**LYME DISEASE (BORRELIA BURGDORFERI)**

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<td>Mammals (esp. humans, dogs, occasionally horses); some birds although they are usually asymptomatic</td>
<td>Tick vector (<em>Ixodes</em> sp); rodents are among the most important reservoir hosts, including white-footed mouse (<em>Peromyscus leucopus</em>) in N. America and <em>Apodemus</em> sp. in Eurasia)</td>
<td>General: Shifting leg lameness, arthritis, fever, myocarditis, CNS signs; Humans: erythema migrans; Dogs: renal syndrome</td>
<td>Varies, can be asymptomatic, mild lameness, or chronic illness</td>
<td>Doxycycline x 30d, azithromycin, ceftriaxone, amoxicillin; recrudescence is possible</td>
<td>Prevent tick attachment; remove ticks as soon as possible; vaccine available for dogs</td>
<td>Yes, via tick bite only</td>
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**Fact Sheet compiled by**: Elizabeth E. Hammond  
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**Fact Sheet Reviewed by**: Holly J. Haefele; Sarah A. Hamer  

**Susceptible animal groups**: All mammals – but dogs, horses primarily affected and cattle appear less susceptible. Some bird species although they are usually asymptomatic.

**Causative organism**: *Borrelia burgdorferi* sensu lato (s.l.) & sensu stricto (s.s.) (Gram-negative spirochete); *B. burgdorferi* s.s. is the cause of Lyme disease in the US; different strains may explain varied clinical signs depending on region; tick vector: *Ixodes* sp. (*I. scapularis, I. ricinus, I. pacificus*) (nymph life stage)

**Zoonotic potential**: Yes, via tick bite only

**Distribution**: Temperate areas worldwide. In the US, most human and canine cases are reported from the northeastern and upper Midwestern states.

**Incubation period**: 60-90d

**Clinical signs**: Shifting leg lameness, joint swelling, lymphadenopathy, anorexia, fever, myocarditis, CNS signs, renal syndrome (dogs); in humans, a rash (erythema migrans) at the site of tick attachment is often present.

**Post mortem, gross, or histologic findings**: perivascular lymphoplasmacytic infiltrates in kidneys that can lead to glomerulonephritis (dogs), liver, cerebrum, meninges, and lungs; synovitis with inflammatory cells and fibrin deposits

**Diagnosis**: serology (ELISA, IFA, EIA, modified Western blot), Western immunoblot can differentiate between vaccine titer and natural infection based on band pattern (dogs); PCR; or culture of organism (difficult) from urinary bladder, kidney, spleen, skin, and other organs with evidence of clinical signs of disease, history of exposure and response to treatment; also, xenodiagnosis (feeding uninfected tick larvae on a host and evaluating for signs of infection)

**Material required for laboratory analysis**: serum, whole blood, tissue

**Relevant diagnostic laboratories**: Standard diagnostic laboratories can test for serologic evidence of Lyme disease; patient-side ELISA SNAP® test (IDEXX) available for dogs; culture of organism requires special
LYME DISEASE (Borrelia burgdorferi)

**Treatment:** Doxycycline x 30d (although this is contraindicated in young animals), azithromycin, ceftriaxone (esp. for neurologic disease), amoxicillin; recrudescence is possible; better chance of resolution if treatment initiated early

**Prevention and control:** Tick prevention, remove ticks within 48hr of attachment as this duration is minimum time to transmit the organism; killed whole cell and recombinant subunit vaccines are available for dogs; human vaccine is no longer available.

**Suggested disinfectant for housing facilities:** standard disinfectants, such as 1% sodium hypochlorite, 70% ethanol, heat, and UV light, are appropriate as Borrelia sp. cannot survive free-living in the environment.

**Notification:** In the US, it is reportable in humans, but not in animals.

**Measures required under the Animal Disease Surveillance Plan:** None.

**Measures required for introducing animals to infected animal:** Tick control

**Conditions for restoring disease-free status after an outbreak:** None

**Experts who may be consulted:**
Sarah Hamer, DVM, PhD
College of Veterinary Medicine and Biomedical Sciences
Texas A&M University
College Station, Texas 77843-4458
Phone: 517-775-4360
Fax: 979-847-8981
shamer@cvm.tamu.edu

**References:**