

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

Infectious Disease Protocol

Appendix 1:

Case Definitions and Disease-Specific Information

Disease: Leprosy

Effective: May 2022

Leprosy

Communicable

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;⁵
- The iPHIS User Guides published by Public Health Ontario (PHO); and
- Bulletins and directives issued by PHO.

Type of Surveillance

Case-by-case

Case Definition

Confirmed Case

Laboratory confirmation of infection with clinically compatible signs and symptoms:

- Demonstration of characteristic acid fast bacilli in slit-skin smears and biopsies prepared from the ear lobe or other appropriate site, such as elbow, knee, or skin lesion

OR

- Histopathological report from skin or nerve biopsy compatible with leprosy

OR

- Clinically compatible signs and symptoms with detection of *Mycobacterium leprae* (*M. leprae*) DNA in biopsy material

Probable Case

Clinically compatible signs and symptoms with an epidemiologic link to an endemic region or to a laboratory-confirmed case

Outbreak Case Definition

The outbreak case definition varies with the outbreak under investigation. Please refer to the *Infectious Diseases Protocol, 2018* (or as current) for guidance in developing an outbreak case definition as needed.

The outbreak case definitions are established to reflect the disease and circumstances of the outbreak under investigation. The outbreak case definitions should be developed for each individual outbreak based on its characteristics, reviewed during the course of the outbreak, and modified if necessary, to ensure that the majority of cases are captured by the definition. The case definitions should be created in consideration of the outbreak definitions.

Outbreak cases may be classified by levels of probability (*i.e.*, confirmed and/or probable).

Clinical Information

Clinical Evidence

A clinical consultation with a clinician trained and experienced in the diagnosis of leprosy is necessary for diagnosis.

Clinical Presentation

A chronic bacterial disease characterized by the involvement primarily of skin as well as peripheral nerves and the mucosa of the upper airway. Clinical forms of the

disease represent a spectrum reflecting the cellular immune response to *M. leprae*.^{1,2} The following characteristics are typical of the major forms of the disease:³

- Tuberculoid: one or a few well-demarcated, hypopigmented and anesthetic skin lesions, frequently with active spreading edges and a clearing centre; peripheral nerve swelling or thickening also may occur;
- Lepromatous: a number of erythematous papules, plaques, or nodules or an infiltration of the face, hands and feet with lesions in a bilateral and symmetrical distribution that progress to thickening of the skin, possible with reduced sensation;
- Borderline (dimorphous): skin lesions characteristic of both the tuberculoid and lepromatous forms; and
- Indeterminate: early lesions, usually hypopigmented macules, without developed tuberculoid or lepromatous features.

Laboratory Evidence

Laboratory Confirmation

Any of the following will constitute a confirmed case of Leprosy:

- Positive Acid Fast stain with typical morphology for *M. leprae* from specimens as indicated above (see [Case Definition section](#))
- Histopathological report from skin or nerve biopsy compatible with leprosy
- Nucleic acid amplification test (NAAT) for *M. leprae*

Approved/Validated Tests

- NAAT for *M. leprae*

Indications and Limitations

Not applicable

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

Requests for testing of biopsy samples should be forwarded to 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.

Public health intervention is minimal especially after initiation of treatment when communicability is low; no restrictions in employment or attendance at school are indicated for persons whose disease is regarded as non-infectious.

Treatment should be under the direction of an infectious disease specialist, refer to World Health Organization (WHO) treatment recommendations. As above, medications are provided at no cost in Ontario through the Ministry of Health (ministry), Office of Chief Medical Officer of Health, Public Health, Infectious Disease Policy and Programs Unit.

Contact Management

Contacts are defined as persons who have been in close, continuous household contact with a new patient up to 3 years prior to diagnosis or during any period of inadequate treatment. Persons residing with cases in areas of endemicity are particularly vulnerable.⁶

Initial examination of contacts should take place, but long-term follow-up of asymptomatic contacts is not warranted.¹

Outbreak Management

Please see the *Infectious Diseases Protocol, 2018* (or as current) for the public health management of outbreaks or clusters in order to identify the source of illness, manage the outbreak and limit secondary spread.

Prevention and Control Measures

Personal Prevention Measures

The best preventative measure is early diagnosis and treatment of cases.² Health education should stress the availability of effective multidrug therapy, the non-infectivity of persons under continuous treatment and the importance of completing treatment. The ministry provides medications at no cost for the treatment of leprosy cases and contacts.

Infection Prevention and Control Strategies

If hospitalized, routine practices are indicated. Hand hygiene is recommended for all people in contact with a case.¹ Disinfection of nasal secretions, handkerchiefs and other fomites is necessary until treatment is established.

Refer to [PHO's website](#) to search for the most up-to-date information on Infection Prevention and Control (IPAC).

Disease Characteristics

Aetiologic Agent - *Mycobacterium leprae* (*M. leprae*) is the bacterium which causes leprosy. It is an obligate intracellular, acid-fast bacillus that can be Gram-stain variable.¹

Modes of Transmission - The bacterium may be transmitted from close contact with nasal mucosa, possibly through respiratory secretions by untreated cases or individuals incubating subclinical infections, but the exact mechanism of transmission is not clearly understood.^{1,2} Indirect transmission is unlikely, although the bacillus can survive up to 7 days in dried nasal secretions.²

Incubation Period – Incubation has been reported from as short as a few weeks to 30 years; however, the average incubation period is between 3 to 10 years.²

Period of Communicability - Clinical and laboratory evidence suggest that infectiousness is lost in most instances within a day of treatment with multidrug therapy.²

Reservoir - Humans and armadillos.²

Host Susceptibility and Resistance - Infection among close contacts of cases is frequent. Several human genes have been identified that are associated with susceptibility to *M. leprae*, and fewer than 5% of people appear to be genetically susceptible to the infection. People with human immunodeficiency virus (HIV) infection do not appear to be at increased risk of becoming infected with *M. leprae*. However, concomitant HIV infection and leprosy can lead to worsening of leprosy symptoms. Onset of leprosy is associated increasingly with use of anti-inflammatory autoimmune therapies and immunologic senescence among elderly patients.¹ The disease is rarely seen in children younger than 3 years.²

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. Committee on Infectious Diseases, American Academy of Pediatrics. Section 3: Summaries of Infectious Diseases: Leprosy. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, editors. Red Book: 2018 Report of the Committee on Infectious Diseases. 31 ed. Itasca, IL: American Academy of Pediatrics; 2018.
2. Heymann DL, editor. Control of Communicable Diseases Manual. 20 ed. Washington, D.C: American Public Health Association; 2015.

3. Centers for Disease Control and Prevention. National Notifiable Disease Surveillance System: Hansen's Disease / Leprosy (*Mycobacterium leprae*) - 2013 Case Definition [Internet]. Atlanta, GA: U.S. Department of Health & Human Services; 2013 [cited May 1, 2018]. Available from: [Hansen's Disease / Leprosy \(*Mycobacterium leprae*\) 2013 Case Definition | CDC](#)
4. Boggild AK, Correia JD, Keystone JS, Kain KC. Leprosy in Toronto: an analysis of 184 imported cases. *Canadian Medical Association Journal*. 2004;170(1):55-9.
5. Health Protection and Promotion Act, R.S.O. 1990, Reg. 569, Reports, (2018). Available from: <https://www.ontario.ca/laws/regulation/900569>
6. County of Los Angeles, Department of Public Health. Acute Communicable Disease Control Manual (B-73) - Part IV: acute communicable diseases, Leprosy (Hansen disease). Los Angeles, CA: County of Los Angeles, Department of Public Health; 2018.

Case Definition Sources

Centers for Disease Control and Prevention. National Notifiable Disease Surveillance System: Hansen's Disease / Leprosy (*Mycobacterium leprae*) - 2013 Case Definition [Internet]. Atlanta, GA: U.S. Department of Health & Human Services; 2013 [cited May 1, 2018]. Available from: [Hansen's Disease / Leprosy \(*Mycobacterium leprae*\) 2013 Case Definition | CDC](#)

Public Health Agency of Canada. Leprosy. In: Case Definitions for Communicable Diseases under National Surveillance. *Canada Communicable Disease Report*. 2009;35S2.

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.