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AT A GLANCE

Zika Virus Infection Update

Early in 2018, both the Committee to Advise on Tropical Medicine and Travel (CATMAT) and the Public Health Agency of Canada (PHAC) updated materials on their Zika virus (ZIKV) infection webpages, based on more current assessments of the epidemiology of ZIKV infection and evidence that continues to emerge on the prevention, clinical presentation and complications of infection. Here we provide an update to Public Health Ontario's (PHO) *Zika Virus Infection: Information and guidance for health care providers*. The following issues will be highlighted in this PHO update:

- the reduced incidence of ZIKV infection in the Americas and the implications on screening for infection;
- risks of congenital Zika syndrome (CZS), especially recent updates from the United States (US) Zika pregnancy registry;
- persistence of ZIKV in the sperm of infected males and implications of these findings for the sexual transmission of ZIKV infection;
- status of ZIKV mosquito vectors in Ontario; and
- status of ZIKV vaccine trials.

Zika Virus (ZIKV) Infection Incidence in the Americas

For reasons that have not been completely determined, the incidence of ZIKV infection in the Americas has fallen dramatically over the 2017–18 period. However, it is difficult to provide a revised estimate of risk of acquisition of ZIKV infection, given that:

- there have not been updated epidemiologic data from the Pan-American Health Organization (PAHO) since early Jan., 2018 and the most recent Regional Zika Epidemiological Update was dated Aug. 25, 2017;
- the vast majority of countries providing Zika surveillance data to PAHO were reporting suspected cases based on clinical signs and symptoms instead of confirmed cases with laboratory evidence of recent ZIKV infection; this distinction is important as other mosquito-borne infections such as chikungunya or dengue infections can be misclassified as ZIKV infections as their symptoms can be similar; and
- data from many countries in the Americas have not been updated during 2017 and 2018.

However, with the marked reduction in Canadian and American travel-associated diagnoses in the latter half of 2017, combined with fewer reported ZIKV infection complications (especially Guillain-Barré Syndrome and CZS), it is clear that there has been a substantial reduction in the incidence of ZIKV infections throughout the Americas. This reduced incidence could be due to a variety of factors,

including exposure and resultant herd immunity acquired during the peak of the epidemic in 2016–17, as well as impacts from vector control measures.

Because of the decreased risk of ZIKV infection, CATMAT has reviewed its advice to clinicians in terms of assessment for ZIKV infection, with updated recommendations on the PHAC Zika website dated April 23, 2018. While the recommendations for testing symptomatic patients with travel to/exposure in Zika-affected areas remain the same, especially for pregnant women, CATMAT has stated the following:

> "Screening of asymptomatic pregnant women with possible exposure during pregnancy or during the peri-conception period should be discussed on a case-by-case basis between the woman and her health care provider. The declining incidence of Zika transmission in most areas of the world means that infection rates in this population will be very low, and the risk of false positive laboratory results, particularly for serology, correspondingly elevated. False positive diagnoses would have important implications for adverse events related to unwarranted additional testing and anxiety, as well as resource utilization."

Clinicians should refer to the updated CATMAT statement and its recommendations for diagnosis and follow-up of individuals returning from Zika-affected areas, especially those with compatible symptoms.

Incidence of Congenital Zika Syndrome (CZS)

A number of sources are contributing to our improved understanding of the incidence of and impacts on ZIKV infection in pregnancy, especially estimates of the incidence of CZS.

- Data from the US Zika Pregnancy Registry reported between Jan. 15 and Dec. 27, 2016 showed that 1 in 10 pregnancies impacted by laboratory-confirmed ZIKV infection resulted in an infant born with CZS. The incidence rates of CZS were similar whether the woman had symptoms or not, however, the timing of the infection during the pregnancy appeared important, with an increase in CZS incidence to 15% when laboratory-confirmed ZIKV infection was contracted during the first trimester.

- Data from the US territories for the period of Jan. 2016 to April 2017 showed a lower incidence of CZS, with 5% of pregnancies with laboratory-confirmed ZIKV infection resulting in infants with CZS. A slightly higher proportion of first trimester pregnancies with laboratory-confirmed ZIKV infection resulted in infants with CZS (8%) compared to when the infection occurred during the second or third trimester (5% and 4%, respectively). The data are limited due to the pregnancy registries only following women with positive laboratory testing for ZIKV infection in pregnancy, which would lead to an unknown magnitude of under-ascertainment of the population prevalence of ZIKV infection during pregnancy due to non-testing, false negative results and asymptomatic infections. In addition, CZS may be underdiagnosed due to the methods used to assess and report birth defects in infants.

- A cohort study of pregnant women with PCR-confirmed ZIKV infection in the French territories in the Americas found that neurological and ocular abnormalities were observed in 39 out of 555 (7.0%) fetuses and infants included in the study.

- In Canada, PHAC is collaborating with the Canadian Pediatric Society to carry out two surveillance projects focused on severe microcephaly (2016–18) and CZS (2017–19). Although the results of these projects are pending, during the first six months of the severe microcephaly surveillance project, 24 cases were reported, of which 17 met the case definition for severe microcephaly. None of these severe cases were found to be associated with ZIKV infection.

Zika Virus (ZIKV) Persistence in Semen

A recent prospective cohort study undertaken by the US Centers for Disease Control and Prevention (CDC) and published in the *New England Journal of Medicine* in April 2018 provided data on the persistence of ZIKV in the semen of men who contracted symptomatic ZIKV infections. ZIKV RNA was detected by PCR in one-third of the 184 men in the study when tested 14 to 304 days after onset of illness, decreasing over the first few months post-infection. Positive viral cultures for infectious ZIKV were documented in 3 of 78 specimens collected from men within the first 30 days post-infection, suggesting a much shorter period of potential sexual transmission of the infection than suggested based on PCR findings. However, the CATMAT recommendations for the sexual transmission of ZIKV remain to abstain or use condom for 6 months post-symptom onset or last exposure, whereas the US CDC recommendations are that couples should use condoms or abstain from sex for at least 3 months post symptom onset or last exposure.

Aedes Mosquito Surveillance in Ontario

The vectors responsible for ZIKV transmission are *Aedes aegypti* and, to a lesser extent, *Aedes albopictus*. Active surveillance for *Ae*. *aegypti* and *Ae. albopictus* in Windsor-Essex County over the past two years has documented established populations of *Ae. albopictus* in the region. This is likely the result of successful overwintering of the more cold-tolerant *Ae. albopictus*. The small numbers of *Ae. aegypti* is more likely to be a result of annual summer importations, with winter die-offs. For local ZIKV transmission to occur, sufficient infectious individuals with virus present in their blood and established populations of *Ae. aegypti* (the more efficient vector for ZIKV infection) are required. As there is currently no established populations of *Ae. aegypti*, the potential for local transmission of ZIKV in southwestern Ontario is extremely low.

Zika Virus (ZIKV) Vaccines and Anti-Viral Treatment

A number of candidate ZIKV vaccines have gone through Phase 1 trials, with two vaccines (one a DNA and the other a mRNA vaccine) being, or have been, assessed via Phase 2 trials. The results from these Phase 2 trials have not been published, and the WHO vaccine pipeline tracker indicates that there are no vaccine candidates being considered for Phase 3 trials. There are currently no registered clinical trials examining treatments for ZIKV infection.

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Disclaimer

At a Glance

An *At a Glance* is a brief document offering an overview of a topic or steps in a process, in a concise manner.

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