

## LABORATORY DIAGNOSIS OF LYME DISEASE

Lyme disease or Lyme borreliosis is a tick-borne spirochetal disease, caused by *Borrelia burgdorferi*, which occurs in temperate areas of North America, Asia, and Europe. The geographic distribution of this infection in the United States closely follows the distribution of the tick vector, *Ixodes scapularis* and *I. pacificus*. The distribution of *I. scapularis* is mainly in the northeastern United States, especially Connecticut, Massachusetts, New Jersey, New York, Maryland, and Pennsylvania and the north mid-western US, especially Minnesota and Wisconsin. Several hundred to several thousand cases are reported annually from these areas. In contrast, the distribution of *I. pacificus* is predominately in California where there are between 50-100 cases reported annually. In eastern Nebraska and the surrounding tri-state area, where neither *I. scapularis* nor *I. pacificus* are found, there are usually less than 10 cases of Lyme disease reported each year. For most of these, the patients have a travel history to an endemic area during the late spring and summer, i.e. prime tick season. The laboratory diagnosis of Lyme disease centers around serology. Standard of practice is to order a screening ELISA test for antibodies to *B. burgdorferi* for patients with a suggestive clinical and epidemiologic picture, including erythema migrans and a travel history to an endemic area during tick season. However, **because as much as half the normal uninfected population can have some reactivity in this ELISA test, the CDC recommends a two-step approach for diagnosis such that a positive or equivocal ELISA is confirmed by a Western Blot for IgM and IgG.**

Creighton Medical Laboratories has long recommended to clinicians that the CDC guidelines for the serologic diagnosis of Lyme disease be followed. On the effective date noted below, CML will automatically order, as a reflex test, a *B. burgdorferi* western blot for IgM and IgG if the screening ELISA antibody test is positive or equivocal. This will streamline the testing and allow for optimal turnaround time. **As with any reflex test, you may opt out of the confirmatory western blot test by specifically so indicating on the laboratory requisition.** Note however that, because of the poor positive predictive value (<1%), a positive screening ELISA for *B. burgdorferi* is most probably a false positive.

**Effective Date:** April 1, 2008

**Specimen Requirements:** 4 mL SST tube of blood

**Test Order:** Lyme Serology

**CPT Code:** ELISA 86618; Western Blot 86617 x 2

**Availability:** Results available within 5 working days of specimen receipt

Please forward this to appropriate staff members within your facility. If you have any questions, please contact CML at (402) 280-4382 or email us at [cml@creighton.edu](mailto:cml@creighton.edu). Visit our website <http://www.cml.md/testing/> for additional information.

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