

TYPHOID FEVER

Disease Overview

Typhoid Fever is caused by the gram-negative bacillus *Salmonella enterica* subsp. *enterica* serotype Typhi. The bacteria are found worldwide mostly in developing areas. Most cases in developed countries are in travelers to endemic areas and the disease can be spread by food handlers.

Symptoms

Infection is characterized by insidious onset of sustained fever, marked headache, malaise, anorexia, non-productive cough, and constipation more often than diarrhea in adults. Varies from mild illness to severe clinical illness with complications. A chronic carrier state may follow illness; this is most common among females and in those with gallbladder disease.

Reservoir

Humans are the main reservoir for both typhoid and paratyphoid (*Salmonella enterica* subsp. *enterica* serotype Paratyphi).

Mode of Transmission

Fecal-oral route transmission. Common source outbreaks are related to consumption of food or water contamination by fecal material and/or urine from infected persons. Common source outbreaks have been traced to food sources such as:

- Milk, water, or shellfish.

Fecal and/or urine contamination of non-treated water can also be a source of infection.

Person to person spread is possible in poor hygienic conditions.

Incubation Period

Usually 8-14 days (range 3-60 days).

Period of Communicability

Usually from the first week of infection, variable thereafter.

Risk Factors

Increased risk for transmitting illness:

- Spread by food handlers

Increased risk for acquiring/severe illness:

- Travelers to endemic countries

Surveillance Case Definition

Confirmed case

Laboratory confirmation of infection with or without clinical illness:

- Isolation of *Salmonella* Typhi from an appropriate clinical specimen (e.g., blood, stool, urine, bone marrow, rectal swab, deep tissue wound, other sterile site, vomit).

Probable case

Clinical illness in a person who is epidemiologically linked to a confirmed case.

Diagnosis and Laboratory Guidelines

Diagnosis is based on isolation of *S. Typhi* from a clinical specimen (stool, blood, or urine samples). Regional laboratories in New Brunswick perform bacterial culture and antimicrobial resistance.

The microbiology laboratory at the Saint John Regional Hospital can perform PFGE on *S. Typhi*

Isolation of organisms from stool samples (see Food and Water Borne Diseases Introduction). The bacteria can be isolated from other samples (for example blood and urine).

Reporting

Per Policy 2.2 Disease and Event Notification to OCMOHE and section 3 Disease and Event Reporting.

- Routine surveillance (RDSS) for all confirmed cases.
- Access databases for all confirmed cases. Database extracts are submitted to OCMOHE on a weekly basis.

Case Management

Education

Case or relevant caregiver should be informed about:

- Nature of infection, length of communicable period and mode of transmission
- Enteric disease precautions
- Hand washing
- Food safety
- Safe water source

Investigation

The ability to spread via contaminated food means single cases require prompt investigation.

Complete enteric investigation form. Obtain food and travel history before onset of illness. Cases who have not visited an endemic area should be investigated further to determine the source of infection.

Exclusion/Social Distancing

Follow exclusion period guidelines for cases under investigation (cases, symptomatic and asymptomatic contacts) identified in high-risk individuals (food handlers, caregivers, and individuals in early learning and childcare facilities and kindergartens). Exclude until asymptomatic and 3 consecutive negative stool culture, collected at least 1 week apart, and at least 2 weeks after antibiotic treatment and not earlier than one month after the onset of illness.

Chronic typhoid carriers in high-risk groups should be excluded from handling food and providing care until three consecutive negative cultures are obtained from stool samples taken at least one month apart and at least 48 hours after antimicrobial therapy has stopped.

Treatment

Usually requires antibiotics.

Immunization

Typhoid Fever is a vaccine preventable disease. Encourage vaccination for persons traveling to endemic regions.

Contact Management

Education

Per case management

Investigation

Identify contacts with significant exposure to cases. Complete enteric investigation form per case management.

Exclusion/Social Distancing

Follow exclusion period guidelines for cases under investigation (cases, symptomatic and asymptomatic contacts) identified in high-risk individuals (food handlers, caregivers, and individuals in daycare centres and kindergartens). Exclude until asymptomatic and 3 consecutive negative stool cultures, collected at least 1 week apart, and at least 2 weeks after antibiotic treatment and not earlier than one month after the onset of illness.

Exclude symptomatic contacts (non high-risk individuals) until clinically well for 48 hours with formed stools and hygiene advice.

Prophylaxis

Immunization should be considered for household contacts of chronic typhoid carriers.

Outbreak Management

Activate the local outbreak plan when an outbreak is declared.

Most clusters/outbreaks in developed countries will result from exposure to a common source abroad, or transmission within close family groups.