Ministry of Health and Long-Term Care

Infectious Diseases Protocol

Appendix A: Disease-Specific Chapters

Chapter: Shigellosis

Revised March 2017

Ontario

Shigellosis

☒ 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

Shigellosis is an acute bacterial disease, also known as bacillary dysentery caused by a facultative, anaerobic, Gram-negative bacilli in the family *Enterobacteriaceae*. Four species with more than 40 serotypes have been identified.[1, 2]

A. *Shigella dysenteriae*
B. *Shigella flexneri*
C. *Shigella boydii*
D. *Shigella sonnei*

Species A, B, and C are further classified into 15, 15, and 19 serotypes and subtypes, respectively.[1]

2.0 Case Definition

2.1 Surveillance Case Definition

See Appendix B

2.2 Outbreak Case Definition

Outbreak case definition varies with the outbreak under investigation. For example, confirmed outbreak cases should at a minimum meet the criteria specified for the provincial surveillance confirmed case classification. Consideration should be given to the following when establishing an outbreak case definition:

1. Clinical 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
5. Further strain typing (e.g. species, phage type (PT), pulsed field gel electrophoresis (PFGE)) as appropriate, which may be used to support linkage.

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

3.0 Identification

3.1 Clinical Presentation

An acute bacterial disease involving the distal small intestine and colon, characterized by watery, loose stools, accompanied by fever, nausea and vomiting in mild cases. Sometimes presenting with toxemia, abdominal cramps and tenesmus with mucoid stools with or without blood in more severe cases.[2] Illness is usually self-limiting, lasting an average of 4–7 days.[1] Severity and case-fatality vary with the age of the host and the species of *Shigella*.[1]

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

4.0 Epidemiology

4.1 Occurrence

Occurrence is worldwide.[3]

Between 2007 and 2011, an average of 247 cases of shigellosis were reported per year in Ontario.

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]

http://www.publichealthontario.ca/en/DataAndAnalytics/Pages/DataReports.aspx

4.2 Reservoir

The only significant reservoir is humans.[1]

4.3 Modes of Transmission

The infectious dose for humans is low; as few as 10-100 bacteria have been shown to cause disease.[1]

Primary mode of transmission is fecal-oral. Transmission occurs through person-to-person contact, contact with contaminated inanimate objects, ingestion of contaminated

food or water and through sexual contact.[2] Direct transmission is common in children and infected persons who do not thoroughly clean their hands.[1] Risk of transmission increases for individuals engaging in anal-oral sex or in settings where personal hygiene is inadequate, such as in daycare centres. Multi-antibiotic resistant strains have appeared worldwide, resulting from wide spread use of antibiotics. Foodborne outbreaks of shigellosis associated with an infected food handler have occurred in Ontario.

4.4 Incubation Period

Usually 1-3 days but may range from 12-96 hours and up to one week for *S. dysenteriae*.[1]

4.5 Period of Communicability

During acute infection and until the infectious agent is no longer present in feces, usually within 4 weeks after illness. Secondary attack rates in households can be as high as 40%.[1] Asymptomatic carriers may transmit infection.[1] Appropriate antimicrobial treatment usually reduces duration of carriage to a few days.[1]

4.6 Host Susceptibility and Resistance

Susceptibility is general; the elderly, debilitated and malnourished individuals of all ages are particularly susceptible to severe disease and death.

5.0 Reporting Requirements

5.1 To local Board of Health

Individuals who have or may have shigellosis 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).[6]

5.2 To the Ministry of Health and Long-Term Care (the ministry) or Public Health Ontario (PHO), as specified by the ministry

Report only case classifications specified in the case definition 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.[7]

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

- *Ontario Regulation 569* (Reports) under the HPPA;[8, 6]
- 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

Thorough and frequent hand hygiene is the most important prevention measure to decrease the risk of transmission.

Avoid consuming food and beverages from unsafe or questionable sources.

Travelling

- Take special precautions when traveling to developing countries such as drinking only treated or boiled water, and avoiding consumption of food and beverages from unsafe or questionable sources; eat only cooked hot foods or fruits you peel yourself

Food Safety at Home

- Practice good hygiene, especially hand washing, before food preparation and eating, and after using sanitary facilities;
- Ensure potentially hazardous foods are stored at either below 4°C or above 60°C;
- Thoroughly wash fresh fruits and vegetables using clean, potable running water;
- Prevent cross-contamination between raw foods and ready-to-eat foods during food preparation; store raw and cooked foods separately;
- Cook and reheat food thoroughly to the appropriate temperatures. For temperatures, see the Ministry of Health and Long-Term Care 'Food Safety: Cook' publication available at http://www.health.gov.on.ca/en/public/programs/publichealth/foodsafety/cook.aspx#4
- For more food safety prevention measures, please see the ministry's food safety Frequently Asked Questions available from http://www.health.gov.on.ca/en/public/programs/publichealth/foodsafety/faq.aspx

Caregivers

- Follow proper diapering procedures;
- Clean and sanitize baby diaper changing areas regularly;
- The use of alcohol-based hand rubs may be effective where access to soap and clean water is limited, and when hands are not soiled; and
- Ensure young children are washing their hands thoroughly and frequently with adult supervision, especially after using the toilet.

Sexual Contact

- Education about the risk of sexual practices that permit anal-oral contact, safer sex practices (including avoiding anal oral contact with sexual partner(s)).

6.2 Infection Prevention and Control Strategies

Strategies:

- Contact precautions are indicated for the duration of the illness in addition to routine practices for hospitalized cases;
- Promote and emphasize frequent and proper hand washing with soap and water; and
- Exclude infected persons from:
  1. food handling
  2. providing care in childcare and health care settings, and
  3. attending childcare settings

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 shigellosis to determine the source of infection. Refer to Section 5: Reporting Requirements above for relevant data to be collected during case investigation. In addition to the requirements of HPPA *Regulation 569* (Reports),[8] the following disease-specific information should also be obtained for the incubation period:

- Symptoms and date of symptom onset;
- History of travel, including earliest and latest exposure dates;
- Food and history of other exposures for the 3 day period prior to symptom onset;
- Known exposure to an individual with signs and symptoms compatible with shigellosis, and
- History of occupation involving susceptible populations, food handling, childcare and healthcare.

Identify close contacts (see definition below).

Educate the case regarding the transmission of infection and proper hand hygiene.

Further follow-up may be required for those with risk factors related to sexually transmitted shigellosis. May consider using the following as a guide for management of cases: *Sexual Health and Sexually Transmitted Infections Prevention and Control Protocol, 2008* (or as current) and the Canadian Guidelines on Sexually Transmitted Infections, Section 4, Public Health Agency of Canada, 2006 (or as current).Where there is evidence of sexual transmission, referral should be made to the health unit's Sexual Transmitted Infection (STI) team for appropriate counselling and investigation.

Advise the case against attending swimming pools, hot tubs or water spray parks until 48 hours after their symptoms have resolved.

Note: Treatment and follow up is under the direction of the attending health care provider.

Exclusion Criteria:

Exclude symptomatic cases who are food handlers, healthcare providers*, caregivers or daycare attendees pending a negative stool sample or rectal swab collected at least 24 hours after cessation of symptoms **OR** 48 hours after completion of antibiotic therapy.

*If the healthcare setting is a hospital, use the "Enteric Diseases Surveillance Protocol for Ontario Hospitals" (OHA and OMA Joint Communicable Diseases Surveillance Protocols Committee, revised December 2015, or as current)) for exclusion criteria: http://www.oha.com/Services/HealthSafety/Pages/CommunicableDiseasesSurveillanceProtocols.aspx

6.4 Management of Contacts

Consider household members as close contacts of a case. Provide education about transmission of infection and proper hand hygiene.

Symptomatic contacts that work in high risk settings should be assessed by their health care provider to determine whether they are infected, and should be excluded as above (i.e., as per exclusion of symptomatic cases).

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 unrelated cases of the same serotype of shigellosis with a common exposure is suggestive of an outbreak.

As per this Protocol, 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. 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;
- Identify the origin of suspect food, along with the transportation, storage and preparation processes;
- Coordinate and collect appropriate clinical, environmental and/or food 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.

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. The ON-FIORP can be found here: http://health.gov.on.ca/en/pro/programs/publichealth/enviro/

7.0 References

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4. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Monthly infectious diseases surveillance report. Toronto, ON: Queen's Printer for Ontario; 2014. Available from: http://www.publichealthontario.ca/en/ServicesAndTools/SurveillanceServices/Pages/Monthly-Infectious-Diseases-Surveillance-Report.aspx
5. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Reportable disease trends in Ontario, 2011. Toronto, ON: Queen's Printer for

Ontario; 2014. Available from: https://www.publichealthontario.ca/en/BrowseByTopic/InfectiousDiseases/Pages/Reportable-Disease-Trends.aspx

6. *Health Protection and Promotion Act*, R.S.O. 1990, c. H.7. Available from: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90h07_e.htm.
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8. *Reports*, R.R.O. 1990, Reg. 569. Available from: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_900569_e.htm

8.0 Additional Resources

Expert Working Group on the Canadian Guidelines on Sexually Transmitted Infections; Public Health Agency of Canada. Canadian guidelines on sexually transmitted infections. Evergreen ed. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2013. Available from: http://www.phac-aspc.gc.ca/std-mts/sti-its/cgsti-ldcits/index-eng.php

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9.0 Document History

Table 1: History of Revisions

Revision Date	Document Section	Description of Revisions
March 2017	General	New Template
March 2017	6.3 Management of Cases	“Enteric Diseases Surveillance Protocol for Ontario Hospitals” reference updated
March 2017	7.0 References	Updated
March 2017	9.0 Document History	Updated


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