

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

Infectious Disease Protocol

Appendix 1:

Case Definitions and Disease-Specific Information

Disease: Tetanus

Effective: May 2022

Tetanus

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;⁶
- The [iPHIS User Guides](#) published by Public Health Ontario (PHO); and
- For certain vaccines, information to be entered into the applicable provincial inventory system ; and
- Bulletins and directives issued by PHO.

Type of Surveillance

Case-by-case

Case Definition

Confirmed Case

Clinical evidence of illness (see Clinical Evidence section) without other apparent medical cause with or without isolation of *Clostridium tetani* (*C. tetani*) and with or without history of injury.

Outbreak Case Definition

Not applicable.

Clinical Information

Clinical Evidence

Clinical illness is characterized by acute onset of hypertonia and/or painful muscular contractions (usually of the muscles of the jaw and neck), and generalized muscle spasms without other apparent medical cause.

Clinical Presentation

Tetanus is an acute disease that can manifest in four clinical forms based on presentation: local, cephalic, neonatal and generalized tetanus.³

Local tetanus is an uncommon condition in which persistent muscle contraction is limited to the area of injury but can most often progress to generalized tetanus.^{3,4}

Cephalic tetanus is rare and involves the cranial nerves or can occur with otitis media.⁴ Neonatal tetanus is a form of generalized tetanus in newborn infants who do not have passive protection from maternal antibodies.³

Generalized tetanus is the most common manifestation of the disease occurring in approximately 80% of reported cases.⁴ Generalized tetanus is characterized by painful muscle spasms, usually in a descending pattern beginning in the masseter muscle (trismus or lockjaw), followed by stiff abdominal muscles.^{1,2,4} Abdominal rigidity is a common first presentation of disease in older children and adults.² Duration of spasms is generally three to four weeks, though recovery may take months.⁴

With disease progression, generalized prolonged frequent spasms may occur, contributing to serious complications and death unless treatment is provided.¹ Case-fatality ratios vary from 10% to over 80% in unvaccinated individuals; highest rates are found in infants and the elderly.¹

Laboratory Evidence

Laboratory Confirmation

There are no laboratory findings characteristic of tetanus.

Approved/Validated Tests

There is no diagnostic laboratory test for tetanus. Diagnosis is determined by clinical findings.

Note: Reactive Anti-Tetanus Toxoid Immunoglobulin G (IgG) by the enzyme immunoassay (EIA) method does not provide proof of protection against tetanus.

Consult with the laboratory about appropriate specimens and testing methodology.

Indications and Limitations

- Detection of *C. tetani* toxin should not be considered among the list of laboratory methods for confirmation of tetanus since this assay is not available or in use.
- Attempts to culture *C. tetani* are associated with poor yield, and a negative culture does not rule out disease. *C. tetani* is recovered from the wound in only 30% of tetanus cases.
- A positive culture does not confirm disease; *C. tetani* can be isolated from cases who do not have tetanus.
- A protective serum antitoxin concentration should not be used to exclude the diagnosis of tetanus. Tetanus can occur in the presence or absence of 'protective' levels of antitoxin.

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:⁵

- wound location and management, including receipt of tetanus toxoid-containing vaccine or Tlg
- treatment – date started, prophylaxis with tetanus toxoid-containing vaccine or Tlg

The primary goal in managing cases is to remove the source of toxin production and neutralizing toxin that may have been released by:

- Timely, thorough cleaning of wound including removal of necrotic tissue and foreign materials;^{1,4} and
- Ensuring high circulating concentrations of tetanus antibody which inactivate the toxin.¹

Treatment should be administered as per the attending health care provider. For further guidance please refer to the current [Canadian Immunization Guide](#).¹

Tetanus disease does not confer immunity since illness can be caused by a very small amount of toxin.⁴ The case should begin or continue with tetanus toxoid-containing vaccinations after recovery.⁴

Contact Management

Not applicable; no direct person-to-person transmission.²

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 of Health's (ministry) immunization program at vaccine.program@ontario.ca as soon as possible.

Personal Prevention Measures

Immunize as per the current [Publicly Funded Immunization Schedules for Ontario](#).⁷

In Ontario, the [Immunization of School Pupils Act \(ISPA\)](#) is the legislation that governs the immunization of school pupils for the designated diseases that are included in the Act. All students without a valid exemption must have documented receipt of tetanus toxoid containing vaccine according to the specified schedule.⁸

Completion of the primary series (at least three doses) induces more than 99% protective antibody levels against tetanus. The primary series is followed by booster doses at 18 months of age and four to six years of age. Booster doses with a tetanus toxoid containing vaccine should be received every ten years thereafter in adolescence and adulthood.¹

In Ontario, the [Child Care and Early Years Act, 2014 \(CCEYA\)](#) is the legislation that governs licensed child care settings. Pursuant to [O. Reg. 137/15](#) under the CCEYA, children who are not in school and who are attending licensed child care settings must be immunized as recommended by the local medical officer of health prior to being admitted. Under the CCEYA parents can provide a medical reason as to why the child should not be immunized or object to immunization on religious/conscience grounds.⁹

Tetanus toxoid is only available as a combination vaccine. Immunization with a tetanus toxoid containing vaccine is indicated in susceptible pregnant women, infants born prematurely and immunocompromised persons. However, these individuals should be referred to their health care provider for guidance on dose and type of combination vaccine.¹

Post-exposure prophylaxis

Post-exposure prophylaxis should follow the [Canadian Immunization Guide](#).¹

Achieving adequate effective neutralizing antibody concentrations at the time of the injury is only possible through prior completion of the tetanus toxoid-containing vaccine series or immediate administration of tetanus immune globulin (Tlg).¹

Individuals who present with more than a minor wound and who are unimmunized or incompletely immunized (unknown or less than three doses) should receive both Tlg and tetanus toxoid-containing vaccine as appropriate for age and vaccination history.¹ Previously immunized persons (three or more doses) may require a booster dose of a tetanus toxoid-containing vaccine, depending on the interval since the last booster and the type of wound.¹

Infection Prevention and Control Strategies

Routine practices are recommended for hospitalized cases. Isolation is not required.

Refer to PHO's website at www.publichealthontario.ca to search for the most up-to-date information on Infection Prevention and Control.

Disease Characteristics

Aetiologic Agent - Tetanus (lockjaw) is caused by a neurotoxin produced by the bacterium *Clostridium tetani* (*C. tetani*).^{1,2}

Modes of Transmission - Spores are introduced into the body through a break in the skin (e.g. puncture wound, animal bites, burns) or contaminated injectable street drugs, that have been contaminated with soil, street dust, or animal or human feces.^{1,2}

Incubation Period - Usually three to 21 days (average eight days), with a range from one day to several months, depending on the character, extent and location of the wound; most cases occur within 14 days of exposure.^{2,4} In general, shorter incubation periods are associated with more heavily contaminated wounds, more severe disease and a worse prognosis.² Incubation period for neonatal tetanus ranges from four to 14 days (average seven days) after birth.⁴

Period of Communicability - Not applicable; no direct person-to-person transmission.²

Reservoir - *C. tetani* spores are widely distributed worldwide in soil or on fomites contaminated with animal or human feces. Spores are also detected in the intestines of animals and humans as normal, harmless inhabitants.^{1,2}

Host Susceptibility and Resistance - Susceptibility is general in unimmunized or inadequately immunized persons; active immunity is induced by the tetanus toxoid and persists for at least ten years after completion of the immunization series.^{1,5} Due to waning immunity, booster doses with a tetanus toxoid-containing vaccine are required every ten years after the 4-6 year old booster immunization to maintain high levels of immunity.¹ Recovery from tetanus does not result in immunity or prevent recurrence, therefore active immunization is indicated after recovery.^{1,4}

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.

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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.