

Pathology and Laboratory Medicine Memorandum

To: Nova Scotia Physicians and Health Service Directors

From: Dr. Todd Hatchette, Service Chief, Central Zone Microbiology
Charles Heinstein, Manager, Central Zone Microbiology

Date: March 25, 2021

Subject: **Transition to the Modified Two Tier Testing (MTTT) Algorithm for Lyme Serology**

As of April 1, 2021, serological testing for Lyme disease will transition to the modified two tier testing (MTTT) algorithm using 2 enzyme immunoassays (EIAs).

To date serological testing for Lyme disease at the QEII HSC Microbiology Laboratory has used the standard two tier testing (STTT) algorithm. Specimens that are reactive or indeterminate on the first step EIA are then forwarded to the National Microbiology Laboratory in Winnipeg for further testing using immunoblotting.

With the MTTT algorithm, specimens will first be tested using the Zeus C10/VIsE EIA (ZEUS ELISA *Borrelia* VIsE1/pepC10 IgG/IgM). Reactive specimens will then be tested at the QEII by a second EIA, the Zeus whole cell EIA (ZEUS ELISA *Borrelia burgdorferi* IgG/IgM). Specimens with positive results on both EIAs are considered to be positive. This approach has been approved by the FDA and endorsed by the CDC in Atlanta and the Canadian Public Health Laboratory Network.

The MTTT approach offers the following advantages: It is more sensitive for detecting early infection (formal evaluation showed that the MTTT approach detected 28% more cases of early infection)

- It has a similar specificity compared to the STTT (99.6%)
- Both EIAs can be performed at the QEII HSC Microbiology Laboratory, which will significantly improve turn-around-time for results.
- It simplifies the interpretation of Lyme disease serology results, which will now be reported as “positive” or “negative”

While the MTTT approach has improved sensitivity for detecting early infection, it is important for clinicians to remember that patients presenting with early localized Lyme diseases should be treated on the basis of a clinical diagnosis, without relying on serology. The improved sensitivity and turn-around-time may be an advantage for investigating patients where early disseminated Lyme disease is a consideration.

If you have any questions, please do not hesitate to contact the laboratory at 902-473-6624.