

## Lyme Disease – Florida Fact or Fiction

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Lyme disease (LD) is caused by the bacterium *Borrelia burgdorferi* which is transmitted to people (and some animals) through the bite of an infected tick. It takes more than a day of attachment for an infected tick to transmit the bacterium to a new host. Ticks typically become infected after feeding on white-footed mice (*Peromyscus leucopus*) that have a bacteremia with *B. burgdorferi*. The tick *Ixodes scapularis* is implicated as the vector of LD in much of the eastern seaboard. *I. scapularis* is found throughout Florida.

As a reportable condition in Florida, it is incumbent on practitioners and laboratories to report suspected or diagnosed cases of LD to their respective county health departments. For epidemiologic purposes, the case definition for LD includes both acute and chronic disease manifestations. A documented case of acute LD is contingent upon a physician-diagnosed erythema migrans (EM) lesion that is at least 5 centimeters. In many people, this lesion appears 7 to 10 days (range 3 to 31 days) after being bitten by infected ticks. Annular erythematous lesions arising a few hours after tick attachment are hypersensitivity reactions usually responsive to antihistamines and are not EM.

Because late manifestations of LD can include musculoskeletal, neurologic and/or cardiovascular disease (when alternate etiologies have been ruled out), the case definition requires supportive laboratory findings.<sup>1</sup> Some LD laboratory tests may not have consistent quality control and/or are notorious for cross-reacting with other agents. Therefore, the Association of State and Territorial Public Health Laboratory Directors, the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration, the National Institutes of Health, the Council of State and Territorial Epidemiologists and the National Committee for Laboratory Standards have recommended a two-test approach to LD serodiagnosis.<sup>2</sup> First, sera are analyzed using a sensitive enzyme immunoassay (EIA) or an immunofluorescent assay (IFA) for exposure to LD. If positive, sera should be tested by a standardized Western immunoblot algorithm. If the serum is drawn within the first four weeks of disease, both immunoglobulin M (IgM) and immunoglobulin G (IgG) assays should be performed; after 4 weeks, IgG is recommended because a positive IgM alone has a high likelihood for a false-positive test result in such patients. IgM immunoblot is considered positive with the presence of two of the three bands: 21 kDa (or 24kDa since they both measure OspC), 39kDa and 41 kDa. IgG is considered positive with the presence of five of the 10 bands: 18 kDa, 21 kDa (or 24kDa), 28 kDa, 30 kDa, 39 kDa, 41 kDa, 45 kDa, 58 kDa, 66 kDa, and 93 Kda. Lyme urine antigen tests are not recommended due to the high likelihood of false-positive test results. NOTE: The Florida Department of Health Jacksonville Laboratory offers the EIA with confirmatory testing conducted at the CDC Laboratory (please contact 904-791-1540 for information regarding sample submission.)

In Florida, 315 human cases of Lyme disease were reported during the 20-year period, 1980 through 1999. Two thirds of these cases (209) were reported during the recent 4-year period, 1996 through 1999. Of these 209, 63% had a documented travel history out of the state prior to onset of clinical signs. EM was reported in 56% of the 209 cases. LD does occur in Florida but at a low prevalence compared with other states (notably the northeast).

*Borrelia burgdorferi* has never been cultured from an EM lesion in the southeast as it has in northeastern states. Genetically different strains of *B. burgdorferi* have been isolated from cotton rats. Physicians should be aware that some “southern tick-associated rash illness” (STAR) in Florida may be caused by another species of *Borellia* thought to be vectored by *Amblyomma americanum* (lone star) ticks. The Centers for Disease Control and Prevention is asking for physician/patient participation in a study to identify the cause of the red, expanding skin rash that sometimes occurs after a tick bite in people living in the southeastern United States. Requested study samples include skin biopsy specimens from the rash site, and blood and urine specimens. Some of the samples will be stored until sensitive and specific tests are available to determine the causative agent.

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1. Due to similarity of manifestations, physicians may wish to test their patients for reactive arthropathy (Reiter’s syndrome).
  2. “Recommendations for test performance and interpretation from the Second National Conference on Serologic Diagnosis of Lyme Disease.” MMWR, August 11, 1995/44(31); 590-591.