Alberta Health Services

PROVLAB ALBERTA

Laboratory Bulletin

Date: **September 28, 2016**
To: **Infectious Disease Physicians, Medical Officers of Health, Emergency Departments, and Laboratory Microbiologists and Managers**
From: **Provincial Laboratory for Public Health (ProvLab)**
Re: **Update on Testing for Zika, Dengue and Chikungunya Viruses**

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Key Message:

- Testing of symptomatic patients with relevant travel history should include testing for Zika, Dengue and Chikungunya viruses, by serology, and by PCR within 14 days of onset of symptoms.
- Zika transmission has now been documented in Florida.
- A complete travel and symptoms history is required for rational testing decisions.
- Sexual encounter with a partner recently exposed to Zika virus is now recognized as a risk factor for Zika infection.
- Asymptomatic pregnant exposed patients will be tested by serology, and by PCR within 14 days of exposure.
- This bulletin supersedes previous ProvLab bulletins on Zika virus testing.

Background

In the past few years, Chikungunya and Zika viruses have greatly expanded their endemicity areas and have now established themselves in Latin America and the Caribbean. These viruses are also prevalent in many other tropical and subtropical regions of the world including Africa, South East Asia and Polynesia. Importantly, Dengue virus is also widely prevalent in all these areas. Recently, local transmission of Zika virus has been documented in Florida; it is therefore possible that extension of transmission in other Gulf states may occur; it is also possible that dengue and Chikungunya virus local transmission may occur in the future in these locations. Because of the overlapping areas of endemicity, high prevalence and similar clinical presentations (which may include fever, rash, arthralgia, myalgia and non-purulent conjunctivitis) returning travelers with symptoms compatible with arbovirus infections should be tested for all three viruses.

Sexual transmission has now been documented among heterosexual partners and among men having sex with men. Transmission has occurred before, during and after the symptomatic period, and has also occurred from asymptomatic partners. Sexual encounters with a partner recently exposed to the Zika virus should therefore be considered a risk factor.

Availability of testing

ProvLab has now developed and implemented a multiplex PCR assay which can simultaneously detect and identify Dengue, Zika and Chikungunya viruses.

Provlab previously implemented Dengue virus serologies (IgM and IgG EIA assays, Focus Diagnostics). ProvLab is currently evaluating kits for Chikungunya IgM and IgG assays, and will be evaluating in the near future kits for Zika serology. Currently however, serologies for Chikungunya and Zika viruses are still referred to the National Microbiology Laboratory (NML), through ProvLab.

Testing algorithm

- PCR (for all 3 viruses) will be done on blood samples only if collected within 14 days of symptoms onset.

  For Zika virus infection, some data indicate that urine is a useful sample for detection of the virus by PCR. Testing by PCR of urine samples will be done on request in patients with a relevant history if the sample has been collected within 14 days of symptoms onset. Blood samples for PCR and serology remain indicated however.

  Ideally, serology should be done on an acute sample collected no sooner than 5 days after symptoms onset, and on a convalescent serum collected at least 2 weeks later.

- For asymptomatic pregnant patients, serological testing (including for Zika virus) will be done. Collection of a second serum sample 2 weeks later is strongly recommended at this time. Recent recommendations also call for PCR testing of blood and urine samples collected within 14 days of exposure.

- For other asymptomatic patients, in most cases testing is not recommended by current guidelines. Specific situations may be discussed with the Virologist-on-Call (VOC).

- Zika and dengue viruses are capable of causing meningitis or encephalitis; in such cases, testing of cerebrospinal fluid samples by PCR is indicated and should be arranged by consultation with the VOC.

- Testing of babies born to mothers that were infected with Zika during pregnancy should include PCR on a urine sample; and PCR and Zika IgM serology on a blood sample (avoid cord blood as it may be contaminated with maternal blood). PCR on a placenta biopsy may be considered. Zika PRNT serology, which is used to confirm Zika IgM, should not be ordered on newborns; the PRNT assay measures neutralizing antibodies and since most of these belong to the IgG class, babies born to infected mothers will have a positive PRNT serology whether or not congenital infection occurred. PRNT serology should only be ordered after 18 months of age.

Testing in other scenarios must be discussed with the VOC.

Please note that testing for West Nile virus (WNV), also an arbovirus, must be ordered separately, and that previous processes for WNV testing remain unchanged.

For testing for other arboviruses, or for testing other type of samples (eg amniocentesis fluid), please contact the VOC.

Specimen submission

In most cases, all of the following should be submitted:

1) For arbovirus PCR: submit one blood in EDTA sample.

2) For serology: acute and convalescent sera should be collected in SST tubes.

3) For Zika PCR on urine: submit a urine sample in a sterile container without additives.

Mandatory patient history

Relevant patient history must be submitted for testing to occur. History must include a travel history (i.e. countries visited), date of return in Canada, date of onset of symptoms, nature of symptoms, and whether the patient is pregnant. The Zoonotic Serology requisition from ProvLab should be used to document the history.

If no history is provided, testing will be suspended and a report issued to the submitter, requesting the required information.

The Zoonotic Serology requisition can be found at the following links:

http://www.provlab.ab.ca/requisition_history_form.htm or

http://www.albertahealthservices.ca/lab/Page3320.aspx

Interpretation of laboratory results:

A guide for interpretation of results is in preparation and will be available soon at the following link:

http://www.provlab.ab.ca/education.htm

Assistance for interpretation of results for a specific patient can be obtained by discussing the results with the VOC.

Inquiries and feedback:

The VOC can be contacted using the following numbers:
Edmonton Site – Ph: 780-407-7121 (ask for Virologist-on-Call)
Calgary Site – Ph: 403-944-1200 (ask for Virologist-on-Call)

If you have any question or comment regarding this bulletin or other issues related to arbovirus testing, please contact Dr Raymond Tellier, Program Leader for Arboviruses and Zoonotic Viruses Raymond.Tellier@albertahealthservices.ca or (403) 944-2724

This bulletin has been reviewed and approved by:
Dr. Graham Tipples, Medical / Scientific Director, Provincial Laboratory for Public Health (ProvLab)