

Appendix A: Disease-Specific Chapters

Chapter: West Nile Virus Illness

Revised March 2017

West Nile Virus Illness

☒ Communicable

☐ Virulent

Health Protection and Promotion Act:

Ontario Regulation 558/91 – Specification of Communicable Diseases

Health Protection and Promotion Act:

Ontario Regulation 559/91 – Specification of Reportable Diseases

1.0 Aetiologic Agent

West Nile Virus (WNV) is a mosquito-borne virus of the genus *Flavivirus*.¹

2.0 Case Definition

2.1 Surveillance Case Definition

[See Appendix B](#)

2.2 Outbreak Case Definition

Not applicable.

3.0 Identification

3.1 Clinical Presentation

There are three clinical manifestations of WNV; asymptomatic, non-neurological, and neurological. The majority of WNV cases are asymptomatic. About 20% of infected persons develop the usually less severe symptom complex known as WNV fever (non-neurological syndrome). This presents with a mild flu-like illness with fever, headache, and body aches, occasionally with a skin rash and swollen lymph nodes or other non-specific symptoms that last several days. Other symptoms may include nausea, vomiting, eye pain or photophobia.²

WNV neurological symptoms can present as an encephalitis illness as well as conditions similar to acute flaccid paralysis, and Parkinson's disease. Less than 1% of infected people will develop neurological symptoms.¹

3.2 Diagnosis

Diagnosis is based on clinical presentation and serological test results.

For further information about human diagnostic testing, contact the Public Health Ontario Laboratories or refer to the Public Health Ontario Laboratory Services webpage:

<http://www.publichealthontario.ca/en/ServicesAndTools/LaboratoryServices/Pages/default.aspx>

See [Appendix B](#) for diagnostic criteria relevant to Case Definitions.

4.0 Epidemiology

4.1 Occurrence

The virus was first isolated in 1937 in the West Nile district of Uganda. The first recorded outbreak in North America happened in New York City in 1999.

In Canada, the virus was first confirmed in birds in 2001 and the first human case was confirmed in Ontario in September 2002. Locally acquired WNV occurs in the summer months, with the majority of cases occurring in August and September.

There are no scientific models that can accurately predict the extent of WNV activity from one year to the next; multiple factors, including weather affect mosquito growth and development as well as viral transmission.

Between 2007 and 2011, an average of six cases of WNV were reported per year in Ontario.

Please refer to the Public Health Ontario Monthly Infectious Diseases Surveillance Reports and other infectious diseases reports for more information on disease trends in Ontario.^{3, 4}

<http://www.publichealthontario.ca/en/DataAndAnalytics/Pages/DataReports.aspx>

4.2 Reservoir

Birds are the main reservoir of WNV in North America.

4.3 Modes of Transmission

Mosquitoes are the main vectors of WNV with the *Culex* genus being the primary vector. In Ontario the main vectors of concern are *Culex pipiens* and *Culex restuans*.

Indirect human transmission can occur through blood and organ donations. Most infants born to women who have contracted WNV during pregnancy have no infection or clinical abnormalities. There is only one reported case of confirmed congenital WNV infection. There is one report of WNV infection transmitted from human milk, but the infant remained asymptomatic.

4.4 Incubation Period

Usually 2-15 days.⁵

4.5 Period of Communicability

No direct person-to-person transmission. Infected mosquitoes probably transmit virus throughout life.²

4.6 Host Susceptibility and Resistance

Susceptibility appears to be general and throughout life in both sexes at all ages.² Persons over 50 years of age and immunocompromised persons have the highest risk of severe disease.

5.0 Reporting Requirements

5.1 To Local Board of Health

Individuals who have or may have WNV shall be reported as soon as possible to the medical officer of health by persons required to do so under the *Health Protection and Promotion Act*, R.S.O. 1990 (HPPA).⁶

5.2 To the Ministry of Health and Long-Term Care (the ministry) or Public Health Ontario (PHO), as specified by the ministry

Report only case classifications specified in the case definition.

Cases shall be reported using the integrated Public Health Information System (iPHIS), or any other method specified by the ministry **within one (1) business day of receipt of initial notification** as per iPHIS Bulletin Number 17: Timely Entry of Cases.⁷

The minimum data elements to be reported for each case are specified in the following:

- *Ontario Regulation 569 (Reports)* under the *Health Protection and Promotion Act* (HPPA);^{6, 8}
- The disease-specific User Guides published by PHO; and
- Bulletins and directives issued by PHO.

6.0 Prevention and Control Measures

6.1 Personal Prevention Measures

Provide public education regarding:

- The use of insect repellent when outdoors. Consider using federally registered personal insect repellents on exposed skin, such as those containing DEET or other approved repellants (a light coating will do). Follow the manufacturer's label for directions on use.
- Wearing long sleeve shirts, long pants, and light coloured clothes.

- Cleaning up mosquito-friendly areas around your home regularly such as standing water.

For more information on prevention measures refer to the current version of the WNV Preparedness Plan from the ministry.

6.2 Infection Prevention and Control Strategies

The board of health shall develop and utilize a local vector-borne management strategy in order to mitigate risk. This strategy shall include measures such as:

- Local risk assessments;
- Public education; and
- Source reduction when and where applicable.

For healthcare settings, implementing routine practices is sufficient.

For more information on vector-borne management strategies refer to Ontario Regulation 199 (Control of West Nile Virus) under the *Health Protection and Promotion Act* and the current version of the WNV Preparedness Plan from the ministry.

Refer to Public Health Ontario's website at www.publichealthontario.ca to search for the most up-to-date Provincial Infectious Diseases Advisory Committee (PIDAC) best practices on Infection Prevention and Control (IPAC). PIDAC best practice documents can be found at:

http://www.publichealthontario.ca/en/BrowseByTopic/InfectiousDiseases/PIDAC/Pages/PIDAC_Documents.aspx.

6.3 Management of Cases

Investigate the case to determine potential source of infection. Refer to *Ontario Regulation 569* for relevant data to collect and determine the most likely location of exposure.⁸

As per this protocol, notify Trillium Gift-of-Life of any positive human WNV results with blood/organ donation histories.

6.4 Management of Contacts

Not applicable.

6.5 Management of Outbreaks

For outbreak management refer to this protocol as well as the current version of the WNV Preparedness Plan from the ministry.

7.0 References

1. American Academy of Pediatrics. Section 3: summaries of infectious diseases. In: Pickering LK, Baker CJ, Long SS, McMillan JA, editors. Red book: 2012 report of the Committee on Infectious Diseases. 29th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2012:792-95.
2. Heymann DL, editor. Control of communicable diseases manual. 19th ed. Washington, DC: American Public Health Association; 2008.
3. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Monthly infectious diseases surveillance report. Toronto, ON: Queen's Printer for Ontario; 2014. Available from:
<http://www.publichealthontario.ca/en/ServicesAndTools/SurveillanceServices/Pages/Monthly-Infectious-Diseases-Surveillance-Report.aspx>
4. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Reportable disease trends in Ontario, 2011. Toronto, ON: Queen's Printer for Ontario; 2014. Available from:
<https://www.publichealthontario.ca/en/BrowseByTopic/InfectiousDiseases/Pages/Reportable-Disease-Trends.aspx>
5. Ontario. Ministry of Health and Long-Term Care. West Nile Virus Preparedness and Prevention Plan 2008. Toronto, ON: Queen's Printer for Ontario; 2008. Available from:
http://www.health.gov.on.ca/en/common/ministry/publications/reports/wnv_plan_2008/wnv_plan_2008.aspx
6. *Health Protection and Promotion Act*, R.S.O. 1990, c. H.7. Available from:
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90h07_e.htm
7. Ontario. Ministry of Health and Long-Term Care. Timely entry of cases. iPHIS Bulletin. Toronto, ON: Queen's Printer for Ontario; 2014:17.
8. *Reports*, R.R.O. 1990, Reg. 569. Available from:
http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_900569_e.htm

8.0 Additional Resources

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Vector-borne diseases 2012 summary report. Toronto, ON: Queen's Printer for Ontario; 2013. Available from:

<https://www.publichealthontario.ca/en/ServicesAndTools/SurveillanceServices/Pages/Vector-Borne-Disease-Surveillance-Reports.aspx>

Ontario. Ministry of Health and Long-Term Care. Infectious diseases protocol, 2013. Toronto, ON: Queen's Printer for Ontario; 2013. Available from:

http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/infdispro.aspx

Public Health Agency of Canada. Management of patients with West Nile Virus: guidelines for health care providers. Can Commun Dis Rep. 2005;31 Suppl 4:1-10. Available from: <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/05vol31/index-eng.php>

Public Health Agency of Canada [Internet]. . Ottawa, ON: Her Majesty the Queen in Right of Canada; 2013. West Nile Virus MONITOR; [updated Jul 25; cited 2014 Jun 26]. Available from: <http://www.phac-aspc.gc.ca/wnv-vwn/index-eng.php>

Public Health Agency of Canada [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2013. West Nile Virus – protect yourself!; [updated 2013 Jul 25; cited 2014 Jun 26]. Available from: <http://www.phac-aspc.gc.ca/wn-no/index-eng.php>

9.0 Document History

Table 1: History of Revisions

Revision Date	Document Section	Description of Revisions
March 2017	General	New Template
March 2017	6.3 Management of Cases	Removal of “...Canadian Blood Services (CBS) and...”
March 2017	Document History	Updated

