

Campylobacteriosis

Revision Dates

Case Definition	August 2011
Reporting Requirements	August 2011
Remainder of the Guideline (i.e., Etiology to References sections inclusive)	October 2005

Case Definition

Confirmed Case

Laboratory confirmation of infection with or without clinical illness^[1]:

- Isolation of *Campylobacter* species from an appropriate clinical specimen (e.g., feces).

**The following probable case definition is provided as a guideline to assist with case finding and public health management, and should not be reported to AHW.*

Probable Case*

Clinical illness^[1] in a person who is epidemiologically linked to a confirmed case.

^[1] Clinical illness is characterized by diarrhea, abdominal pain, malaise, fever, nausea and/or vomiting.

Reporting Requirements

1. Physicians, Health Practitioners and others

Physicians, health practitioners and others listed in Sections 22(1) or 22(2) of the *Public Health Act* shall notify the Medical Officer of Health (MOH) (or designate) of all confirmed cases in the prescribed form by mail, fax or electronic transfer within 48 hours (two days).

2. Laboratories

All laboratories, including regional laboratories and the Provincial Laboratory for Public Health (PLPH) shall in accordance with Section 23 of the *Public Health Act*, report all positive laboratory results by mail, fax or electronic transfer within 48 hours (two days) to the:

- Chief Medical Officer of Health (CMOH) (or designate),
- MOH (or designate) and
- Attending/ordering physician.

3. Alberta Health Services and First Nations Inuit Health

- The MOH (or designate) of the zone where the case currently resides shall forward the preliminary Notifiable Disease Report (NDR) of all confirmed cases to the CMOH (or designate) within two weeks of notification and the final NDR (amendment) within four weeks of notification.
- For out-of-zone reports, the MOH (or designate) first notified shall notify the MOH (or designate) of the zone where the client currently resides by mail, fax or electronic transfer and fax a copy of the positive laboratory report within 48 hours (two days).
- For out-of-province and out-of-country reports, the following information should be forwarded to the CMOH (or designate) by phone, fax or electronic transfer within 48 hours (two days) including:
 - name,
 - date of birth,
 - out-of-province health care number,
 - out-of-province address and phone number,
 - attending physician (locally and out-of-province) and
 - positive laboratory report (faxed).

Etiology

Campylobacteriosis is an acute zoonotic bacterial infection of the gastrointestinal tract (enteric) or blood (extra-intestinal) caused by *Campylobacter* species. Enteric infections are most commonly associated with *Campylobacter jejuni* and extra-intestinal infections by *Campylobacter fetus*. Extra-intestinal infection occurs in fewer than 1% of cases. There are over 90 biotypes and serotypes.

Campylobacter is susceptible to many disinfectants and heat. The bacteria survive in moist environments (including droplets) especially at lower temperatures, but do not tolerate drying or freezing. These characteristics limit transmission. *Campylobacter* may survive in water for two to five days, in milk for three days, and in feces for up to nine days.(1)

Clinical Presentation

Infection with *Campylobacter* may present with variable severity of symptoms. Acute enteritis is the most common presentation including diarrhea ranging from massive watery to grossly bloody stools, malaise, fever, and abdominal pain. There may be a prodromal period with fever, headache, myalgia, and general malaise 12 to 24 hours before the intestinal symptoms appear.

Acute colitis, with symptoms of fever, abdominal cramps, and bloody diarrhea persisting for seven days or longer may present. On occasion, acute abdominal pain may be the only symptom of infection. *C. jejuni* may cause pseudo-appendicitis.

A transient fever may be the only symptom of infection that has occurred outside of the gastrointestinal tract. Additionally, systemic infection may include joint pain. It may cause bacteremia (in < 1% of cases), but this most often occurs in persons with underlying medical conditions such as diabetes or cancer.

Many *C. jejuni* infections are asymptomatic. Infection is most often self-limited and symptoms cease within two to five days. Illness may be prolonged in adults and relapses can occur. Guillain-Barré Syndrome (GBS) is an uncommon complication of *C. jejuni* infection occurring at a rate of approximately 1 case per 2000 infections. GBS usually occurs two to three weeks after the diarrheal illness. Hepatitis, interstitial nephritis, and hemolytic uremic syndrome (HUS) are other reported complications.

Diagnosis

Diagnosis is made by culture of the organism from stool. Isolation of *C. jejuni* from food is difficult as the bacteria are usually present in low numbers.

Epidemiology

Reservoir

The reservoir for *Campylobacter* is the intestinal tract of animals, most commonly poultry and cattle, but it may also be present in sheep, swine, birds, rodents, puppies, kittens, and other domestic animals. Raw poultry or meat, often contaminated through the slaughter process, and unpasteurized milk are frequently identified as sources of infection. For travellers to developing countries, contaminated water and food are common sources. Strains acquired during travel may be antibiotic resistant.

Transmission

Ingestion of contaminated food, in particular raw or undercooked poultry or meat, unpasteurized milk or contaminated water are the most common sources of transmission. Direct contact with animals and pets that are infected is also significant. The organism may be carried by flies (1).

Cross contamination from cutting boards may occur. Person to person transmission (fecal – oral) has been reported. Newborns of infected mothers have also been infected. The infective dose is considered to be low (500 organisms or less).(2)

Incubation Period

Most infections occur two to four days after exposure but the incubation period may be inversely related to the infective dose.

Period of Communicability

Campylobacteriosis is communicable during the course of the infection typically lasting several days to weeks. Persons not treated with antibiotics may excrete the organism for as long as two to seven weeks.

Host Susceptibility

Infection with *Campylobacter* confers lasting immunity to that strain. In developing countries, the majority of the population will develop immunity in the first two years of life.

Occurrence

General

Campylobacter species cause approximately 5 to 14% of diarrheal illness worldwide and it is an important cause of traveller's diarrhea. Common source outbreaks occur.

Canada (3)

Campylobacteriosis occurs year round with a peak in summer and early fall. The highest incidence is in children under the age of five years and young adults. The rate in Canada has remained relatively stable. From 1988 to 2000, the rate ranged from 37.7 to 48.7/100,000. In 2000, 12,352 cases were reported (40.1/100,000).

Alberta (4)

Campylobacteriosis is the most prevalent enteric disease in Alberta. From 1987 to 2000, Alberta's rate remained below the national average. Since 1993, Alberta has reported between 1000 and 1400 cases each year. In 2004, the rate of infection with *Campylobacter* was 29/100,000 (911 cases). Adults aged 30 to 59 years and young children have the highest incidence of disease in the province (1997 to 2004).

Key Investigation

Single Case/household cluster

- Determine the possible source of infection taking into consideration the incubation period, reservoir, and mode of transmission. Assessment may include:
 - identifying recent ingestion of potentially contaminated food (especially poultry, beef, pork) or water, or unpasteurized milk and the time of consumption,
 - assessing for possible cross contamination (e.g., cutting boards),
 - obtaining a food history,
 - determining occupational exposure (e.g., animal or meat handling),
 - determining history of high risk sexual practices, especially contact with feces, and
 - identifying history of recent travel especially to areas with inadequate sanitation, water and sewage treatment.
- Assess for history of residing in areas with poor sanitation including improper water treatment and sewage disposal and include recent immigration.
- Identify recent illness in pets or acquisition of a puppy or kitten into the household.

- Determine history of sexual behaviors that permit contact with feces.
- Assess for history of similar symptoms in other members of the household.
- Suspected contaminated food may be held to prevent of consumption.
- Suspected contaminated food may be destroyed.
- Identify contacts. Contacts include:
 - persons living in the household,
 - children and childcare workers in a daycare/dayhome, and
 - individuals exposed to the same source (if it is identified).

Control

Management of a case

- All cases should be instructed about disease transmission, appropriate personal hygiene, routine practices, and contact precautions.
- Exclusion should be considered for symptomatic persons who are:
 - food handlers whose work involves
 - touching unwrapped food to be consumed raw or without further cooking and/or
 - handling equipment or utensils that touch unwrapped food to be consumed raw or without further cooking,
 - healthcare, daycare or other staff who have contact through serving food with highly susceptible patients or persons, in whom an intestinal infection would have particularly serious consequences,
 - involved in patient care or care of young children, elderly or dependent persons,
 - children attending daycares or similar facilities who are diapered or unable to implement good standards of personal hygiene, and
 - older children or adults who are unable to implement good standards of personal hygiene (e.g., mentally or physically challenged).
- Exclusion applies until at least 48 hours after normal stools have resumed or treatment with appropriate antibiotics has been completed.
- Asymptomatic individuals who are indicated in the above categories are generally not excluded from work or daycare, although the decision to exclude will be made by the MOH.
- Reassignment to a low risk area may be used as an alternative to exclusion.
- Contact precautions should be used in healthcare settings where children or adults have poor hygiene or incontinence that cannot be contained. Otherwise, routine precautions are adequate.

Treatment of a case

- Rehydration and electrolyte replacement are considered the primary treatment and should be provided when indicated.
- Antimotility agents are not recommended.
- In most cases, infection is self-limited and treatment with antibiotics is not indicated. Treatment is recommended for persons who:
 - are immunodeficient,
 - have high fever,
 - are experiencing more than eight stools per day,
 - have symptoms that are not improving or are worsening after a week of illness,
 - have bloody diarrhea, or
 - are pregnant.

- Antibiotics
 - Recommended regimen is erythromycin for seven to 10 days or ciprofloxacin for five to seven days (adults).
 - Alternative treatment is azithromycin for five days.

Management of Contacts

- Contacts should be instructed about disease transmission, appropriate personal hygiene, routine practices, and contact precautions.
- Symptomatic contacts should be assessed by a physician.
- Contacts who are symptomatic may be excluded from daycare or similar facilities or occupations involving food handling, patient care or care of young, elderly or dependent persons as per MOH assessment.
- Asymptomatic contacts, in general, are not excluded from work or daycare.

Preventive measures

- Provide public education about personal hygiene, especially the sanitary disposal of feces and careful hand washing after defecation and sexual contact, and before preparing or eating food.
- Educate food handlers about proper food and equipment handling and hygiene, especially in avoiding cross-contamination from raw meat products, and thorough hand washing.
- Advise infected individuals to avoid food preparation.
- Educate about the risk of sexual practices that permit fecal-oral contact.
 - Educate about condom use for safer sex.
- Test private water supplies for presence of bacterial contamination, if suspected.
- Thoroughly cook poultry and meats.
- Encourage careful hand washing after handling animals, including pets and livestock, or their feces.

Superseded

References

- (1) Public Health Agency of Canada. *Infectious substances – Campylobacter*. Office of Laboratory Security. Material Safety Data Sheet. 2001.
<http://www.phac-aspc.gc.ca/msds-ftss/msds29e.html>
- (2) *Foodborne Pathogenic Microorganisms and Natural Toxins Handbook – Campylobacter jejuni*. U. S. Food and Drug Administration. Centre for Food Safety and Applied Nutrition. Bad Bug Book. January 1992.
<http://www.cfsan.fda.gov/~mow/chap4.html>
- (3) Public Health Agency of Canada. *Notifiable diseases on-line – Campylobacteriosis*. 2003.
http://dsol-smed.phac-aspc.gc.ca/dsol-smend/ndis/diseases/camp_e.html
- (4) Alberta Health and Wellness, Disease Control and Prevention. *Communicable Disease Reporting System, Notifiable Diseases – Alberta*. March 2003.