls and small openings around the home.
- Move firewood piles and bird feeders away from the house.
- Manage pet activity; keep dogs and cats out of the woods to reduce ticks brought into the home.
- Use plantings that do not attract deer (contact your local Cooperative Extension or garden center for suggestions) or exclude deer through various types of fencing.
- Move children's swing sets and sand boxes away from the woodland edge and place them on a wood chip or mulch type foundation.
- Trim tree branches and shrubs around the lawn edge to let in more sunlight.



Courtesy of CT Agricultural Experiment Station

- Adopt dryer or less water-demanding landscaping techniques with gravel pathways and mulches. Create a 3-foot or wider wood chip, mulch, or gravel border between lawn and woods or stonewalls. Consider areas with decking, tile, gravel and border or container plantings in areas by the house or frequently traveled.
- Widen woodland trails.
- If you consider a pesticide application as a targeted treatment, do not use any pesticide near streams or any body of water, as it may kill aquatic life or pollute the water itself.

Always read and follow pesticide label directions and precautions



Tick and Insect Repellents: Deciding on Their Use

Tick and Insect Repellents: Deciding on Their Use

There are many different products on the market, with different ingredients, concentrations and effectiveness. The most effective contain DEET, permethrin (only to be applied on clothing), picaridin or oil of lemon eucalyptus. If you decide to use one, be sure to follow label directions and apply repellent carefully.

ABOUT INSECT REPELLENTS

DEET (the label may say N,N-diethyl-m-toluamide) comes in many different concentrations, with percentages as low as five percent or as high as 100 percent. In general, the higher the concentration the higher the protection, but the risk of negative health effects goes up, too. Use the lowest concentration that you think will provide the protection you need.

Picaridin (also known as KBR3023) and oil of lemon eucalyptus were registered for use in New York State in 2005. Both repellents have been shown to offer long-lasting protection against mosquito bites but there are limited data regarding their ability to repel ticks.

Products containing permethrin are **for use on clothing only**, not on skin. Permethrin kills ticks and insects that come in contact with treated clothes. Permethrin products can cause eye irritation, particularly if label directions have not been followed. Animal studies indicate that permethrin may have some cancer-causing potential. Permethrin is effective for two weeks or more if the clothing is not washed. Keep treated clothing in a plastic bag when not in use.

If you decide to use any kind of repellent, carefully read and follow all label directions before each use. On the labels, you will find important information about how to apply the repellent, whether it can be applied to skin and/or clothing, special instructions for children, hazards to humans, physical or chemical hazards and first aid.

Children, Pregnant Women and Repellents

Children may be at greater risk for adverse reactions to repellents, in part, because their exposure may be greater.

- Keep repellents out of the reach of children.
- Do not allow children to apply repellents to themselves.
- Use only small amounts of repellent on children.
- Do not apply repellents to the hands of young children because this may result in accidental eye contact or ingestion.

- Try to reduce the use of repellents by dressing children in long sleeves and long pants tucked into boots or socks whenever possible. Use netting over strollers, playpens, etc.
- As with chemical exposures in general, pregnant women should take care to avoid exposures to repellents when practical, as the fetus may be vulnerable.

Considerations

When thinking about using a repellent, consider a combination of things, including where you are, how long you will be outside and how bad the bugs are, and if those bugs carry disease. Every situation is different. Use the following questions to make a “profile” that fits your situation - this may help you decide if you want to use a repellent, and if so, which kind.

What type of pest are you concerned about?

Ticks may be more difficult to repel than mosquitoes. Repellents provide some protection against ticks, as does wearing light-colored, long-sleeved shirts and long pants, with bottoms tucked into socks and boots.

When will you be outside? Where will you be?

Some pests are more active at certain times. For example, some mosquitoes are most active between dusk and dawn. Ticks may be active at any time of day. Some places are more likely to have higher activity too. Mosquitoes generally live in areas with brush and trees. Ticks prefer areas with tall grass, brush and trees.

How long will you be outside?

Are you doing some gardening, going on a hike, camping for a week? The longer you are out, the more protection you may need. Some people exposed to high numbers of ticks and mosquitoes for long periods of time use a two-part approach. With this approach, about 33 percent DEET in a controlled release formula is applied on exposed skin, and clothing is treated with permethrin. If, on the other hand, you are going to do some yard work or have a picnic during mid-day when mosquito activity is low and you decide to use an insect repellent, DEET concentrations as low as five percent may provide sufficient protection from mosquito bites for up to about four hours.

Remember! If you decide to use a repellent, use only what and how much you need for your situation.





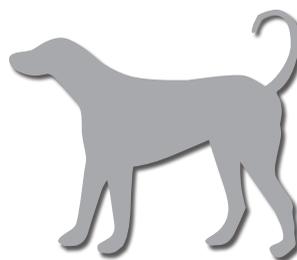
Lyme disease is not limited to humans. Veterinarians have reported Lyme in both dogs and cats. Just as with humans, it is important for animals to avoid tick bites and receive prompt treatment for Lyme disease.

Tick Bite Prevention:

- When walking or exercising your pet outdoors, try to keep it away from grassy or wooded areas and leafy debris.
- Check your pet regularly for ticks, especially after any trips through grassy or wooded areas. Comb through your pet's hair thoroughly.
- If you find a tick, remove it promptly.
- Consult your veterinarian about treating your dog or cat with tick-killing pesticides (acaricides) or using tick collars. There are many pesticides aimed at preventing tick bites, but some people and animals may be sensitive to the chemicals they contain.
- There is currently a Lyme disease vaccine available for dogs. However, there are varying opinions on its effectiveness. Consult your veterinarian about the vaccine.
- If you find several ticks on your dog, you may wish to discuss an insecticidal bath with your veterinarian or groomer.

Symptoms of Lyme Disease in Pets:

Symptoms of Lyme disease in animals are similar to the symptoms in humans. Although you will not see a skin rash on your pet, they can experience a range of symptoms:



In dogs: Some infected dogs do not experience any symptoms of Lyme disease. Symptoms include lethargy, arthritis (displayed as joint pain, shifting from foot to foot, and lameness), fever, fatigue, and kidney damage. Symptoms can become chronic.

In cats: While there is some debate about whether cats suffer from Lyme disease, cats are thought to be highly resistant to the disease.



Treatment of Lyme Disease in Pets:

As with humans, animals are generally treated for Lyme disease with certain antibiotics. However, you should consult your veterinarian about proper treatment of your pet.

