



# Campylobacteriosis

## Colorado Communicable Disease Manual

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### The Disease and Its Epidemiology

#### A. Etiologic Agent

Campylobacteriosis refers to disease caused by bacteria in the genus *Campylobacter*. *C. jejuni* and *C. coli* are the most common species isolated from patients with diarrhea. Other *Campylobacter* organisms, including *C. lari*, *C. fetus* and *C. upsaliensis*, have been associated with diarrhea in normal hosts.

#### B. Clinical Description

The most common symptoms of campylobacteriosis are diarrhea (sometimes bloody), abdominal pain, malaise, fever, nausea, and sometimes vomiting. Asymptomatic infections also occur. Symptoms usually resolve within a week, however some individuals may have prolonged symptoms and sometimes relapse. Rarely, patients develop long-term complications including reactive arthritis and Guillain-Barré syndrome, a rare disease that affects the nerves of the body beginning several weeks after the diarrheal illness. Guillain-Barré syndrome results in paralysis that lasts several weeks and usually requires intensive care.

#### C. Reservoirs

*Campylobacter* bacteria are very common in the gastrointestinal tracts of cattle and poultry and are found in swine, sheep, and other animals. Pets such as birds, kittens, and puppies may be sources of human infection. A very large percentage of raw poultry is contaminated with *C. jejuni*.

#### D. Modes of Transmission

*Campylobacter* bacteria are transmitted via the fecal-oral route. A small dose of *Campylobacter* (approximately 500 organisms) can cause illness. The most common mode of transmission is ingestion of food or water that has been contaminated with animal or human feces. This includes raw and undercooked poultry, raw milk, and raw milk products. In particular, infections can occur through cross contamination when cutting boards are used for both raw poultry and vegetables without adequate cleaning in between. However, any food contaminated with the bacteria can be a source of infection. In addition, farm animals and pets, such as puppies and kittens with diarrhea, can be sources of human infection. Person-to-person spread appears to be uncommon but can occur, especially among household contacts and in settings with diapered children.

#### E. Incubation Period

The incubation period can vary from 1 to 10 days but is usually about 2 to 5 days.

#### F. Period of Communicability or Infectious Period

The disease is communicable for as long as the infected person excretes *Campylobacter* bacteria in their stool, which can last 2 to 7 weeks without antibiotic treatment, however, people are most infectious while they have diarrhea. Antibiotics, when prescribed early in the infection, usually eradicate the organism from stool within 2 to 3 days.

## G. Epidemiology

*Campylobacter* is the most common bacterial cause of diarrheal illness in Colorado and in the US. Approximately 800 cases of campylobacteriosis are reported in Colorado each year. Cases are reported throughout the year, but are more common in the summer months. Most reported cases are single, sporadic cases, although *Campylobacter* outbreaks have occurred.

Colorado statistics are available at the CDPHE website:

<https://www.colorado.gov/pacific/cdphe/colorado-reportable-disease-data>

## Case Definition

### Clinical Description

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 for Diagnosis

Confirmed:	Isolation of <i>Campylobacter</i> species (i.e., culture) from a clinical specimen
Probable:	Detection of <i>Campylobacter</i> spp. in a clinical specimen using a culture-independent diagnostic test (e.g., antigen-based or PCR)

### Case Classification

Confirmed:	A case that is laboratory confirmed (using culture). Confirmed cases can include asymptomatic infections.
Probable:	A case that is detected using non-culture based methods (e.g., antigen-based or PCR) or a clinically compatible case that is epidemiologically-linked to a confirmed case.

## Reporting Criteria

### What to Report to the Colorado Department of Public Health and Environment (CDPHE) or local health agency

- Confirmed and probable campylobacteriosis cases.
- Campylobacteriosis cases should be reported within 7 days of diagnosis or a positive laboratory test.
- All specimens with any test positive for *Campylobacter*, by culture, EIA, PCR or other form of testing should be reported within 7 days of the positive test result.
- Cases should be reported using the Colorado Electronic Disease Reporting System (CEDRS), or fax or telephone to CDPHE or local health departments. See below for CDPHE phone and fax numbers.
- Suspected foodborne/enteric disease outbreaks should be reported to CDPHE or local health departments within 24 hours, even if the causative agent is not yet known.

### Purpose of Surveillance and Reporting

- To identify cases for investigation and potential outbreaks
- To monitor trends in disease incidence

### Important Telephone and Fax Numbers

CDPHE Communicable Disease Epidemiology Branch

- Phone: 303-692-2700 or 800-866-2759
- Fax: 303-782-0338

- After hours: 303-370-9395

CDPHE Microbiology laboratory: 303-692-3480

Communicable Disease (CD) Manual website: <https://www.colorado.gov/pacific/cdphe/communicable-disease-manual>

## State Laboratory Services

### Laboratory Testing Services Available

The services listed below are for public health purposes; clinical laboratories are not charged for these services, unless otherwise noted.

- The CDPHE Laboratory will test bulk stool or rectal swab specimens for the presence of *Campylobacter* in situations where such testing is warranted for public health purposes.
  - Note: Authorization by the CDPHE Communicable Disease Branch is required before submitting bulk stool, rectal swabs, or implicated food items to the CDPHE Laboratory.
- The CDPHE laboratory will perform culture on a fee-for-service basis for laboratories that wish to submit a stool that was positive using a non-culture based method.
- For more information on *Campylobacter* testing, contact the CDPHE Microbiology Laboratory.
- See Disease Control Measures, section E (Environmental Measures), for more information about food testing.

## Case Investigation

Interview all cases of campylobacteriosis, including symptomatic contacts of confirmed cases, to determine:

- Potential source of infection, and implement control measures as appropriate
- If others are ill (i.e., Could this be an outbreak?)
- If the case may be a source of infection for others (e.g., a high-risk worker or a diapered child); and if so, prevent further transmission

Local public health agencies have primary responsibility for interviews of sporadic cases in their jurisdictions.

Smaller agencies should consult with regional epidemiologists to establish primary responsibility for interviews of sporadic cases. CDPHE is available to assist with case investigation.

### A. Case Investigation / Forms

For single cases, complete the CDPHE Campylobacteriosis Case Investigation Form. Interview all cases, regardless of specimen source (stool, blood, wound, urine, etc.). At a minimum, collect information about symptoms, hospitalization, outcome, school/work, contacts and international travel for all cases.

Determining the exposure period can be difficult for cases who do not have an acute onset of gastrointestinal symptoms. It's important to do a complete assessment for GI illness, even when the specimen was blood, a wound or urine to determine if any GI symptoms were present, even if mild.

Use the table below to determine the date used to calculate the exposure period:

If case...	...then use the following date to determine exposure period:
Reports diarrhea or vomiting	Onset date of diarrhea/vomiting
Does NOT report GI illness, but had onset of other symptoms	Onset date of other symptoms
Reports NO onset of any symptom	Specimen collection date

## B. Identify and Evaluate Contacts

### Symptomatic Contacts

- Contacts of a confirmed case who have diarrhea are probable cases and are treated the same as confirmed cases for disease control purposes. See Disease Control Measures below.
- Complete a case investigation form for all epidemiologically-linked individuals having symptoms compatible with campylobacteriosis.
- Refer symptomatic individuals who have not previously been tested (especially if they are high-risk workers) to their health care providers for stool cultures. If testing will be performed by CDPHE, refer to the Instructions for Enteric and Food Specimen Packaging and Shipping on the Specimen Collection Guidelines webpage.
- CDPHE recommends that people who are experiencing symptoms submit stool specimens through their health care provider rather than to the state laboratory for several reasons:
  - ▶ The patient will receive appropriate medical care for the illness, including antimicrobial therapy, if appropriate.
  - ▶ Results will be known more quickly if stool is tested by a commercial laboratory than if tested at the state laboratory.
  - ▶ Commercial labs can often perform antimicrobial susceptibility testing, whereas, the state lab does not routinely perform such testing.
- Symptomatic contacts should be entered into CEDRS as probable campylobacteriosis cases. (It is helpful if you enter the CEDRS ID numbers of the lab-confirmed cases to whom probable cases are epi-linked in the CEDRS case notes.)
- If a common source of infection is suspected, please notify CDPHE.

### Asymptomatic Contacts

- Ask about sensitive occupations, food handling, childcare, and/or school.
- Provide information about symptoms and preventive measures. See Disease Control Measures, section C (Education).
- Counsel asymptomatic high-risk workers (e.g., food handlers). Stress the importance of good handwashing, personal hygiene, and removing themselves from working and notifying their supervisor whenever they have a diarrheal illness.
- If an asymptomatic contact who is a high-risk worker develops diarrhea, exclude her/him from work, obtain a stool sample, and notify the worker's supervisor.
- Consult with Environmental Health staff and issue a glove order if necessary.

## C. Reported Incidence Is Higher than Usual/Outbreak Suspected

If the number of reported cases of campylobacteriosis in your jurisdiction is higher than usual, or if an outbreak is suspected, investigate to determine the source of infection and mode of transmission. Consult with a CDPHE Communicable Disease Epidemiologist. CDPHE staff can assist local public health agencies to investigate outbreaks and determine a course of action to prevent further cases, and can coordinate surveillance of cases that cross county lines.

## Disease Control Measures

CDC has information for the public on their website at:

<https://www.cdc.gov/foodsafety/diseases/campylobacter/index.html>.

### A. Treatment

Most persons infected with *Campylobacter* do not require antimicrobial therapy. In more severe cases, antibiotics can be used. Antibiotics can shorten the duration of symptoms if they are given early in the illness and will eradicate the organism from the stool. Because antimicrobial resistance to *Campylobacter* is increasing, health care providers should check the antimicrobial susceptibility pattern of the isolate before prescribing antibiotics.

## B. Prophylaxis

No prophylactic treatment of close contacts is recommended.

## C. Education

- Keep food that will be eaten raw, such as vegetables, from becoming contaminated by raw animal-derived food products.
- Thoroughly cook all food products from animals, especially poultry, and avoid consuming unpasteurized milk, or other unpasteurized products.
- Cases should not prepare food for other individuals or attend child care until diarrhea has resolved.
- Educate case and household contacts on proper hand washing techniques.
- Always wash hands thoroughly with soap and water before eating or preparing food, after using the toilet, after changing diapers, and after touching pets or other animals (especially puppies and kittens with diarrhea).
- After changing diapers, wash your hands AND the child's hands.
- In a childcare setting, dispose of stool and soiled diapers in a sanitary manner.

## D. Managing Special Situations

### Food Handlers

- Food handlers must be excluded from work until at least 24 hours after diarrhea has resolved and adequate hygiene can be maintained, ideally as verified by environmental health. "Exclude" means to prevent a person from working as an employee in a food establishment or entering a food establishment as an employee.
- While individual circumstances may vary, cases are generally not required to provide two consecutive negative stools to return to work.
- If a case has questionable hygienic practices or there are other concerns, a food handler should be excluded from work until two consecutive negative stool cultures have been obtained at least 24 hours apart.
- In an outbreak situation, negative cultures may be required to return to food handling.
- If the case being re-tested has received antibiotics, stool should be collected at least 48 hours after antibiotics are completed.

### Childcare/Preschool

Refer childcare providers to the CDPHE Infectious Disease in Child Care and School Settings for an overview of *Campylobacter* infections.

- Children and staff members with campylobacteriosis who have diarrhea should be excluded until at least 24 hours after diarrhea has resolved. Parents of cases should be counseled not to take their children to another childcare center during this period of exclusion.
- Reinforce the importance of meticulous handwashing with childcare center staff after diaper changes and toileting children. If possible, this should be verified by environmental health.
- Since many child care center staff assist with food preparation and /or feeding children, it is very important that those with *Campylobacter* infection be excluded until at least 24 hours after diarrhea has resolved. See Disease Control Measures, section D (Food Handlers) above.
- If there are concerns about hygienic practices at the child care center, consider obtaining two consecutive negative stool cultures obtained at least 24 hours apart before a case returns to class.
- If the case being re-tested has received antibiotics, stool should be collected at least 48 hours after antibiotics are completed.
- When a case of campylobacteriosis is identified in a child attending childcare, determine whether additional children have or have recently had diarrhea. Other children with diarrhea should be excluded, should be seen by their physician, and should submit stool for culture. If other cases in the center are identified, consider sending a letter home to parents.
- If the case is the only child in the classroom or center who has been ill, no further action is indicated for other children in that classroom or center.

## School

Refer school personnel to the CDPHE Infectious Disease in Child Care and School Settings for an overview of *Campylobacter* infections.

- Students or staff with campylobacteriosis who have diarrhea should be excluded until at least 24 hours after their diarrhea has resolved.
- In general, students or staff with campylobacteriosis who do not have diarrhea and are not otherwise sick may remain in school.
- If there are concerns about the case's hygiene (e.g., the case has developmental disabilities and wears diapers) consider obtaining two consecutive negative stool cultures at least 24 hours apart before a case returns to class.
- If the case being re-tested has received antibiotics, stool should be collected at least 48 hours after antibiotics are completed.
- Students or staff who handle food and have campylobacteriosis must not prepare food until at least 24 hours after their diarrhea has resolved. See Disease Control Measures, section D (Food Handlers) above.

## Community Residential Programs (facilities serving the developmentally disabled)

Actions taken in response to a case of campylobacteriosis in a community residential program will depend on the type of program and the level of functioning of the residents. In general:

- Residents with campylobacteriosis should be placed on contact precautions until at least 24 hours after their symptoms subside.
- If the resident has questionable hygiene, is incontinent, or there are other concerns, the resident should remain on contact precautions until he/she has submitted two consecutive negative stool cultures obtained at least 24 hours apart.
- If the case being re-tested has received antibiotics, stool should be collected at least 48 hours after antibiotics are completed.
- Residents with campylobacteriosis must be excluded from handling or preparing food for other residents until at least 24 hours after their diarrhea has resolved.
- For staff members who provide direct patient care (e.g., feed patients, give mouth or denture care, or give medications) follow guidelines for staff in health care facilities below.
- Staff members with campylobacteriosis should be excluded from work until at least 24 hours after their diarrhea has resolved.

## Patients and Staff in Health Care Facilities (Hospitals and Long Term Care Facilities)

Hospitals and long term care facilities generally have written infection control policies and procedures for handling cases of communicable disease among patients and staff members. If a facility does not have such policies in place, provide the following recommendations:

- Patients with campylobacteriosis should be placed on contact precautions until at least 24 hours after their symptoms subside.
- If the patient has questionable hygiene, is incontinent, or there are other concerns, the patient should remain on contact precautions until two consecutive negative stool cultures are obtained.
- If case being re-tested has received antibiotics, stool should be collected at least 48 hours after antibiotics are completed.
- Healthcare workers should be excluded from work until at least 24 hours after diarrhea has resolved.
- While individual circumstances may vary, in general, healthcare workers are not required to provide two negative stools to return to work.
- In an outbreak situation, negative cultures may be required to return to work.

## E. Environmental Measures

- Implicated food items must be removed from the environment.
- A decision about testing suspect/implicated food items must be made in consultation with CDPHE Communicable Disease Program.
- If a commercial product is suspected, CDPHE Communicable Disease Branch will coordinate follow-up with the CDPHE Division of Environmental Health and Sustainability and relevant outside agencies.

- The Instructions for Enteric and Food Specimen Packaging and Shipping are available on the Specimen Collection Guidelines webpage.
- The general policy of the CDPHE Laboratory and the Communicable Disease Branch is only to test food samples associated with outbreaks, not in single cases.
- For single cases, CDPHE or local health agencies may suggest that the holders of food locate a private laboratory that will test food, or that they store the food in their freezer for a period of time in case additional reports are received.
- The CDPHE laboratory can test food samples associated with isolated cases of illness on a fee for service basis. For more information, contact the CDPHE Microbiology Laboratory.

## References

American Academy of Pediatrics. 2009 Red Book: Report of the Committee on Infectious Diseases, 28th Edition. Illinois, Academy of Pediatrics, 2009.

Case Definitions for Infectious Conditions Under Public Health Surveillance.

[www.cdc.gov/osels/ph\\_surveillance/nndss/casedef/case\\_definitions.htm](http://www.cdc.gov/osels/ph_surveillance/nndss/casedef/case_definitions.htm)

CDC Website: [www.cdc.gov](http://www.cdc.gov) (click on “Diseases and Conditions”)

Heymann DL, ed. Control of Communicable Diseases Manual, 19th Edition. Washington, DC, American Public Health Association, 2008.