2.3 Campylobacteriosis

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.

Case Definitions

Confirmed Case

Laboratory confirmation of infection with or without symptoms:

- isolation of *Campylobacter* sp. from an appropriate clinical specimen

Probable Case

Clinical illness in a person who is epidemiologically linked to a confirmed case.

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. For confirmation on laboratory specimens go to the public health laboratory web site www.publichealthlab.ca or call 709-777-6583.

Epidemiology

Occurrence

Globally, 5-14% of reported cases of diarrhea are caused by infection with Campylobacter. In industrialized countries the illness affects predominantly children younger than 5 years of age and young adults. Virtually all cases occur as isolated, sporadic events, not as a part of large outbreaks. Most human illness is caused by one species, called *Campylobacter jejuni*. The mean incidence rate in Canada for 2000 – 2004 was 35.7 per 100,000. In Newfoundland Labrador the mean incidence rate for the same period was 12.2 per 100,000 population. In the year 2015, 56 cases were reported and in 2014, 40 cases were reported.

Reservoir

Many chicken flocks are silently infected with Campylobacter; that is, the chickens are infected with the organism but show no signs of illness. The organism can be easily spread from bird to bird through a common water source or through contact with infected feces. When an infected bird is slaughtered, Campylobacter can be transferred from the intestines to the meat. Unpasteurized milk can become contaminated if the cow has an infection with Campylobacter in her udder or the milk is contaminated with manure. Surface water and mountain streams can become contaminated from infected feces from cows or wild birds. Animals can also be infected, and some people have acquired their infection from contact with the infected stool of an ill dog or cat.

Transmission

Fecal-oral spread is the most common mode of transmission. This occurs by ingestion of contaminated food such as improperly cooked poultry or meat, or drinking unpasteurized milk and contaminated water. Person-to-person transmission is uncommon but has been reported among young children and in families.

Incubation Period

The incubation period is from two to five days with a range of one to ten days.

Communicability

Communicability is uncommon but is greatest during the acute phase of the disease.

Control Measures

Management of Cases

Investigations

- Obtain a food history.
- Identify recent ingestion of potentially contaminated food (especially poultry, beef, and pork) or water, or unpasteurized milk and the time of consumption.
- Determine the possible source of infection taking into consideration the incubation period, reservoir, and mode of transmission.
- Assessing for possible cross contamination (e.g. cutting boards).
- Determine occupational exposure (e.g., animal or meat handling).
- If necessary, determine history of high risk sexual practices, especially contact with feces.
- Identify 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.
- 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.
- Contact precautions should be used for hospitalized children and for hospitalized adults who have poor hygiene or incontinence.

Treatment

- 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,
  - are pregnant.
- Antibiotics are prescribed according to the physician.

Exclusion

Exclusion (staying away from school or work) 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.
- Older children or adults who are unable to implement good standards of personal hygiene (e.g., mentally or physically challenged).
- Advise work restrictions until the case has been symptom free for 48 hours.
- 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.

Management of Contact

- 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.

Management of Outbreaks

An outbreak management team should be established to direct and coordinate the investigation as well as address infection prevention and control measures. If the outbreak is limited to one region the region is responsible to manage the outbreak; if more than one region is involved the outbreak will be managed by the province or in consultation with the province.

Education and Preventive Measures

- Report cases to public health.
- 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.
- If necessary, educate about the risk of sexual practices that permit fecal-oral contact.
- If necessary, 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.
- Provide fact sheet available at http://www.health.gov.nl.ca/health/publichealth/envhealth/campylobacter.pdf

Reporting Requirements and Procedures

- The laboratory (hospital or public health laboratories) report case/s to the attending physician, the Chief Medical Officer of Health and the Medical Officers of Health (MOH)
- The MOH office will notify, as required, local physicians, nurse practitioners, environmental health officers, community health nurses, communicable disease control nurses (CDCNs) and infection control practitioners (ICP), in the particular region as required for follow-up and case investigation.
- EHO will conduct an investigation of the case under the direction of the MOH and provide case details as per the food history.
- CDCN enters the case details into the electronic reporting system and uses the CNPHI tool, if indicated, for alerts or outbreak summaries

Provincial Disease Control

- Reports the aggregate case data to Public Health Agency of Canada
- Provides an analysis of the case/s with reports in the Quarterly Communicable Disease Report (CDR), also posted on the Public Health website
- Coordinates the response if an outbreak across RHAs (CMOH will likely coordinate an outbreak across RHAs with input from disease control and environmental health.)