

Lyme Disease (*Borrelia burgdorferi*)

DISEASE IN ANIMALS

B. burgdorferi is a bacterial spirochete that is transmitted by three species of ticks in the Ixodes genus, most notably in the U.S. by *Ixodes scapularis*, also known as the blacklegged tick or deer tick. Transmission is unlikely to occur unless the tick is attached for 24 hours or more. Naturally occurring Lyme disease has been reported in horses, cattle, dogs and cats.

Reporting: Lyme disease is not a required reportable disease in animals. Reporting of lab-confirmed animal cases to the [local health department](#) (LHD) is encouraged, as this information may be valuable for identifying areas where infected ticks may be present.

Clinical signs: Most animal infections are asymptomatic. Cattle and cats are fairly resistant but arthralgia and fever may be reported in cases with high titers. Infected horses may experience shifting leg lameness, muscle tenderness and behavioral changes with rare cases developing encephalitis, uveitis, dermatitis or abortion. Dogs most commonly experience lameness and arthritis, especially in the carpal and tarsal joints, though fever, lethargy, anorexia and lymphadenitis may also occur.

Diagnostics:

- Serology (ELISA, IFA, or Western Blot) supports clinical diagnosis. Serologic diagnosis is complicated by a four to 12 week period before developing antibodies, presence of asymptomatic infections, and cross-reactivity with other spirochetes. Titers remain high for months to years after infection
- PCR: detects antigen, but there is risk of false-positive
- Culture: possible but difficult

Case classification:

- Suspected: a clinical case with signs consistent with Lyme disease.
- Probable: a clinically suspect case with laboratory evidence from a screening or unvalidated test (e.g. single ELISA serology, PCR).
- Confirmed: a case that meets confirmatory testing criteria determined by a state or federal diagnostic laboratory (e.g. western blot).

DISEASE IN HUMANS

Reporting: Report by the end of the business week any suspected human illness or positive laboratory result to the LHD where the patient resides. If unknown report to the LHD of the health provider or laboratory.

Human symptoms: A systemic, tick-borne disease with protean manifestations, including dermatologic, rheumatologic, neurologic and cardiac abnormalities. Typical symptoms include fever, headache, fatigue, and a characteristic skin rash called erythema migrans. If left untreated, infection can spread to joints, the heart, and the nervous system. The best clinical marker for the disease is the initial skin lesion (i.e. erythema migrans [EM]) which occurs in 60 percent to 80 percent of patients.

Personal protection: Infected animals do not directly transmit Lyme disease to people, but they may carry infected ticks. Precautions for preventing tick bites include protective footwear, clothing and insect repellents. Persons handling tick-infested dogs or entering tick habitats should check themselves frequently for ticks and remove them as soon as possible. Acaricides can be used on pets and livestock, and products are available to treat barns and kennels.

FOR MORE INFORMATION

Disease in Animals

[AVMA Zoonosis Updates: Lyme borreliosis](#)
[Iowa State University Center for Food Security and Public Health Animal Disease Factsheets](#)

Disease in Humans

[CDC Lyme Disease](#)
[ODH Infectious Disease Control Manual](#)
[ODH Vector-Borne Disease Laboratory](#)