December 2015

Cycolsporiasis

Surveillance Protocol

Provider Responsibilities

1. Report cases of *Cyclospora* infection (including laboratory reports) to the local health department within 72 hours of diagnosis. Include all of the following information:
   a) Patient's name, date of birth, address and phone number
   b) Demographic information including race, sex, age, and ethnicity
   c) Clinical symptoms
   d) Laboratory results
2. Report outbreaks of Cyclosporiasis immediately to the local health department or Division of Infectious Disease Epidemiology (DIDE) at 304-558-5358 ext 1or 800-423-1271 ext 1 or Answering Service 304-925-9946.
3. Educate newly diagnosed persons about *Cyclospora* infection

Laboratory Responsibilities

1. Forward paper copies of positive laboratory results for *Cyclospora* infection to the local health department in the patient's county of residence within 72 hours of result, if not already reported via Electronic Laboratory Reports (ELRs). Please include:
   a) Patient's name, date of birth, address and phone number
   b) Demographic information including age, sex, race and ethnicity
   c) Physician name, address and phone number
   d) Laboratory results, normal values and interpretation
2. Report outbreaks of Cyclosporiasis immediately to the local health department or DIDE (304-558-5358 ext 1or 800-423-1271 ext 1 or Answering Service 304-925-9946).

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Local Health Responsibilities

1. Educate providers and the public about transmission and prevention of Cyclosporiasis.
2. Educate providers and laboratories to report *Cyclospora* infections to the local health department in the patient's county of residence within 72 hours of diagnosis.
3. Conduct an appropriate investigation as follows:
    a. Complete the West Virginia Electronic Disease Surveillance System (WVEDSS) Cyclosporiasis Case Report Form. Include all of the following information:
        i. A complete food history
        ii. Complete travel history within 2 weeks before illness onset
        iii. History of exposure to fresh fruits and vegetables
        iv. Identification of high-risk persons or symptomatic individuals for further investigation
        v. Identification of specific behaviors that may be associated with *Cyclospora* infection during incubation period of 2-14 days
        vi. Attach relevant laboratory results
    b. For outbreaks (cases linked by person/place/time): Begin the epidemiological investigation as in 3a above. Consult the DIDE immediately at 1-800-423-1271 ext 1 or Answering Service 304-925-9946.
4. Identify other symptomatic persons and refer for laboratory testing, if appropriate.
5. Persons with diarrhea should be excluded from school, work or daycare until asymptomatic and educated about hand hygiene before their return.
6. Provide disease prevention and control education to case and family.
7. Any symptomatic household contact is considered a probable case and should be investigated and entered into WVEDSS using the Cyclosporiasis Case Report Form.

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State Health Responsibilities

1. Timely and complete reporting of Cyclosporiasis cases to the Center for Disease Control and Prevention (CDC) through WVEDSS.
2. Provide technical expertise and consultation on surveillance, investigation, disease control and prevention of Cyclosporiasis.
3. Assist local health department in suspected outbreak investigations in getting technical expertise and resources necessary for the investigation.
4. Notify CDC of outbreaks involving cases from multiple states or suspected to be associated with a product distributed across multiple states.
5. Summarize surveillance data on an annual basis.

Disease Control Objectives

Reduce the risk of additional cases by identifying and investigating outbreaks at the earliest possible time so that control measures can be instituted rapidly.

Disease Prevention Objectives

Reduce the incidence of *Cyclospora* infection by appropriate investigation of outbreaks and clusters to identify and remove any common source of disease.

Disease Surveillance Objectives

1. Determine the incidence of Cyclosporiasis in West Virginia
2. Identify demographic characteristics of persons with Cyclosporiasis
3. Identify risk characteristics of persons with Cyclosporiasis
4. Identify outbreaks of Cyclosporiasis at the earliest possible time

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Public Health Significance

Cyclosporiasis is an intestinal illness caused by a protozoan (unicellular) parasite. *Cyclospora* infection occurs world-wide, but is common in tropical and subtropical regions. There is no recognized endemic transmission of *Cyclospora* in the United States[3] . In the U.S., cases of infection have occurred in persons who traveled to *Cyclospora*-endemic areas.

Outbreaks in the U.S. have been associated with imported fresh produce including raspberries, basil, snow peas, cilantro and salad items. No commercially frozen or canned produce has been linked to outbreaks (http://www.cdc.gov/parasites/cyclosporiasis/outbreaks/index.html). *Cyclospora* is a parasite that only reproduces within a host and cysts shed in stool require a period of maturation (7-15 days) in the environment before they become infective sporulated oocysts[2]. Therefore, infected food handlers cannot contaminate food products at the time of serving.

Diagnosis of *Cyclospora* infection can be problematic because even patients who are symptomatic might not shed enough oocysts in their stool to be detectable by laboratory examinations. Therefore, patients might need to provide three or more specimens collected on different days. Furthermore, testing for *Cyclospora* is not routinely done in most laboratories, even when stool is tested for other parasites.

Clinical Description

Symptoms are characterized by non-bloody watery diarrhea, anorexia, weight loss, nausea, abdominal cramping and bloating, and fatigue. Symptoms such as vomiting, low-grade fever and muscle and joint aches are seen in some individuals. Onset of illness occurs abruptly in many cases, with symptoms lasting 10 to 20 days or longer. Asymptomatic infection can occur, especially in endemic areas, and prolonged asymptomatic shedding of oocysts can occur after recovery. Untreated persons can have remitting-relapsing illness for several weeks or months. Symptoms associated with Cyclosporiasis are more severe in HIV/AIDS patients[5].

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Etiologic Agent

Cyclospora cayetanensis is a sporulating coccidian protozoon that infects the upper small intestine. *Cyclospora* belongs to the phylum Apicomplexa, class Coccidea, order Emiriida and family Eimeriidae[4].

Reservoir

Humans are the only known host for the *C. cayetanensis*

Mode of Transmission

People become infected with *Cyclospora* by ingesting sporulated oocysts, which are the infective form of the parasite. Transmission occurs when drinking or swimming in contaminated water or eating contaminated fruits and vegetables. Direct person-to-person transmission is unlikely because the excreted oocysts are not infectious and require 7-15 days outside the host to sporulate.

Incubation Period

The average incubation period is one week. Range is 2-14 days.

Period of Communicability

Patients with *Cyclospora* are unlikely to transmit infection to others because excreted unsporulated oocysts require one to several weeks to sporulate and become infectious.

Outbreak Recognition

Outbreaks are usually recognized in association with an event where food was served. Cases of prolonged diarrhea among individuals who all ate food at the same event should prompt investigation including laboratory testing for parasitic illness.

Laboratory Testing

Microscopic examination of stool preserved in formalin for evidence of the parasite is routinely used for diagnosis of *Cycolspora* infection. Polymerase Chain Reaction (PCR) testing is also available.

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Case Definition

Clinical Description

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

Laboratory Criteria for Diagnosis

Laboratory-confirmed Cyclosporiasis shall be defined as the detection of *Cyclospora* organisms or DNA in stool, intestinal fluid/aspirate, or intestinal biopsy specimens.

Case Classification

Probable

A case that meets the clinical description and that is epidemiologically linked to a confirmed case.

Confirmed

A case that meets the clinical description and at least one of the criteria for laboratory confirmation as described above.

Prevention Measures

Avoiding food or water that may have been contaminated with feces is the best way to prevent Cyclosporiasis. Proper hygiene habits and food washing may reduce, but will not eliminate the risk of acquiring *Cyclospora* infections.Treatment with chlorine or iodine is unlikely to kill *Cyclospora* oocysts. No vaccine for Cyclosporiasis is available.

Resources for education:

Cyclosporiasis FAQs
Cyclosporiasis Fact Sheet
Cyclosporiasis Provider Fact Sheet

Treatment

Trimethoprim –sulfamethoxazole, typically for 7-10 days (American Academy of Pediatrics, 2015).

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Surveillance Indicators

1. Proportion of cases with complete demographic information
2. Proportion of cases with complete clinical severity information (hospitalization and death)
3. Proportion of cases with complete exposure information including:
   a. Fresh produce consumption
   b. Travel history

References

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5. Ortega, Y.R. and Sanchaz, R. (2010). Update on *Cyclospora cayetanensis*, a Food-Borne and Waterborne Parasite. Clin Microbiol Rev; 23: 218–234.

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