

Ontario Public Health Standards:  
Requirements for Programs, Services and Accountability

Infectious Disease Protocol

# **Appendix 1:**

## **Case Definitions and Disease-Specific Information**

**Disease: Encephalitis**

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

Effective: May 2022

# Encephalitis

a) Primary, viral;

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

Communicable (primary, viral only)

Virulent

[Health Protection and Promotion Act \(HPPA\)](#)

[Ontario Regulation \(O. Reg.\) 135/18 \(Designation of Diseases\)](#)

## Provincial Reporting Requirements

Confirmed case

Probable case

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:

- [O. Reg. 569](#) (Reports) under the HPPA;<sup>4</sup>
- The iPHIS User Guides published by Public Health Ontario (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, such as encephalitis due to:

- *Haemophilus influenzae*, all types, invasive;
- Influenza;

- Meningococcal disease, invasive;
- Pneumococcal disease, invasive;
- Tuberculosis;
- Syphilis
- Rabies;
- Lyme Disease;
- 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).

## Type of Surveillance

Case-by-case

## Case Definition

### Confirmed Case

Laboratory confirmation of infection with clinically compatible signs and symptoms of encephalitis:

- Isolation of organism from an appropriate clinical specimen (e.g., cerebrospinal fluid, stool);

**OR**

- Detection of nucleic acid from appropriate clinical specimens (e.g., cerebrospinal fluid, stool);

**OR**

- Detection of specific antigen;

**OR**

- Serologic confirmation of infection with an organism known to cause encephalitis.

## **Probable Case**

- Clinically compatible signs and symptoms of encephalitis in the absence of laboratory confirmation of a causative organism,

**AND**

- Clinical diagnosis of encephalitis is made by the attending physician.

## **Outbreak Case Definition**

Not applicable

## **Clinical Information**

### **Clinical Evidence**

Clinically compatible signs and symptoms are characterized by fever, headache, and altered mental status ranging from confusion to coma with or without additional signs of brain dysfunction (e.g., paresis or paralysis, cranial nerve palsies, sensory deficits, abnormal reflexes, generalized convulsions, and abnormal movements).

**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.

Consult with the treating physician to determine the presence of clinical evidence for encephalitis.

### **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>

## Laboratory Evidence

### Laboratory Confirmation

Given the variability of etiological organisms, consult with laboratory about appropriate specimens and testing methodologies.

### Approved/Validated Tests

Given the variability of etiological organisms, appropriate specimens and existing and emerging testing methodologies, consult with laboratory.

### Indications and Limitations

Indications and limitations will be based on clinical presentation and be test specific due to the variability of the etiological organism. As mentioned in the above Laboratory Evidence sections, this should be discussed with the laboratory.

For further information about human diagnostic testing, contact the [Public Health Ontario Laboratories](#).

## Case Management

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 Provincial 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.

## Contact Management

Not applicable

## Outbreak Management

Not applicable

## 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.

## 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>25</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.

## 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](#) to search for the most up-to-date information on Infection Prevention and Control (IPAC).

## Disease Characteristics

**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.

**Modes of Transmission** – Depends on causative agent.

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

**Period of Communicability** – Varies depending on causative agent.

**Reservoir** – Depends on causative agent.

**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>

Please refer to [PHO's Reportable Disease Trends in Ontario reporting tool](#) for the most up-to-date information on infectious disease trends in Ontario.

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

## References

1. O'Toole MT, editor. Mosby's Dictionary of Medicine, Nursing & Health Professions. 9 ed. St. Louis, MO: Elsevier; 2013.
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4. *Reports, RRO 1990, Reg. 569*. Available from: <https://www.ontario.ca/laws/regulation/900569>



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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/Health-Topics/Infection-Prevention-Control/Routine-Practices-Additional-Precautions>
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## Document History

Revision Date	Document Section	Description of Revisions
April 2022	Entire Document	New template. Appendix A and B merged. No material content changes.
April 2022	Epidemiology: Occurrence section	Removed.
April 2022	ICD Codes	Removed.