

# Appendix A: Disease-Specific Chapters

## Chapter: Encephalitis

- a) Primary, viral;
- b) Post-infectious; Vaccine-related; Subacute sclerosing panencephalitis, and Unspecified

Effective: February 2019

# Encephalitis

a) Primary, viral;

b) Post-infectious; Vaccine-related;  
Subacute sclerosing panencephalitis,  
and Unspecified

Communicable (primary, viral only)

Virulent

**Health Protection and Promotion Act:  
O. Reg.135/18 (Designation of Diseases)**

## 1.0 Aetiologic Agent

Encephalitis is acute inflammation of the brain, typically with spinal cord involvement.<sup>1,2</sup> The condition is mostly caused by an arbovirus infection (e.g., West Nile virus, Togavirus, Bunyavirus, Alphavirus) through a mosquito vector.<sup>1,2</sup> Infections may result in St. Louis encephalitis (SLE), Western equine encephalitis (WEE), Eastern equine encephalitis (EEE) and California encephalitis (CE), however, most infections do not result in disease. Additionally, infections by enteroviruses, such as, coxsackie virus, ECHO virus and poliovirus may also lead to encephalitis.<sup>1</sup> Inflammation of the brain can also be caused by bacteria, fungi, and protozoa.

## 2.0 Case Definition

### 2.1 Surveillance Case Definition

Refer to [Appendix B](#) for Case Definitions.

### 2.2 Outbreak Case Definition

Not applicable

## 3.0 Identification

### 3.1 Clinical Presentation

Most viral encephalitis infections are asymptomatic; mild cases often occur as febrile headache; severe infections are usually marked by acute onset, with headache, high fever, meningeal signs, stupor, disorientation, coma, tremors, occasional convulsions and spastic paralysis.<sup>1</sup>

- Primary encephalitis occurs when the disease condition is directly related to an infection of brain tissue.

- Post infectious encephalitis is an adverse consequence of an infectious process elsewhere in the body e.g., chickenpox, influenza, or measles.<sup>1</sup>
- Encephalitis may also be caused by non-infectious processes e.g. lead, poisoning or hemorrhage.<sup>1</sup>
- Subacute sclerosing panencephalitis is an insidious onset of inflammation of the entire brain. It is thought to be caused by a slow latent measles virus post recovery from a past infection.<sup>1</sup>

**Note:** Clinically, encephalitis involves abnormal brain function (e.g., change in mental status, motor or sensory deficits and speech or movement disorder). Comparatively, individuals with meningitis may experience discomfort, lethargy or headache, however, brain function is normal.<sup>2</sup>

## 3.2 Diagnosis

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

For further information about human diagnostic testing, contact the Public Health Ontario Laboratories or refer to the Public Health Ontario Laboratory Services at <http://www.publichealthontario.ca/en/ServicesAndTools/LaboratoryServices/Pages/default.aspx>

# 4.0 Epidemiology

## 4.1 Occurrence

Viral encephalitis occurs worldwide; some types are endemic to geographic location and linked with seasons (i.e., weather patterns).<sup>2</sup>

Post-infectious encephalitis can occur after vaccination or nondescript respiratory infections; the most common viruses implicated are measles, rubella, smallpox and chicken pox.<sup>2</sup>

Please refer to Public Health Ontario's (PHO) Reportable Disease Trends in Ontario reporting tool and other reports for the most up-to-date information on infectious disease trends in Ontario.

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

For additional national and international epidemiological information, please refer to the Public Health Agency of Canada and the World Health Organization.

## 4.2 Reservoir

Depends on causative agent.

## 4.3 Modes of Transmission

Depends on causative agent.

## 4.4 Incubation Period

Depends on causative agent; for primary viral, the incubation period is usually 3-15 days.<sup>2,3</sup>

## 4.5 Period of Communicability

Varies depending on causative agent.

## 4.6 Host Susceptibility and Resistance

Susceptibility to clinical disease is usually highest for individuals at the extremes of age, however, risk by disease type varies across all the age groups.<sup>3</sup>

# 5.0 Reporting Requirements

## 5.1 To local Board of Health

As per Requirement #3 of the “Reporting of Infectious Diseases” section of the *Infectious Diseases Protocol, 2018* (or as current), 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);<sup>4</sup>
- The iPHIS User Guides published by PHO; and
- Bulletins and directives issued by PHO.

**Note:** Encephalitis due to any disease classified as reportable in Ontario should be reported under the corresponding disease, including:

Encephalitis due to:

- *Haemophilus influenzae, all types, invasive;*
- Meningococcal disease, invasive;
- Pneumococcal disease, invasive;
- Tuberculosis;
- West Nile Virus Illness; or
- Listeriosis.

Post-infectious encephalitis due to measles, rubella, mumps or varicella should be reported under the respective condition as a complication of the illness.

Post-vaccine encephalitis should be reported as an Adverse Event Following Immunization (AEFI).

# 6.0 Prevention and Control Measures

In the event that publicly funded vaccine doses are needed for case and contact management, the board of health should contact the ministry’s Immunization program at [vaccine.program@ontario.ca](mailto:vaccine.program@ontario.ca) as soon as possible.

## 6.1 Personal Prevention Measures

- Proper hand hygiene and avoidance of sharing utensils, cups and other items to prevent infections that could lead to encephalitis.
- Protection against vectors including: mosquito control programs; personal precautions to avoid arthropod bites include repellents and protective clothing and staying in screened or air-conditioned locations and travelers to tropical countries should consider bringing mosquito bed nets and aerosol insecticide sprays.<sup>2,5</sup>
- Educate the public and health care workers about reducing the spread of all types of infection by practicing proper hand hygiene especially after providing direct care and/or coming in contact with body fluids, before preparing foods and eating.
- Educate the public and health care worker about proper respiratory etiquette:<sup>6</sup>
  - not visiting a health care facility when ill with an acute respiratory infection;
  - avoidance measures that minimize contact with droplets when coughing or sneezing, such as:
    - turning the head away from others,
    - maintaining a two-metre separation from others, and
    - covering the nose and mouth with tissue;
  - immediate disposal of tissues into waste after use; and
  - immediate hand hygiene after disposal of tissues.

## 6.2 Infection Prevention and Control Strategies

Routine practices are recommended for hospitalized cases and additional precautions would depend on the causative organism.

Refer to PHO's website at [www.publichealthontario.ca](http://www.publichealthontario.ca) to search for the most up-to-date information Infection Prevention and Control.

## 6.3 Management of Cases

In addition to the requirements set out in the Requirement #2 of the “Management of Infectious Diseases – Sporadic Cases” and “Investigation and Management of Infectious Diseases Outbreaks” sections of the *Infectious Diseases Protocol, 2018* (or as current), the board of health shall investigate cases to determine the source of infection. Refer to Section 5: Reporting Requirements above for relevant data to be collected during case investigation. The following disease-specific information should also be obtained during case management:

- History of immunization in last 3 weeks, and
- History of infectious illness in last 10 days.

## 6.4 Management of Contacts

Not applicable

## 6.5 Management of Outbreaks

Not applicable

## 7.0 References

1. O'Toole MT, editor. Mosby's Dictionary of Medicine, Nursing & Health Professions. 9 ed. St. Louis, MO: Elsevier; 2013.
2. Zomorodi M, Johnston S. Clinical manifestations and diagnostic studies. In: Lewis L, Dirksen S, Heitkemper M, Camera I, Bucher L, Barry M, et al., editors. Medical-surgical nursing in Canada: Assessment and management of clinical problems. 3 ed. Toronto, ON: Elsevier; 2014.
3. Howes DS, Lazoff M. Encephalitis Clinical Presentation [Internet]. New York, NY: Medscape; 2017 [updated June 12, 2017; cited May 16, 2018]. Available from: <https://emedicine.medscape.com/article/791896-clinical#showall>
4. *Reports, RRO 1990, Reg. 569*. Available from: <https://www.ontario.ca/laws/regulation/900569>
5. Davis CP. Encephalitis [Internet]. emedicinehealth; [updated November 20, 2017; cited May 16, 2018]. Available from: [https://www.emedicinehealth.com/encephalitis/article\\_em.htm#what\\_is\\_encephalitis](https://www.emedicinehealth.com/encephalitis/article_em.htm#what_is_encephalitis)
6. Ontario Agency for Health Protection and Promotion (Public Health Ontario). PIDAC. Routine Practices and Additional Precautions in All Health Care Settings, 3<sup>rd</sup> Edition. Toronto, ON: Queen's Printer for Ontario; 2012. Available from: [https://www.publichealthontario.ca/en/BrowseByTopic/InfectiousDiseases/PIDAC/Pages/Routine\\_Practices\\_Additional\\_Precautions.aspx](https://www.publichealthontario.ca/en/BrowseByTopic/InfectiousDiseases/PIDAC/Pages/Routine_Practices_Additional_Precautions.aspx)

## 8.0 Document History

Table 1: History of Revisions

Revision Date	Document Section	Description of Revisions
February 2019	General	<p>Revisions made throughout entire document. Minor revisions were made to support the regulation change to Diseases of Public Health Significance. Common text included in all Disease Specific chapters: Surveillance Case Definition, Diagnosis, Reporting Requirements, and Management of Cases. The epidemiology section and references were updated.</p> <p>Minor revisions were made to support the regulation change to Diseases of Public Health Significance, Diagnosis, Reporting Requirements, the epidemiology section and references were updated and Section 8.0 Additional Resources was deleted.</p>
February 2019	1.0 Aetiologic Agent	Section updated.
February 2019	3.1 Clinical Presentation	Section updated.
February 2019	6.0 Prevention and Control Measures	Updates regarding the ordering of publicly funded vaccines for case and contact management.
February 2019	6.3 Management of Cases	Minor revisions to section.

