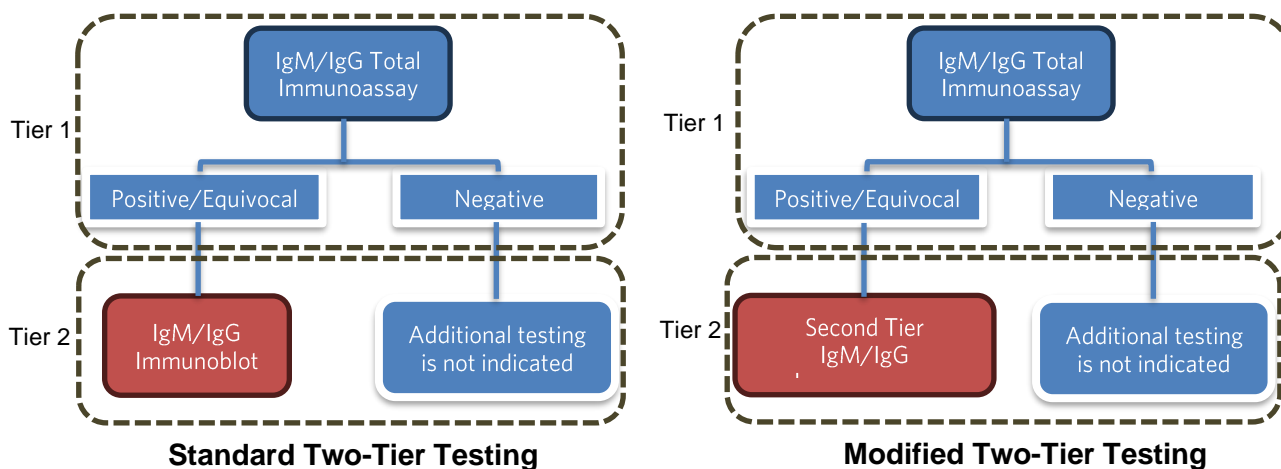


Diagnostic Testing for Lyme Disease Tip Sheet

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Lyme disease (LD) is caused by bacteria in the *Borrelia burgdorferi* sensu lato complex and is transmitted to humans through the bite of *Ixodes* ticks. Diagnosis is based on symptoms, physical findings, and potential exposure to ticks, although lack of documented history of tick bite does not rule out infection. Patients with tick exposure and classic erythema migrans skin rash do not require diagnostic testing, but for those with atypical presentation or symptoms consistent with Lyme neuroborreliosis, laboratory test can be helpful.

The current laboratory diagnosis of LD is based on a 2-tiered serologic testing algorithm, either via a standard two-tier testing (STTT) or a modified two-tier testing (MTTT). A comparison of STTT and MTTT is shown below.



At VUMC, we recommend using MTTT (LAB6574, *Borrelia burgdorferi* VlsE1/pepC10 AB, total by ELISA with reflex to IgM and IgG by ELISA) for the diagnosis of LD for serum specimens. For CSF specimens, we recommend using STTT (LAB6618, *Borrelia burgdorferi*, CSF) to diagnose Lyme neuroborreliosis. A confirmatory immunoblot can be ordered if a patient has a documented positive screening test result from prior testing (LAB5769, *Borrelia burgdorferi* IgG/IgM Immunoblot). Confirmatory testing should not be done without a screening test because it decreases the assay's specificity.

References

- Paul M Lantos, Jeffrey Rumbaugh, Linda K Bockenstedt, et al. Clinical Practice Guidelines by the Infectious Diseases Society of America (IDSA), American Academy of Neurology (AAN), and American College of Rheumatology (ACR): 2020 Guidelines for the Prevention, Diagnosis, and Treatment of Lyme Disease, *Clinical Infectious Diseases*, Volume 72, Issue 1, 1 January 2021, Pages e1–e48.
- Mead P, Petersen J, Hinckley A. Updated CDC Recommendation for Serologic Diagnosis of Lyme Disease. *MMWR Morb Mortal Wkly Rep*. 2019 Aug 16;68(32):703.