Travel-related dengue, Zika and chikungunya in Canada, 2012–2023

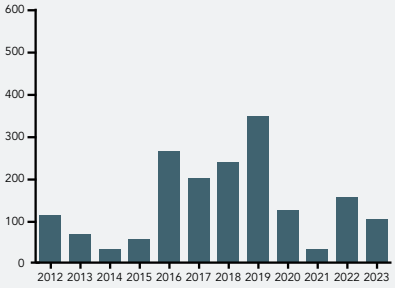
Results from a feasibility pilot study on laboratory-based surveillance

- Dengue, Zika and chikungunya are vector-borne diseases (VBD) spread by mosquitoes that Canadians may encounter during travel abroad[1]. These diseases are not endemic in Canada and are not reportable and/or nationally notifiable, yet hundreds of Canadians returning from travel to endemic regions are diagnosed each year[2,3].
- Laboratory-based surveillance uses routine laboratory requisition and testing data to identify and monitor disease activity.
- The Retro 3 feasibility pilot study used laboratory-based surveillance methods to retrospectively analyse travel-related dengue, Zika and chikungunya among returning Canadian travellers[4]. Data from persons tested at the National Microbiology Laboratory (NML) are presented, however they underestimate total disease burden as vital testing information from provincial public health laboratories are not yet included in this analysis.

DENGUE

1,725 cases[5] | Median age: 35

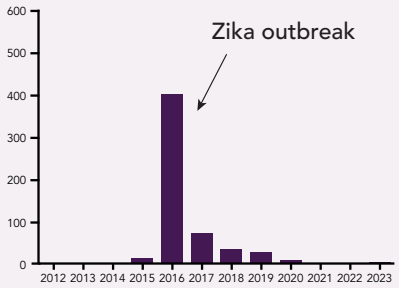
70% women (49% pregnant)



ZIKA

559 cases[5] | Median age: 35

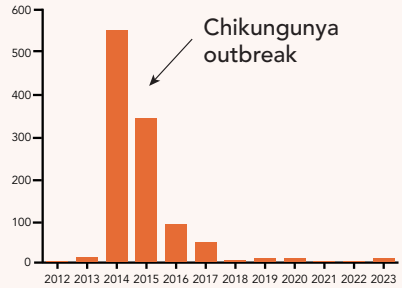
68% women (28% pregnant)



CHIKUNGUNYA

1,065 cases[5] | Median age: 49

63% women (1% pregnant)



The Caribbean[6] was the top travel destination linked with laboratory-based cases of dengue, Zika and chikungunya

- **A total of 3,349 laboratory-based cases of travel-related dengue, Zika and chikungunya were identified among 49,942 persons tested for these diseases at the NML in 2012–2023[7].**
- Disease trends closely aligned with those observed globally and in countries of travel destination.
- Most laboratory-based cases were among women of childbearing age, except for chikungunya, which was more common in older age groups.
- Only 1% of chikungunya and 28% of Zika laboratory-based cases among women reported pregnancy, compared to approximately 50% for dengue[8].

Laboratory data can be leveraged for epidemiologic analyses to monitor long-term trends and detect outbreaks of travel-related VBD. Laboratory-based surveillance of VBD could provide valuable insights into their epidemiology and play a critical role in supporting current surveillance efforts for emerging VBD.

BC Centre for Disease Control
An agency of the Provincial Health Services Authority
Alberta Health Services
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1. Government of Canada. Zika virus: Latest travel health advice. 2023. https://www.canada.ca/en/public-health/services/diseases/zika-virus/latest-travel-health-advice.html. 2. Ogden NH, Gachon P. Climate change and infectious diseases: What can we expect? Can Commun Dis Rep 2019;45(4):76–80. https://doi.org/10.14745/ccdr.v45i04a01. 3. Government of Canada. Dengue fever: Surveillance. 2024. https://www.canada.ca/en/public-health/services/infectious-diseases/viral-haemorrhagic-fevers/dengue-fever/surveillance.html. 4. Public Health Agency of Canada, BCCDC Public Health Laboratory, Alberta Health Services Laboratory Services, Public Health Ontario Laboratory. Retro 3: A feasibility pilot study for the development of a laboratory-based surveillance system for vector-borne diseases. Can Commun Dis Rep 2025;51(5):213. 5. Laboratory-based cases. 6. Travel regions are based on intermediate regions within the United Nations' Statistical Division's M49 classification system. Travel within Canada was excluded. Highlighted box is an approximation of countries/areas within the Caribbean intermediate region. 7. Year is defined as the earliest year among sample collection, sample receipt or symptom onset. 8. This higher proportion for dengue likely reflects Zika testing recommendations for potential travel exposure during pregnancy also leading to dengue testing due to overlapping travel risks, clinical presentations and cross-reactivity, rather than indicating a true higher prevalence of dengue among pregnant women.

Public Health Agency of Canada, BCCDC Public Health Laboratory, Alberta Health Services Laboratory Services, Public Health Ontario Laboratory. Travel-related dengue, Zika and chikungunya in Canada, 2012–2023: Results from a feasibility pilot study on laboratory-based surveillance. Can Commun Dis Rep 2025;51(5):212.

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