ALBERTA PRECISION LABORATORIES
Leaders in Laboratory Medicine

Laboratory Bulletin

DATE:	4 March 2024
TO:	All Physicians and Clinicians
FROM:	Alberta Precision Laboratories (APL) – Public Health Laboratory
RE:	**Updates to Zika Virus Testing**

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Key Message

- **The primary test for evaluation of Zika virus infection in patients is Zika virus NAT (PCR) which should be done on blood and urine.**
- **Zika virus serology testing is limited in its scope/utility and will be offered in only select circumstances.**

Background

- Zika virus is an arthropod-borne flavivirus most-commonly transmitted to humans by the bite of infected mosquitos in endemic areas. It is known to circulate in areas where mosquitos may also transmit dengue and chikungunya viruses as well. Zika virus infection in humans can be asymptomatic, cause a self-limited illness, and or result in post-infectious Guillain-Barre syndrome/other neurologic involvement. In rare circumstances, it can lead to neurologic disease of an unborn fetus if infection is acquired vertically during the pregnancy.

Diagnosis of acute infection due to Zika virus

- Testing for Zika virus infection can be a challenge. Tests available include molecular detection of viral RNA via a PCR/NAT test or serology testing. The use of serology as a tool for diagnosis for Zika virus infection can be problematic due to a high rate of false positive and false-negative results. This can be a result of cross-reactivity with other flavivirus antibodies and well as biologic-false positives due to other medical and physiologic conditions. Other types of Zika virus serology tests (e.g. plaque reduction/neutralization) can be quite laborious and have prolonged turnaround times. Thus, serology alone is not advised as a tool for acute diagnosis.
- Given the challenge of accurate serologic diagnosis, there has been a change over time in the guidance as to the optimal methods to test for Zika virus infection. This new guidance has been reflected in the table that follows.

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Updated recommendations for Zika virus testing
(as per guidance from the Public Health Agency of Canada and the US CDC)

Indication/Patient Presentation	Testing Advised
Asymptomatic non-pregnant patient with travel to an endemic area.	No testing advised. Patient is not symptomatic. Pre-conception testing post return from an endemic area in a non-symptomatic patient is not advised.
Symptomatic non-pregnant patient with travel to an endemic area within 14 days of return or symptom onset (whichever is later).	• Arbovirus PCR/NAT panel on blood • Arbovirus PCR/NAT panel on urine • **Zika virus serology is NOT advised.**
Pregnant patient (**symptomatic OR asymptomatic**) who has: • Travel history to an endemic area … OR • A sexual partner (**symptomatic OR asymptomatic**) with a travel history to an endemic area. • Timing: up to 12 weeks after return.	• Arbovirus PCR/NAT panel on blood • Arbovirus PCR/NAT panel on urine • **Zika virus serology is NOT advised.**
Pregnant patient (symptomatic or asymptomatic) with **ultrasound imaging evidence** of potential congenital Zika virus syndrome in a patient with relevant exposure history during the pregnancy.	• Arbovirus PCR/NAT panel on blood • Arbovirus PCR/NAT panel on urine • Zika virus IgM and IgG • Dengue virus IgG and IgM • Chikungunya virus IgG and IgM • If amniocentesis is conducted, then arbovirus PCR on amniotic fluid is advised.
Child born with suspected congenital Zika virus syndrome, or a still birth.	Send the following tests on the infant as well as the birth parent: • Arbovirus PCR/NAT panel on blood • Arbovirus PCR/NAT panel on urine • Zika virus IgM Still born testing: • Arbovirus PCR/NAT panel on placenta and other tissues submitted by pathologist. • Placental samples for histopathology advised.
Patient with the following and Zika virus is suspected as a cause. **Should have relevant exposure (travel) history**: • Guillain-Barre syndrome (GBS) • Chronic inflammatory demyelinating polyneuropathy • Transient polyneuritis / transverse myelitis • Acute disseminated encephalomyelitis • Encephalopathy (usually meningoencephaitis)	• Arbovirus PCR/NAT panel on blood • Arbovirus PCR/NAT panel on urine • Zika virus IgM and IgG • Dengue virus IgG and IgM • Chikungunya virus IgG and IgM

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Recommended Specimen Types

Arbovirus NAT (PCR) panel:

- Blood – Collect a dedicated EDTA (lavender top) with 3-5 mL of blood (can use 1mL for infants).
- Urine – Collect a dedicated 3-10mL of urine in a sterile container with **no preservatives.**

Zika virus IgM:

- Collect 1 dedicated SST (gold top) with 3-5mL of blood (can use 1mL for infants).

Provision of History / Review of test requests

Test requests for Zika virus testing are reviewed by the Public Health Microbiologist/Virologist-on-call. Testing may be declined, cancelled, or delayed if there is insufficient history provided on the requisition (paper or electronic) or if the patient does not meet testing criteria.

Action Required

- Clinicians should take notice of updates to testing guidance for Zika virus in your patient.
- Ensure the appropriate testing for Zika virus (if suspected) is ordered based on the situation of the patient.
- If there are questions, consult with the Public Health Microbiologist/Virologist-on-call at the Public Health Laboratory (ProvLab).

Inquiries and feedback may be directed to

- Dr. Jamil Kanji, Medical Microbiologist, Public Health Laboratory, Alberta Precision Laboratories (jamil.kanji@ahs.ca).

This bulletin has been reviewed and approved by

- Dr. Graham Tipples, Medical and Scientific Director, Public Health Laboratory, Alberta Precision Laboratories

References

- https://www.canada.ca/en/public-health/services/diseases/zika-virus/health-professionals.html

Effective September 1, 2023, APL has become the sole provider of all public lab services in Alberta. As a result, community lab services formally provided by DynaLIFE Medical Labs will become the responsibility of Alberta Precision Labs (APL). This change impacts all zones.