Appendix A: Disease-Specific Chapters

Chapter: *Campylobacter* enteritis

Revised January 2014
Campylobacter enteritis

- 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

The bacterium *Campylobacter jejuni* (*C. jejuni*) and less commonly *Campylobacter coli* (*C. coli*) are the usual causes of campylobacteriosis.\(^1\)

*Campylobacter* species are motile, comma-shaped, microaerophilic Gram-negative bacilli that cause gastroenteritis.\(^2\)

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 (Appendix B) and the following criteria when establishing an outbreak case definition:

1. Clinical, laboratory and/or epidemiological criteria;
2. The time frame of occurrence;
3. The geographic location(s) or place(s) where cases live or became ill/exposed;
4. Special attributes of cases (e.g. age, underlying conditions and/or the etiologic agent); and
5. Further strain typing (e.g. serotype) as appropriate, which may be used to support linkage.

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

3.0 Identification

3.1 Clinical Presentation

Symptoms usually occur 2-5 days after exposure and may persist for one to two weeks.\(^1\)

Illness is characterized by diarrhea (with or without bloody stool), abdominal pain, malaise, fever, nausea and vomiting. The symptoms can vary from mild to severe, can mimic appendicitis and cases can also be asymptomatic. Relapses can occur.
Blood and mucus may be present in liquid stools.\(^1\) Less common presentations include typhoid-like syndrome, febrile convulsions, or meningitis; post-infectious complications include reactive arthritis, febrile convulsions or Guillain-Barré syndrome.\(^1,3\)

### 3.2 Diagnosis

See Appendix B for diagnostic criteria relevant to the case definition.

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.publichealthontario.ca/en/ServicesAndTools/LaboratoryServices/Pages/default.aspx](http://www.publichealthontario.ca/en/ServicesAndTools/LaboratoryServices/Pages/default.aspx)

### 4.0 Epidemiology

#### 4.1 Occurrence

*Campylobacter* enteritis is one of the leading causes of enteric disease in Ontario and occurs primarily in the summer months. Between 2007 and 2011, an average of 3,558 cases of *Campylobacter* enteritis occurred per year in Ontario.

For more information on infectious diseases activity in Ontario, refer to the current versions of the Ontario annual infectious diseases epidemiology reports and the *Monthly Infectious Diseases Surveillance Report* \(^4,5\)

#### 4.2 Reservoir

Animals, most frequently poultry and cattle. Puppies, kittens, other pets, swine, sheep, rodents and birds may also be sources of human infection. In many countries, raw poultry meat is commonly contaminated with *C. jejuni*.\(^1\)

#### 4.3 Modes of Transmission

Ingestion of the organisms in undercooked meat and poultry, contaminated food and water, or raw milk and other dairy products; contact with infected pets (especially puppies and kittens), farm animals. Contamination of milk usually occurs from intestinal carrier cattle; people and food can be contaminated from raw/undercooked poultry, especially from common cutting boards. The infective dose is often low. Person to person transmission appears uncommon.\(^1\)

#### 4.4 Incubation Period

Usually 2-5 days, with a range of 1-10 days, depending on dose ingested.\(^1\)

#### 4.5 Period of Communicability

Several days to several weeks, individuals without antibiotic treatment may shed *Campylobacter* bacteria in the feces for 2-7 weeks.\(^1\)

The temporary carrier state is probably of little epidemiological importance, except for infants and others who are incontinent of stool.\(^1\)
4.6 Host Susceptibility and Resistance

Immune mechanisms are not well understood, but lasting immunity to serologically related strains follows infection. In developing countries, most people develop immunity in the first two years of life.¹

5.0 Reporting Requirements

5.1 To local Board of Health

Individuals who have or may have Campylobacter enteritis shall be reported immediately to the medical officer of health by persons required to do so under the Health Protection and Promotion Act, R.S.O. 1990 (HPPA).⁶

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 five (5) business days of receipt of initial notification as per iPHIS Bulletin Number 17: Timely Entry of Cases and Outbreaks.⁷

The minimum data elements to be reported for each case is specified in the following sources:

- Ontario Regulation 569 (Reports) under the HPPA,⁸
- 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:

- Minimize cross contamination by washing (wash, rinse and sanitize) cutting boards and utensils with warm soapy water after contact with raw poultry, and avoiding contact between fruits, vegetables and ready-to-eat foods with the juices of raw poultry.
- Use proper hand hygiene after using sanitary facilities and diapering, contacting pet’s feces; and before and after handling food.
- Treat or boil private or non-municipal drinking water when intended for consumption.
- Consume only pasteurized milk and milk products.
- Provide food safety education to food handlers about safe food and equipment handling, and personal and hand hygiene.

6.2 Infection Prevention and Control Strategies
Routine practices and contact precautions are indicated.

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
Investigate cases of campylobacteriosis to determine the source of infection. Refer to Section 5: Reporting Requirements above for relevant data to be collected during case investigation.

Provide education on illness and how to prevent re-infection and secondary spread (see Personal Preventive Measures).

Exclusion Criteria:

- Exclude symptomatic food handlers and healthcare providers*, and day care staff and attendees until symptom free for 24 hours, or 48 hours after completion of antibiotic or anti-diarrheal medications.


Note: Treatment recommendations are under the direction of the attending health care provider.

6.4 Management of Contacts
Assess household and other contacts for symptoms and if symptomatic advise to seek medical care. Management of symptomatic contacts is the same as for cases.

Asymptomatic contacts should be tested only to assist in the identification of the source of an outbreak.

6.5 Management of Outbreaks
Provide public health management of outbreaks or clusters in order to identify the source of illness, stop the outbreak and limit secondary spread.

Two or more cases linked by time, common exposure, and/or place is suggestive of an outbreak.

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

- Confirm diagnosis and verify the outbreak;
- Establish an outbreak team;
• Develop an outbreak case definition- These definitions should be reviewed during the course of the outbreak, and modified if necessary, to ensure that the majority of cases are captured by the definitions;
• 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.

For more information regarding specimen collection and testing, please see the Public Health Inspector’s Guide to the Principles and Practices of Environmental Microbiology.12

Refer to Ontario’s Foodborne Illness Outbreak Response Protocol (ON-FIORP) for multi-jurisdictional foodborne outbreaks which require the response of more than two Parties (as defined in ON-FIORP) to carry out an investigation.

7.0 References

7. Ontario. Ministry of Health and Long-Term Care. Timely entry of cases and outbreaks. iPHIS bulletin. Toronto, ON: Queen’s Printer for Ontario; 2012:17 (or as current).


8.0 Additional Resources


9.0 Document History

Table 1: History of Revisions

<table>
<thead>
<tr>
<th>Revision Date</th>
<th>Document Section</th>
<th>Description of Revisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 2014</td>
<td>General</td>
<td>New template.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Section 9.0 Document History Added.</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Title of Section 4.5 changed from “Susceptibility and Resistance” to “Host</td>
</tr>
<tr>
<td>Revision Date</td>
<td>Document Section</td>
<td>Description of Revisions</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td></td>
<td>Susceptibility and Resistance”</td>
<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>
</tr>
</tbody>
</table>
| 2.2 Outbreak Case Definition | Addition of first paragraph: | **Consideration should be given to the provincial surveillance case definition (Appendix B) and the following criteria when...**  
- Further strain typing (e.g. serotype) as appropriate, which may be used to support linkage. |
| 3.1 Clinical Presentation | First paragraph changed from “Symptoms usually occur 2-5 days after exposure and may persist for one. Illness is characterized by diarrhea, abdominal pain, malaise, fever, nausea and vomiting.” to “Symptoms usually occur 2-5 days after exposure and may persist for one to two weeks. Illness is characterized by diarrhea (with or without bloody stool), abdominal pain, malaise, fever, and nausea and vomiting.”  
Second paragraph changed from “Blood and mucus may be present in liquid stools. The illness can also mimic acute appendicitis. Less common presentations include typhoid-like syndrome, febrile convulsions, or meningitis (the bacteria infects the membrane which lines the surface of the brain); post-infectious complications include reactive arthritis, febrile convulsions or Guillain-Barre syndrome.” to “Blood and mucus may be present in liquid stools. Less common presentations include typhoid-like syndrome, febrile convulsions, or meningitis; post-infectious complications include reactive arthritis, febrile convulsions or Guillain-Barré syndrome.” |
<p>| 3.2 Diagnosis | Addition of the second paragraph: |</p>
<table>
<thead>
<tr>
<th>Revision Date</th>
<th>Document Section</th>
<th>Description of Revisions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“For further information…”</td>
<td></td>
</tr>
<tr>
<td>4.1 Occurrence</td>
<td>Entire section revised.</td>
<td></td>
</tr>
<tr>
<td>4.2 Reservoir</td>
<td>Last sentence changed from “Most raw poultry meat is contaminated with C. jejuni.” to “In many countries, raw poultry meat is commonly contaminated with C. jejuni.”</td>
<td></td>
</tr>
<tr>
<td>4.3 Modes of Transmission</td>
<td>Second sentence removed “or infected infants.” Third sentence added “…raw/undercooked poultry…”</td>
<td></td>
</tr>
<tr>
<td>4.5 Period of Communicability</td>
<td>Entire section revised.</td>
<td></td>
</tr>
<tr>
<td>6.1 Personal Prevention Measures</td>
<td>Entire section revised.</td>
<td></td>
</tr>
<tr>
<td>6.2 Infection Prevention and Control Strategies</td>
<td>Entire section revised.</td>
<td></td>
</tr>
<tr>
<td>6.3 Management of Cases</td>
<td>Entire section revised.</td>
<td></td>
</tr>
<tr>
<td>6.4 Management of Contacts</td>
<td>Entire section revised.</td>
<td></td>
</tr>
<tr>
<td>Revision Date</td>
<td>Document Section</td>
<td>Description of Revisions</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>6.5 Management of Outbreaks</td>
<td>Addition of second sentence “Two or more cases linked by time, common exposure, and/or place is suggestive of an outbreak.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Third bullet in third paragraph added: “…- These definitions should be reviewed during the course of the outbreak, and modified if necessary, to ensure that the majority of cases are captured by the definitions…”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Addition of the fourth paragraph: “For more information regarding specimen collection and testing, please see to the Public Health Inspector’s Guide to the Principles and Practices of Environmental Microbiology.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Addition of the fifth paragraph: “Refer to Ontario’s Foodborne Illness Outbreak Response Protocol (ON-FIORP) for multi-jurisdictional foodborne outbreaks which require the response of more than two Parties (as defined in ON-FIORP) to carry out an investigation.”</td>
</tr>
<tr>
<td></td>
<td>7.0 References</td>
<td>Updated.</td>
</tr>
<tr>
<td></td>
<td>8.0 Additional Resources</td>
<td>Updated.</td>
</tr>
</tbody>
</table>