

2.6 Cyclosporiasis

Etiology

Cyclosporiasis is an enteric illness caused by *Cyclospora cayetanensis*, a sporulating coccidian parasite. Cyclospora are resistant to chlorination.

Case Definition

Confirmed Case

Laboratory confirmation of infection in a person with or without clinical illness:

- Demonstration of *Cyclospora cayetanensis* oocysts in stool, duodenal/jejunal aspirate or small bowel biopsy.

Probable Case

Clinical illness⁴ in a person with evidence of:

- an epidemiologic link to a confirmed case either by consumption of the same food or exposure to food known to be handled by a confirmed case

OR

- a history of travel to a cyclospora-endemic area.

Clinical Presentation

Cyclospora infects the small intestine. The onset of the illness is abrupt. Watery diarrhea (six or more stools per day) is most commonly the initial symptom of infection. However, in some cases, a flu-like illness may precede the diarrhea. Loss of appetite, abdominal bloating and cramping, increased flatus, nausea, fatigue, and low-grade fever also characterize clinical illness.

The infection is typically self-limited, lasting two to seven weeks. Illness may be cyclic or relapsing. Weight loss is common. In immunocompromised individuals the diarrhea may be severe and persist for months. The duration of illness in endemic areas (tropical and sub-tropical areas e.g., Peru, Nepal) is short-lived and many people are asymptomatic carriers. Asymptomatic infection is rare in Canada.

Diagnosis

Diagnosis is made by the identification of oocysts in the stool, duodenal/jejunal aspirate, or small bowel biopsy specimen. For confirmation on laboratory specimens go to the public health laboratory web site www.publichealthlab.ca or call 709-777-6583.

⁴ Clinical illness is characterized by watery diarrhea, loss of appetite, weight loss, abdominal bloating and cramping, increased flatus, nausea, fatigue and low-grade fever. Vomiting may also be noted. Relapses and asymptomatic infections can occur. Some evidence suggests that symptoms may be more severe and long-lasting in immunocompromised individuals.

Epidemiology

Occurrence

Cyclospora is endemic in many developing countries and has been reported as a cause of traveler's diarrhea. Outbreaks in the United States and Canada during 1996-1998 were associated with ingestion of fresh raspberries imported from Central America.

Reservoir

Cyclospora organisms are intestinal pathogens of humans that are increasingly recognized in many parts of the world; yet, the reservoirs and host range remain poorly defined.

Transmission

Indirect transmission can occur if an infected person contaminates the environment and oocysts have sufficient time, under appropriate conditions, to become infectious. For example, *Cyclospora* may be transmitted by ingestion of water or food contaminated with oocysts. Transmission of *Cyclospora* directly from an infected person to someone else is unlikely.

Incubation Period

The incubation period is approximately seven (7) days (range, one to fourteen days).

Communicability

The disappearance of symptoms and oocysts usually occurs simultaneously. The mean duration of organism shedding is 23 days.

Control Measures

Management of Case

Investigations

- Obtain a food history.
- Determine consumption of contaminated food or water, or other drink including unpasteurized milk.
- Determine contact with a potential source (reservoir) especially recent consumption of fresh produce, e.g., raspberries, basil or lettuce.
- Determine the possible source of infection taking into consideration the incubation period, reservoir, and mode of transmission.
- Identify history of recent travel.
- Identify history of residing in areas with poor sanitation including improper water treatment and sewage disposal and include recent immigration.
- Assess for history of similar symptoms in other members of the household.
- Suspected contaminated food may be held to prevent consumption.
- Suspected contaminated food may be destroyed.

Treatment

- In most cases, cyclosporiasis is a self-limited disease and treatment is not indicated.
- Anti-motility agents are not recommended.

Antibiotics

- When symptoms persist, trimethoprim-sulfamethoxazole (TMP-SMX) may be prescribed:
 - seven days for children and adults.
 - ten days followed by chronic prophylaxis three times per week for individuals with HIV. Relapse is common.

Exclusion (*staying away from school or work*)

- Symptomatic and asymptomatic individuals are generally not excluded from work or daycare.
- Routine practices should be used in healthcare settings.

Management of Contacts

- Person to person transmission has not been documented.
- Individuals exposed to the suspected source of the infection should be instructed about disease transmission and appropriate personal hygiene.
- Individuals exposed to the suspected source of the infection may be monitored during the incubation period and offered treatment as necessary.

Management of Outbreaks

An outbreak management team should be established to direct and coordinate the investigation as well as address infection prevention and control measures associated with cases. If the outbreak is limited to one region the region is responsible to manage the outbreak; if more than one region is involved the outbreak will be managed by the province or in consultation with the province.

Education and Preventive Measures

- On the basis of currently available information, avoiding food or water that might be contaminated with stool is the best way to prevent infection.
- Produce should be washed thoroughly before it is eaten, although this practice does not eliminate the risk of cyclosporiasis.
- Cooking and baking fruits and vegetables will eliminate the risk of infection.
- Risk can be reduced through rigorously enforced controls on production, harvesting and packaging of foods.
- Provide fact sheet
<http://healthycanadians.gc.ca/eating-nutrition/risks-recalls-rappels-risques/poisoning-intoxication/poisoning-intoxication/cyclospora-eng.php>

Reporting Requirements and Procedures

- The laboratory (hospital or public health laboratories) report case/s to the attending physician, the Chief Medical Officer of Health and the Medical Officers of Health (MOH)
- The MOH office will notify, as required, local physicians, nurse practitioners, environmental health officers, community health nurses, communicable disease control nurses (CDCNs) and infection control practitioners (ICP), in the particular region as required for follow-up and case investigation.
- EHO will conduct an investigation of the case under the direction of the MOH and provide case details as per the food history.
- CDCN enters the case details into the electronic reporting system and uses the CNPHI tool, if indicated, for alerts or outbreak summaries

Provincial Disease Control

- Reports the aggregate case data to Public Health Agency of Canada
- Provides an analysis of the case/s with reports in the Quarterly Communicable Disease Report (CDR), also posted on the Public Health website
- Coordinates the response if an outbreak across RHAs (CMOH will likely coordinate an outbreak across RHAs with input from disease control and environmental health.)

References

American Public Health Association. *Control of communicable diseases manual* (19th ed). Heymann DL (ed.). Washington, DC: 160-161. 2008.