

Campylobacteriosis

Surveillance and Investigation Protocol

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I. ABOUT THE DISEASE

A. Clinical Presentation

Campylobacteriosis typically presents as an acute, self-limiting gastroenteritis. The primary symptoms include diarrhea, which is often bloody, accompanied by abdominal pain or cramping, fever, and general malaise; nausea and vomiting may also occur. A prodromal period of fever and malaise may precede the onset of diarrhea by a day or more. Mild infections resemble viral gastroenteritis and last only one to two days, but symptoms can persist for up to two weeks. The severe abdominal pain associated with the infection is sometimes mistaken for conditions like acute appendicitis or inflammatory bowel disease.

Approximately 10%-20% of cases experience a relapse or prolonged illness. Immunocompromised individuals are at higher risk for more severe, persistent, or extraintestinal infections. Rare but serious post-infectious complications can arise during convalescence, including reactive arthritis and Guillain-Barré syndrome (GBS), a condition that affects the nervous system. Post-infectious irritable bowel syndrome has also been linked to *Campylobacter* infection.

B. Etiologic Agent

The primary etiologic agents responsible for Campylobacteriosis are bacteria belonging to the genus *Campylobacter*. These organisms are motile, gram-negative bacilli characterized by their distinct comma or corkscrew shape. These bacteria are microaerophilic, meaning they require an environment with low oxygen levels to grow effectively. While there are at least 25 species within this genus, *Campylobacter jejuni* and *Campylobacter coli* are the species most frequently isolated from patients with diarrhea.

Other species can also cause illness. *Campylobacter fetus* is rare in the general population and is associated with systemic illness in neonates and people who are immunocompromised. Species such as *C. lari*, *C. upsaliensis*, and *C. hyointestinalis* have also been known to cause similar diarrheal or systemic illnesses.

C. Reservoir

The primary reservoirs for *Campylobacter* bacteria are the gastrointestinal tracts of various domestic and wild animals and birds. *Campylobacter jejuni* and *Campylobacter coli* are particularly prevalent in poultry, with studies isolating these bacteria from the feces of a high percentage of healthy chickens, turkeys, and waterfowl. As a result, raw poultry meat is a common source of contamination. Various farm animals including cattle, swine, and sheep, along with household pets such as dogs, cats, hamsters, and small birds

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(especially young animals), can also harbor *Campylobacter* and serve as additional potential sources of human infection.

D. Incubation Period

The typical incubation period for *Campylobacter* infection is two to five days after the bacteria are ingested, although this range can extend from one to 10 days depending on the dose ingested.

E. Mode of Transmission

Campylobacter infections are acquired through the fecal-oral route. The primary sources include ingestion of contaminated food or water or direct contact with poultry, or animals. Raw or undercooked poultry is a major contributor to human illness, as even a single drop of fluid from raw chicken can contain enough *Campylobacter* organisms to cause infection. The infectious dose for Campylobacteriosis is as few as 500 organisms. Other high-risk transmission sources include unpasteurized dairy products, contaminated drinking or recreational water, and fresh produce exposed to animal feces.

Most human cases of Campylobacteriosis are linked to the consumption of contaminated food products, such as undercooked poultry and meat, unpasteurized dairy items, or contaminated water sources.

While person-to-person transmission is rare, it can occur, particularly among very young children. This often involves an infected child touching shared objects with soiled hands, and another child placing their fingers in their mouth after touching the same object.

F. Period of Communicability

The period of communicability for *Campylobacter* infection is greatest during the acute phase of the illness when a person is symptomatic. Infected individuals typically excrete the bacteria in their feces for two to three weeks without antimicrobial treatment, though shedding can continue for as long as seven weeks. While person-to-person transmission is uncommon, proper hygiene is important during this period. Treatment with appropriate antibiotics can help shorten the duration of bacterial excretion.

II. DISEASE CONTROL AND PREVENTION

A. Disease Control Objectives

Reduce the occurrence of Campylobacteriosis cases by:

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1. Investigating cases, contacts, and outbreaks to identify and mitigate sources of infection.
2. Identifying cases who work in or attend sensitive settings (i.e., daycare attendees, daycare employees, healthcare workers, food handlers) and institute control measures.
3. Educate cases and their contacts about how *Campylobacter* is transmitted and how to prevent infection.

B. Disease Prevention Objectives

Reduce risk of disease by educating the public on prevention strategies:

1. Always wash your hands with soap and water after contact with animals, using the toilet, changing diapers, helping someone with diarrhea clean up, and before preparing food.
2. Do not swim in recreational water while sick, especially when experiencing diarrhea.
3. Do not drink untreated water or use ice from untreated water sources, including during international travel.
4. Follow local drinking water advisories.
5. Always boil untreated water before use. Bring to a full rolling boil for at least one minute, or for three minutes at elevations above 6,500 feet.
6. Follow safe food handling practices by thoroughly cooking eggs, meat, and poultry to a minimum internal temperature of 165°F and preventing cross-contamination during food preparation.
7. Avoid unsafe foods such as unpasteurized milk, cheese, juice, and cider.
8. Keep pets (e.g., dogs and cats) out of food preparation areas and thoroughly wash your hands after contact with pets.
9. Minimize contact with poultry, farm animals, and their feces.

C. Disease Prevention and Control Intervention

Preventing *Campylobacter* infection includes maintaining hand hygiene by washing hands thoroughly with soap and water after using the toilet, changing diapers, handling pets or farm animals, and especially before and after preparing food or handling raw poultry.

In the kitchen, it is critical to avoid cross-contamination by using separate cutting boards for raw meat and fresh produce, and by washing all utensils and surfaces with hot, soapy water after contact with raw ingredients. All poultry and poultry products must be cooked thoroughly to an internal temperature of 165°F (74°C) to kill bacteria. Furthermore, individuals should only consume pasteurized milk and juices and drink safe, treated water, avoiding untreated sources like untreated well and surface water from streams and ponds.

Control interventions for *Campylobacter* infections focus primarily on interrupting enteric transmission through hygiene and specific exclusions for symptomatic individuals in sensitive settings. Key measures

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include maintaining strict personal hygiene, particularly hand hygiene, for all individuals. People experiencing diarrhea are generally advised to abstain from handling food or caring for patients in hospitals, custodial care, and childcare centers. Specific protocols are crucial for sensitive settings. For example, in food handling and healthcare settings, symptomatic staff must be excluded from work, although asymptomatic patients may remain only if proper personal hygiene measures, including hand hygiene, are maintained. Additionally, individuals with diarrhea should avoid swimming or using recreational water facilities and should continue to abstain for a full week after symptoms resolve to prevent community spread.

D. Disease Treatment

Treatment for *Campylobacter* infection primarily involves supportive care through rehydration and electrolyte replacement, as the illness is typically mild and self-limiting. Most healthy individuals recover without antibiotics.

Antibiotic treatment is reserved for high-risk patients (i.e., the very young, elderly, or immunocompromised) or those with severe, invasive disease. Antibiotic treatment has been shown to reduce the duration of symptoms if given early in the course of the illness. Antibiotic resistance to certain antimicrobial agents is increasing. *C. jejuni* and *C. coli* are susceptible to many antibiotics, however, a small percentage (around 2% of *C. jejuni* and 5-9% of *C. coli*) of isolates show resistance to antibiotics such as Azithromycin. Fluoroquinolone resistance has continued to increase worldwide and should be considered in patients who have traveled to areas with high resistance.

III. DISEASE INVESTIGATION

A. Case Definition and Case Classification

Clinical Criteria

An illness of variable severity commonly manifested by diarrhea, abdominal pain, nausea, and sometimes vomiting. The organism may also rarely cause extraintestinal infections such as bacteremia, meningitis, or other focal infections.

Laboratory Criteria

Confirmatory laboratory evidence:

- Isolation of *Campylobacter* spp. from a clinical specimen.

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Probable laboratory evidence:

- Detection of *Campylobacter* spp. in a clinical specimen using a culture independent diagnostic test (CIDT).

Epidemiologic Linkage

Probable:

- A clinically compatible case that is epidemiologically linked to a case that meets the probable or confirmed laboratory criteria for diagnosis.

Criteria to Distinguish a New Case from an Existing Case

A case should not be counted as a new case if laboratory results were reported within 90 days of a previously reported infection in the same individual.

Case Classifications

Probable

- A case that meets the probable laboratory criteria for diagnosis or a clinically compatible case that is epidemiologically linked to a probable or confirmed case of campylobacteriosis.

Confirmed

- A case that meets the confirmed laboratory criteria for diagnosis.

Comments

The use of CIDTs as stand-alone tests for the direct detection of *Campylobacter* in stool is increasing. Data regarding their performance indicates variability in the sensitivity, specificity, and positive predictive value of these assays depending on the manufacturer (CDC unpublished data). It is therefore useful to collect information on the laboratory conducting the testing using the laboratory's unique Clinical Laboratory Improvement Amendments (CLIA) number, and when possible, type and manufacturer of the CIDT used to diagnose each case. Culture confirmation of CIDT-positive specimens is ideal, but not practical to achieve in most jurisdictions.

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B. Reporting Time Frame to Public Health

Report all cases to the local health department within the following timeframe:

- Sporadic case of Campylobacteriosis: within 72 hours of diagnosis.
- Outbreaks of Campylobacteriosis: immediately (see outbreak definition below).

C. Outbreak Recognition

Common-source outbreaks of Campylobacteriosis are uncommon, but certain exposures present higher risks. Common-source outbreaks are primarily linked to consuming contaminated food items like unpasteurized milk, undercooked poultry, and untreated water, as well as exposure to sick pet store puppies. While person-to-person transmission of *Campylobacter* is rare, it has been documented in specific contexts such as vertical transmission from mothers to neonates in healthcare-associated nurseries; additionally, asymptomatic patients (common in older children) can spread infection and cause outbreaks. Occupational exposure in fields such as agriculture and healthcare can also increase risk.

Outbreak of Campylobacteriosis: a greater than the expected number of cases occurring within a specific time frame, or the identification of two or more cases that are epidemiologically linked to a common source by location and time of exposure.

Waterborne Disease Outbreak: two or more people that are epidemiologically linked by time, location of exposure (i.e., water source), and experience a similar illness and epidemiologic analysis implicates the water as the likely source of the illness.

Foodborne Disease Outbreak: two or more people who experience a similar illness after ingestion of a common food, and epidemiologic analysis implicates the food product as the source of the illness.

D. Healthcare Provider Responsibilities

1. Report all Campylobacteriosis cases to the local health department serving the patient's county of residence within 72 hours of diagnosis.
2. Report all suspected or confirmed outbreaks of Campylobacteriosis to the local health department serving the patient's county of residence immediately by phone.
3. Implement contact precautions in addition to standard precautions for hospitalized patients.
4. Use environmental cleaning agents effective against *Campylobacter* for environmental cleaning.

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E. Laboratory Responsibilities

1. Report all positive *Campylobacter* laboratory results to the local health department serving the patient's county of residence within 72 hours.
2. Report all suspected or confirmed outbreaks to the local health department serving the patient's county of residence immediately.
3. Laboratories performing culture independent diagnostic tests (CIDTs) for *Campylobacter* are recommended to perform culture confirmation.
4. Clinical laboratories that do not have the capacity to perform culture confirmation for *Campylobacter* species, must submit the specimen for testing to the West Virginia Office of Laboratory Services (WV OLS) within four days from date of collection along with a completed [Microbiology Laboratory Specimen Submission Form](#). If the clinical laboratory has already performed a culture, there is no need to submit the specimen to WV OLS.
5. Submit *Campylobacter* specimens associated with suspected or confirmed outbreaks to the West Virginia Office of Laboratory Services (WV OLS) within four days from date of collection along with a completed [Microbiology Laboratory Specimen Submission Form](#). For instructions on specimen collection, see [Stool Specimen Collection Instructions](#) (Enteric).
6. Follow shipping and handling instructions when sending *Campylobacter* specimens to the Office of Laboratory Services Microbiology Lab at 167 11th Avenue, South Charleston, WV 25303.
7. Laboratories with questions about specimen submission, shipping, or test results should call (304) 558-3530.

F. Local Health Responsibilities

Investigate sporadic cases of Campylobacteriosis:

1. Interview the case using the Enteric [Case Report Form](#) to guide the interview.
2. Collect exposure history for the 10 days prior to the case's illness onset, including:
 - a. Exposure to raw poultry, live poultry, or their feces.
 - b. Exposure to other farm animals, livestock, or their feces.
 - c. Exposure to pets, pet stores, farms, or petting zoos.
 - d. Contact with recreational water sources (e.g., pools, splash pads, rivers, lakes).
 - e. International travel.
 - f. Restaurants.
 - g. Contact with a laboratory confirmed case of Campylobacteriosis.
 - h. Attendance in or employment at a sensitive setting.
4. Provide the case with education on how the disease is transmitted and [prevention measures](#).
5. Enter the case investigation into the WVEDSS case report form and attach the Enteric Case Report Form in the Attachments Section of the Supplemental Info Tab within two weeks of LHD notification.

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6. Identify other cases and investigate case(s) completely as above:
 - a. Symptomatic contacts that are epidemiologically linked to a case that meets confirmatory or probable laboratory criteria must be investigated separately as a case that meets Probable case classification.
 - b. Open a case investigation in WVEDSS for all epidemiologically linked contacts that meet Probable case classification. Enter the case investigation and attach the Enteric Case Report Form in the Attachments Section of the Supplemental Info Tab within two weeks of LHD notification.
7. Institute appropriate control measures:
 - a. Wash hands frequently with soap and water, especially after contact with poultry, animals, using the toilet, changing diapers, helping someone with diarrhea clean up, and before preparing food.
 - b. Do not drink untreated surface water or use ice made from untreated surface water.
 - c. Do not consume unwashed raw fruits and vegetables.
 - d. Do not wash fruits or vegetables with untreated surface water.
 - e. Avoid eating raw or undercooked poultry, meat, or poultry products.
 - f. Do not consume unpasteurized milk, cider, or juices.
 - g. Follow local drinking water advisories.
 - h. When traveling to countries where the water might be unsafe, do not use or drink inadequately treated water or ice and avoid eating uncooked foods.
 - i. Individuals with diarrhea should not use recreational water (e.g., pools, splash pads, lakes, rivers) until one week has passed since symptoms have completely resolved.
 - j. Do not swallow recreational water. See Centers for Disease Control and Preventions [Healthy Swimming](#) for more information.
 - k. Shower before participating in recreational water activities. Showering for just one minute before entering the water helps keep the pool cleaner, allows chlorine or bromine to work more effectively, improves water quality, reduces the risk of waterborne illnesses, and decreases the amount of chemicals needed to maintain safe conditions.
8. Notify the Office of Epidemiology and Prevention Services (OEPS) Epidemiologist On-Call at (304) 558-5358 of any suspected or confirmed outbreaks within one hour of local health department notification.
9. Determine if the case is a member of a sensitive setting and institute appropriate control measures.
 - a. If the case works in or attends a childcare facility:
 - i. Interview manager/operator and check records to identify any additional cases.
 - ii. Provide education to the manager/operator about the symptoms of Campylobacteriosis, how it is spread, and how to prevent transmission within a childcare setting.
 - iii. Ensure all staff members follow strict hand hygiene, diapering, toileting, food handling, cleaning, and sanitation procedures.

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- iv. Collect stool samples from symptomatic staff members and/or attendees.
 - v. Conduct an environmental inspection when other suspected cases are identified.
 - vi. Instruct the manager/operator to notify the local health department if new cases of gastrointestinal (GI) illness occur.
 - vii. Recommend staff observe children during handwashing to encourage good hand hygiene after they use the toilet, have their diaper changed, and before eating.
 - viii. Educate staff to wash their hands using soap and water for at least 20 seconds after using the toilet, after helping a child use the toilet, after diapering a child, and before handling or eating food.
 - ix. Refer to the Enteric Conditions Exclusion Worksheet for guidance on exclusion and reinstatement criteria for staff and attendees.
 - x. To help reduce the spread of germs, clean surfaces regularly and follow the recommended procedures for cleaning, sanitizing, and disinfecting childcare facility surfaces.
- b. If the case is a food handler:
- i. Interview the manager/operator and check attendee records to identify suspect cases that occurred during the past month. Ask if there have been any complaints from any patrons during the past month.
 - ii. Conduct an environmental inspection of the facility.
 - iii. Collect stool samples from symptomatic staff members.
 - iv. Refer to the Food Handler Exclusion Worksheet for guidance on when to exclude food handlers from service and criteria for reinstatement. All food handler exclusion guidance is based on the FDA Food Code adopted under the West Virginia Legislative Rule 64CSR17, the Food Establishment Code.
 - v. Educate staff on the importance of maintaining good personal hygiene, hand hygiene, and excluding themselves from work when they have a diarrheal illness.
- c. If the case is a member of a healthcare facility or lives in a residential care facility:
- i. Provide education on good hand hygiene practices.
 - ii. Identify any abnormal incidence of diarrhea within the last month and recommend testing for symptomatic staff, residents, and patients.
 - iii. Educate facility healthcare providers on CDC recommendations for treatment, period of communicability, transmission, and prevention.
 - iv. Refer to the Enteric Conditions Exclusion Worksheet for guidance on exclusion and reinstatement criteria for staff and attendees.
 - vi. Refer to the Food Handler Exclusion Worksheet for guidance on when to exclude food handlers from service and criteria for reinstatement. All food handler exclusion guidance is based on the FDA Food Code adopted under the West Virginia Legislative Rule 64CSR17, the Food Establishment Code.
 - v. Implement contact precautions in addition to standard precautions for incontinent residents for the duration of their illness.

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- vi. Thoroughly clean and disinfect surfaces using a disinfectant effective against *Campylobacter*.

Lost to follow-up (LTF) is defined as a patient who cannot be located or contacted by disease investigators to provide disease education or preventative intervention. A case investigation can be deemed “Lost to Follow Up” by local health department (LHD) staff after:

- The LHD has made three unsuccessful contact attempts* to the patient. Contact attempts must be documented in the WVEDSS General Comments.
- Documentation of LTF status must be completed within 30 days of the investigation start date.

**Avenues of contact the LHD can consider are phone calls, text messages, emails, in person visits or speaking with a medical power of attorney. For best practice, contact attempts can be made on three different days and times.*

G. State Health Responsibilities

1. Provide consultative support to local health departments and regional epidemiologists on case investigations, implementation of control measures, and prevention strategies.
2. Assist local health jurisdictions during Campylobacteriosis outbreak responses.
3. Develop guidance documents, protocols, and health alerts for public health and health care providers.
4. Coordinate the public health response between internal partners, other state agencies, and federal partners including the Centers for Disease Control and Prevention (CDC), U.S. Food and Drug Administration (FDA), United States Department of Agriculture (USDA), and West Virginia Office of Environmental Health Services (OEHS) during multi-state responses.
5. Open, review, and close cases in WVEDSS.
6. Notify the CDC of outbreaks through the National Outbreak Report System (NORS).

H. Occupational Health

Occupational exposure to *Campylobacter* represents a significant hazard for individuals working with livestock, particularly in the poultry and dairy industries. Workers in farming, animal slaughter, and meat processing are at a high risk due to direct contact with infected animals, manure, or raw carcasses. To mitigate these risks, employers are often required to implement exposure control plans that include rigorous hand hygiene education and the provision of personal protective equipment (PPE), such as gloves and gowns. Furthermore, to prevent secondary transmission, public health guidelines typically exclude infected food handlers and healthcare workers from their duties until they have been symptom-free for at least 24 hours without the use of anti-diarrheal medications.

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IV. DISEASE SURVEILLANCE

A. Public Health Significance

Campylobacteriosis represents a critical public health challenge as the leading cause of bacterial foodborne illness both in the United States and globally. With an estimated 1.5 million domestic infections annually, the pathogen disproportionately affects children under five years of age and remains a primary cause of traveler's diarrhea. Since 2019, West Virginia has had an average of 476 cases of Campylobacteriosis each year. Beyond its high incidence, the infection imposes a significant economic burden, resulting in approximately \$270 million in direct medical costs each year in the U.S. alone. While often associated with contaminated poultry, outbreaks are frequently linked to unpasteurized milk and dairy products, and non-chlorinated water, highlighting the continued need for consumer education on healthy food and water practices.

Antimicrobial resistance also presents a risk for people at greater risk for severe infections of Campylobacteriosis. Approximately 29% of specimens with susceptibility testing now demonstrate decreased susceptibility to fluoroquinolone and macrolide, the primary antibiotics used to treat severe infections. This trend complicates clinical management and increases the risk of prolonged illness or complications. As the prevalence of the pathogen continues to rise in both industrialized and developing nations, it remains a top priority for public health surveillance and intervention strategies aimed at reducing the global burden of diarrheal disease.

B. Disease Surveillance Objectives

1. To identify the temporal, geographic, and demographic occurrence of Campylobacteriosis to guide prevention and control activities.
2. To identify the behavioral risk factors associated with Campylobacteriosis.
3. To promptly identify outbreaks of Campylobacteriosis and implement control measures.

C. Surveillance Indicators

1. Proportion of investigations with complete demographic information.
2. Proportion of investigations with complete information on exposures.
3. Proportion of CIDT-positive cases with specimens submitted to WV OLS for culture confirmation.

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V. REFERENCES

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