

Borreliosis (Lyme disease)

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Borreliosis

(Lyme disease) is the most commonly reported vector-borne (insect-transmitted) disease in the U.S. In this country, it is found primarily in the Northeast, upper Midwest and northern California.

Borreliosis is caused by a spirochete (spiral) bacterium, *Borrelia burgdorferi*. This bacterium is found in a variety of reservoir hosts (where the bacteria persist naturally): mainly birds and small (rodents) to medium-sized mammals. The disease is transmitted to humans and other animals primarily through the bite/blood meal of members of the Ixodid tick family (see image below).

The Disease in Animals

Infected dogs can develop fever, malaise, anorexia and swollen lymph nodes. They may show a shifting leg

lameness affecting several different joints. In extreme cases, severe kidney disease can occur. In areas where Lyme disease is endemic (found naturally), dogs displaying these clinical signs often are tested for evidence of exposure to *B. burgdorferi*.

Horses are another domestic animal species that appear to be affected with Lyme disease. Veterinary medical literature includes discussion about equine neurologic and ocular disease. Anecdotal information in diseased horses also reports arthritis, lameness, muscular tenderness, abortion, fever and lethargy.

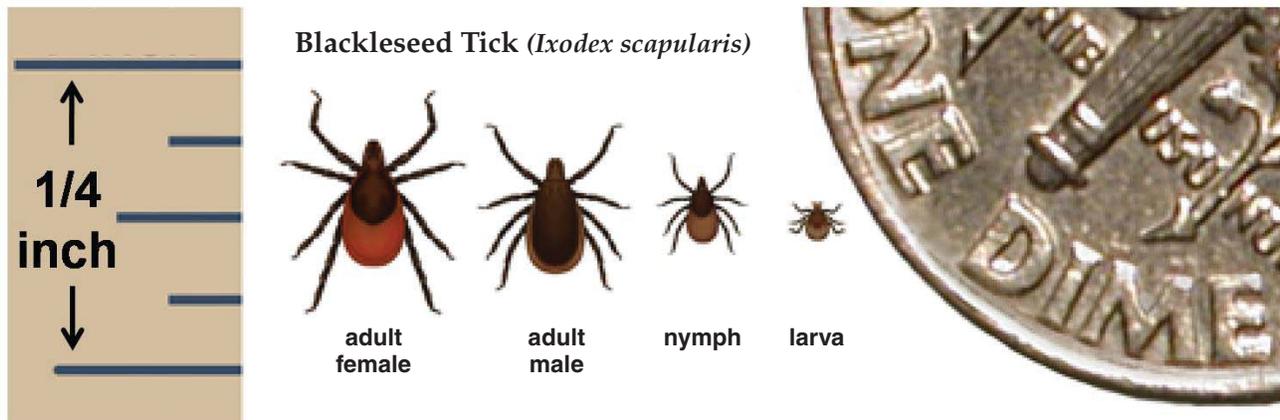


Photo courtesy of Center for Disease Control and Prevention, <http://phil.cdc.gov>

The Disease in Humans

Humans bitten by ticks carrying the *Borrelia* bacteria develop a characteristic targetlike skin lesion known as erythema chronicum migrans. This is caused by the attachment of the tick and a reaction to its saliva. A tick must be attached for at least 24 hours before the bacteria are transmitted into a human host; therefore, prompt removal of ticks is important.

Some infected individuals may show no signs of disease, some may have flulike symptoms, and others may develop chronic Lyme disease leading to disease in the heart, nervous system, joints and skin. If you have been exposed to a tick and develop symptoms consistent with Lyme disease, consult your physician.



Erythema chronicum migrans

Photo courtesy of Center for Disease Control and Prevention, <http://phil.cdc.gov>

Diagnosis

Diagnosis of borreliosis is difficult. It can be managed through a combination of clinical signs, evidence of exposure, response to treatment, identification of the organism through a variety of tests, and evaluation of patient serum for antibody to the bacteria. Because the organism is difficult to demonstrate in clinical samples, finding antibody in a patient's serum is often the best way to suspect borreliosis. While antibody alone does not confer a positive diagnosis, along with other test results, it can provide an answer.

Treatment

Lyme disease can be treated with antibiotics. Several different vaccines also are available for veterinary use. No human vaccine is available.

Risk of Exposure

Borrelia burgdorferi is transmitted to animals and humans by the bite of an infected tick; therefore, a tick bite is the primary means of exposure.

Exposure Point

People are encouraged to take precautions to prevent them and their animals from being exposed to ticks. The following is list of suggested preventative practices:

- Wear light-colored clothing.
- Examine clothes and skin for ticks.
- If possible, use well-traveled trails.
- Use insect repellent.
- Wear long-sleeved shirts and pants.
- Place sock tops outside the pant leg and tuck in your shirt when walking in woods.
- Check yourself, your children and pets for ticks at the end of the day.
- Keep your lawn mowed.
- Clear vegetation from around houses and gardens.
- Spray the yard with a residual insecticide.
- Talk to your veterinarian about using an appropriate tick repellent for pets.

For more information on this and other topics, see www.ag.ndsu.edu

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