Lyme Disease

Disease Name: Lyme disease or borreliosis. Lyme disease is named for the town of Lyme, Connecticut, where the disease was first confirmed as a specific syndrome in the United States.

Disease Type: Lyme disease is caused by a spirochete bacterium called *Borrelia burgdorferi*. *B. burgdorferi* can infect numerous body systems including skin, muscle, joints, heart, eyes and nervous system and affects both humans and animals. Some horses infected with B. burgdorferi will develop Lyme disease, while others will remain asymptomatic (no clinical signs).

Transmission: Horses are infected with *B. burdorferi* through the bite of infected ticks. Similar to humans, horses are incidental, dead-end hosts and cannot transmit the infection to other animals. At least 3 known species of ticks can transmit *B. burdorferi*, however, the great majority of transmissions are due to the bite of a very tiny tick commonly called the deer tick (*Ixodes* spp.). The deer tick carries the spirochete and transmits it to the horse while the tick is attached to the horse. At least 24 hours of tick attachment is required for successful transmission of *B. burgdorferi* to a horse host. Only ticks harboring B. burgdorferi can transmit the infection to horses or other host species.

Frequency: The frequency of infection with *B. burgdorferi* is high in regions inhabited by *Ixodes* spp. ticks, however, the percentage of horses who will develop clinical signs of Lyme disease is low. Many horses infected with *B. burgdorferi* develop antibodies but don't have clinical signs.

Incubation period: Antibodies can be detected 3-6 weeks after experimental infection with *B. burgdorferi*. It is important to note that most infected horses will never develop any clinical signs of illness. In those who do develop Lyme disease, the time between infection with *B. burgdorferi* and onset of clinical signs is variable.

Carrier status: The horse is a dead-end host and cannot pass an infection to humans, other animals or horses.

Severity: The majority of horses with antibodies against *B. burgdorferi* will never develop clinical signs. Horses with Lyme disease have clinical signs that vary in severity. Infection of the central nervous system, termed "neuroborreliosis" is rare and can be fatal.

Clinical signs: Clinical signs of Lyme disease are often vague and are similar to signs caused by other diseases.
Documented clinical syndromes include one or more of the following:

- Synovitis (swollen joints)
- Neuroborreliosis, a rare form of Lyme disease can also present with fever, muscle wasting, difficulty eating, skin sensitivity and other neurologic signs
- Uveitis (eye inflammation)
- Skin masses or nodules at site of tick bite
- Nuchal bursitis (infection and inflammation of the poll)

 © Copyright EDCC – Revised 2025

Undocumented, but possible clinical signs include one or more of the following. Many other diseases are more likely causes of these clinical signs than Lyme disease.

- Stiffness
- Lethargy
- Lameness
- Change in behavior

Diagnosis:
The diagnosis of *B. borrelia* infection and/or exposure is confirmed via measurement of serum antibody levels (titers). Horses with positive titers may be actively infected or may have been infected in the past. It is important to remember that positive titers only indicate exposure, and do not confirm Lyme disease in horses with no clinical signs.

The diagnosis of Lyme disease is much more difficult, and is based on the following criteria:

1. The horse lives or has traveled in regions where *B. burgdorferi* infected ticks are present
2. Clinical signs are compatible with Lyme disease
3. **Other diseases with similar symptoms have been ruled out**
4. *Borrelia*-specific antibodies are detected
5. Occasionally, the organism can be detected in fluid or tissue samples (ocular fluid, cerebrospinal fluid, skin biopsy, joint capsule biopsy). The organism is generally not detectable in blood.

Treatment: In horses with clinical signs of Lyme disease, commonly used antimicrobial treatments include oxytetracycline intravenously, doxycycline orally, or minocycline orally. *B. burgdorferi* is also susceptible to ceftiofur. It is NOT recommended to treat horses without clinical signs.

Prevention:
An approved Lyme vaccine for horses is not currently available. Off-label use of canine Lyme vaccines may provide some level of protection, and horse owners are encouraged to work with their veterinarians to decide if this is a good option for their horses.

In endemic areas, application of compounds that repel ticks such as DEET, picaridin or permethrin is highly recommended, as well as daily grooming and tick removal.

“Tick scaping” practices such as pasture mowing and removal of brush and debris can reduce tick population on horse properties and help prevent infection.

 © Copyright EDCC – Revised 2025