




Campylobacter Investigation Guideline

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Revision History:

Date	Replaced	Comments
07/2016	06/2012	Updated case definition and formatted to include table of contents. Updated Laboratory Analysis section.
06/2012	02/2012	Updated investigation sections to agree with new surveillance system and added reporting form. Edited fact sheet.
02/2012	05/2011	Removed references to KS-EDSS. Updated CDC case definition to 2012 version.
05/2011	03/2009	Minor formatting of investigation guideline. Edits to Managing Special Situations – restaurant and childcare settings. BEPHI replaced BSE throughout. Included revised fact sheet.

Campylobacter

Disease Management and Investigation Guidelines

CASE DEFINITION (CDC 2015)

Clinical Description for Public Health Surveillance:

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

Laboratory Criteria for Case Classification:

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

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

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 New from an Existing Case:

A case should not be counted as a new case if laboratory results were reported within 30 days of a previously reported infection in the same individual.

Case Classification:

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 indicate 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in the sensitivity, specificity, and positive predictive value of these assays depending on the manufacturer (CDC unpublished data).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.

LABORATORY ANALYSIS:

- 1) *Campylobacter* is detected using culture or culture independent diagnostic tests (CIDTs), including nucleic acid assays (PCR) and antigen tests.
 - Culture is the gold standard but requires special media and conditions.
 - PCR offers a sensitive and specific assay that is an alternative to culture.
 - While *Campylobacter* stool antigen tests are convenient to use, the sensitivity, specificity, and positive predictive value of antigen tests are highly variable. Confirmation by culture or PCR should be done, if practical.
- 2) If clinical laboratories are unable to perform a reflex culture or PCR from positive CIDT specimens and the situation is a matter of public health importance and warrants confirmation, the positive CIDT specimens can be submitted to Kansas Health and Environmental Laboratories (KHEL) for culture confirmation.
 - If a fresh stool is received for initial testing via CIDT, a quarter sized amount of stool should be transferred immediately into Cary-Blair transport medium vial and refrigerated until it is decided whether confirmation is needed at KHEL. Specimens in transport media should be stored refrigerated.
 - Preserved specimens requiring culture confirmation should be received as soon as possible by KHEL for the best chance to isolate the organism.
 - Ship cold (ideal) or at room temperature in an [Enteric with Cary Blair mailer](#) with a *Biological Substance, Category B, Enteric/Misc. Bacterial* shipping label provided by KHEL.
 - Indicate the type of testing already performed and the results of that testing on the [KHEL Universal Submission Form \(Health\)](#).
 - KHEL will provide CIDT culture confirmation and isolate identification.
- 3) If clinical laboratories are able to isolate a *Campylobacter* species but the situation is a matter of public health importance and warrants further identification, the isolate can be submitted to KHEL for isolate identification.
 - Pure isolated colonies (<48 hours old) should be placed in an appropriate tubed media or broth. Liquid media tubes should be sealed with parafilm or other appropriate barrier film. (Do not send specimens on agar plates.)
 - Package in a Bacterial Isolate mailer with a *Biological Substance, Category B, Enteric/Misc. Bacterial* shipping label provided by KHEL.
 - Ship at room temperature.
 - Isolates must be received by KHEL within 21 days of collection.
 - Indicate the type of testing already performed and the results of that testing on the [KHEL Universal Submission Form \(Health\)](#).
- 4) KHEL will provide pulsed-field gel electrophoresis (PFGE) analysis of isolates only during outbreak investigations or in other matters of public health importance after a request has been made through the Kansas Department of Health and Environment (KDHE) by calling 1-877-427-7317.
- 5) For additional information concerning specimen collection or transport, call (785) 296-1620.

EPIDEMIOLOGY

Campylobacter is the most common bacterial cause of diarrheal illness in the United States. It is estimated that over 1 million cases occur annually with most occurring as isolated, sporadic events. Common-source outbreaks have been associated with foods; especially undercooked poultry, unpasteurized milk and non-chlorinated water. Children and young adults have the highest incidence of infection. Immunocompromised persons are at increased risk of infections with recurrences and severe symptoms and are more likely to be chronic carriers.

DISEASE OVERVIEW

A. Agent:

Campylobacter is a gram-negative rod with hundreds of serotypes; of these, the 2 most common causes of gastroenteritis are *C. jejuni* and *C. coli*.

B. Clinical Description:

Acute gastroenteritis of variable severity, characterized by diarrhea that is often bloody, abdominal pain, malaise, nausea and occasional vomiting. Usually self-limited to 2-5 days, but prolonged illness in adults and relapses may occur.

C. Reservoirs:

Campylobacter is endemic in animals such as cattle, poultry, swine, sheep, and pets including birds, kittens and puppies. A large proportion of raw poultry is contaminated with *C. jejuni*. Chronic infection of poultry and other animals constitutes the primary source of infection.

D. Mode(s) of Transmission:

Fecal-oral, including: person-to-person, animal-to-person, waterborne and foodborne. Ingestion of the organism in under-cooked meat, food, water, or raw (unpasteurized) milk contaminated with human or animal feces and/or from contact with infected pets (especially puppies and kittens), farm animals, or infected infants. Cross-contamination can occur, especially from common cutting boards. Person-to-person transmission, although rare, may occur among household contacts, pre-school children in daycare, and the elderly and developmentally disabled persons living in residential facilities. Transmission may also occur through certain types of sexual contact (e.g., oral-anal contact).

E. Incubation Period:

2 to 5 days, with a range from 1-10 days, depending on the infective dose.

F. Period of Communicability:

Variable for as long as the infected person excretes bacteria in stool, lasting from several days to weeks. Without antibiotic treatment excretion may last 2-7 weeks. The temporary carrier state is of little epidemiological importance, except for infants and others who are incontinent of stool.

G. Susceptibility and Resistance:

Lasting immunity to serologically related strains follows infection.

H. Treatment:

Fluid and electrolyte replacement therapy may be indicated. *C. jejuni* or *C. coli* are susceptible in vitro to erythromycin, tetracyclines and quinolones. In some areas quinolone resistance is increasing. Antimotility agents are not recommended.

NOTIFICATION TO PUBLIC HEALTH AUTHORITIES

Campylobacter infections shall be designated as infectious or contagious in their nature, and cases or suspect cases shall be reported within seven days:

1. Health care providers and hospitals: report to the local public health jurisdiction.
2. Local public health jurisdiction: report to KDHE-BEPHI (see below).
3. Laboratories: report to KDHE-BEPHI (see below).

**Kansas Department of Health and Environment (KDHE)
Bureau of Epidemiology and Public Health Informatics (BEPHI)**

Phone: 1-877-427-7317



Fax: 1-877-427-7318

(Local public health can report cases with New CMR creation in EpiTrax.)

Further responsibilities of local health departments:

- **Local public health jurisdiction** will report information requested in the Kansas electronic surveillance system as soon as possible, ensuring that the electronic form is completed within 5 days of receiving a notification of a case.

INVESTIGATOR RESPONSIBILITIES

- 1) **Report** all Campylobacter cases to the KDHE-BEPHI.
 - Initiate the case investigation within 3 days of notification of a case.
 - Complete the investigation within 5 days of the notification.
- 2) Contact medical provider to collect additional information and confirm diagnosis using current **case definition**. For all diagnosed cases:
 - Collect all information requested in **Step 1** of case investigation.
 - Ensure that case/proxy is aware of the diagnosis.
- 3) Conduct a **case investigation** to determine the individual's risks of exposure and potential source of exposure.
- 4) Conduct **contact investigation** to identify additional cases, as needed.
- 5) Identify whether the source of infection is major public health concern.
 - Food handler, daycare, or a direct patient care provider involved.
 - Commercial raw milk, a water supply, or other public source is involved.
- 6) Initiate any needed control and prevention measures.
- 7) **Record** data, collected during the investigation, in the KS EpiTrax system under the data's associated **[tab]** in the case morbidity report (CMR).
- 8) As appropriate, use the **notification letter(s)**  and the disease **fact sheet**  to notify the case, contacts and other individuals or groups.

STANDARD CASE INVESTIGATION AND CONTROL METHODS

Case Investigation

- 1) Contact the medical provider who ordered testing and obtain the following information. (This includes medical records for hospitalized patients.)
 - Review and obtain information on any laboratory tests performed.
 - If CIDT was performed, record information on the type of and manufacturer of the test (if available). [Notes]
 - Even if only CIDT was performed and *Campylobacter* was not isolated from the clinical specimen, the case remains probable but should still be investigated.
 - Determine if further laboratory testing is needed.
 - If a probable case is part of an increasing number of probable cases for your jurisdiction or region, it may be necessary to have the stool specimen forwarded to [state laboratory for isolation procedures](#).
 - Review clinical notes to record the following:
 - Collect patient's demographics (address, birth date, gender, race/ethnicity, primary language, and phone number(s)). [Demographic]
 - Onset date and time of first symptoms of this episode [Clinical]
 - Exposure Period (count back 10 days from onset date) [Clinical]
 - If patient recovered, Recovery date and time [Clinical]
 - Hospitalizations: location and duration of stay [Clinical]
 - Outcomes: survived or date of death [Clinical]
 - Pregnancy status for women. [Clinical]
 - Any antibiotic treatment that occurred. [Clinical]
 - Symptoms: Diarrhea, bloody stools, abdominal pain, nausea, malaise, fever, or other symptoms. [Investigation – Symptoms]
 - Underlying immunodeficiency [Investigation – Symptoms]
- 2) Interview the case-patient to determine source, risk factors, and transmission setting: [Investigation – Exposure]
 - At least 3 phone attempts at different times of day should be made before an [Enteric Letter to Case](#) is used and the case is closed as lost to follow-up. [Investigation – Interview Information]
 - Collect epidemiological information that helps to establish risks of acquiring and transmitting infection [Epidemiologic]:
 - Patient's occupation, especially associations to food handling, healthcare, group living, daycare attendee or worker, or school attendee or employee (including volunteer work).
 - If a case-patient worked or attended school while ill, record the facility location.
 - Even if the case-patient did not work while ill record places of potential exposure (where case could have acquired or transmitted illness); including daycare, school, restaurants, recreational source, and group living.
 - For the exposure period (10 days prior to onset), examine: [Investigation]
 - In-state and out-of-state travel.

- Exposure to (contact with) others with diarrhea or campylobacter infection.
 - Attendance at restaurant or large group gathering. [Notes]
 - Water exposure; especially note patient's source of drinking water, plumbing or construction work on water systems, and ingestion of untreated water.
 - Animal exposure; consider exposure to farms, animal exhibits, manure and other types of contact with specific animals
 - Food exposure, especially note consumption of unpasteurized milk, milk products or juice and consumption of meat, poultry, eggs, and fresh produce.
 - For infants \leq 3 months of age, if a source is not identified, consider interviewing caretaker(s) and performing stool cultures even if asymptomatic. Also, carefully review food-handling practices to determine whether cross-contamination of infant formula or food may be involved.
- 3) Examining the epidemiological information, record where the infection was most likely imported from. (Indigenous or out-of-county, state, or U.S.)
[Epidemiologic].
- 4) Investigate epi-links among cases (clusters, household, co-workers, etc).
- If the case had contact with person(s) who have/had Campylobacter, determine if the other “cases” have been reported to the state:
 - Search EpiTrax for the possible case.
 - If found, record the previously reported record number in the record of the case you are investigating [Notes]
 - Clinically compatible cases that are epidemiologically linked and have not previously been reported should be investigated as a probable case and reported to KDHE-BEPHI.
 - For suspected outbreaks refer to [Managing Special Situations](#) section.

Contact Investigation

- 1) Review the patient's occupation and activities that were collected during the case investigation and recorded on the [Epidemiological] and [Investigation-Exposure] tab, especially those activities performed during the period the case-patient was symptomatic.
- 2) Consider the following types of contacts during the contact investigation:
 - Household and intimate/sexual contacts of case-patient.
 - Include those who ate food prepared by the symptomatic case-patient or food that was implicated as the source of the case-patient's infection.
 - School Contacts: Only with epidemiologic evidence of transmission in a school setting consider those who share similar exposure activities with cases (e.g. common food, drink, or animal sources)
 - Food service contacts: patrons of the establishment of an infected food handler if the food handler (1) worked while infectious, (2) had poor

personal hygiene, and (3) had the opportunity to have bare-hand contact with ready-to-eat food.

- Direct patient care provider contact: patients of an infected provider if there is evidence that the provider was (1) symptomatic with poor personal hygiene and (2) had an opportunity for bare-hand contact with the patient's ready-to-eat foods, oral medications, or oral treatments.
 - High risk contacts: those at risk for developing severe disease or those who may expose persons at high risk for severe disease.
- 3) After identifying potential contacts, evaluate whether a risk of transmission exists. Only if a risk of transmission exists, create a line listing of contacts at-risk of developing disease. Make note of any high risk contacts.
 - 4) Institute control measures; see [Isolation, Work and Daycare Restrictions](#).
 - 5) Follow-up with household and close contacts (especially high risk contact) as recommended under [Contact Management](#).

Isolation, Work and Daycare Restrictions

Campylobacteriosis is not listed in the Kansas Administrative Code for quarantine and isolation, but the Kansas Food Code should be followed for food handlers*:

Kansas Food Code 2012:

- Food handlers with diarrhea, fever or vomiting must be restricted from handling food, or be excluded from work if they serve high risk groups, until symptoms have resolved for 24 hours.

Exclusion is not allowing the employee to work at the facility;

Restriction is restricting the employee in the facility by not allowing food handling; cleaning of equipment, utensils or linens; or unwrapping of single-use articles.

High risk groups are immunocompromised or older adults in a health care or assisted living facility or are preschool age children in a facility that provides custodial care.

* *Workers in schools, residential programs, daycare and healthcare facilities that feed, provide oral hygiene, or dispense medications should follow the same restrictions as food handlers.*

- 1) Enteric precautions followed for the duration of acute symptoms.
- 2) Symptomatic people should be excluded from food handling, care of patients in hospitals, and care of people in custodial or child care centers until no longer symptomatic.
- 3) Asymptomatic but infected workers need not be excluded if proper personal hygiene measures, including hand hygiene, are maintained.
- 4) Children with diarrhea may not attend daycare or school until asymptomatic.

Case Management

- 1) [Educate](#) on measures to avoid future illness and to prevent transmission.
- 2) Additional stool cultures are not routinely indicated.
- 3) Additional follow-up may be needed if a case cares for young children, the elderly or handles food to assure compliance with work restrictions.
- 4) Initiate [outbreak](#) control measures appropriate to setting, as needed

Contact Management

- 1) Prophylaxis: None.
- 2) If a contact listing was created because of the high possibility of disease transmission, follow-up with the listed contacts.
 - The listed contacts should be entered into EpiTrax and follow-up should occur to determine if transmission occurred. [Contact]
 - Report the final disposition of each contact investigated. [Contact]
- 3) As needed, provide education on avoiding further exposures and to ensure proper medical care is obtained and precautions taken if symptoms develop.
- 4) Symptomatic contact:
 - Considered a probable case; [report](#) to KDHE-BEPHI
 - Encourage the ill contact to seek medical evaluation.
 - Initiate any restrictions.
- 5) In outbreak situations:
 - Cultures to confirm epi-linked cases may be warranted.
 - Contacts who are food handlers may need to be restricted from working with high risk populations.

Environmental Measures

- 1) Environmental Investigation: If a commercial food service, daycare center, public water supply or commercial raw milk dairy is implicated in transmission, coordinate with the proper regulatory agency to accomplish the following:
 - Inspecting the facility.
 - Collecting food, drink, or water samples
 - Consult the [KDHE Foodborne Illness and Outbreak Investigation Manual](#) for further information on facilities associated with food.
- 2) Environmental control measures:
 - Proper chlorination or boiling of water prevents illness transmission.
 - Clean and sanitize contaminated surfaces with 1% bleach or proper germicides.

Education

- 1) Instruct cases on the necessary restrictions.
- 2) Counsel contacts to watch for signs or symptoms of campylobacteriosis occurring within 10 days of exposure, and to seek medical attention if needed.
- 3) Provide education on preventing the spread of disease:
- 4) Stress that case should wash hands thoroughly with soap and water before eating/handling food or after using the toilet.
- 5) Emphasize cleaning fingernails and personal hygiene.
- 6) Remind contacts that when taking care of someone with diarrhea to scrub hands with plenty of soap and water after cleaning the bathroom, helping the person use the toilet, or changing diapers, soiled clothes or sheets.
- 7) Provide additional education on preventing future illness:
 - Hand washing: washing hands thoroughly with soap and water before

- eating/handling food and after handling raw food, using the toilet, changing diapers and handling pets, fowl, or other animals and/or feces.
- Avoid eating raw or undercooked meat, seafood or poultry. Cook poultry to an internal temperature of at least 170°F (77°C) for breast meat, and 180°F (82°C) for thigh meat - no longer pink and juices run clear.
 - Do not eat raw shellfish.
 - Do not drink unpasteurized milk or eat anything made from it.
 - Use only clean utensils, dishes and cutting boards to prepare food that is already cooked or will be eaten raw or lightly cooked. Anything used to prepare raw meat, seafood, or poultry, including hands and the table or counter top, should be washed thoroughly before touching other food.
 - Properly refrigerate and store perishable foods. Store in small containers and do not leave at room temperature for more than 2 hours.
 - Avoid drinking or swallowing untreated surface water. Surface water should be boiled or otherwise disinfected before consumption.

MANAGING SPECIAL SITUATIONS

A. Outbreak Investigation:

Outbreak definition: (1) An unexpected, unexplained increase in cases clustered by time, place, or person; or (2) two or more cases in different households with the same strain or pulsed-field gel electrophoresis (PFGE) pattern clustered by person, place or time (within the incubation period).

- Notify KDHE-BEPHI immediately, 1-877-427-7317.
 - Consult [KDHE Foodborne Manual](#) for outbreaks involving food.
- Organize and maintain all data related to outbreak:
 - Construct and maintain case listing which includes:
 - Record EpiTrax CMR, name, DOB (or age) and other demographics,
 - Symptoms;
 - Onset date and time; recovery date and time
 - Source of exposure (i.e., record number, setting, classroom),
 - Specimen collection date and lab results,
 - Case status (i.e., confirmed, probable, suspect)
 - All epidemiologic data will be reported and managed with the EpiTrax.
- Identify population(s) at risk of infection based on the scope and spread of the outbreak; use the information collected in case investigations to define:
 - Person: who is becoming ill (i.e., age, gender, occupations)
 - Place: where are the cases (i.e. classrooms, addresses) and to what settings or activities are they associated
 - Time: when did it start and is it still going on
- Enhance surveillance and perform active case finding:
 - Maintain active surveillance with medical providers serving the affected communities for two incubation periods from last confirmed case.
- Outbreak control:
 - Target efforts on those population(s) identified as at risk.
 - Evaluate the effectiveness of and consider amendments to the restrictions discussed in [Isolation, Work and Daycare Restrictions](#).

- Establish protocols for control measures necessary to slow or prevent the transmission of disease in affected settings.

B. Case Is a Food handler or Food Establishment Is Implicated:

- 1) Contact the Kansas Department of Agriculture (KDA) Division of Food Safety and Lodging at (785) 296-5600.
- 2) The assigned local food facility inspector will perform the following:
 - Interview the manager to identify other possible cases among staff or patrons within the past 10 days.
 - Inquire into any recent complaints from other patrons.
 - Execute any [work restrictions](#) for ill food handlers.
 - Report findings to KDHE (or local health department, if requested).
- 3) The local health department will perform or coordinate the following:
 - Collect stool samples from any staff or patron with history of diarrheal illness within the past 10 days.
 - Ensure proper work restrictions have been executed.
 - If needed, approve reinstatement of food handler(s) to full duties [after necessary conditions](#) have been met.

In addition, with a food handler case or if >1 case is associated to the facility:

- 1) An assigned local food inspector will also perform the following:
 - A thorough inspection of the establishment.
 - Collection of any suspected food samples.
 - Survey employees using the “Gastrointestinal Employee Survey”
 - Instruct the facility operator to call the health department if new cases of diarrhea occur in staff members in the next 2 weeks.
- 2) The local health department will also perform or coordinate the following:
 - Initiate an [outbreak investigation](#) and notify KDHE-BEPHI, if:
 - The associated cases are from different households, or
 - There are additional cases within the two week period.
 - Initiate a [contact investigation](#) if warranted based on inspection.

C. Public Gathering Implicated:

- 1) Food sources may include undercooked meat, cross-contaminated food, or possibly food contaminated by food handler.
- 2) Conduct active case finding; ask about recent illness among food handlers.
- 3) If a food establishment or distributor is implicated as the source of infection refer to “[Case Is a Food Handler or Food Establishment Is Implicated.](#)”
- 4) If animal sources are implicated:
 - Hygienic and control measures may need to be initiated on farms, petting zoos or fairs. (Refer to [Animals in Public Places Compendium.](#))
 - Pets and other domestic animals may need to be treated to control.
 - Proper hand washing after handling animals should always be stressed.

D. Commercial Dairy or Community Water Source Implicated:

Consult with KDHE-BEPHI epidemiology staff if a case reports drinking raw milk from a commercial dairy with no other identifiable source of infection or when the investigation implicates a community drinking water system.

E. Daycare Worker or Attendee:

For one case, proceed with the following activities:

- 1) Interview the operator and request a review of attendance records to identify other possible cases among staff or attendees in the past 10 days.
- 2) Coordinate the collection of stool specimens from any other attendees or staff with a history of diarrheal illness within the past 10 days.
 - Testing of all symptomatic individuals is not a good use of resources.
 - Stool cultures from three to five symptomatic individuals will help to confirm the diagnosis in a suspected outbreak situation.
 - Collect samples first from those who are still symptomatic followed by those who most recently had their symptoms resolve.
- 3) Reinforce the need to exclude symptomatic children or adults. (Asymptomatic, culture positive individuals are not excluded if proper personal hygiene measures are maintained.)

If >1 case or suspected case is identified among attendees or workers:

- 1) Contact KDHE-BEPHI and initiate an outbreak investigation.
- 2) Contact the KDHE Child-Care Licensing Program at (785) 296-1270, and/or the local daycare inspector to coordinate the following:
 - Thorough inspection of the facility.
 - Investigate hand washing, diapering and disinfection procedures.
 - Investigate for possible source of infection during last 10 days:
 - o Possible index cases.
 - o Animal contact (on-site and field trips).
 - o For suspected point source outbreaks, collect menus of food and drinks served during the last 10 days from the first date of onset.
 - Exclusion of symptomatic children and adults until no diarrheal symptoms for 24 hours. Continue the stricter exclusion policy until the outbreak is considered over with no new cases for a 2 week period following the last case's onset.
 - Recommend possible treatment for all culture positive individuals (symptomatic or asymptomatic) if they attend or work at the daycare or are household members of those who attend or work at the daycare.
 - Review findings with daycare operator and implement control measures.
- 3) The daycare center should not be closed to new admission or to readmission and temporary closure is not recommended. Permanent closure or revocation of license may occur if deemed necessary by the Child-Care Licensing Program based on additional findings.

In all instances:

- 1) Educate on how to prevent disease transmission at center and at home.
- 2) Instruct the facility operator to call the health department immediately if new cases of diarrhea occur in the 2 weeks following the last case.
- 3) Call or visit each week for 2 weeks after the last case's onset to verify no further cases and that appropriate hygienic measures are being carried out.

F. Health Care Setting Associated:

- 1) Hospitals: *Campylobacter*, while usually community acquired, has on rare occasion been associated with nosocomial infections.
 - Nosocomial describes infections not present or incubating prior to the patient being admitted but acquired in hospitals and usually observed >48 hours after admission. As the incubation period will vary to some extent based on underlying health conditions, each infection should be assessed individually. Nosocomial infections include those acquired in the hospital but not evident until after discharge.
 - Coordinate investigation efforts with hospital infection control.
- 2) Nursing home: Crowded communal living conditions and age-related risk factors including immune status and higher rates of antibiotic usage, dementia, and incontinence may allow transmission of enteric pathogens.
 - Coordinate investigation efforts through nursing home administrator.
 - Kansas Department of Aging (KDOA) should be notified if a nursing home, adult care, or long-term care facility is involved in an outbreak.
 - KDOA can be contacted at (785) 296-1265

G. Intentional Contamination

- 1) If suspected, notify local law enforcement and state public health officials.
 - Consider epidemiologic clues and law enforcement guidance to determine the threat level.
 - Observations during environmental assessments may provide evidence.
- 2) Implement “Chain of Custody” procedures for all samples collected, as they will be considered evidence in a criminal investigation.
- 3) Refer to the [KDHE Foodborne Illness and Outbreak Investigation Manual](#) for situations involving food.

DATA MANAGEMENT AND REPORTING TO THE KDHE

- A. Accept the case assigned to the LHD and record the date the LHD investigation was started on the [\[Administrative\]](#) tab.
- B. Organize and collect data, using appropriate data collection tools including:
 - The [Campylobacter Report Form](#) can be used to collect information.
 - Alternatively, investigators can collect and enter all required information directly into EpiTrax [\[Investigation\]](#), [\[Clinical\]](#), [\[Demographics\]](#), [\[Epidemiological\]](#) tabs.
 - During outbreak investigations, refer to guidance from a KDHE epidemiologist for appropriate collection tools.
- C. Report data collected during the course of the investigation via EpiTrax.
 - Verify that all data requested on the [Campylobacter Report Form](#) has been recorded on an appropriate EpiTrax [\[tab\]](#), or that actions are completed for a case lost to follow-up as outlined below.
 - Some data that cannot be reported on an EpiTrax [\[tab\]](#) may need to be recorded in [\[Notes\]](#) or scanned and attached to the record.
 - Paper report forms do not need to be sent to KDHE after the information is recorded and/or attached in EpiTrax. The forms should be handled as directed by local administrative practices.
- D. If a case is lost to follow-up, after the appropriate attempts to contact the case have been made:
 - Indicate 'lost to follow-up' on the [\[Investigation\]](#) tab with the number of attempts to contact the case recorded.
 - Record at least the information that was collected from the initial reporter.
 - Record a reason for 'lost to follow-up' in [\[Notes\]](#).
- E. Once the investigation is completed, the LHD investigator will record the date the investigation was completed on the [\[Administrative\]](#) tab and click the "Complete" button. This will trigger an alert to the LHD Administrator so they can review the case before sending to the state.
 - The LHD Administrator will then "Approve" or "Reject" the CMR.
 - Once a case is "Approved" by the LHD Administrator, BEPHI staff will review and close the case after ensuring it is complete and that the case is assigned to the correct event, based on the reported symptoms reported. (Review the [EpiTrax User Guide, Case Routing](#) for further guidance.)


ADDITIONAL INFORMATION / REFERENCES

- A. **Treatment / Differential Diagnosis:** Red Book: 2015 Report of the Committee on Infectious Diseases. 30th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2015.
- B. **Epidemiology, Investigation and Control:** Heymann. D., ed., Control of Communicable Diseases Manual (CCDM), 20th Edition. Washington, DC, American Public Health Association, 2015.
- C. **Case Definitions:** CDC Division of Public Health Surveillance and Informatics, Available at: wwwn.cdc.gov/nndss/
- D. **Kansas Regulations/Statutes Related to Infectious Disease:** www.kdheks.gov/epi/regulations.htm
- E. **KDHE Foodborne Illness and Outbreak Investigation Manual:** www.kdheks.gov/epi/download/kansas_foodborne_illness_manual.pdf
- F. **Animals in Public Places Compendium:** www.kdheks.gov/epi/human_animal_health.htm
- G. **Additional Information (CDC):** www.cdc.gov/ticks/index.html

ATTACHMENTS

- **Fact Sheet**
- **Sample Letter, Enteric to Case**

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1. Go to <View>; <Navigation Pane>; <Attachments> – OR – Click on the “Paper Clip”  icon.
2. Double click on the document to open.