

# Cyclosporiasis

## 1. DISEASE REPORTING

### A. Purpose of Reporting and Surveillance

1. To identify sources of transmission (e.g., a commercial product) and to prevent further transmission from such sources.
2. To better characterize the epidemiology of this organism.

### B. Legal Reporting Requirements

1. Health care providers: notifiable to local health jurisdiction within 3 business days.
2. Health care facilities: notifiable to local health jurisdiction within 3 business days.
3. Laboratories: *Cyclospora cayetanensis* notifiable to local health jurisdiction within 2 business days, specimen submission within 2 business days required.
4. Local health jurisdictions: notifiable to the Washington State Department of Health Communicable Disease Epidemiology Section (CDES) within 7 days of case investigation completion or summary information required within 21.

### C. Local Health Jurisdiction Investigation Responsibilities

1. If a source of infection is identified, prevent further spread from the source.
2. Report all confirmed cases to CDES. Complete the cyclosporiasis case report from (available at <http://www.doh.wa.gov/notify/forms/cyclo.pdf>) and enter the data into the Public Health Issues Management System (PHIMS).

## 2. THE DISEASE AND ITS EPIDEMIOLOGY

### A. Etiologic Agent

Cyclosporiasis is caused by a unicellular parasite (*Cyclospora cayetanensis*) which infects the small bowel.

### B. Description of Illness

The clinical syndrome consists of watery diarrhea (~6 stools/day), nausea, anorexia, abdominal cramping, marked fatigue and weight loss; fever occurs in 25–50% of persons. Diarrhea in the immunocompetent can be prolonged but is usually self-limited; mean duration of organism shedding was 23 days in Peruvian children. In the immunocompromised, diarrhea can last for months. Asymptomatic infections can occur.

### C. Cyclosporiasis in Washington State

Requirements for the reporting of cyclosporiasis were instituted in December of 2000. Since then, DOH has received 0–11 case reports per year. Washington cases have mainly been exposed during foreign travel.

### D. Reservoir

The primary reservoir appears to be infected humans. It is not known whether animals

can be infected and serve as a source of infection for humans.

### E. Modes of Transmission

*Cyclospora* oocysts excreted in the stool are not immediately infectious, but can become infectious under sufficient environmental conditions. Transmission appears to occur primarily after ingestion of contaminated food or water. There was an international outbreak involving thousands of persons traced to raspberries from Guatemala during the late 1990s. Other vehicles have included basil, lettuce and snow peas. Outbreaks have a seasonal pattern, with warmer months predominating in reported cases.

### F. Incubation Period

The incubation period ranges from 1–14 days with an average of 1 week.

### G. Period of Communicability

*Cyclospora* oocysts are not infectious at the time of excretion; therefore, direct person-to-person fecal-oral transmission does not occur. However, indirect transmission can occur if excreted oocysts contaminate the environment and sufficient conditions allow them to become infectious (i.e., sporulate). The organism is resistant to chlorination of water.

### H. Treatment

Trimethoprim-sulfamethoxazole (twice daily for at least 7 days) is most commonly used to treat cyclosporiasis. In patients who are not treated, illness can be protracted, with remitting and relapsing symptoms.

## 3. CASE DEFINITIONS

### A. Clinical Criteria for Diagnosis

An illness of variable severity caused by the protozoan parasite *Cyclospora cayetanensis*. The most common symptom is watery diarrhea. Other symptoms include loss of appetite, weight loss, abdominal cramping/bloating, nausea, body aches and fatigue. Vomiting and low grade fever may be noted.

### B. Laboratory Criteria for Diagnosis

Laboratory-confirmed cyclosporiasis shall be defined as the detection in symptomatic persons of *Cyclospora* by one or more of the following results:

1. *Cyclospora* organisms in stool, intestinal fluid/aspirate, or intestinal biopsy specimens, or
2. *Cyclospora* DNA (by polymerase chain reaction) in stool, duodenal/jejunal aspirates or small bowel biopsy specimens.

### C. Case Definition (1998)

*Confirmed*: a case that meets the clinical description and at least one of the criteria for laboratory confirmation described above.

*Probable*: a case that meets the clinical description and that is epidemiologically linked to a confirmed case.

## 4. DIAGNOSIS AND LABORATORY SERVICES

### A. Diagnosis

Diagnosis is made by identification of the 8–10 µm size oocysts, about twice the size of *Cryptosporidium parvum*, in wet mount under phase contrast microscopy. If *Cyclospora* is suspected, a modified acid-fast stain can be used to increase the likelihood of detection. Other techniques that increase the sensitivity of detection of *Cyclospora* oocysts are ultraviolet fluorescence microscopy and a modified safranin stain; however these methods may not be available in most laboratories. Health care providers considering the diagnosis of *Cyclospora* infection should alert the laboratory so that specific staining procedures can be performed.

### B. Tests Available at DOH Public Health Laboratories

PHL can identify *Cyclospora* oocysts in stool. If *Cyclospora* is suspected, PHL should be notified so that appropriate staining with a modified acid-fast stain can be used. Consult with a CDES epidemiologist prior to submitting specimens.

Note that PHL require all clinical specimens have two patient identifiers, a name **and** a second identifier (e.g., date of birth) both on the specimen label and on the submission form. Due to laboratory accreditation standards, specimens will be rejected for testing if not properly identified. Also include specimen source and collection date.

### C. Specimen Collection

To maximize the likelihood of detecting *Cyclospora*, three stool specimens should be collected 48 hours apart or over a 10-day period. Stool should be stored and transported either in Para Pac ULTRA ECOFIX™ or in one tube with 10% formalin and one tube with PVA. If the ECOFIX™ kit is being used, stool should be added to the collection kit until the fluid level reaches the red line marked on the outside of the tube. The kit should then be mixed and shipped at room temperature.

Specimens need to be shipped with a completed parasitology form  
<http://www.doh.wa.gov/EHSPHL/PHL/Forms/Microbiology.pdf>

## 5. ROUTINE CASE INVESTIGATION

Interview the case and others who might be able to provide pertinent information.

### A. Identify Source of Infection

Ask the patient about potential exposures in the 1–14 days prior to onset, including:

1. Travel outside the United States,
2. Consumption of berries, fresh herbs, lettuce, and other produce,
3. Consumption of untreated water, and
4. Recreational water exposure.

### B. Identify Potentially Exposed Persons

Contacts are generally at low risk for acquiring infection since oocysts excreted in the stool are not infectious.

### C. Environmental Evaluation

Generally, no environmental evaluation is needed for sporadic cases.

## 6. CONTROLLING FURTHER SPREAD

### A. Infection Control Recommendations / Case Management

1. Hospitalized patients should be cared for using standard precautions. In addition, contact precautions should be used for diapered or incontinent persons.
2. Cases should be educated about proper hand hygiene particularly after using the toilet and before preparing food.
3. Work and child care restrictions: As a general rule, persons should not work as food handlers or attend child care while they have diarrhea. Restrictions can be waived or modified at the discretion of the local health jurisdiction.

### B. Contact Management

Contacts with symptoms compatible with cyclosporiasis should be referred to a health care provider for evaluation.

### C. Environmental Measures

A traceback investigation should be performed if a commercial food product is implicated in an outbreak.

## 7. MANAGING SPECIAL SITUATIONS

### A. Outbreaks

If you suspect an outbreak of cyclosporiasis, call the Communicable Disease Epidemiology Section immediately.

## 8. ROUTINE PREVENTION

### A. Immunization Recommendations: None

### B. Prevention Recommendations

Produce should be washed thoroughly before it is eaten; however, this practice does not eliminate the risk of *Cyclospora*.

When traveling in risk areas, persons should drink only treated or boiled water and eat only cooked hot foods or fruits they peel themselves.

Persons should avoid swallowing recreational water, especially when traveling.

## ACKNOWLEDGEMENTS

This document is a revision of the Washington State Guidelines for Notifiable Condition Reporting and Surveillance published in 2002 which were originally based on the Control of Communicable Diseases Manual (CCDM), 17<sup>th</sup> Edition; James Chin, Ed. APHA 2000. We would like to acknowledge the Oregon Department of Human Services for developing the format and select content of this document.

## UPDATES

March 2008: In Section 1C, the guideline for timeliness of initiating an investigation was removed.

January 2010: Section 3 was updated to reflect changes in national case classifications. Asymptomatic persons are no longer notifiable as cases under the changed classification.

January 2011:

The Legal Reporting Requirements section has been revised to reflect the 2011 Notifiable Conditions Rule revision.