

Committee: Infectious Disease

Title: Creation of a National Campylobacteriosis Case Definition

I. Statement of the Problem

Although campylobacteriosis is not nationally-notifiable, it is a disease which is under public health surveillance in the majority of states. A national case definition is needed to facilitate standardized case reporting and ascertainment across jurisdictions. This definition will take into account both traditional culture-based methods and the increasing use of culture-independent methods for diagnosis of *Campylobacter*.

II. Background and Justification

CSTE position statement 07-EC-02 recognized the need to develop an official list of nationally notifiable conditions and a standardized case definition for each condition on the official list. Although campylobacteriosis is not nationally-notifiable, reporting of campylobacteriosis was explicitly requested in the reporting rules of 49 states or territorial jurisdictions according to the State Reportable Conditions Assessment (CSTE 2010), and case definitions vary. The purpose of this position statement is to establish a national case definition that would facilitate standardized case ascertainment across jurisdictions. This definition will take into account both traditional culture-based methods and the increasing use of culture-independent methods in place of culture for diagnosis of *Campylobacter*.

In 1990, CDC in collaboration with CSTE published *Case Definitions for Public Health Surveillance*, which provided standard criteria for reporting cases. Although not nationally notifiable, a national case definition for *Campylobacter* infection was included in the document. This history is more completely described in 07-EC-02. In 2008, CSTE clarified the process of placing conditions under national surveillance by passing position statement 08-EC-02 which established *Criteria for Inclusion of Conditions on CSTE Nationally Notifiable Condition List and for Categorization as Immediately or Routinely Notifiable*. In 2010, CSTE clarified the process of placing conditions under national surveillance by passing position statement 10-SI-02 *Modification of the Process for Recommending Conditions for National Surveillance*. Position statement 10-SI-02 provides a means for establishing standard reporting and notification methods for the condition and recommends that States or Territories conducting surveillance for the condition use these standard methods. This provision allows for the flexibility to adopt a national case definition without also including the disease on the list of nationally notifiable conditions.

Campylobacter is a common cause of gastroenteritis in the United States. An estimated 1.3 million cases of campylobacteriosis occur each year in the United States. Of these, 845,000 are estimated to be foodborne illnesses (1). Although several species of *Campylobacter* can cause human illness, *C. jejuni* is the most common cause of gastroenteritis. Less commonly, infections are reported due to *C. coli*, *C. lari*, *C. fetus*, *C. hyointestinalis* and *C. upsaliensis*. This bacteria causes a generally self-limited clinical illness typically characterized by diarrhea (frequently with bloody stools), abdominal cramps, malaise, fever, nausea and/or vomiting and malabsorption;

asymptomatic infection also occurs frequently. Symptoms usually persist less than one week. Invasive disease is uncommon, even in neonates. Immunocompromised persons have a higher risk of infection, recurrence, prolonged shedding and severe disease. Prolonged illness and/or relapses may occur in adults.

Campylobacter infection is transmitted by the fecal-oral route and results from the ingestion of *Campylobacter* through the consumption of undercooked meat, contaminated food, water, or raw milk, contact with infected pets, farm animals or infected infants. Although the infective dose is often low, person-to-person transmission is uncommon, (with the possible exception of contact with infected infants and incontinent adults).

Surveillance for campylobacteriosis is necessary to identify and control outbreaks and to determine if there is a source of infection of public health concern (e.g., a commercial raw milk dairy or public water supply) and to stop transmission from such a source. Surveillance for campylobacteriosis is also important to monitor incidence over time and to estimate the burden of illness from campylobacteriosis.

III. Statement of the desired action(s) to be taken

Establish standard reporting and case classification for campylobacteriosis and recommend that any State or Territory conducting surveillance for this condition use these standards.

IV. Goals of Surveillance

To provide information on the temporal, geographic, and demographic occurrence of campylobacteriosis to facilitate its prevention and control. Surveillance for campylobacteriosis is necessary to identify and control outbreaks and to determine if there is a source of infection of public health concern (e.g., a commercial raw milk dairy or public water supply) and to stop transmission from such a source.

V. Methods for Surveillance:

Surveillance for campylobacteriosis should use the following recommended sources of data and the extent of coverage listed in Table V.

Table V. Recommended sources of data for case identification and extent of coverage for ascertaining cases of campylobacter.

Source of data for case identification	Coverage	
	Population-wide	Sentinel sites
Clinician reporting	X	
Laboratory reporting	X	
Reporting by other entities (e.g., hospitals, veterinarians, pharmacies)	X	
Death certificates	X	
Hospital discharge or outpatient records	X	

Extracts from electronic medical records	X	
Telephone survey		
School-based survey		
Other _____		

VI. Criteria for case identification

A. Narrative: A description of suggested criteria that may be for case ascertainment of a specific condition.

Report any illness to public health authorities that meets any of the following criteria:

1. Any person with *Campylobacter* spp. isolated from a clinical specimen.
2. Any person with *Campylobacter* spp. detected in a clinical specimen using non-culture based laboratory methods.
3. Any person with at least one gastrointestinal symptom of illness such as diarrhea, abdominal cramping, fever, nausea, vomiting and who is either a contact of a confirmed case of campylobacteriosis or a member of a risk group as defined by the public health authorities during an outbreak.
4. A person whose healthcare record contains a diagnosis of campylobacteriosis.
5. A person whose death certificate contains campylobacteriosis as a contributing or underlying cause of death.

Other recommended reporting procedures:

- All cases of campylobacteriosis should be reported according to state regulations.
- Reporting should be ongoing and routine.
- Frequency of reporting should follow the state health department's routine schedule.

Table VI-B. Table of criteria to determine whether a case should be reported to public health authorities.

Criterion	Reporting		
<i>Clinical Evidence</i>			
Diarrhea		O	
Abdominal cramping		O	
Fever		O	
Nausea		O	
Vomiting		O	
Healthcare record contains a diagnosis of campylobacteriosis			S
Death certificate containing campylobacteriosis as a contributing or underlying cause of death			S
<i>Laboratory Evidence</i>			
Isolation of <i>Campylobacter</i> spp. from a clinical specimen	S		
Detection of <i>Campylobacter</i> spp. in a clinical specimen using non-culture based laboratory methods	S		
<i>Epidemiological Evidence</i>			
Contact of a confirmed case of campylobacteriosis		O	

Member of a risk group as defined by the public health authorities during an outbreak		O	
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Note:

S = This criterion alone is Sufficient to report a case.

O = At least one of these “O” (Optional) criteria in each category (e.g., clinical evidence and laboratory evidence) in the same column is required to report a case.

C. Disease-specific data elements

Disease-specific data elements to be included in the initial report are listed below.

Basic demographics

Clinical Information

- Date of onset and outcome
- Reported symptoms of illness
- Hospitalized

Epidemiological Risk Factors

- Childcare center attendee or worker
- International travel in past 10 days
- Longterm care resident or worker
- Consumption of undercooked meat or contact with raw meat especially poultry
- Implicated (suspected or confirmed food vehicles and where implicated food vehicle(s) was prepared and eaten
- Drinking untreated water or contact with recreational water including location and dates of exposure
- Consumption of raw milk or unpasteurized dairy products including dates of exposure
- Contact with infected pets, farm animals or infected infants
- Contact with a confirmed case of campylobacteriosis

Laboratory Information

- Method(s) of laboratory testing (culture, PCR, antigen)
- Type of antigen testing (-EIA test format - lateral flow or microplate) and manufacturer

VII. Case Definition for Case Classification

A. Narrative: Description of criteria to determine how a case should be classified.

Clinical description

A diarrheal illness of variable severity

Laboratory criteria for diagnosis

Suspect: Detection of *Campylobacter* spp. in a clinical specimen using non-culture based laboratory methods

Confirmed: Isolation of *Campylobacter* spp. in a clinical specimen.

Case classification

Suspect: a case that meets the suspect laboratory criteria for diagnosis.

Probable: a clinically compatible case that is epidemiologically linked to a confirmed case of campylobacteriosis.

Confirmed: A case that meets the confirmed laboratory criteria for diagnosis

Comment:

The use of culture independent methods as standalone tests for the direct detection of *Campylobacter* in stool appears to be increasing. Data available about the performance characteristics of these assays indicates there is variability in the sensitivity, specificity and positive predictive value of these assays depending on the test (EIA test format -lateral flow or – microplate) and manufacturer. It is therefore useful to collect information on which type of EIA test and manufacturer are used to diagnose a case. Culture confirmation of culture independent (e.g. EIA) test positive specimens is ideal.

B. Classification Tables

Table VII-B. Criteria for defining a case of campylobacter.

Criterion	Confirmed	Probable	Suspect
<i>Clinical Evidence</i>			
A diarrheal illness of variable severity		N	
<i>Laboratory Evidence</i>			
Detection of <i>Campylobacter</i> spp. in a clinical specimen using non-culture based laboratory methods			S
Isolation of <i>Campylobacter</i> spp. from a clinical specimen	S		
<i>Epidemiological Evidence</i>			
Epidemiologically linked to a confirmed case of <i>Campylobacter</i>		N	

S = This criterion alone is Sufficient to report a case.

N = All “N” criteria in the same column are Necessary to classify a case.

VIII. Period of Surveillance

Surveillance should be on going.

IX. Data sharing/release and print criteria

- Data will be used to determine the burden of illness due to *Campylobacter*, monitor trends in illness over time, assess the effectiveness of control programs, and monitor progress toward goals in campylobacteriosis control. Data may also be used to compare cases of campylobacteriosis across jurisdictions.

- Information may be distributed among states and territories or to CDC depending on the current epidemiologic situation or jurisdiction specific protocols. Unusual situations may increase the need for communication. For example, results of ad-hoc analyses may be made available to health departments involved in investigations. Frequency of cases, epidemiologic distribution, importation status transmission risk, and other factors will influence communications.
- States and territories will share data with CDC according to jurisdiction specific protocols.
- State-specific data on cases, if shared with CDC, will be verified prior to publication.

X. References

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2. Friedman, C.R., J. Neimann, et al. (2000). Epidemiology of *Campylobacter jejuni* infections in the United States and other industrialized nations. Campylobacter, 2nd edition. I. Nachamkin and M. Blaser. Washington D.C., American Society for Microbiology: 121-138.
3. Friedman C.R., R.M.Hoekstra, et. al. Risk factors for sporadic Campylobacter infection in the United States: A case-control study in FoodNet sites. *Clin Infect Dis.* 2004 Apr 15;38 Suppl 3:S285-96.
4. Heymann DL, editor. Control of communicable diseases manual. 18th edition. Washington: American Public Health Association; 2004.
5. Position Statement 07-EC-02. *CSTE official list of Nationally Notifiable Conditions* <http://www.cste.org/PS/2007ps/2007psfinal/EC/07-EC-02.pdf>
6. Position Statement 08-EC-02. *Criteria for Inclusion of Conditions on CSTE Nationally Notifiable Condition List and for Categorization as Immediately or Routinely Notifiable* <http://www.cste.org/PS/2008/2008psfinal/08-EC-02.pdf>
7. Position Statement 10-SI-02 *Modification of the Process for Recommending Conditions for National Surveillance* <http://www.cste.org/ps2010/10-SI-02.pdf>

XI. Coordination

Agencies for Information

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