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## Campylobacteriosis


### Case Definition - [Campylobacteriosis - 2015 Case Definition](#)

#### Overview

- **Agent** - *Campylobacter* species (spp.)
- **Reservoir** – Animals, most frequently poultry and cattle. Other sources of infection include pets such as kittens and puppies along with swine, sheep, rodents and birds.
- **Environment** - *Campylobacter* spp. grow in the 86–113°F temperature range. Although unable to grow below 86°F, *Campylobacter* spp. survive at temperatures as low as 39.2°F under moist conditions. Survival in food is extended at refrigeration temperatures compared with room temperature, with viable cells being found after 7 months storage at 39.2°F. Although *Campylobacter* spp. survive well at cold temperatures, they are sensitive to heat and are readily inactivated by pasteurization treatment or domestic cooking. Poultry should be cooked until it reaches a minimum internal temperature of 165°F. *Campylobacter* spp. are highly sensitive to loss of moisture and do not survive well on dry surfaces.
- **Occurrence** – *Campylobacter* is found throughout the world. *Campylobacter jejuni* and *Campylobacter coli* are the species isolated most commonly from patients with diarrhea.
- **Risk Factors** – Persons who consume raw dairy products or undercooked meats, particularly poultry; persons who consume untreated water, persons who are immune compromised; persons who have direct contact with infected animals.
- **Mode of Transmission** - Primarily by consumption of raw dairy, undercooked meats (especially poultry) or water contaminated with the organism; direct contact with infected animals such as farm animals and pets such as kittens and puppies.
- **Period of Communicability** – Person-to-person transmission occurs occasionally, particularly among very young children, and risk is greatest during the acute phase of illness.
- **Incubation Period** – Usually 2-5 days (range 1-10 days).
- **Clinical Illness** – Diarrhea (which may be bloody), abdominal cramps, nausea and vomiting along with fever and malaise which may precede diarrhea by a day or more. Symptoms may last from a period of 1-2 days to two weeks.
- **Laboratory Testing** – Culture and culture-independent diagnostic tests (CIDTs) which include PCR and enzyme immunoassay (EIA) methods.
- **Treatment** – Most patients do not require antimicrobial therapy. Azithromycin and erythromycin shorten the duration of illness and excretion of susceptible organisms and may prevent relapse when administered early in gastrointestinal tract infection. Fluoroquinolones can also be used for persons >18 years of age. Anti-motility agents should not be used.
- **Priority** – Prompt investigation and implementation of control measures are required.

#### Quick References / Factsheets

- Public - [About Campylobacter Infection \(CDC\)](#)

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- Health Professionals – [Clinical Overview of Campylobacter \(CDC\)](#)

### **Forms**

- [Disease Case Report \(CD-1\)](#)
- [Missouri Outbreak Report Form \(MORE\)](#)
- [National Outbreak Reporting System \(NORS\) Form](#)
- [Child Care Establishment Inspection Related to Enteric Infection \(CD-8\)](#)
- [Record of Investigation of Enteric Illness \(CD-2C\)](#)

### **Notifications**


- Contact the [District Epidemiologists](#) or the Missouri Department of Health and Senior Services (MDHSS) - BCDCP, phone (573) 751-6113, if an outbreak due to *Campylobacter* is suspected.

### **Reporting Requirements**

- Campylobacteriosis is a Category 3 disease and shall be reported to the local health authority or to the MDHSS within three (3) calendar days of first knowledge or suspicion.
- Campylobacteriosis is a nationally notifiable condition in the standard reporting category. The MDHSS reports confirmed and probable campylobacteriosis cases to the CDC by routine electronic transmission.
- Campylobacteriosis reporting includes the following:
  1. For all cases, complete a “[Disease Case Report](#)” (CD-1).
  2. For confirmed and probable cases, complete the “[Record of Investigation of Enteric Illness](#)” (CD-2C).
  3. Attach the completed Record of Investigation of Enteric Illness form into WebSurv.
  4. All outbreaks or suspected outbreaks must be reported as soon as possible (by phone, fax or e-mail) to the [District Epidemiologists](#).
  5. If an outbreak is associated with the consumption or use of water for drinking, or with ingestion, contact, or inhalation of recreational water, a CDC 52.14 form ([National Outbreak Reporting System \(NORS\) Form](#)) is to be completed and submitted to the [District Epidemiologists](#) at the conclusion of the outbreak.
  6. Within 90 days from the conclusion of an outbreak, submit the final outbreak report to the [District Epidemiologists](#).

### **Laboratory Testing and Diagnosis**

*Campylobacter* can be detected in stool, body tissue, or fluids. The most common tests for *Campylobacter* include culture and nucleic acid tests, including like culture-independent diagnostic tests (CIDTs) and polymerase chain reaction (PCR).

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The Missouri State Public Health Laboratory (MSPHL) can test clinical and food specimens for *Campylobacter* spp.

**Clinical Specimens:** The MSPHL can perform culture or PCR testing for *Campylobacter*. Inoculated culture slants, raw stool specimens, and Shiga toxin-positive enrichment broths are acceptable specimen types for culture. Stool in Cary-Blair media is the only acceptable specimen type for the BioFire GI Panel, which can detect *C. jejuni*, *C. coli* and *C. upsaliensis*. Stool should be collected in Cary-Blair media, refrigerated until transported to the laboratory, and shipped on cold packs. Raw stool specimens will only be accepted from city or county health departments, unless there are special circumstances and previous approval has been obtained.

**Food Samples:** Food samples can be sent chilled to the MSPHL to be tested for *Campylobacter* as part of an epidemiological investigation. Samples are to be collected and submitted by an official of the local public health agency or state health office. Samples should be collected in their final **intact package** for testing. If an intact sample of a product is too large to submit to the lab, submit a sterile sample container with at least four ounces of the product to be tested. Prior to collection and submission of food samples, the [District Epidemiologists](#), the Bureau of Environmental Health Services, and the Environmental Bacteriology Unit at the MSPHL should be consulted. For additional information concerning food sample collection or food sample transport visit the MSPHL website at <http://health.mo.gov/lab/foodtesting.php> or call the MSPHL - Environmental Bacteriology Unit at (573) 751-3334.

### **Conducting the Investigation**

1. **Verify the diagnosis.** What laboratory tests were conducted and what were the results? Obtain demographic, clinical and laboratory information on the case from the provider and/or laboratory. Obtain the other epidemiological information necessary to complete the [Record of Investigation of Enteric Illness](#) (CD-2C) from the patient or a knowledgeable family member.
2. **Establish the extent of illness.** Have there been other cases linked by time, place or person? Ask about illnesses among household, child care, hospital or long-term care, sexual and other contacts. Determine if the case provided child or patient care, or prepared food for anyone outside the household while symptomatic. Ask if the case lived or spent significant time in another household. If ill persons are identified, advise them to contact their medical provider.  
*NOTE: Campylobacter fetus* predominantly causes systemic illness in neonates and debilitated hosts.
3. **Identify potential sources of infection.** The information obtained from the public health investigation will be used to help identify the source.
  - Does the case or a member of the case's household attend a child care center or nursery school?
  - Does the case or a member of the case's household work as a food handler or health care provider?
  - Does the case handle animals or otherwise have contact with feces from wild or domestic animals?

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- What is the case's primary source of drinking water?
- Has the case ingested untreated water from a lake or stream?
- Did the case eat raw or undercooked poultry?
- Has the case traveled recently?
- Has the case consumed unpasteurized dairy products?
- Have there been other cases linked by time, place or person?
- Is this case related to a food recall?

**NOTES:** Person-to-person spread of *Campylobacter* occasionally occurs, particularly in very young children. While outbreaks of diarrhea in child care centers have been reported, they appear to be uncommon.<sup>2</sup>

4. **Provide *Campylobacter* information to persons at risk for infection and the general public as needed.** Efforts should be made to promote *Campylobacter* awareness and provide prevention information to the public to reduce the risk of campylobacteriosis. Cases should be educated on the importance of personal hygiene, particularly after using the toilet and before and after food handling. Information on campylobacteriosis prevention can be found on CDC's website at: <https://www.cdc.gov/campylobacter/prevention/index.html>.
5. ***Campylobacter* Surveillance.** Review WebSurv to determine whether there have been other campylobacteriosis cases in your jurisdiction. When cases are related by person, place or time and serotype, efforts should be made to identify a common source. Information obtained through the public health investigation will be used to identify a possible source of infection and to characterize persons or geographic areas in which additional efforts are needed to raise awareness and reduce disease incidence.

## **Control Measures (General Setting)**

### **General**


Currently, there is no vaccine to prevent campylobacteriosis. The best defense against campylobacteriosis is thorough, frequent handwashing and proper cooking, handling and storage of food. General control measures include:

- Do not prepare food or pour beverages for others while ill with diarrhea.
- Wash hands and surfaces often.
- Do not cross-contaminate.
- Cook food to safe temperatures.
- Refrigerate food promptly and properly.

Additional information can be found in the [Missouri Food Code](#).

### **Treatment**

Almost all persons infected with illness caused by *Campylobacter* recover without any specific treatment. Antimicrobial therapy is warranted only for patients with severe disease or those at high risk for severe disease, such as those with immune systems severely weakened from

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medications or other illnesses. Rehydration is the mainstay for all children with diarrhea. Azithromycin and erythromycin shorten the duration of illness and excretion of organisms and prevent relapse when given early in gastrointestinal tract infections.

### Travelers

Travelers should be advised to follow CDC's [food and water precautions and drink from a safe water supply](#).

### Drinking and Recreational Water

- If coliform bacteria are detected in a private water supply (e.g., cistern, well), advise the family to boil the water (bring water to a full rolling boil for one minute) used for drinking, food preparation, dishwashing, and tooth brushing until the problem in the water supply can be corrected.
- If cases are associated with a public water supply, notify the [District Epidemiologists](#) and the Bureau of Environmental Health Services (BEHS), who will notify the Department of Natural Resources (DNR). If possible, DNR should be contacted before the collection of any public water samples.
- Avoid swallowing water from ponds, lakes, or untreated pools. For cases associated with recreational water activities or with private drinking water contact the [District Epidemiologists](#) and BEHS.
- Infected persons should refrain from recreational water venues (e.g., swimming pools, water parks) for 2 weeks after symptoms resolve.

### Control Measures (Special Settings)

#### Food Handlers


Educate all food handlers about the importance of handwashing before, during and after food preparation, refrigerate prepared foods in small containers, thoroughly cook all food products derived from animal sources, avoid recontamination within the kitchen after cooking is complete, and maintain a sanitary kitchen and protect foods against rodent and insect contamination.

Food handlers with vomiting or diarrhea should be excluded until asymptomatic for at least 24 hours. Individuals with questionable hygiene may return to work when symptoms resolve, but should be reassigned to other duties (non-food handling) until they can be trained and are likely to follow proper hygienic measures. Refer to the [Missouri Food Code](#) for additional information regarding individuals working in food establishments.

#### Health Care Workers

Health care workers (HCWs) should be excluded from care of patients until after the diarrhea has ceased for 24 hours. HCWs who are asymptomatic need not be excluded from work if proper personal hygiene measures, including hand hygiene, are maintained.<sup>2</sup>

#### Schools

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Exclude symptomatic children and teachers from schools until diarrhea stops. Stress proper handwashing.

### Child Care

Increased surveillance within the child care facility to identify others with diarrheal illness is important. Child care staff with diarrhea should be excluded from the facility until after the diarrhea has ceased for 24 hours. Infants and children in diapers with diarrhea should be excluded from the facility until after the diarrhea has ceased for 24 hours or may be cared for in a separate protected area until diarrhea has subsided. Antibiotic treatment (e.g., azithromycin or erythromycin) may further limit the potential for transmission.<sup>2</sup>


- Emphasize handwashing to all staff and children because good hand hygiene is the best preventive measure. Supervised handwashing after visiting the bathroom and before eating is essential for all children. Waterless hand sanitizers may also be helpful in addition to washing hands with soap and warm water.
- Employees handling food in child care settings should follow the criteria listed above in the [Missouri Food Code](#).
- Staff that prepare food should not change diapers or assist children in using the toilet.
- If a child in diapers has campylobacteriosis, everyone who changes the child's diapers should be sure the diapers are disposed of properly in a closed-lid garbage can and should wash their hands and the child's hands carefully with soap and warm water immediately after changing the diaper. After use, the diaper changing area should be wiped down with a disinfectant such as diluted household bleach, Lysol or bactericidal wipes.
- Other surfaces and objects should be decontaminated regularly and on a daily basis during an outbreak of campylobacteriosis.
- If several cases occur in a child care center, the local public health agency should coordinate efforts to improve handwashing among the staff, children, and their families. Contact the [District Epidemiologists](#), who will notify the Section for Child Care Regulation for an Environmental Public Health Specialist to perform an assessment of the child care facility. The inspection should include emphasis on the items listed in [“Day Care Establishment Inspection Related to Enteric Infection” \(CD-8\)](#).
- Access to shared water-play areas and dirty diapers should be eliminated.

To prevent the spread of infection, efforts should be made to avoid the transfer of children to other child care centers. Closure of affected child care centers may lead to placement of infected children in other centers (with subsequent transmission in those centers) and is counterproductive.

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