Appendix A: Disease-Specific Chapters

Chapter: Tularemia

Revised December 2014
Tularemia

☒ 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

Tularemia (also known as rabbit fever) is a zoonotic bacterial disease caused by the bacterium *Francisella tularensis* (*F. tularensis*), which is a small, Gram-negative, non-motile coccobacillus.¹

*F. tularensis* may be used as a potential bioterrorism agent.

2.0 Case Definition

2.1 Surveillance Case Definition

See Appendix B

2.2 Outbreak Case Definition

The outbreak case definition varies with the outbreak under investigation. Consideration should be given to the provincial surveillance case definition and the following criteria when establishing an outbreak case definition:

1. Clinical, laboratory and/or epidemiological criteria;
2. A time frame of occurrence;
3. A geographic location(s) or place(s) where cases live or became ill/exposed;
4. Special attributes of cases (e.g. age, underlying conditions); and
5. Occupation (e.g. trapper, veterinarian).

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

Given the rarity of tularemia in Ontario, the occurrence of two or more cases linked in time and place to a common exposure is suggestive of an outbreak.

3.0 Identification

3.1 Clinical Presentation

Clinical presentation is typically sudden with an abrupt onset of fever, chills, myalgia and headache. Illness usually conforms to one of several tularemic syndromes, including the following:¹,²
• Ulcero-glandular – cutaneous ulcer with regional lymphadenopathy at the entry site (most common)
• Glandular – regional lymphadenopathy with no ulcer
• Oculo-glandular – conjunctivitis with preauricular lymphadenopathy
• Oropharyngeal – stomatitis or pharyngitis, or tonsillitis and cervical lymphadenopathy
• Intestinal – intestinal pain, vomiting, and diarrhea
• Pneumonic – primary pleuropulmonary disease
• Typhoidal – febrile illness without early localizing signs and symptoms

3.2 Diagnosis
Laboratory demonstration of *F. tularensis* obtained from blood or an appropriate clinical specimen.

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.publichealthonline.ca/en/ServicesAndTools/LaboratoryServices/Pages/default.aspx

See Appendix B for diagnostic criteria relevant to Case Definitions.

4.0 Epidemiology

4.1 Occurrence
Tularemia is not internationally reportable. However, it has been reported throughout North America and in many parts of continental Europe, the former Soviet Union, China and Japan.¹

Tularemia is very rarely reported in Ontario. Two human cases were reported in Ontario from 2007 to 2011; both cases were reported in 2010.

*F. tularensis* is known to circulate in Ontario wildlife populations.

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.publichealthonline.ca/en/DataAndAnalytics/Pages/DataReports.aspx

4.2 Reservoir
Wild animals, especially rabbits, hares, voles, muskrats, beavers and some domestic animals, as well as various ticks.¹

4.3 Modes of Transmission
Many routes of human exposure to tularemia are known to exist; the common routes include inoculation of the skin or mucous membranes with blood or tissue of animals, while handling infected animals; bites from infected deerflies or ticks; and handling or eating insufficiently cooked meat of infected animals.¹
Less common means of spread include drinking contaminated water, inhaling dust from contaminated soil, contact with contaminated animal pelts or paws, and handling sick domestic pets.¹

4.4 Incubation Period
Related to size of innoculum; usually 3 – 5 days with a range of 1 – 14 days.¹

4.5 Period of Communicability
No person to person spread; unless treated, infectious agent may be found in blood during first 2 weeks of disease and in lesions for a month; flies are infective for 14 days and ticks throughout their lifetime (two years); frozen rabbit meat has remained infective for more than three years.¹

4.6 Host Susceptibility and Resistance
All ages are susceptible, and long-term immunity follows recovery; reinfection is extremely rare and has been reported only in laboratory staff.¹

5.0 Reporting Requirements

5.1 To local Board of Health
Individuals who have or may have tularemia 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).⁵

5.2 To the Ministry of Health and Long-Term Care (the ministry) or Public Health Ontario (PHO), as specified by the ministry
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 and Outbreaks.⁶
The minimum data elements to be reported for each case are specified in the following:

- Ontario Regulation 569 (Reports) under the HPPA;⁷,⁵
- The iPHIS User Guides published by PHO; and,
- Bulletins and directives issued by PHO.

6.0 Prevention and Control Measures

6.1 Personal Prevention Measures
Preventive measures:¹,²
- Provide education to the public about avoiding bites of deer flies, mosquitoes and ticks; using insect repellent; wearing long sleeved shirts and pants and light coloured clothing to observe ticks more easily; and checking for ticks frequently
• Provide education to hunters, trappers AND others that handle wildlife (e.g. wildlife rehabilitators)
• Provide education about cooking game meat thoroughly and using impermeable gloves when dressing game

6.2 Infection Prevention and Control Strategies
For hospitalized cases, routine practices are recommended.² Refer to PIDAC Routine Practices and Additional Practices in All Health Care Settings, 2012 (or as current).

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
Every case should be followed up as soon as possible to determine the source of exposure and eliminate the potential that the case is a result of bioterrorism.

Epidemiological investigation:
Information that must be reported to the medical officer of health is specified in Ontario Regulation 569 under the HPPA.⁷.⁵ Investigate the case to determine source of infection. Inquire about the following:
• Contact with animals, especially muskrats and rabbits;
• History of bite from ticks, deer flies or mosquitoes.

Treatment is under the direction of the attending health care provider.

Provide education about the illness and how to prevent the spread as mentioned above.

NOTE: Given the potential for the appearance of tularemia cases to signal a bioterrorism incident, investigation and follow-up may involve the activation of the emergency management system in place in the province, including the Emergency Management Branch of the Ministry of Health and Long-Term Care and relevant health emergency response plans, as well as those additional ministries with responsibilities for security, law enforcement, or other relevant areas of concern, as identified in the Emergency Management and Civil Protection Act and associated Order in Council. The Ministry Emergency Response Plan (MERP) provides information on how the ministry would respond to an emergency. Please see the following link for further information:
http://www.health.gov.on.ca/english/providers/program/emu/emerg_prep/emerg_resp_plan.html
6.4 Management of Contacts
None, except if exposed to a common source, then same as above.

Use of prophylactic antibiotics is recommended for children and adults after exposure to an intentional release of tularemia.\(^2\) Refer to the resources listed below for case and contact management in this situation.

6.5 Management of Outbreaks
A single case of tularemia should be managed with urgency. If there is suspicion of a bioterrorism incident, notify Emergency Management Ontario.

Provide public health management of outbreaks or clusters in order to identify the source of illness and stop the outbreak.

**The occurrence of two or more cases linked in time and place to a common exposure is suggestive of an outbreak.**

As per the *Infectious Diseases Protocol, 2008* (or as current), outbreak management shall be comprised of, but not limited to, the following general steps:

- Confirm diagnosis and verify the outbreak;
- Establish an outbreak team;
- Develop an outbreak case definition;
- Implement prevention and control measures;
- Implement and tailor communication and notification plans, depending on the scope of the outbreak;
- Conduct epidemiological analysis on data collected;
- Conduct environmental inspections of implicated premise where applicable;
- Coordinate and collect appropriate clinical specimens where applicable;
- Prepare a written report; and
- Declare the outbreak over in collaboration with the outbreak team.

7.0 References


8.0 Additional Resources


### 9.0 Document History

Table 1: History of Revisions

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<tr>
<th>Revision Date</th>
<th>Document Section</th>
<th>Description of Revisions</th>
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<tr>
<td>December 2014</td>
<td>General</td>
<td>New template.</td>
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<tr>
<td></td>
<td></td>
<td>Title of Section 4.6 changed from “Susceptibility and Resistance” to “Host Susceptibility and Resistance”.</td>
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<td>Title of Section 5.2 changed from “To Public Health Division (PHD)” to “To the Ministry of Health and Long-Term Care (the ministry) or Public Health Ontario (PHO), as specified by the ministry”.</td>
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<td>Section 9.0 Document History added.</td>
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<tr>
<td>December 2014</td>
<td>1.0 Aetiologic Agent</td>
<td>Second paragraph, addition of “F. tularensis”.</td>
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<tr>
<td>December 2014</td>
<td>2.2 Outbreak Case Definition</td>
<td>First paragraph, addition of “provincial surveillance case definition and”.</td>
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<td>Addition of fifth bullet, “5. Occupation (e.g. trapper, veterinarian).”</td>
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<td>Second paragraph, addition of “cases”.</td>
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<td>Addition of third paragraph, “Given the rarity of tularemia in Ontario, the occurrence of two or more cases linked in time and place to a common exposure is suggestive of an outbreak.”</td>
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<td>December 2014</td>
<td>3.2 Diagnosis</td>
<td>Paragraph one, “See Appendix B” removed.</td>
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<td>Addition of new paragraph one, “Laboratory demonstration of F. tularensis obtained from blood or an appropriate clinical specimen.”</td>
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<td>Third paragraph added, “See Appendix B for diagnostic criteria relevant to Case Definitions.”</td>
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| December 2014 | 4.1 Occurrence   | Second paragraph, “Five cases of tularemia were reported in Ontario between 2003 to 2005…” replaced with “Two human cases were reported in Ontario from 2007 to 2011; both cases
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| December 2014 | 4.3 Modes of Transmission | Third paragraph added “*F. tularensis* is known to circulate in Ontario wildlife populations.”
|               |                  | Fourth paragraph added, “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…” |
|               | 4.5 Period of Communicability | First paragraph, addition of “their”.
|               | 5.1 To local Board of Health | First sentence, changed “Confirmed and suspected cases should be reported immediately” to “Individuals who have or may have tularemia shall be reported as soon as possible”. First sentence, addition of “(HPPA)”.
|               | 5.2 To the Ministry of Health and Long-Term Care (the ministry), or Public Health Ontario (PHO), as specified by the ministry | First paragraph, first sentence removed. Bullet two, changed from “The disease-specific User Guides published by the Ministry” to “The iPHIS User Guides published by PHO”. Bullet three, replaced “the Ministry” with “PHO”.
|               | 6.1 Personal Prevention Measures | First bullet, “wearing light coloured clothing to observe ticks easier; long sleeved shirts and pants” replaced with “wearing long sleeved shirts and pants and light coloured clothing to observe ticks more easily”.
|               |                  | Second bullet, replaced “(e.g. trappers)” with “(e.g. wildlife rehabilitators)”.
|               | 6.2 Infection Prevention and Control Strategies | Addition of second paragraph, “Refer to PIDAC *Routine Practices and Additional Practices in All Health Care Settings*, 2012 (or as current).”
|               |                  | Addition of third paragraph, “Refer to Public*
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<td>6.3 Management of Cases</td>
<td>Entire section revised.</td>
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<td>6.4 Management of Contacts</td>
<td>First paragraph, replaced “same” with “a common”.</td>
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<td>Addition of new paragraph one, “A single case of tularemia should be managed with urgency. If there is suspicion of a bioterrorism incident, notify Emergency Management Ontario.” Third paragraph, addition of “The occurrence of”. Fourth paragraph changed “As per this Protocol, outbreak management shall comprise of but not be limited to the following general steps” to “As per the Infectious Diseases Protocol, 2008 (or as current), outbreak management shall be comprised of, but not limited to, the following general steps”.</td>
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