

Risk

In the United States, Lyme disease is mostly localized to states in the northeastern, mid-Atlantic, and upper north-central regions, and to several counties in northwestern California. In 1999, 16,273 cases of Lyme disease were reported to the Centers for Disease Control and Prevention (CDC). Ninety-two percent of these were from the states of Connecticut, Rhode Island, New York, Pennsylvania, Delaware, New Jersey, Maryland, Massachusetts, and Wisconsin.

People and dogs are susceptible to infection with the tick-borne agent which causes Lyme disease. Can horses also become infected with this agent and become clinically sick?

Yes! Lyme disease (or “Borreliosis”) is caused by a bacterial spirochete called *Borrelia burgdorferi*. This agent is transmitted by a species of tick called *Ixodes*, commonly called the “deer tick”. These ticks are found throughout New Jersey, as is the disease in people and dogs. Horses do not appear to be as susceptible to the disease as people and dogs, however. Lyme disease in horses has been reported in NJ by equine practitioners over the past ten years. What are the clinical signs of Lyme disease commonly seen in horses?

Clinical signs of this disease in horses appear to be quite variable including (but not limited to) one or more of the following:

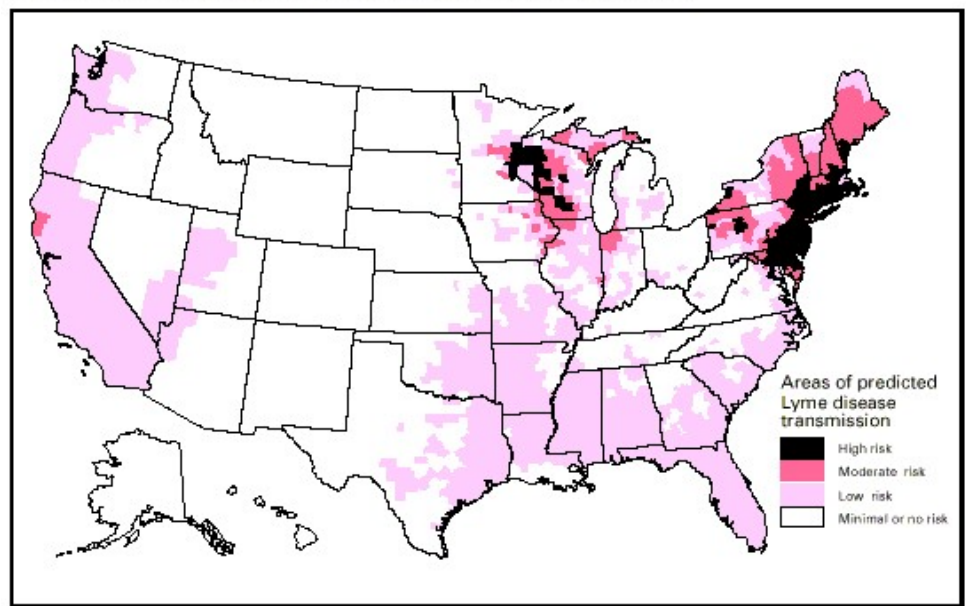
- lameness
- arthritis
- fever
- edema
- eye inflammation
- joint swellings
- encephalitis

Multiple organ-systems of the horse may be directly affected by this spirochete, so that wherever the organism causes the most damage may be where clinical signs of disease are found (like arthritis when the bacteria is in a joint and hepatitis when it is found in the liver). In addition, there may be variations in the severity of disease from horse to horse following exposure to this spirochete. Some of the variation in clinical signs appears to be related to the response of the horse’s immune system to the presence of the spirochete. While some horses appear to tolerate infection with this organism and demonstrate no signs of illness, other horses may be infected and clinically sick. There’s a lot yet to learn about this disease in horses!

How is Lyme disease diagnosed in horses?

In people, Lyme disease is called the “great imitator”. The same may be said of trying to diagnose this disease in horses. In the horse, *Borrelia burgdorferi* may cause clinical signs of disease which resemble other diseases or the organism may be present and cause no clinical signs of disease. In addition, this spirochete is extremely difficult to isolate from a live horse. So, in order to diagnose a horse with Lyme disease, common causes of the clinical signs of disease must first be eliminated.

National Lyme disease risk map with four categories of risk



After ruling out other possible causes of disease, veterinarians use blood tests to determine exposure of a horse to the *Borrelia burgdorferi* spirochete. This is done by checking for antibodies in the serum. Two different types of lab tests are used to measure the level of serum antibodies to *Borrelia burgdorferi*: the ELISA and Western blot. Most horses need to have both blood tests performed in order for a veterinarian to determine whether the horse has been exposed to *Borrelia burgdorferi* or has other antibodies which may interfere with this test.

Once antibodies are identified in the blood of a horse showing signs of Lyme disease, there is still no guarantee that the clinical signs of disease are being caused by *Borrelia burgdorferi*. The presence of antibodies means that the horse has been exposed to or vaccinated for this organism. If no other cause of disease is identified, a sick horse would then be treated with appropriate antibiotics to kill *Borrelia burgdorferi* spirochetes. Follow-up blood tests are needed to determine if the level of antibodies to the spirochete are decreasing. Decreasing antibody levels and diminishing signs of Lyme disease in a horse undergoing treatment indicate that the therapy is having a positive effect against this bacteria.

Is there a Lyme disease vaccine approved for use in horses?

No! Currently, there is no USDA approved Lyme disease vaccine for use in horses. Some horse owners have elected to vaccinate their horses using one of three Lyme disease vaccines approved for use in dogs. However, there is no research or clinical information to support the use of any dog vaccine for Lyme disease prevention in the horse. In fact, use of the vaccine will make interpretation of the diagnostic tests more difficult should this disease be suspected. In addition, researchers have reported finding the spirochete organism in clinically ill horses who had previously been given the dog vaccine! Insect control is probably the best method of preventive medicine for horse owners to decrease their horses = exposure to ticks. Talk with your veterinarian and ask for some recommendations on appropriate insecticides to use on your horse to minimize contact with ticks.