Appendix A: Disease-Specific Chapters

Chapter: *Campylobacter* enteritis

Ontario

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) Aetiologic Agent:	The bacterium C*ampylobacter jejuni* (*C. jejuni*) and less commonly C*ampylobacter coli (C. coli)* are the usual causes of campylobacteriosis (1). C*ampylobacter* species are motile, comma-shaped, microaerophilic Gram-negative bacilli that cause gastroenteritis (2).

2) Case Definition:

Surveillance Case Definition	See Appendix B
Outbreak Case Definition	The outbreak case definition varies with the outbreak under investigation. Consideration should be given to the following in 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 aetiologic agent) Cases may be classified by levels of probability (e.g. confirmed, probable or suspect).

3) Identification:

Clinical Presentation	Symptoms usually occur 2-5 days after exposure and may persist for one week (1). Illness is characterized by diarrhea, abdominal pain, malaise, fever, and nausea and vomiting. The symptoms can vary from mild to severe, can mimic appendicitis and can also be asymptomatic. Relapses can occur. Blood and mucus may be present in liquid stools. The illness can also mimic acute appendicitis (1). 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 (1, 3).
Diagnosis	See Appendix B

4) Epidemiology:

Occurrence	*Campylobacter* enteritis is one of the leading causes of enteric disease in Ontario and occurs primarily in the summer months with an average of almost 4,000 cases occurring annually. Globally, 5-14% of reported cases of diarrhea are caused by infection with *Campylobacter*. In industrialized countries the illness affects predominantly children older than 5 years of age and young adults. In developing countries, the persons most affected are infants and children under 2 years (3).
Reservoir	Animals, most frequently poultry and cattle. Puppies, kittens, other pets, swine, sheep, rodents and birds may also be sources of human infection. Most raw poultry meat is contaminated with *C. jejuni* (1).
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 or infected infants. Contamination of milk usually occurs from intestinal carrier cattle; people and food can be contaminated from poultry, especially from common cutting boards. The infective dose is often low. Person to person transmission appears uncommon (1).
Incubation Period	Usually 2-5 days, with a range of 1-10 days, depending on dose ingested (1).
Period of Communicability	Variable, throughout the course of infection, as long as organisms are being excreted (usually 2-7 weeks) (1).
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 2 years of life (1).

5) Reporting Requirements:

To local Board of Health	Confirmed and suspected cases shall be reported to the medical officer of health by persons required to do so under the *Health Protection and Promotion Act*, R.S.O. 1990.

To Public Health Division (PHD)	Report only case classifications specified in the case definition to PHD 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 (4). The minimum data elements to be reported for each case is specified in the following sources: • *Ontario Regulation 569* (Reports) under the Health Protection and Promotion Act (HPPA); • The disease-specific User Guides published by the Ministry, and • Bulletins and directives issued by the Ministry.

6) Prevention and Control Measures:

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 • Wash hands after using sanitary facilities, handling raw poultry or contacting feces of dogs and cats, particularly diarrheic stool of puppies and kittens; and before handling food • Cook thoroughly all food derived from animal sources, especially poultry • Treat or boil water when intended for consumption • Consume only pasteurized milk
Infection Prevention and Control Strategies	Strategies: • Provide food safety education to food handlers about safe food and equipment handling, and personal and hand hygiene • Enforce the exclusion of cases and symptomatic people from food handling, patient care and child care • Recommend routine practices and contact precautions for hospitalized cases

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. The following disease-specific information should also be obtained during case management: • Symptoms and date of symptom onset • History of out-of-province or international travel • History of exposure or risk behaviours • Earliest and latest exposure dates • Occupation • Residency/attendance at a facility or institution • Determine food history, and current health status Provide education on illness and how to prevent re-infection and secondary spread (as above). Exclusion Criteria: • Exclude symptomatic individuals from food handling, and from direct care of infants, elderly, immunocompromised and institutionalized patients until symptom free for 24 hours • Exclude symptomatic cases from attending or working in day care centers until symptom free for 24 hours. • Return to work is not conditional upon submission of stool specimens or results of stool examination with the exception of Health Care Workers (HCW) who work with high risk patients such as nursery personnel. Refer these cases to the occupational health or the infection control practitioner for follow up (will be managed as per the OHA/OMA Enteric Diseases Surveillance Protocol, Revised September 2007). **Note**: Treatment recommendations are under the direction of the individual's health care provider. Specific treatment is generally not indicated except for rehydration and electrolyte replacement (1). However, treatment with certain antibiotics may shorten duration of illness and prevent relapse when given early in illness (2).
Management of Contacts	Assess household and other contacts to determine if exposed to same source. Symptomatic contacts that work in high risk settings (such as health care, food preparation, and daycare centers) should be assessed by their health care provider to determine if infected and should be excluded as above. Asymptomatic contacts should be tested only to assist in the identification of the source of an outbreak.
Management of Outbreaks	As with most enteric diseases, **an outbreak is defined as the occurrence of two or more cases of enteric illness linked by time, common exposure or source and most often location.** Provide public health management of outbreaks or clusters in order to identify the source of illness, stop the outbreak and limit secondary

	spread. In addition, as per this Protocol, 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; • 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) References	(1) Heymann D, editor. Control of communicable diseases manual. 18th ed. Washington: American Public Health Association; 2004. (2) Pickering LK, Baker CJ, Long SS, McMillan JA, editors. Red book: 2006 report of the Committee on Infectious Diseases. 27th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006. Section 3, Summaries of infectious diseases; p. 240-2. (3) Notifiable Diseases On-Line [Internet]. Ottawa: Public Health Agency of Canada; 2003. Campylobacteriosis; 2003 Dec 11 [cited 2009 Feb 12]. Available from http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/diseases/camp_e.html. (4) Ministry of Health and Long-Term Care. Timely entry of cases. iPHIS Bulletin. 2007 May 11;17.
8) Additional Resources	Ministry of Health and Long-Term Care. Food safety protocol. Toronto: Queen's Printer for Ontario; 2008. Available from http://www.health.gov.on.ca/english/providers/program/pubhealth/oph_standards/ophs/progstds/protocols/food_safety.pdf. (or as current) Ministry of Health and Long-Term Care. Infectious diseases protocol. Toronto: Queen's Printer for Ontario; 2009. Available from http://www.health.gov.on.ca/english/providers/program/pubhealth/oph_standards/ophs/infdispro.html (or as current) *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. Ontario Hospital Association; Ontario Medical Association. Enteric disease surveillance protocols for Ontario hospitals. Toronto: Ontario Hospital Association; 2007. Available from

	http://www.oha.com/Client/OHA/OHA_LP4W_LND_WebStation.nsf/resources/Communicable+Disease+Surveillance+Protocols/$file/Enteric+Diseases.pdf. Ministry of Health and Long Term Care, Advisory Committee on Communicable Diseases, "Enteric Disease Screening Recommendations and Case Management Guidelines on Food handlers and Patient Care Workers", 1990 or as current (Currently being revised as "Guidelines for the Management of Enteric Diseases in Healthcare Workers, Food Handlers and Day Care Staff and Attendees"). Gregg MB, editor. Field epidemiology. 2nd ed. New York: Oxford University Press; 2002.

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