

Appendix A: Disease-Specific Chapters

Chapter: Paratyphoid Fever

Paratyphoid Fever

- 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:	Paratyphoid fever is caused by <i>Salmonella enterica subsp, Enterica serovar Paratyphi A and B (commonly S. Paratyphi)</i> .
2) Case Definition:	
Surveillance Case Definition	See Appendix B
Outbreak Case Definition	<p>The outbreak case definition varies with the outbreak under investigation. Consideration should be given to the following when establishing an outbreak case definition:</p> <ol style="list-style-type: none">1. Clinical, laboratory and/or epidemiological criteria;2. The time frame for occurrence;3. The geographic location(s) or place(s) where cases live or became ill/exposed, and4. Special attributes of cases (e.g. age, underlying conditions) and/or the aetiologic agent. <p>Cases may be classified by levels of probability (i.e. confirmed, probable and/or suspect).</p>
3) Identification:	
Clinical Presentation	<p>Paratyphoid fever is a systemic bacterial disease which usually presents with fever, headache, malaise, anorexia, and diminished frequency of stool which is more common than diarrhoea, plus bradycardia, enlargement of spleen and rose spots on trunk (1).</p> <p>The clinical picture varies from mild illness with low-grade fever to severe clinical disease with abdominal discomfort and multiple complications. Peyer patches in the ileum can ulcerate with intestinal haemorrhage or perforation, especially late in untreated cases (1).</p>
Diagnosis	<p>See Appendix B</p> <p>Culture positive blood, feces or urine for the paratyphoid bacilli confirms diagnosis. Blood may be positive as early as the first week of illness; feces and urine after the first week (1).</p>

4) Epidemiology:	
Occurrence	<p>Worldwide (1). Paratyphoid is not known to be endemic in Ontario. Occurrence does not demonstrate the typical summer peak noted for other enteric diseases because it is almost always associated with travel to endemic regions of the world, such as South Asia, Indo-China and some developing countries.</p> <p>The number of cases of paratyphoid fever in Ontario has remained stable since 2004.</p>
Reservoir	Humans, rarely animals (1).
Modes of Transmission	Fecal-oral route. Transmitted via ingestion of food and water contaminated by feces and urine of cases and carriers; also by ingestion of contaminated milk, raw fruit and vegetables and shellfish harvested from contaminated water. Flies may be vectors (1).
Incubation Period	The incubation period for paratyphoid is 1-10 days (1).
Period of Communicability	Communicable as long as organisms are excreted, which is from the appearance of prodromal symptoms, throughout illness and for periods of up to two weeks after onset. Few persons with paratyphoid organisms become chronic carriers (1).
Susceptibility and Resistance	Susceptibility is general and is increased in individuals with gastric achlorhydria and possibly in those who are HIV positive. Relative specific immunity follows recovery from clinical disease and inapparent infection (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 <i>Health Protection and Promotion Act</i> , R.S.O. 1990.
To Public Health Division (PHD)	<p>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 <i>iPHIS Bulletin</i> Number 17: Timely Entry of Cases (2).</p> <p>The minimum data elements to be reported for each case is specified in the following sources:</p> <ul style="list-style-type: none"> • <i>Ontario Regulation 569</i> (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	<p>Prevention measures:</p> <ul style="list-style-type: none">• Education on proper hygiene, especially hand washing after defecation and before food preparation and eating• While travelling in endemic areas: avoid consumption of raw or undercooked shellfish, particularly shellfish harvested from fecally contaminated water; consume fresh produce that has been washed and consume thoroughly cooked food derived from animal sources• Shellfish should be boiled or steamed for at least 10 minutes before consumption• Travellers should be referred to travel clinics to assess their personal risk and appropriate preventive measures
Infection Prevention and Control Strategies	<p>If hospitalized, routine practices and contact precautions are recommended (1).</p> <p>Properly implemented exclusion requirements can contribute to the prevention and control of secondary cases. Exclusion criteria are detailed below.</p>
Management of Cases	<p>Investigate cases of paratyphoid fever to determine the source of infection. Refer to Section 5: <i>Reporting Requirements</i> above for relevant data to be collected during case investigation. The following disease-specific information should also be obtained during case management:</p> <ul style="list-style-type: none">• Symptoms and date of symptom onset;• History of out-of-province or international travel, or close contact with a recent traveller/visitor to an endemic country. Include earliest and latest exposure dates, and• Food history for the 10 day period prior to symptom onset. <p>Educate the case about transmission of infection and proper hand hygiene.</p> <p>Exclusion Criteria:</p> <p>Exclude all cases of <i>S. Paratyphoid</i> from food handling, healthcare and daycare activities until three consecutive stool specimens are negative. They are to be collected at least one week apart and at least 24 hours after cessation of symptoms. If treated then specimens must be collected at least two weeks after completion of antibiotic treatment.</p> <p>Treatment with antibiotics and follow up is under the direction of the attending health care provider. Note details of medication name, dose and duration of treatment.</p> <p>Carriers: If after 6 samples, a case continues to test positive, then he or she could be considered a carrier. A carrier must be excluded</p>

	<p>from food-handling, health care and child care activities until the carrier state is eradicated. This requires three consecutive negative stool cultures, collected one month apart at least 48 hours after the cessation of antibiotic therapy. Also, three negative urine cultures are required for cases acquired in schistosomiasis endemic areas.</p>
Management of Contacts	<p>Close contacts include household members, any members of a travel party to endemic regions, and sexual partners.</p> <p>These contacts should be seen by their health care provider and screened for illness (that is, stool specimens sent for testing).</p> <p>Exclude symptomatic contacts from working in high risk (food handling, health care, and day care settings) until cleared with two consecutive negative stool specimens collected at least 24 hours apart.</p> <p>If contacts work in high-risk settings and are asymptomatic, they should be screened, but not excluded.</p>
Management of Outbreaks	<p>Provide public health management of outbreaks or clusters in order to identify the source of illness, stop the outbreak and limit secondary spread.</p> <p>Two or more cases not related to travel, linked to a common source is suggestive of an outbreak of paratyphoid.</p> <p>As per this Protocol, outbreak management shall comprise of but not be limited to the following general steps:</p> <ul style="list-style-type: none"> • 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	<p>(1) Heymann D, editor. Control of communicable diseases manual. 18th ed. Washington: American Public Health Association; 2004.</p> <p>(2) Ministry of Health and Long-Term Care. Timely entry of cases. iPHIS Bulletin. 2007 May 11;17.</p>
8) Additional Resources	<p>Notifiable Diseases On-Line [Internet]. Ottawa: Public Health Agency of Canada; 2003. Paratyphoid; 2003 Dec 11 [cited 2008 Jun 24].</p>

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