

Shigellosis

Investigation Guideline

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Revision History:

Date	Replaced	Comments
08/2014	05/2012	Added table of contents. Updated laboratory analysis, Notification to Public Health, Isolation, Work and Daycare Restrictions, Data Management, and Management of Special Situations. More details added to Investigators Responsibilities. Reformatted Standard Case Investigation section to assist with EpiTrax system data entry. Revised Enteric Letter to a Case to apply specifically to Shigella. Reformatted Fact Sheet.
05/2012	02/2012	Updated investigation sections to agree with new surveillance system and added reporting form. Updated fact sheet and sample letters.
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. Incorporated specific agent recommendations from Enteric Outbreak in Daycares Manual into this investigation guideline. Note: Childcare guidance was modified to agree with current regulations with stricter control measures retained for the control of outbreaks. BEPHI replaced BSE throughout.

Shigellosis

Disease Management and Investigation Guidelines

CASE DEFINITION (CDC 2012)

Clinical Description for Public Health Surveillance:

An illness of variable severity characterized by diarrhea, fever, nausea, cramps, and tenesmus. Asymptomatic infections may occur.

Laboratory Criteria for Case Classification:

- **Confirmed:** Isolation of *Shigella* from a clinical specimen.
- **Suspect:** Detection of *Shigella* from a clinical specimen using a non-culture based method.

Case Classification:

- **Confirmed:** A case that meets the confirmed laboratory criteria for diagnosis. When available, O antigen serotype characterization should be reported.
- **Probable:** A clinically compatible case that is epidemiologically linked, i.e., is a contact of a confirmed case or a member of a risk group defined by public health authorities during an outbreak.
- **Suspect:** A case that meets the suspect laboratory criteria for diagnosis.

Comment: *Both asymptomatic infections and infections at sites other than the gastrointestinal tract, if laboratory confirmed, are considered confirmed cases that should be reported.*

LABORATORY ANALYSIS

Services available from the Kansas Health and Environmental Laboratories (KHEL):

- Storage and analysis of *Shigella* isolates from outside laboratories. (The submission of *Shigella* isolates to KHEL is required by law.)
- Culture of stool specimens from suspect cases during outbreak investigations. **Preapproval** is required through the KDHE Infectious Disease Response unit at 1-877-427-7317.
- Culture of stool specimens to assist in removal of work / daycare restrictions. Collection and shipment is arranged through the local health department with jurisdiction over the case.

Specimen collection criteria:

- Specimen type: Feces; marble size amount in Cary-Blair
- Collection materials: Enteric kit (bottle with Cary-Blair medium (0.16%))
- Timing of specimen collection:
 - To remove restrictions collect 2 specimens \geq 24 hours apart.
 - Collect the first specimen >48 hours after the discontinuation of any antibiotics.

Shipment of *Shigella* isolates to the KHEL as required by law:

- Isolate shipment: Use infectious disease mailers provided by KHEL.

For additional information concerning collection or transport call (785) 296-1620 or refer to www.kdheks.gov/labs/lab_ref_guide.htm

EPIDEMIOLOGY

Shigellosis has a worldwide distribution with an estimated 600,000 deaths occurring annually throughout the world. Secondary attack rates can be as high as 40% in households and among close contacts. Outbreaks can result from person-to-person transmission and/or contaminated food and water. There is an increased risk in certain populations, including homosexual men or in conditions of crowding where personal hygiene may be poor; such as prisons, institutions for children, mental hospitals and refugee camps.

DISEASE OVERVIEW

A. Agent:

Shigella is a gram-negative rod divided into 4 groups, including: *S. dysenteriae* (Group A), *S. flexneri* (Group B), *S. boydji* (Group C) and *S. sonnei* (Group D). Group A infections are serious with high fatality rates, but are rare in the United States. Group B infections are often associated with travel to/from developing countries. Over 75% of all *Shigella* infections in the U.S. are Group D.

B. Clinical Description:

Acute gastroenteritis with diarrhea, fever, nausea, vomiting, cramps and/or tenesmus (difficulty passing stool). When severe, stools contain blood, mucus and pus. While usually self-limiting to 4-7 days, severe dehydration can occur; especially with infants and the elderly. Asymptomatic infections can occur.

C. Reservoirs: Humans.

D. Mode(s) of Transmission:

Fecal-oral transmission with low infectious dose (10-200 organisms). Direct transmission is associated to poor hand washing and with certain sexual behaviors (e.g., oral-anal). Indirect transmission occurs via contaminated food, milk, water, inanimate objects (fomites) and houseflies (vectors).

E. Incubation Period:

Usually 1-3 days, range from 12 to 96 hours. Up to 1 week for *S. dysenteriae*.

F. Period of Communicability:

Variable as long as organisms are excreted, usually ≤ 4 weeks after onset. Asymptomatic carriers may transmit infection; rarely, a carrier-state persists for months. Antimicrobial treatment may decrease the shedding to a few days.

G. Susceptibility and Resistance:

Susceptibility is general. The elderly, debilitated, and malnourished are more at risk for severe disease and death. Breastfeeding is protective for infants. There is evidence of serotype specific immunity but only for short durations.

H. Treatment:

Antibiotics have been shown to shorten the duration of illness and bacterial shedding. Usage should be based on the clinical status of patient and sensitivity of organism. High levels of resistance to Ampicillin and TMP/SMX have been found in the United States. Fluid and electrolyte replacement may be necessary in severe cases. The use of antimotility agents is contraindicated.

NOTIFICATION TO PUBLIC HEALTH AUTHORITIES

Shigellosis 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 state and local health departments to the CDC:

As a nationally notifiable condition, shigellosis cases require a STANDARD report to the Center of Disease Control and Prevention (CDC).

1. STANDARD reporting requires KDHE-BEPHI to file an electronic report for cases within the next reporting cycle.
 - KDHE-BEPHI will file electronic reports weekly with CDC.
2. The **Local public health jurisdiction** will :
 - Start the investigation of the case **within 3 days** of receiving a notification and
 - Will report the information requested in the Kansas EpiTrax system, as soon as possible, ensuring that the electronic form is completed within 7 days of receiving a notification of a report.

INVESTIGATOR RESPONSIBILITIES

- 1) [Report](#) all confirmed, probable and suspect cases to the KDHE-BEPHI.
- 2) Contact medical provider to collect additional information and confirm diagnosis using current [case definition](#).
 - If *Shigella* was isolated, ensure a bacterial isolate is sent to KHEL.
 - Collect all information requested in [Step 1](#)) of case investigation.
 - Ensure that case is aware of his/her diagnosis.
- 3) Conduct [case investigation](#) to identify potential source of infection.
 - Complete an interview with the case to collect information requested on the [Shigella Investigation Form](#).
- 4) Conduct [contact investigation](#) to locate additional cases and/or contacts.
 - Only contacts at high risk of acquiring infection require follow-up.
- 5) Identify whether the source of infection is major public health concern,
 - Involvement of a foodhandler, daycare, or a direct patient care provider.
 - Suspected outbreak.
 - Public water supply involvement.
- 6) Initiate control and prevention measures to prevent spread of disease.
- 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 or is attending to the case and obtain the following. (This may require a request for medical records.)
 - Obtain clinical information on symptoms [Investigation-Symptoms], onset date and time and, if available, recovery date and time. [Clinical]
 - Calculate the exposure period, 4 days prior to the onset date. [Clinical]
 - Note any underlying immunodeficiency. [Investigation-Symptoms]
 - Examine laboratory testing, specifically culture results. [Laboratory]
 - If *Shigella* was isolated, ensure bacterial isolate was sent to KHEL.
 - Mark yes/ no to: “Specimen Sent to State Lab?” in EpiTrax. [Laboratory]
 - Determine if further laboratory testing is needed.
 - If suspect cases are increasing in number in your jurisdiction, it may be necessary to collect stool specimens for testing at KHEL.
 - Collect case’s demographics and contacting information (address, birth date, gender, race/ethnicity, primary language, and phone number(s)) [Demographic]
 - Record hospitalizations: location and duration of stay [Clinical]
 - Record outcomes: survived or date of death [Clinical]
- 2) Interview the case to determine source, risk factors and transmission settings:
 - At least 3 phone attempts at different times of day should be made before the 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: [Epidemiological]
 - Case’s occupation: food handler, healthcare worker, daycare attendee or worker, school attendee or worker, lab employee or student; indicate if the case volunteers at any of these occupations.
 - Note any group living arrangements
 - If the employee worked at or attended any facilities while ill: record the facility name, address, and phone number
 - Even if they did not work while ill record places of potential exposure (where they could have acquired or transmitted illness) this includes daycare, school, restaurants, recreational source, and group living.
 - For the period **4 days** prior to symptoms onset, examine:
 - In-state and out-of-state travel. [Investigation – General]
 - o Obtain dates and location(s).
 - o Include hiking, camping or hunting trips.
 - Attendance at restaurant or large group gathering.
 - o Record large gathering(s) type, name, location and exposure date(s). [Investigation – General]
 - o Record restaurant(s) location and exposure date(s) [Epidemiological]
 - Exposure to (contact with) others with diarrhea. [Investigation – General]
 - o Obtain contact’s onset date and exposure date(s) to case, relationship to case and contact’s occupation.

- To identify outbreaks, note if contact(s) had onset within or greater than 24 hours before/after case-patient's onset time.
 - Association with childcare (including contact with attendees): daycare, preschool, elementary school, camp, or any other. [Investigation – General]
 - Record childcare location and exposure dates [Epidemiological]
 - Food history (including place of purchase).
 - Source of food at home [Investigation-Food Source]
 - Examine risks such as vegetables, fruits or foods that were bare-handed without further cooking. [Investigation-Food]
 - Recreational water exposure, record type [Investigation-Water]
 - Record water location and exposure dates [Epidemiological]
 - Consumption of untreated/unfiltered water, record source, location and date of exposure [Investigation-Water]
 - For infants \leq 3 months of age, if a source is not identified, consider:
 - Collecting detailed epidemiologic data and performing stool cultures on caretaker(s), even if asymptomatic.
 - Carefully review food-handling practices to determine whether cross-contamination of infant formula or food may be involved.
 - Collect information from case for the [Contact Investigation](#). (See below).
- 3) Investigate epi-links among cases (clusters, household, co-workers, etc).
- If the case had contact with person(s) who have/had *Shigella*, 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]
 - Highly suspected cases, that have not previously been reported should be investigated as a suspect case and [reported](#) to KDHE-BEPHI.
 - For suspected [outbreaks](#) refer to Managing Special Situations section.

Contact Investigation

- 1) Review the case's occupation and activities that were collected during the case investigation and recorded on the [Epidemiological] tab, especially dates, activities and locations during the period from illness onset till the resolution of symptoms.
- 2) Consider the following types of contacts during a contact investigation:
 - Household and intimate/sexual contacts of case
 - Those who ate food that the case prepared or food that was implicated as the source of the case's infection.
 - Daycare contacts, consider the following situations to determine contacts:
 - All children are toilet trained or are all over 2 years of age: Consider only direct caregivers and room/classmates of the case
 - Non-toilet trained attendees present or if >1 employee or child is infected or if household contacts of \geq 2 separate attendees are infected: Consider all employees and attendees of a daycare
 - Daycare in which outbreak recognition is delayed by \geq 3 weeks: Consider all employees, attendees and household contacts of diapered

- attendees.
- Infectious food handler prepared food: Individuals who work the same shift in a kitchen and all daycare attendees and employees who ate food prepared by an infected food handler, especially if the case handled bare-handed ready-to-eat foods or worked while experiencing diarrhea.
 - School contacts: **Only** with epidemiologic evidence of transmission in a school setting should you investigate contacts. Consider those who share similar exposure activities with the cases (e.g. common food/drink, animal or recreational water sources).
 - Food service contacts: Patrons of the establishment of an infected food handler if (1) the food handler worked while infectious, (2) had poor personal hygiene, and (3) had the opportunity to have bare-hand contact with ready-to-eat food. (This information can be collected from the Kansas Department of Agriculture (KDA) inspector who investigates the establishment.)
 - Direct patient care provider contacts: Patients of an infected care 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.
 - Residential Facility / Institutional Contacts (Crowded Living Conditions):
 - Room or cellmates and those who share common bathroom facilities.
 - In conditions where personal hygiene is poor or with issues of fecal incontinence or toilet use, those who share common areas with cases.
- 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 and make note of any high risk contacts. **[Contact]**
- Risk of transmission is assumed to exist with the following exposures:
 - Household contacts and intimate/sexual contacts
 - Those who consumed food prepared by an infectious case
 - Those who consumed food associated to an outbreak
 - Risk of transmission increases if the following is present:
 - Cases exhibit lack of fecal continence (i.e. diapered children) or have poor personal hygiene, especially after using the bathroom.
 - Contacts exhibit frequent hand-to-mouth activity (i.e. toddlers and infants) or have poor personal hygiene, especially after assisting someone in the bathroom, changing a diaper, or any other activity that may result in possible exposure to someone else's feces
 - High risk contacts: those who may develop a severe infection or expose those at high risk for developing a severe infection. (i.e. older or immunocompromised adults or preschool age children)
- 4) Follow-up with household and other contacts (especially high risk contacts) as recommended under [Contact Management](#).
- 5) Institute control measures for school or day-care contacts as indicated under [Isolation, Work and Daycare Restrictions](#).

Isolation, Work and Daycare Restrictions

K.A.R 28-1-6 for *Shigella*:

- Enteric precautions shall be followed for the duration of acute symptoms.
- Each infected person shall be **excluded** from food handling, patient care, and any occupation involving the care of young children and the elderly until two negative stool cultures are obtained at least 24 hours apart and no sooner than 48 hours following discontinuation of antibiotics.
- No infected child shall attend a child care facility or family day care home until two negative stool cultures are obtained at least 24 hours apart and no sooner than 48 hours following the discontinuation of antibiotics..

For the purposes of the regulation “enteric precautions” shall mean thorough hand washing after attending to infectious cases or touching the feces of an infected person, disinfection of articles that have been in contact with infectious cases or feces, and sanitary disposal of feces.

School-aged children: With an understanding of and ability to practice good hygiene, children usually do not represent a risk of spreading this pathogen via the fecal-oral route. Children are a risk only if the infected child is unable to or fails to maintain good hygiene, including hand hygiene after toilet use. Children in diapers at any age constitute a far greater risk of spreading *Shigella*. In school settings:

1. Exclude children with diarrhea, vomiting, and fever until symptoms resolve.
2. During a school-based outbreak of *Shigella*, stronger exclusion measures may be warranted and will be based on consultations with the KDHE-BEPHI.

Recreational water use restrictions: Infected individuals (adults and children) with diarrhea caused by this pathogen should not use recreational water venues (i.e., pools, slides) until their symptoms have resolved for 2 weeks.

Kansas Food Code 2005:

- 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.
- *Follow additional restrictions / exclusion measures for food handlers infectious with or exposed to *Shigella* as listed in [Table 1](#).*

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.

* *Note*: Workers in schools, residential programs, daycare and healthcare facilities that feed, perform oral hygiene or dispense medications are subject to the same restrictions as food handlers.

Diarrhea?	Diagnosed with <i>Shigella</i> spp.?	Illness in last month with <i>Shigella</i> spp.	Exposed † to <i>Shigella</i> spp.	Restriction or Exclusion ‡	Reinstatement of Employee to Full Duties
Yes	Yes			<u>Exclude</u> from all facilities. Reduce to <u>restriction</u> (with no food handling) in facilities not serving highly susceptible populations* after asymptomatic for 24 hours.	With the approval from regulatory authority. (See minimum requirements below.) §
Yes	No			<u>Exclude</u> from facilities that serve highly susceptible populations*. <u>Restrict</u> in other situations.	After asymptomatic for 24 hours or with written medical documentation that the symptom is noninfectious.
No		Yes		<u>Exclude</u> from facilities that serve highly susceptible populations*.	With the approval from regulatory authority. §
No	No	No	Yes	<u>Restrict</u> from facilities that serve highly susceptible populations*.	3 days after employee was exposed or after household contact became asymptomatic.

(Refer to the KDHE Foodborne Illness and Outbreak Investigation Manual for additional information)

§ **Approval by a regulatory authority (i.e. local health officer) requires, at a minimum, written documentation of 2 consecutive negative stools taken 48 hours after discontinuance of antibiotics and 24 hours apart or a declaration that the person has been asymptomatic for 7 days.**

‡ **Exclusion** is not allowing the employee to work at the food establishment. **Restriction** is not allowing the employee to work with food; to clean equipment, utensils or linens; or to un-wrap single-use articles in the food establishment.

* A **highly susceptible population** is more likely to experience foodborne disease because they are immunocompromised or older adults and in a facility that provides health care or assisted living services, such as a hospital or nursing home; or preschool age children in a facility that provides custodial care, such as a daycare center.

† **Exposure** is defined as a food handler consuming or preparing food implicated in a foodborne outbreak of STEC or that was prepared by a person infected with STEC or a food handler who has a household contact that attended or worked at a setting where there was a foodborne outbreak of STEC or who was diagnosed with STEC.

Case Management

- 1) Educate case on measures to avoid future illness and to prevent transmission.
- 2) Follow-up is needed to assure compliance with [restrictions or exclusions](#) if:
 - Case cares for young children, the elderly or patients;
 - Case or exposed contact handles food; or
 - Case attends a daycare or family daycare home.
- 3) Collect additional specimens for culture ONLY if necessary to lift restrictions.
 - Coordinate testing and shipping of specimens with the KHEL.
- 4) Initiate outbreak control measures appropriate to setting, as needed
 - If necessary, reference the [Kansas Community Containment Toolbox](#).
- 5) Report any changes in patient status, especially complications, hospitalizations, or death. *[Clinical]*

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 to determine if transmission occurred and to identify any high risk situations *[Contact]*
 - Collect information on each contact's health status, noting any symptoms
 - Collect information on each contact's occupation.
 - A contact that is a food-handler should be restricted from facilities that serve highly susceptible populations. Consult [Table 1](#).
 - Note any other high risk contacts or situations and handle appropriately.
- 3) As needed, provide education on avoiding further exposures and to ensure proper medical care is obtained and precautions taken if symptoms develop.
- 4) A symptomatic contact is consider a probable case requiring investigation and [reporting](#) to KDHE-BEPHI *[Contact]*
(On the Contact Tab of the CMR, click 'Show' beside the symptomatic contact on the listing. When View Contact Event opens in show mode, select 'Promote to CMR')
 - Initiate any [restrictions](#) needed for the probable case (symptomatic contact)
 - Encourage the symptomatic contact to seek medical evaluation.
- 5) In outbreak situations:
 - Cultures to confirm epi-linked cases may be warranted
- 6) As needed, provide education on avoiding further exposures and to ensure proper medical care is obtained and precautions taken if symptoms develop.

Environmental

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:

- 1) Inspecting the facility.
- 2) Collecting food, drink or water samples

Environmental control measures:

- 1) Proper chlorination or boiling of water prevents illness transmission.
- 2) Clean and sanitize contaminated surfaces with 1% bleach or proper germicides.

Education

- 1) Instruct on the necessary restrictions.
- 2) Counsel contacts to watch for signs or symptoms within 1 week of exposure and to seek medical attention if needed.
- 3) Provide education on preventing the spread of disease:
 - 1) Stress that case should wash hands thoroughly with soap and water before eating/handling food or after using the toilet.
 - 2) Education should emphasize cleaning fingernails and personal hygiene.
 - 3) Symptomatic individuals should not prepare food / drinks for others.
 - 4) Remind contacts that when taking care of someone with diarrhea 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.
- 4) Provide education on preventing future illness:
 - 1) Hand washing: wash hands thoroughly with soap and water before eating/handling food or after handling raw food, using the toilet, changing diapers and handling pets, fowl, or other animals and/or feces.
 - 2) Wash fresh produce before cutting or consuming.
 - 3) 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.
 - Consult [KHDE Childcare Outbreak Manual](#) for childcare.
- Organize and maintain all data related to outbreak:
 - Construct and maintain case listing which includes:
 - Record number, name, DOB (or age) and other demographics,
 - Symptoms; onset date and time; recovery date and time
 - Source of exposure (i.e., case ID, setting, classroom),
 - Specimen collection date and lab results,
 - Case status (i.e., confirmed, probable, suspect)
 - All epidemiologic data will be reported and managed with 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, address) 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 using active surveillance with medical providers and others serving the affected community for 1 week (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.
- 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 week.
 - Inquire into any recent complaints from other patrons.
 - Execute any [work restrictions](#) for ill food handlers.
 - If there is going to be a restaurant specific questionnaire used and/or a case control study conducted, the inspector will collect a menu and credit card receipts.
 - 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 week.
 - Ensure proper [work restrictions](#) have been executed.
 - If needed, approve reinstatement of food handler(s) to full duties [after necessary conditions](#) have been met.
 - If more than one case of gastrointestinal illness is associated to the restaurant, the local health department will contact those that are known to be ill to identify if the cases are from different households. If they are, the local health department will perform the following:
 - Initiate an [outbreak investigation](#) and notify KDHE-BEPHI.
 - Collect contact information for all individuals who may have been exposed to the food establishment, starting with those that were eating with the ill individuals and expanding the contact investigation, as needed, to other patrons based on guidance from KDHE-BEPHI.
 - Interview the ill individuals and others exposed using either a generic or restaurant-specific foodborne outbreak questionnaire.
 - Request and collect stool specimens from 2-5 ill persons.

C. Public Gathering Implicated:

- 1) Determine if anyone who prepared food for the gathering had diarrhea during the week prior to food preparation.
- 2) Conduct active case finding; determine if any other food preparers or attendees developed diarrhea within 4 days after the gathering.
- 3) Collect stool specimens for culture from any symptomatic food handler.
- 4) 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](#)."

D. Daycare Worker or Attendee:

For one case, proceed with the following activities:

- Interview the operator and request review of attendance records to identify other possible cases among staff or attendees in the past week.
- Coordinate the collection stool specimens or rectal swabs from any other attendees or staff with a history of diarrheal illness within the past week.
- Reinforce the need to exclude:
 - All symptomatic children and adults with diarrhea, vomiting, and fever until symptoms resolve.
 - All culture positive (symptomatic and asymptomatic) attendees and workers involved in child care or food handling until after the submission of two negative stool samples taken from the excluded person 24 hours apart and, if treated, 48 hours after the discontinuation of any antibiotic treatment.

If >1 case or suspected case is identified among attendees or workers at a daycare facility, a thorough inspection of the facility is indicated.

- 1) Contact KDHE-BEPHI and initiate an [outbreak investigation](#).
 - Refer to [Control of Enteric Disease Outbreaks in Child-Care Facilities](#)
- 2) Contact the KDHE Child-Care Licensing Program at (785) 296-1270, and/or the local daycare inspector to coordinate the following:
 - Performance of a thorough inspection of the facility.
 - Investigate hand washing, diapering and disinfection procedures.
 - Investigate for possible source of infection during last 7 days:
 - Possible index cases
 - Water-play areas
 - For suspected point source outbreaks, collect menus of food and drinks served during the last 4 days from the first date of onset.
 - Administration of a findings review with the operator and implementation of control measures.
- 3) Request stool samples from the following:
 - All symptomatic children, food handlers/childcare givers, and household/close contacts.
 - Asymptomatic children in the “class or room” of the sick children if the group includes non-toilet trained children.
 - Asymptomatic food handlers and childcare givers.
 - Asymptomatic household/close contacts who are engaged in sensitive occupations such as food handling or direct patient care.
- 4) Exclusion and readmission:
 - Continue to exclude culture positive workers and attendees until two negative stools are collected as required.
 - In addition, exclude all children and adults with diarrhea, vomiting, or fever until after symptoms has ceased for 24 hours. (Requiring one “formed” stool before readmit is an effective control measure.)
- 5) Antibiotic resistance and treatment:
 - Due to an increase in antibiotic resistance among strains of *Shigella spp.*, an antibiogram should be obtained early in the outbreak.

- o Provide the antibiogram to the physicians of sick individuals.
 - o Do not assume that simultaneous outbreaks at different day cares share the same antibiogram. Obtain an antibiogram for each center.
 - Recommend all lab-confirmed children and adults (symptomatic and asymptomatic) seek medical evaluation for treatment.
 - o Treatment cannot be mandated, but public health measures can still include restriction of the activities of stool positive individuals.
 - Encourage any symptomatic individual to submit a stool specimen for culturing to confirm diagnosis prior to any antibiotic treatment.
- 6) Closing of daycares:
- Close to new admissions when there is evidence of noncompliance with control measures or if there is continued transmission within the center.
 - Do not close to readmission or enforce a temporary closure, as this may result in the spread of infection to other daycares.
 - Permanent closure/revocation of license may occur only if deemed necessary by the Child Care Licensing Program.
- 7) Notification: use the [Sample Parent Letter](#).

If there is continued transmission with new cases occurring 1-2 weeks after the initiation of above control measures, the local health officer / administrator or designee may use the following measures:

- 1) Re-inspect to ensure control measures are being employed.
- 2) If not already done, consider closing the daycare to new admissions, but still not to readmission or temporary closure.
- 3) Consider testing all children regardless of the type of enrollees.
- 4) Exclude all symptomatic and all asymptomatic culture positive individuals until cessation of symptoms for 24 hours and after submission of two negative stool samples taken 24 hours apart and, if treated, 48 hours after the end of any antibiotic treatment.
- 5) Consider testing previously treated children that may have not been tested to assess treatment effectiveness.
- 6) For facilities with the capability, consider cohorting:
 - Asymptomatic, stool positive (or previously positive) children and staff may be placed in separate convalescent rooms away from healthy individuals, with the provision of separate restrooms when possible.
 - Individuals may be released after two consecutive stool samples are taken 24 hours apart and, if treated, 48 hours after the discontinuation of any antibiotic treatment.

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.
- 3) Call or visit each week for two weeks after the last case's onset to verify no further cases and that appropriate hygienic measures are being carried out.

E. Community Water Source or Commercial Dairy is Implicated:

Consult with the State epidemiology staff when the investigation implicates that a community drinking water system.

F. Health Care Setting Associated:

- 1) Hospitals: *Shigella* has rarely 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 should be notified if a nursing home, adult care, or long-term care facility is involved in an outbreak.

G. Residential Facility or Institutional Outbreaks:

- 1) Special measures may be required, including separate housing for cases and new admissions, vigorous program of supervised hand washing, and repeated cultures of patients and attendants.
- 2) Groups that include non-toilet trained or young children, those who are mentally deficient and those without an adequate water or hand washing facilities are the most difficult to control.
- 3) Coordinate efforts with institutional medical staff and appropriate regulatory agency. (For example, the Kansas Department of Corrections should be notified of outbreaks involving state prisons.)

H. Intentional Contamination

Shigella dysenteriae is a category B agent and food safety threat, it is moderately easy to disseminate, results in moderate morbidity but low mortality, and requires specific enhancements of CDC's diagnostic capacity and disease surveillance. (In 1996, *Shigella dysenteriae* was used to intentionally contaminate food in a laboratory break room.).

- 1) If suspected, notify local law enforcement and state public health officials.
 - Consider epidemiologic clues and law enforcement guidance.
 - 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 questionnaires, case listings (spreadsheets), and investigation forms, including:
- EpiTrax [Shigella Investigation Form](#) (This is a paper-based form that allows investigators to collect all required information without being logged into EpiTrax.)
 - Alternatively, investigators can collect and enter all required information directly into EpiTrax **[Investigation]**, **[Clinical]**, **[Demographics]**, and **[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 [Shigella Investigation 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 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 medical records.
 - Record a reason for 'lost to follow-up' in **[Notes]**.
- E. Once the investigation is completed, the LHD investigator will 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 the case to ensure completion before closing the case. (Review the [EpiTrax User Guide, Case Routing](#) for further guidance.)

ADDITIONAL INFORMATION / REFERENCES

- A. **Treatment / Differential Diagnosis:** American Academy of Pediatrics. Red Book: Report of the Committee on Infectious Disease, 29th Edition. Illinois, Academy of Pediatrics, 2014.
- B. **Epidemiology, Investigation and Control:** Heymann. D., ed., Control of Communicable Diseases Manual, 19th Edition. Washington, DC, American Public Health Association, 2010.
- C. **Case Definitions:** CDC Division of Public Health Surveillance and Informatics, Available at: www.cdc.gov/osels/ph_surveillance/nndss/casedef/case_definitions.htm
- D. **Quarantine and Isolation:** Kansas Community Containment Isolation/ Quarantine Toolbox Section III, Guidelines and Sample Legal Orders www.kdheks.gov/cphp/operating_guides.htm
- E. **KDHE. Control of Enteric Disease Outbreaks in Child-Care Facilities, 2011:** www.kdheks.gov/epi/download/Enteric_Disease_in_Daycare_Centers.pdf
- F. **Kansas Regulations/Statutes Related to Infectious Disease:** www.kdheks.gov/epi/regulations.htm
- G. **KDHE Foodborne Illness and Outbreak Investigation Manual:** www.kdheks.gov/epi/download/kansas_foodborne_illness_manual.pdf
- H. **Additional Information (CDC):** www.cdc.gov/health/default.htm

ATTACHMENTS

- **Fact Sheet**
- **Sample Letter, Shigella to Case**
- **Sample Letter, To Parent for Daycare Outbreak**

To view attachments in the electronic version:

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