Public Health Ontario | Santé publique Ontario

LABSTRACT – January 2020

Rickettsia Serology - Test algorithm for Rocky Mountain spotted fever group and Murine typhus

Audience

Health care providers and laboratories involved in submission of specimens for *Rickettsia* serology testing.

Overview

Beginning January 2020, Public Health Ontario (PHO) Laboratory will be modifying the serological testing algorithm for *Rickettsia*, including Rocky Mountain spotted fever (RMSF) group and Murine typhus (MT), consistent with current best practices. PHO Laboratory will continue to perform IgG testing using indirect immunofluorescence (IFA) and will titrate and report all positive IgG specimens to higher titer of 1:4096. PHO Laboratory will discontinue IgM testing for these pathogens.

Background information

Currently, PHO Laboratory performs IFA tests for the detection of IgM and IgG antibodies for both RMSF and MT.

Studies have shown that IgM antibodies do not appear significantly earlier than IgG antibodies for RMSF and MT, and are known to be less specific. Therefore, the role of IgM testing for diagnosis of rickettsial disease is unclear (Blanton LS et al 2019). Diagnosis of rickettsial disease is confirmed with a fourfold or greater increase in IgG antibody titers in specimens collected two to four weeks apart in patients with a clinically compatible acute illness.

Beginning January 2020, PHO Laboratory will *only* perform IgG IFA testing for detection of RMSF and MT antibodies. All positive specimens will be further titrated up to 1:4096. Clinicians are highly encouraged to submit paired specimens to aid in the diagnosis of rickettsial disease, with the second specimen submitted two to four weeks after the first.

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Specimen Collection Requirements

- 5.0 ml whole blood or 1.0 ml serum
- Provide appropriate clinical information (symptoms, travel history, and date of onset)

Testing Schedule and Turnaround Time (TAT)

Rickettsia serology testing is performed once per week. Turnaround time is up to 10 days from receipt by PHO Laboratory.

Interpretations of Results

Titers	RMSF	MT	Comments
<1:64	Non-reactive	Non-Reactive	No serological evidence of RMSF or MT group infection
≥1:64*	Reactive	Non-Reactive	Serological evidence of RMSF group[1] infection/exposure. Results should be compared between paired samples with 4-fold or higher changes in titers indicating acute infection
≥1:64*	Non-Reactive	Reactive	Serological evidence of MT group[2] infection/exposure. Results should be compared between paired samples with 4-fold or higher changes in titers indicating acute infection
≥1:64*	Reactive	Reactive	Serological evidence of RMSF group[1] and/or MT group[2] infection/exposure. Cross reactivity between the groups can occur, but cross reactive titers are generally lower than group specific titers. Results should be compared between paired samples with 4-fold or higher changes in titers indicating acute infection

*A single antibody result is not sufficient to make a definitive diagnosis of rickettsial disease. Submission of paired sera collected between two to four weeks apart is recommended.

1. RMSF group includes *Rickettsia rickettsii*, *R. akari, R. conorii, R. australis,* and *R. sibirica.*
2. MT group includes: *R. typhi* and *R. prowazekii*

References

Kit Insert: Focus Diagnostics Rickettsia IFA IgG assay: focusdx.com/pdfs/pi/US/IF0100G.pdf

Blanton LD. The Rickettsioses: A practical guide. Infect Dis Clin N Am. 2019 (33) 213-229.

For further information

- Specimen collection, submission, testing, and reporting information is available in detail on the Rickettsia Serology Test Information sheet (TIS), located on our website at: Rickettsia Serology TIS
- Contact the PHO Laboratory Customer Service Centre at 416-235-6556 or 1-877-604-4567 (toll-free), or by email at customerservicecentre@oahpp.ca
- For PHO Laboratory specimen collection information and previous Labstracts, refer to publichealthontario.ca/test directory
- The current version of the PHO Laboratory General Test Requisition and other forms are available at publichealthontario.ca/Requisitions
- To subscribe to future Labstracts, register on our website
- To register for Autofax and receive laboratory reports by fax directly from our laboratory information system as soon as they are released, contact the PHO Laboratory Customer Service Centre.