

Key points

- Many travel-related cases of Zika virus have been reported in Canada, for up to date information please visit Public Health Agency of Canada (PHAC) website:

- <http://www.healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/zika-virus/surveillance-eng.php?id=zikacases#s1>

List of countries affected:

- <http://www.healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/zika-virus/risks-countries-pays-risques-eng.php>
- To date, there has been one reported cases of locally acquired Zika virus in Canada, from a male to his partner related to sexual activity.
- On April 14, 2016 the WHO reported that “there is scientific consensus that **Zika virus is a cause of microcephaly and Guillain-Barré syndrome.**”

Prevention:

- There is no prophylaxis or treatment so postponement of travel or avoidance of mosquito bites is advised.
- After returning from an area with Zika virus transmission:
 - Women should wait **at least 2 months** before trying to conceive with a partner who has not travelled to an affected country, **6 months** if the partner has travelled to an affected country.
 - Men should use condoms for **6 months** after their return with a partner who could become pregnant.
 - Condom use is recommended for the duration of an established pregnancy.
 - Delay donating cells, blood, tissues, or organs for a minimum of **21 days**.
 - Men should postpone semen donations for **6 months**.

Investigation:

- Obtain travel history from all pregnant women.
- Consider testing asymptomatic pregnant women with a compatible travel history.
- Serial obstetrical ultrasounds are recommended every three to four weeks for all pregnant women returning from an area with Zika virus transmission.
- Test for dengue and Chikungunya as well.

Background

Zika virus, first described in Rhesus monkeys in the Zika forest, Uganda in 1947, has led to outbreaks in Africa, Asia and the Oceanic Pacific region. In late 2015, Zika virus was reported for

Guidance for Investigation and Management of Zika Virus Infection

the first time in a number of countries in Central and South America with a concomitant 20-fold increase in microcephaly rates in affected parts of Brazil. This association is currently under investigation. The list of countries reporting transmission is evolving and now includes many Caribbean nations.

The PHAC website has an up to date list of affected nations:

<http://www.healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/zika-virus/risks-countries-pays-risques-eng.php>

On February 1, 2016 the Director General of the World Health Organization declared that “The recent cluster of microcephaly cases and other neurological disorders reported in Brazil, following a similar cluster in French Polynesia in 2014, constitutes a Public Health Emergency of International Concern.”

Table 1: Laboratory Testing for Suspected Zika Virus

Clinical Presentation	Recommended Tests	Required Information on Requisition
Asymptomatic:		<ol style="list-style-type: none"> Country(-ies) visited in last 2 weeks Date of arrival in affected area Date of return to NL Indicate whether asymptomatic Date of symptom onset Clinical symptoms -fever -conjunctivitis -rash -arthralgias Pregnancy status and gestational age
Asymptomatic, non-pregnant	No testing	
Asymptomatic pregnant <ul style="list-style-type: none"> No symptoms during or within 2 weeks of travel 	<ul style="list-style-type: none"> Zika serology Collect sample \geq 1 month after return from affected area 	
Symptomatic:		
Acutely ill <ul style="list-style-type: none"> \geq2 symptoms Symptom onset during or within 2 weeks of travel Onset of symptoms within last 10 days 	<ol style="list-style-type: none"> 5ml gold top serum separator tube for RT- PCR Urine in sterile container for RT-PCR 1 ml CSF (as indicated) 	
Recovered <ul style="list-style-type: none"> \geq2 symptoms Symptom onset during or within 2 weeks of travel Not currently symptomatic and onset of symptoms was $>$10 days ago 	<ol style="list-style-type: none"> 5ml gold top serum separator tube for Zika virus serology Collect sample $>$ 2 weeks after return from affected area 	

Zika virus and Pregnancy

On April 14, 2016 the WHO reported that “Based on a growing body of research, there is scientific consensus that Zika virus is a cause of microcephaly and Guillain-Barré syndrome .”

Guidance for Investigation and Management of Zika Virus Infection

The current outbreak of Zika virus disease in Brazil has occurred simultaneously with a marked increase in the number of infants born with microcephaly and intracranial calcification, compared to previous years. In some of these cases, Zika virus RNA has been isolated from infants with microcephaly and from fetal losses from women infected with the virus. The data on the outcomes of Zika virus infection during pregnancy is evolving.

Transmission

Zika virus is a mosquito-borne single-strand RNA flavivirus transmitted by *Aedes* mosquitoes. This species also transmits dengue and Chikungunya viruses. It is a day-biting mosquito with highest activity in the hours just after sunrise and just before sunset. This vector is established in subtropical, tropical, and temperate regions but not in Canada, therefore local transmission here is highly unlikely.

Evidence of Zika virus transmission through sexual intercourse is emerging. It is recommended that men who have travelled to an area with Zika virus transmission: (1) use condoms with a partner could become pregnant for six months after their return and (2) use condoms for the duration of an established pregnancy.

Clinical Features

- An estimated 80% of Zika virus infections are asymptomatic
- The incubation period ranges from 3 to 12 days
- Symptoms are usually mild and fatalities are rare
- Symptoms usually last about 2 to 7 days
- Symptoms include:
 - fever (often less than 38.5°C)
 - nonpurulent conjunctivitis
 - maculopapular rash (face and body)
 - arthralgias

Diagnosis

Preliminary diagnosis is based on clinical features and a history of travel to an area with Zika virus transmission. Include on the laboratory requisition travel dates and destination and description and date of onset of symptoms.

Diagnostic tests for Zika virus infection are available through the NL Public Health Laboratory via the National Microbiology Laboratory in Winnipeg. There are two types of testing currently available:

1. Zika virus RT-PCR
 - The test of choice for direct detection of viral RNA
 - Recommended in suspected cases within 7 days of onset of symptoms
 - Submit serum and urine, and, if indicated, cerebrospinal fluid (CSF)

Guidance for Investigation and Management of Zika Virus Infection

- Viral RNA in urine may persist up to 10 days or more after symptoms are noted. This may be considered an alternative or additional sample for RT-PCR testing.
 - Serum is submitted in the yellow/gold serum separator tube (SST)
 - Urine can be submitted in any sterile container
 - CSF (1.0 ml) is in a sterile container (usually the specific CSF tube).
 - Turnaround time for RT PCR is about 2 days.
2. Serology
- Detection of Zika virus IgG and IgM antibodies at least 4 days after symptom onset
 - Serum samples collected after 7 days can be tested for Zika virus antibody
 - Confirmation of Zika virus-specific antibody in serum samples can be challenging, particularly in the case of previous infection with a related *Flavivirus*, such as dengue. This is due to the cross-reactivity of diagnostic *Flavivirus* antibody assays.
 - Turnaround time for serology is about 2-4 weeks.

Who should be tested?

- Any patient with:
 - a history of travel to an area with Zika virus transmission
 - AND-
 - two or more symptoms consistent with Zika virus infection during or within 2 weeks of travel

- Pregnant women with:
 - a history of travel to an area with Zika virus transmission
 - AND-
 - two or more symptoms consistent with Zika virus infection during or within 2 weeks of travel
 - OR-
 - ultrasound findings of fetal microcephaly or intracranial calcification
 - Consider testing asymptomatic pregnant women a history of travel to an area with Zika virus transmission.

- Mothers of newborns with microcephaly who have a history of travel to an area with Zika virus transmission

- Infants:
 - with microcephaly or intracranial calcifications born to women who traveled to or resided in an area with Zika virus transmission while pregnant
 - OR-
 - born to mothers with positive or inconclusive test results for Zika virus infection.

Guidance for Investigation and Management of Zika Virus Infection

For information on testing visit the Public Health Laboratory website:

<http://publichealthlab.ca/laboratory-guidance-for-zika-virus-testing/>

Prevention

There is no vaccine and no specific antiviral treatment for Zika virus, therefore prevention is paramount. Travelers are advised to use appropriate measures to protect against mosquito bites. This includes use of repellants, protective clothing, and bed nets.

Pregnant women are advised to postpone travel to affected areas. If this is not possible, measures to avoid mosquito bites should be strictly observed.

Further information on prevention of mosquito bites can be found at:

<http://travel.gc.ca/travelling/health-safety/insect-bite>

Canadian Blood Services has changed its donor criteria to mitigate the risk of Zika virus entering the national blood supply. They are asking all potential donors who have recently travelled to places other than Canada, the continental United States and Europe to donate prior to departure or 21 days following their return to Canada. For more information:

<https://www.blood.ca/en/media/changes-to-donor-criteria-planned-due-to-zika-virus>

Treatment

There is no specific treatment for Zika virus infection. Symptomatic treatment with analgesics and fluids will suffice in most cases. Avoidance of acetylsalicylic acid and other nonsteroidal anti-inflammatory drugs is recommended until dengue infection has been excluded.

Notifiable Disease

Zika virus is a notifiable disease in NL. As of May 25, 2016 there has been one case of Zika virus identified in NL, which was travel related.

Areas with Zika Virus Transmission

The Public Health Agency of Canada website has an up to date list of affected nations:

<http://www.healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/zika-virus/risks-countries-pays-risques-eng.php>

Public Health Agency of Canada Recommendations

The Committee to Advise on Tropical Medicine and Travel (CATMAT) recommendations on the prevention and treatment of Zika virus can be found at:

<http://www.healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/zika-virus/professionals-professionnels-eng.php>

Guidance for Investigation and Management of Zika Virus Infection

References

- Committee to Advise on Tropical Medicine and Travel. Canadian Recommendations on the Prevention and Treatment of Zika Virus. 2016 February 8. http://www.healthycanadians.gc.ca/publications/diseases-conditions-maladies-affections/committee-statement-treatment-prevention-zika-declaration-comite-traitement-prevention/index-eng.php#a06_2a
- Heymann DL. Control of Communicable Diseases Manual. 20th edition. Washington D.C. USA: American Public Health Association, 2015.
- Musso D, Roche C, Robin E, Nhan T, Teissier A, Cao-Lormeau VM. Potential sexual transmission of Zika virus. *Emerg Infect Dis*. 2015 Feb;21(2):359-361.
- Oduyebo T, Petersen EE, Rasmussen SA, et al. Update: Interim Guidelines for Health Care Providers Caring for Pregnant Women and Women of Reproductive Age with Possible Zika Virus Exposure — United States, 2016. *MMWR Morb Mortal Wkly Rep* 2016;65:122–127. DOI: <http://dx.doi.org/10.15585/mmwr.mm6505e2>.
- Oster AM, Brooks JT, Stryker JE, et al. Interim Guidelines for Prevention of Sexual Transmission of Zika Virus — United States, 2016. *MMWR Morb Mortal Wkly Rep* 2016;65:120–121. DOI: <http://dx.doi.org/10.15585/mmwr.mm6505e1>.
- Pan American Health Organization. Zika virus infection: step by step guide on Risk Communications and Community Engagement. 2016. Retrieved February 1, 2016 from http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&Itemid=270&gid=33051&lang=en
- Petersen EE, Staples JE, Meaney-Delman, D, et al. Interim Guidelines for Pregnant Women During a Zika Virus Outbreak — United States, 2016. *MMWR Morb Mortal Wkly Rep* 2016;65:30–33. DOI: <http://dx.doi.org/10.15585/mmwr.mm6502e1>
- Public Health Agency of Canada. What Health Professionals Need to Know about Zika Virus. January 29, 2016. http://healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/zika-virus/professionals-professionnels-eng.php?id=health_prof
- Public Health Agency of Canada. Surveillance of Zika virus. April 14, 2016. <http://healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/zika-virus/surveillance-eng.php>
- World Health Organization. Zika virus factsheet. January 2016. Retrieved February 1, 2016 from <http://www.who.int/mediacentre/factsheets/zika/en/>
- World Health Organization. Zika virus disease: Questions and answers. January 20, 2016. Retrieved February 1, 2016 from <http://who.int/features/qa/zika/en/>
- World Health Organization. WHO Director-General summarizes the outcome of the Emergency Committee regarding clusters of microcephaly and Guillain-Barré syndrome. Retrieved February 2, 2016 from: <http://www.who.int/mediacentre/news/statements/2016/emergency-committee-zika-microcephaly/en/>
- World Health Organization. Zika situation report 14 April 2016. <http://www.who.int/emergencies/zika-virus/situation-report/14-april-2016/en/>