

Campylobacteriosis

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Section 1

ABOUT THE DISEASE

A. Etiologic Agent

Campylobacter, a gram negative bacillus, is the causative agent of campylobacter enteritis. *Campylobacter jejuni*, and less commonly, *Campylobacter coli*, are the commonly isolated species that cause gastroenteritis.

B. Clinical Description

The most common symptoms of campylobacteriosis are diarrhea (sometimes bloody), abdominal pain, malaise, fever, nausea, and sometimes vomiting. Infection can cause a spectrum of diseases ranging from mild, uncomplicated gastroenteritis to fulminant disease similar to acute appendicitis. Asymptomatic infections also occur. The illness is usually over within a week, but 10-20% patients have prolonged or severe infection, or relapse. Long-term complications include reactive arthritis and Guillain-Barré syndrome, a rare condition that affects the nerves of the body beginning several weeks after the diarrheal illness. This syndrome results in paralysis that lasts several weeks and usually requires intensive care. It is estimated that approximately one case in every 1000 reported campylobacteriosis cases leads to Guillain-Barré syndrome, and as many as 40% of Guillain-Barré syndrome cases in this country are triggered by campylobacteriosis.

C. Vectors and Reservoirs

C. jejuni (and other species of *Campylobacter* that may cause disease) are widely prevalent in the gastrointestinal tracts of many animals, notably cattle and poultry, although swine, sheep, and even pets such as birds, kittens, and puppies may be sources of human infection. A large percentage of raw poultry is contaminated with *C. jejuni*.

D. Modes of Transmission

Campylobacter is transmitted primarily by ingestion of food or water that has been contaminated with animal feces. This includes raw and undercooked poultry or pork, inadequately treated drinking water, and raw milk and raw milk products. However, any food contaminated with the bacteria can be a source of infection. In addition, farm animals and pets, such as puppies, with diarrhea can be sources of infection.

Person-to-person spread can also occur, especially among household contacts, pre-school children in daycare, and the elderly and developmentally disabled persons living in residential facilities. Transmission can also occur through certain types of sexual contact (e.g., oral-anal contact). A large dose of organisms is usually needed to cause infection, but the infectious dose may be lower for certain susceptible groups such as children, the elderly, and the immunocompromised.

E. Incubation Period

The incubation period can vary from 1–10 days but is usually about 2–5 days, with shorter incubation periods probably associated with a larger infecting dose of bacteria.

F. Period of Communicability or Infectious Period

The disease is communicable for as long as the infected person excretes *Campylobacter* bacteria in his/her stool. This can occur for days to several weeks. People who are not given antibiotics have been known to shed these bacteria for as long as seven weeks.

G. Epidemiology

Campylobacter and *Salmonella* are the two most common bacterial causes of diarrheal illness in the U.S. It is estimated that 1.3 million cases of campylobacteriosis occur annually, with almost all cases occurring as isolated, sporadic events. Although outbreaks due to this organism have occurred, they are uncommon. The organism is isolated from infants and young adults more frequently than from persons in other age groups and from males more frequently than females. Although *Campylobacter* infection does not commonly cause death, it has been estimated that approximately 76 persons with *Campylobacter* infections die each year.

H. Bioterrorist Potential

Campylobacter are listed by the Centers for Disease Control and Prevention (CDC) as Category B bioterrorist agents. If acquired and properly disseminated, *Campylobacter* could cause serious public health challenges.

Section 2

REPORTING CRITERIA AND LABORATORY TESTING

A. What to Report to the Massachusetts Department of Public Health (MDPH)

- Report evidence of *Campylobacter* species in any clinical specimen.

B. Laboratory Testing Services Available

The Massachusetts State Public Health Laboratory (MA SPHL) will test stool specimens for the presence of *Campylobacter* and will perform confirmatory testing and speciation on isolates from clinical specimens submitted by other laboratories. In addition, the MA SPHL Clinical Microbiology Laboratory requests submission of all *Campylobacter* isolates for further testing for disease surveillance purposes.

For more information on testing, call the MA SPHL Clinical Microbiology Laboratory at (617) 983-6607.

The MA SPHL Food Microbiology Laboratory, at (617) 983-6610, will test implicated food items from case clusters or outbreaks for *Campylobacter*. See Section 4D for more information.

Section 3

REPORTING RESPONSIBILITIES AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To identify whether the case may be a source of infection for other persons (e.g., a diapered child, daycare attendee, or food handler), and if so, to prevent further transmission.
- To identify transmission sources of major public health concern (e.g., a restaurant or commercially distributed food product), and to stop transmission from such sources.

B. Laboratory and Health Care Provider Reporting Requirements

Campylobacter enteritis is reportable to the local board of health (LBOH). The MDPH requests that health care providers immediately report to the LBOH in the community where the case is diagnosed, all confirmed or suspect cases of campylobacter enteritis, as defined by the reporting criteria in Section 2A above.

Laboratories performing examinations on any specimens derived from Massachusetts residents that yield evidence of *Campylobacter* infection shall report such evidence of infection directly to the MDPH within 24 hours.

C. Local Board of Health (LBOH) Reporting and Follow-Up Responsibilities

Reporting Requirements

MDPH regulations (105 CMR 300.000) stipulate that campylobacteriosis is reportable to the LBOH and that each LBOH must report any confirmed or suspect case of campylobacteriosis as defined by the reporting criteria in Section 2A. Cases should be reported to the MDPH Bureau of Infectious Disease and Laboratory Sciences (BIDLS), Office of Integrated Surveillance and Informatics Services (ISIS) via MAVEN. Refer to the List of Diseases Reportable to Local Boards of Health for information on prioritization and timeliness requirements of reporting and case investigation
<http://www.mass.gov/eohhs/docs/dph/cdc/reporting/rprtbdiseases-lboh.pdf>

Case Investigation

It is the responsibility of the LBOH to complete all questions in each of the question packages by interviewing the case and others who may be able to provide information. Much of the information required can be obtained from the health care provider or from the medical record.

Calling the provider

If the case was hospitalized (i.e. reporting facility is a hospital), call infection control at the named hospital. A list of infection preventionists can be found in the help section of MAVEN. If the case was seen at a clinician's office, ask to speak to a nurse working with the ordering provider.

Calling the case or parent/guardian of the case

Before calling the case, review the disease fact sheet by clicking on the Help Button located in MAVEN and review all the information in this chapter. The call may take a few minutes, so in order to maximize the

chance of getting the information needed, it might be good to note the potential length of the call with your contact, and offer the opportunity to call back when it is more convenient. Asking questions about how the case or child is feeling may get the case or parent talking. If you are unable to answer a question they have, don't hesitate to call the Division of Epidemiology and Immunization at 617-983-6800 for assistance, and call the case back with the answer later. People are often more than willing to talk about their illness, and they may be very happy to speak with someone who can answer their questions.

Using MAVEN

Administrative Question Package

Monitor your "Online LBOH Notification for non-Immediate Disease" workflow in MAVEN for any new cases of campylobacteriosis. Once a new event appears in this workflow, open the Administrative Question Package (QP) and under the "Local Health and Investigation" section, answer the first question "**Step 1** - LBOH acknowledged" by selecting "Yes". The "LBOH acknowledged date" will then auto populate to the current day. Completing this first step will move the event out of this workflow and into your "Online LBOH notified but Case Report Forms (CRF) are pending" workflow. Note the date you started your investigation by answering "**Step 2** - Investigation started" as "Yes" and then note the date where shown. Record your name, agency, and phone numbers where shown in "**Step 3** - LBOH/Agency Investigator."

Demographic Question Package

Record all demographic and employment information. It is particularly important to complete the Race/Ethnicity and Occupation questions.

Clinical Question Package

Complete the "Diagnosis/Clinical Information" section, providing the diagnosis date, symptom information and date of symptom onset, hospitalizations, and other medical information

Risk Exposure/Control & Prevention Question Package

Accurately record all risk questions regarding travel and consumption of any high risk foods. As you enter data into MAVEN, additional questions will appear for you to answer regarding risk/exposure. When asking about exposure history (e.g., food, travel, activities), if possible, use the entire incubation period range of campylobacteriosis (1-10 days). Specifically, however, focus on the 2-5 days prior to the case's onset, which is the usual range.

Completing Your Investigation

1. If you were able to finish the case investigation and follow-up is complete, mark "**Step 4** - Case Report Form Completed" as "Yes" and then choose Local Board of Health (LBOH) -Ready for MDPH review for the Completed by variable.
2. If you have made several attempts to obtain case information but have been unsuccessful (e.g., the case or health care provider does not return your calls or respond to a letter, or the case refuses to divulge information or is too ill to be interviewed), please complete "**Step 4** - Case Report Form Completed" as "No" and then choose a primary reason why the case investigation was not completed from the choices provided in the primary reason answer variable list.

3. If you are not online for MAVEN you may submit a paper case report form. After completing the form, attach laboratory report(s) and fax or mail (in an envelope marked “Confidential”) to ISIS. The confidential fax number is (617) 983-6813. Call ISIS at (617) 983-6801 to obtain a copy of the case report form and to confirm receipt of your fax.

The mailing address is:

MDPH, Office of Integrated Surveillance and Informatics Services (ISIS)
305 South Street, 5th Floor
Jamaica Plain, MA 02130
Fax: (617) 983-6813

Section 4

CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (105 CMR 300.200)

Food handlers with campylobacteriosis must be excluded from work.

Note: A case of campylobacteriosis is defined by the reporting criteria in Section 2A of this chapter.

Minimum Period of Isolation of Patient

After diarrhea has resolved, food handlers may only return to work after producing one negative stool specimen. If the case has been treated with an antimicrobial, the stool specimen shall not be collected until at least 48 hours after cessation of therapy. In outbreak circumstances, a second consecutive negative stool specimen will be required prior to returning to work.

Minimum Period of Quarantine of Contacts

Contacts with diarrhea who are food handlers shall be considered the same as a case and shall be handled in the same fashion. In outbreak circumstances, asymptomatic contacts who are food handlers shall be required to produce two negative stool specimens 24 hours apart. Otherwise, there are no restrictions.

Note: A food handler is any person directly preparing or handling food. This can include a patient care or childcare provider.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

Daycare

Since campylobacteriosis may be transmitted from person-to-person through fecal-oral transmission, it is important to follow-up on cases in daycare settings. General recommendations include:

- Children with *Campylobacter* infection who have diarrhea should be excluded until their diarrhea has resolved.
- Children with *Campylobacter* infection who have no diarrhea and are not otherwise ill may be excluded or may remain in the program if special precautions are taken.
- Most staff in childcare programs are considered food handlers. Those with *Campylobacter* in their stool (symptomatic or not) can remain on site but must not prepare food or feed children until their diarrhea is gone and they have one negative stool test (collected at least 48 hours after completion of antibiotic therapy, if antibiotics are given) (per *105 CMR 300.200*).
- Notifying parents/guardians of attendees should be considered when cases of campylobacteriosis occur in children or staff. Licensed daycare facilities must notify all parents in accordance with Department of Public Health recommendations when any communicable disease or condition has been introduced into the program (606 CMR 7.11). MDPH epidemiologists are available to help determine whether notification is recommended and sample letters are available from the Division of Epidemiology and Immunization at (617) 983-6800.

School

Since campylobacteriosis may be transmitted from person-to-person through fecal-oral transmission, it is important to follow up on cases in school settings. The MDPH Comprehensive School Health Manual <http://www.mass.gov/eohhs/gov/departments/dph/programs/community-health/primarycare-healthaccess/school-health/publications/comprehensive-school-health-manual.html> provides detailed information on case follow-up and control in a school setting. General recommendations include:

- Students or staff with *Campylobacter* infection who have diarrhea should be excluded until their diarrhea has resolved.
- Students or staff with *Campylobacter* who do not handle food, have no diarrhea or have mild diarrhea, and are not otherwise sick may remain in school if special precautions are taken.
- Students or staff who handle food and have *Campylobacter* infection (symptomatic or not) must not prepare food until their diarrhea is gone and they have one negative stool specimen (collected at least 48 hours after completion of antibiotic therapy, if antibiotics are given) (per *105 CMR 300.200*).
- The school nurse and school physician should consult with the LBOH and the MDPH epidemiologists to determine whether some or all parents/guardians and staff should be notified. Parent/guardian notification should be discussed with the school administrator prior to initiation. Sample letters are available from the Division of Epidemiology and Immunization at (617) 983-6800.

Community Residential Programs

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 long-term care facilities, residents with campylobacteriosis should be placed on standard precautions until their symptoms subside and they test negative for *Campylobacter*. Refer to the MDPH Division of Epidemiology and Immunization's MDPH Division of Epidemiology and Immunization Long Term Care Infection Control Guidelines

<http://www.mass.gov/eohhs/gov/departments/dph/programs/id/epidemiology/providers/infection-control.html> for further actions.

Staff members who give direct patient care (e.g., feed patients, give mouth or denture care, or give medications) are considered food handlers and are subject to food handler restrictions under *105 CMR 300.200*. See Section 4A for more information. In addition, staff members with *Campylobacter* infection who are not food handlers should consider not working until their diarrhea has resolved.

In residential facilities for the developmentally disabled, staff and clients with campylobacteriosis must refrain from handling or preparing food for other residents until their diarrhea has subsided and they have one negative stool specimen for *Campylobacter* (collected at least 48 hours after completion of antibiotic therapy, if antibiotics are given) (per *105 CMR 300.200*). In addition, staff members with *Campylobacter* infection who are not food handlers should consider not working until their diarrhea has resolved.

Reported Incidence Is Higher Than Usual/Outbreak Suspected

If the number of reported cases of campylobacteriosis in your city/town is higher than usual or if you suspect an outbreak, investigate to determine the source of infection and the mode of transmission. A common vehicle (e.g., water, food, or association with a daycare center) should be sought, and applicable preventive or control measures should be instituted. Control of person-to-person transmission requires special emphasis on personal hygiene and sanitary disposal of feces. Consult with the epidemiologist on-call at the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850. The Division can help determine a course of action to prevent further cases and can perform surveillance for cases across town lines, which would otherwise be difficult to identify at the local level.

D. Preventive Measures

Environmental Measures

Implicated food items must be removed from consumption. A decision about testing implicated food items can be made in consultation with the Bureau of Environmental Health Food Protection Program (FPP) or the MDPH Division of Epidemiology and Immunization. The FPP can help coordinate pickup and testing of food samples. If a commercial product is suspected, the FPP will coordinate follow up with relevant outside agencies. The FPP can be reached at (617) 983-6712.

Note: The role of the FPP is to establish policy and to provide technical assistance with the environmental investigation, such as interpreting the Massachusetts Food Code, conducting a Hazard Analysis and Critical Control Point (HACCP) risk assessment, initiating enforcement actions, and collecting food samples.

The general policy of the MA SPHL is to test only food samples implicated in suspected outbreaks, not in single cases (except when botulism is suspected). The LBOH may suggest that the holders of food

implicated in single case incidents locate a private laboratory that will test food or store the food in their freezer for a period of time in case additional reports are received. However, in certain circumstances, a single, confirmed case with leftover food that had been consumed within the incubation period may be considered for testing.

Note: Refer to the MDPH Foodborne Illness Investigation and Control Reference Manual for comprehensive information on investigating foodborne illness complaints and outbreaks at <http://www.mass.gov/eohhs/gov/departments/dph/programs/environmental-health/food-safety/foodborne-illness/tools/foodborne-illness-investigations-and-control.html>. For the most recent changes to the Massachusetts Food Code, contact the FPP at (617) 983-6712 or through the MDPH website at www.mass.gov/dph/fpp.

Personal Preventive Measures/Education

To avoid exposure to *Campylobacter*., recommend that individuals:

- Always wash their 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.
- Wash the child's hands as well as their own hands after changing diapers, and dispose of feces in a sanitary manner.
- Wash hands thoroughly and frequently when ill with diarrhea or when caring for someone with diarrhea. Hands should be scrubbed for at least 15–20 seconds after cleaning the bathroom; after using the toilet or helping someone use the toilet; after changing diapers; before handling food; and before eating.
- Keep food that will be eaten raw, such as vegetables, from becoming contaminated by animal-derived food products.
- Make sure to thoroughly cook all food products from animals, especially poultry and eggs, and avoid consuming raw or cracked eggs, unpasteurized milk, or other unpasteurized dairy products.

Discuss transmission risks that may result from oral-anal sexual contact. Latex barrier protection (e.g., dental dam) may prevent the spread of *Campylobacter* to a case's sexual partners and may prevent exposure to and transmission of other fecal-oral pathogens.

The Campylobacteriosis Public Health fact sheet is available from the MDPH Division of Epidemiology and Immunization or on the MDPH website at <http://www.mass.gov/eohhs/gov/departments/dph/programs/id/epidemiology/factsheets.html> in multiple languages.

ADDITIONAL INFORMATION

The formal CDC surveillance case definition for campylobacteriosis is the same as the criteria outlined in Section 2A of this chapter. (The CDC and the MDPH use the CDC case definitions to maintain uniform standards for national reporting.) For reporting to the MDPH, always use the criteria outlined in Section 2A.

Note: The most up-to-date CDC case definitions are available on the CDC website at <https://wwwn.cdc.gov/nndss/conditions/campylobacteriosis/case-definition/2015/>

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