

CAMPYLOBACTERIOSIS

REPORTING INFORMATION

- **Class B:** Report by the close of the next business day after the case or suspected case presents and/or a positive laboratory result to the local public health department where the patient resides. If patient residence is unknown, report to the local public health department in which the reporting health care provider or laboratory is located.
- Reporting Form(s) and/or Mechanism: The Ohio Disease Reporting System (ODRS) should be used to report lab findings to the Ohio Department of Health (ODH). For healthcare providers without access to ODRS, you may use the [Ohio Confidential Reportable Disease Form](#) (HEA 3334).
- Key fields for ODRS reporting include: import status (whether the infection was travel-associated or Ohio-acquired), date of illness onset, and all the fields in the Epidemiology module. In the lab module, please specify if the test was Culture or Antigen.

AGENT

Campylobacter jejuni and, less commonly, *C. coli* are the usual causes of *Campylobacter* diarrhea in humans. Other *Campylobacter* organisms, including *C. lari*, *C. fetus*, and *C. upsaliensis*, have also been associated with diarrhea in normal hosts. *C. ureolyticus* is also occasionally reported, usually from wounds. As of 1989, *C. pylori* was reclassified as *Helicobacter pylori*, which is not a reportable disease in Ohio.

Infectious Dose

A very small number of *Campylobacter* organisms (fewer than 500) can cause illness in humans.

CASE DEFINITION

Background

Campylobacteriosis is a bacterial illness that generally causes a self-limited clinical illness typically characterized by diarrhea (frequently with bloody stools), abdominal cramps, malaise, fever, nausea, and vomiting; asymptomatic infection also occurs frequently. Severe symptoms and invasive infections can also occur, and persons with *Campylobacter* infections are at increased risk for three post-infectious complications: Guillain-Barré syndrome (GBS), reactive arthritis, and irritable bowel syndrome.

Clinical Criteria

An illness of variable severity commonly manifested by diarrhea, abdominal pain, nausea and sometimes vomiting. The organism may also rarely cause extra-intestinal infections such as bacteremia, meningitis or other focal infections.

Laboratory Criteria

Probable: Detection of *Campylobacter* spp. in a clinical specimen using a culture-independent diagnostic test (CIDT). The antigen test is a culture-independent diagnostic test.

Confirmed: Isolation of *Campylobacter* spp. from a clinical specimen.

Case Classification

Probable: A case that meets the probable laboratory criteria for diagnosis or a clinically compatible case that is epidemiologically linked to a probable or confirmed case of campylobacteriosis.

Confirmed: A case that meets the confirmed laboratory criteria for diagnosis.

Not a Case: This status will not generally be used when reporting a case, but may be used to reclassify a report if an investigation revealed that it was not a case.

Criteria to Distinguish a New Case from an Existing Case

A case should not be counted as a new case if laboratory results were reported within 30 days of a previously reported infection in the same individual.

Comment

Campylobacteriosis was made a nationally notifiable disease in 2015.

The use of CIDTs as stand-alone tests for the direct detection of *Campylobacter* in stool is increasing. Data regarding their performance indicate variability in the sensitivity, specificity, and positive predictive value of these assays depending on the manufacturer (CDC unpublished data). It is therefore useful to collect information on the laboratory conducting the testing using the laboratory's unique Clinical Laboratory Improvement Amendments (CLIA) number, and when possible, type and manufacturer of the CIDT used to diagnose each case. Culture confirmation of CIDT-positive specimens is ideal, but not practical to achieve in most jurisdictions. Examples of CIDT are: antigen testing, DNA (PCR) testing.

SIGNS AND SYMPTOMS

Symptoms can be mild to severe. Fever, headache, myalgia and malaise can occur 12-24 hours before onset of intestinal symptoms, which include diarrhea (stool might contain blood or mucus), abdominal pain, vomiting and nausea. Symptoms last from one day to one week or longer.

DIAGNOSIS

Campylobacteriosis is diagnosed by means of stool culture or CIDT; see case definition above. Most hospital laboratories have the ability to identify *Campylobacter*. ODH Laboratory performs testing for campylobacteriosis. In some circumstances testing can be done at the ODH Laboratory without charge. To arrange for testing at ODH Lab, contact the ODH Bureau of Infectious Diseases (BID) Outbreak Response and Bioterrorism Investigation Team (ORBIT) at 614-995-5599.

EPIDEMIOLOGY

Source

Campylobacter is commonly found in healthy wild and domestic animals. The most important sources to humans are poultry, cattle, puppies, kittens, swine, sheep, rodents and birds. The majority of human cases probably result from consumption of contaminated food (especially chicken) and water. *Campylobacter* can survive for months in surface water at 4°C (40°F).

Occurrence

Campylobacteriosis occurs worldwide. In developed countries, the incidence is at least as high as that of *Salmonella*. In 2017, over 2,000 cases were reported in Ohio, for the second year in a row. The majority of cases occur from July through October. Most recognized cases occur in children <5 years of age, adults 20-39 years of age and adults >60 years of age. All ages are at risk.

Mode of Transmission

Campylobacteriosis is acquired via the fecal-oral route from undercooked meat (especially poultry), contaminated food or water or raw milk, as well as from direct contact with infected pets, livestock or infected infants. Foods can become cross-

contaminated from poultry via raw meat juice or misuse of cutting boards. Person-to-person transmission is uncommon.

Period of Communicability

Throughout the acute phase (several days to several weeks), the organism is present in the stool and is communicable. In the absence of antimicrobial therapy, the organism can be excreted for two to seven weeks postinfection. Convalescent excretion does not usually extend beyond three months postinfection. The chronic carrier state in humans is rare.

Incubation Period

The incubation period is 1-10 days, usually 2-5 days.

PUBLIC HEALTH MANAGEMENT

Case

Investigation

All cases reported to the local health department should initially be followed up with a telephone call to obtain demographic and epidemiologic data. No further work-up is recommended if neither the case nor any household member is employed in a sensitive occupation (direct food handling, direct patient care, employee in a child care center who handles food or directly cares for children) or attends a child care center, unless there is evidence that the case is part of an outbreak.

Treatment

Antimicrobial treatment for *Campylobacter* infection is usually not indicated. *Campylobacter* organisms are susceptible in vitro to the following: erythromycin, tetracyclines and quinolones. Antimicrobial agents can reduce the duration of symptoms if given early in the illness and are indicated in invasive cases. Antimicrobial resistance may be an emerging problem with *Campylobacter*.

Isolation and Follow-up Specimens

Ohio Administrative Code (OAC) 3701-3-13 (B) states:

"Campylobacteriosis: a person with campylobacteriosis who attends a child care center or works in a sensitive occupation shall be excluded from the child care center or work in the sensitive occupation and may return when the following conditions are met:

- (1) A child may return to a child care center after his or her diarrhea has ceased.
- (2) A person may return to work in a sensitive occupation after diarrhea has ceased, provided the person's duties do not include food handling.
- (3) A food handler may return to work only after diarrhea has ceased and one of the following conditions are met:
 - (a) Forty-eight hours of effective antimicrobial therapy; or
 - (b) Two consecutive follow-up stool specimens are negative for *Campylobacter*."

Obtain the first stool specimen no sooner than 48 hours after cessation of diarrhea or, if being treated, at least 48 hours after completion of antibiotic therapy. Obtain the remaining specimen(s) at least 24 hours apart.

Contacts

If a household contact (of a confirmed case) is employed in a sensitive occupation or is a child care center attendee, all household members with diarrhea should be tested for *Campylobacter* and treated if positive.

Prevention and Control

Meat, especially poultry, should be thoroughly cooked. Avoid cross contamination of other foods, especially fruits and vegetables, with raw meat juices. Avoid unpasteurized milk and untreated water. Hand washing after contact with animals can also help prevent campylobacteriosis.

Thorough hand washing should be emphasized, especially after bowel movements, changing diapers and before eating or preparing food.

Food Handlers

Symptomatic persons should be excluded from work. As detailed in Isolation, above, food handlers may only return to work after diarrhea has ceased, and either 48 hours of effective antimicrobial therapy, or 2 consecutive follow-up stool specimens are negative for *Campylobacter*.

Food Service Operation rules also pertain to this situation. Campylobacteriosis is a disease which can be transmitted through food. Persons infected with a disease that is communicable by food are not permitted to work as food handlers. For additional information, refer to [Ohio Administrative Code \(OAC\) Chapter 3717-1 \(Ohio Uniform Food Safety Code\) Section 02.1](#), Management and Personnel: Employee Health.

Health Care Workers, Child Care Workers and Children Who Attend Child Care Centers

Symptomatic persons should be excluded from work. As detailed in Isolation above, persons in these sensitive occupations and children who attend child care centers may return when diarrhea has ceased, provided their duties do not include food handling.

Child Care Center Outbreak Control

Whenever a case of campylobacteriosis has been identified in a child care center attendee or worker, staff and children who are symptomatic and in the same classroom as the case should be cultured for *Campylobacter*. Arrangements to have this testing performed at ODH Laboratory can be made by contacting ODH ORBIT at 614-995-5599.

Special Information

Persons with diarrhea of infectious or unknown cause (e.g. confirmed or suspect cases of campylobacteriosis) are not permitted to work in sensitive occupations, according to OAC 3701-3-13 (H) which states: "Diarrhea, infectious or of unknown cause: a person with diarrhea, of infectious or unknown cause, who attends a child care center or works in a sensitive occupation shall be excluded from the child care center or work in the sensitive occupation and may return only after diarrhea has ceased. A person with infectious diarrhea of known cause shall be isolated in accordance with the provisions of the rule set forth for the specified disease."

" 'Sensitive occupation' means direct food handling, direct patient care, the handling of food or provision of direct care to children in a child care center, or any other occupation which provides significant opportunity for an infected individual to transmit infectious disease agents" per OAC 3701-3-01 (Y).

For further information, see:

<https://www.cdc.gov/campylobacter/>

<https://www.fda.gov/downloads/food/foodborneillnesscontaminants/ucm297627.pdf>

What is *Campylobacter* infection?

Campylobacter infection, or campylobacteriosis, is an infectious disease caused by *Campylobacter* bacteria. It is one of the most common causes of diarrheal illness in the United States. The [Foodborne Diseases Active Surveillance Network \(FoodNet\)](#) indicates that about 14 cases are diagnosed each year for every 100,000 people. Many more cases go undiagnosed or unreported. CDC estimates *Campylobacter* infection affects more than 1.3 million people every year. Most cases are not part of recognized outbreaks, and more cases occur in summer than in winter. In Ohio, between 2013 and 2017, a median of 1,789 cases were reported (range 923 – 2,088).

What are the symptoms of *Campylobacter* infection?

People with *Campylobacter* infection usually have diarrhea (often bloody), fever, and abdominal cramps. The diarrhea may be accompanied by nausea and vomiting. These symptoms usually start within two to five days after exposure and last about a week. Some infected people do not have any symptoms. In people with weakened immune systems, such as people with the blood disorders thalassemia and hypogammaglobulinemia, AIDS, or people receiving some kinds of chemotherapy, *Campylobacter* occasionally spreads to the bloodstream and causes a life-threatening infection.

What kind of germ is *Campylobacter*?

Campylobacter are bacteria that can make people and animals sick. Most human illness is caused by one species, called *Campylobacter jejuni*, but other species also can cause human illness.

How does food and water get contaminated with *Campylobacter*?

Many chickens, cows, and other birds and animals that show no signs of illness carry *Campylobacter*. *Campylobacter* can be carried in the intestines, liver, and giblets of animals and can be transferred to other edible parts of an animal when it is slaughtered. In 2014, [National Antimicrobial Resistance Monitoring System \(NARMS\)](#) testing found *Campylobacter* on 33% of raw chicken bought from retailers.

Milk can become contaminated when a cow has a *Campylobacter* infection in her udder or when milk is contaminated with manure. Other foods, such as fruits and vegetables, can become contaminated through contact with soil containing feces from cows, birds, or other animals. Animal feces can also contaminate lakes and streams. Pasteurization of milk, washing or scrubbing of fruits and vegetables, and disinfection of drinking water helps prevent illness <https://www.cdc.gov/campylobacter/prevention.html>.

How do people get infected with *Campylobacter* bacteria?

It takes very few *Campylobacter* germs (fewer than 500) to make someone sick. That means a single drop of juice from raw chicken can have enough *Campylobacter* in it to infect someone.

Most *Campylobacter* infections are associated with eating raw or undercooked poultry or from contamination of other foods by these items. People can get infected when a cutting board that has been used to cut and prepare raw chicken isn't washed before it is used to prepare foods that are served raw or lightly cooked, such as salad or fruit. People also can get infected through contact with the feces of a dog or cat. *Campylobacter* does not usually spread from one person to another.

Outbreaks of *Campylobacter* infections have been associated most often with poultry, raw (unpasteurized) dairy products, untreated water, and produce. *Campylobacter* infection is common in the developing world, and people who travel abroad have a greater chance of becoming infected. About 1 in 5 *Campylobacter* infections reported to the FoodNet are associated with international travel.

Even more rarely, people may become infected through contaminated blood during a transfusion.

How is *Campylobacter* infection diagnosed and treated?

Campylobacter infection is diagnosed when a laboratory test detects *Campylobacter* bacteria in stool, body tissue, or fluids. The test could be a culture that isolates the bacteria or a rapid diagnostic test that detects genetic material of the bacteria.

Most people with *Campylobacter* infection recover without specific treatment. Patients should drink extra fluids as long as the diarrhea lasts. Antibiotics are needed only for patients who are very ill or at high risk for severe disease, such as people with severely weakened immune systems, for example people with the blood disorders thalassemia and hypogammaglobulinemia, AIDS, or people receiving chemotherapy.

Is *Campylobacter* infection serious?

Most people with a *Campylobacter* infection recover completely within a week, although they may shed (get rid of) *Campylobacter* bacteria in their stool for several weeks after recovery, which might result in person-to-person transmission. *Campylobacter* infection rarely results in long-term consequences. Some studies have estimated that 5–20% of people with *Campylobacter* infection develop irritable bowel syndrome for a limited time and 1–5% develop arthritis.

About 1 in every 1,000 reported *Campylobacter* illnesses leads to [Guillain-Barré syndrome \(GBS\)](#). GBS happens when a person's immune system is triggered by an earlier infection, such as *Campylobacter* infection. GBS can lead to muscle weakness and sometimes paralysis that can last for a few weeks to several years, and often requires intensive medical care. Most people recover fully, but some have permanent nerve damage, and some have died of GBS. As many as 40% of GBS cases in the United States may be triggered by *Campylobacter* infection.

What can be done to prevent the infection?

Wash Your Hands:

Illness-causing bacteria can survive on your hands. Wash your hands thoroughly with soap and water during these times:

- Before, during, and after preparing food
- Before eating food
- After using the toilet
- After changing diapers or cleaning up a child who has used the toilet
- Before and after caring for someone who is sick
- Before and after treating a cut or wound
- After touching pets and other animals or their food or poop
- After touching garbage

Keep Certain Foods Separated:

Keep raw poultry away from other foods. Use separate cutting boards and clean them properly.

- Use one cutting board for raw meat (including poultry, seafood, and beef)
- Use another cutting board for fresh fruits and vegetables, and other foods.
- Clean all cutting boards, countertops, and utensils with soap and hot water after preparing any type of raw meat.

Cook Food to the Right Temperature

Be extra careful with poultry, one of the top causes of *Campylobacter* illnesses in the United States. Poultry includes chicken, turkey, duck, goose, and other farmed birds.

- All poultry and foods containing poultry, such as sausages and casseroles, should be cooked to reach a minimum internal temperature of 165°F.
- If you are served poultry that appears to be undercooked in a restaurant, send it back for further cooking.

Drink Pasteurized Milk

Raw milk can carry *Campylobacter* and other harmful germs that can make you very sick. The risk of getting sick from drinking raw milk is greater for:

- Infants and young children
- Adults aged 65 and older
- Pregnant women
- People with weakened immune systems, such as people with the blood disorders thalassemia and hypogammaglobulinemia, AIDS, or people receiving chemotherapy.

Do Not Drink Untreated Water

It is important to know where drinking water comes from, if it's been treated to remove harmful germs, and if it's safe to drink.

- Do not drink untreated water from a stream, river, pond, or lake.
- Be sure that wells are located a safe distance from possible sources of contamination, such as septic tanks, livestock, and manure.
- If you have a septic tank or well, have it inspected regularly to ensure that it is functioning properly.

For further information:

<https://www.cdc.gov/campylobacter/>

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