

Salmonellosis Investigation Guidelines

Contents

Investigation Protocol

- **Investigation Guidelines**

Investigation Forms

- **General Investigation Forms**
- **Enteric Supplemental Form**
- **Enteric Supplemental Form, Daycare Staff**

Supporting Material

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

Salmonellosis (Non-Typhoid)

Disease Management and Investigation Guidelines

CASE DEFINITION (CDC 2005)

A. Clinical Description for Public Health Surveillance:

An illness of variable severity; commonly manifested by diarrhea, abdominal pain, nausea, and sometimes vomiting. Asymptomatic infections may occur, and the organism may cause extraintestinal infections.

B. Laboratory Criteria for Case Classification:

- Isolation of *Salmonella* from a clinical specimen.

C. Case Classification:

- Confirmed: A case that meets the laboratory criteria for diagnosis. When available, O and H antigen serotype characterization should be reported.
- Probable: A clinically compatible case that is epidemiologically linked to a confirmed case.
- Suspect: *Salmonella* positive laboratory results that were not confirmed by isolation of *Salmonella*. (KDHE definition used for data management)

D. Laboratory Testing:

- Collection: Use an enteric kit (bottle with a Cary-Blair medium (0.16% agar))
- Specimen: Feces
- Amount: Marble size (3-10 gram sample preferred over rectal swabs)
- Timing: Shedding of organism may be intermittent; the collection of specimens over several days may increase chances of isolation.
- Submission of *Salmonella* isolates to the Kansas Health and Environmental Laboratories (KHEL) is required by law. Pulsed-field gel electrophoresis (PFGE) is performed on all *Salmonella* isolates at KHEL.
- For additional information and/or questions concerning isolate submission, specimen collection/transport and laboratory kits call (785) 296-1620 or refer to online guidance at http://www.kdheks.gov/labs/lab_ref_guide.htm.

E. Bioterrorism Potential:

As 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 1984, the intentional *S. typhimurium* contamination of The Dalles, Oregon salad bars resulted in 751 illnesses.

F. Outbreak Definition:

- An unexpected, unexplained increase in cases clustered by time, place, or person; or
- 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 for the agent).

INVESTIGATOR RESPONSIBILITIES

A. Investigation Related Tasks and Activities:

- 1) Confirm diagnosis with appropriate medical provider.
 - Before contacting the patient, discuss with the health care provider what the patient has been told about his/her evaluation for disease.
 - Obtain information that supports clinical findings in case definition and information on the date of service or onset date of the symptoms.
 - Obtain information on laboratory tests performed and results.
 - If *Salmonella* was not isolated from the clinical specimen, contact laboratory to have the specimen forwarded to state lab for isolation.
 - If *Salmonella* was isolated from clinical specimen, ensure bacterial isolate was sent to state lab.
 - If patient hospitalized, obtain medical records, including admission notes, progress notes, lab report(s), and discharge summary.
- 2) Conduct case investigation to identify potential source of infection.
- 3) Conduct contact investigation to locate additional cases and/or contacts.
 - Determine if case is involved in a high-risk occupation or if another special situation is involved (e.g. food handler, daycare provider or attendee, direct patient care provider).
- 4) Identify whether the source of infection may be of major public health concern, such as a commercial raw milk dairy or public water supply.
- 5) Initiate control and prevention measures to prevent spread of disease.
 - Provide education that includes basic information about the disease and way to prevent transmission of illness.
 - If needed, work with appropriate regulatory personnel to ensure that work restrictions or exclusions are initiated for high-risk cases and/or contacts (e.g. food handler, daycare provider/attendee, direct patient care provider).
- 6) Report all cases to the KDHE Office of Surveillance and Epidemiology at KDHE using established methods.

B. Notifications:

- No special notifications or additional reporting unless the case is associated with an outbreak. The investigator should then immediately notify the Local Health Officer, the local on-call epidemiologist and KDHE (1-877-427-7317).
- As appropriate, use the notification letter and the disease fact sheet to notify the case, contacts and other individuals or groups.

EPIDEMIOLOGY

Salmonellosis has a worldwide distribution. In the United States, an estimated 5 million cases occur annually. Between 60-80% of these cases are sporadic but large outbreaks have occurred in institutional settings and nationwide from common food sources.

DISEASE OVERVIEW

A. Agent:

A gram-negative bacillus with 4 distinct species causes *Salmonella*; more than 2,000 serotypes have been identified.

B. Clinical Description:

Acute gastroenteritis with sudden onset of headache, fever, abdominal pain, diarrhea, nausea and sometimes vomiting. Dehydration may be severe.

Salmonellosis may also present as septicemia or as a focal infection anywhere in the in the body and may cause abscesses, arthritis, meningitis, endocarditis, pericarditis, pneumonia, or pyelonephritis. Asymptomatic infections also occur.

C. Reservoirs:

Domestic and wild animals, including: livestock, pets, poultry and other birds, reptiles and amphibians. Humans may also be a source of infection.

D. Mode(s) of Transmission:

Fecal-oral route transmission. The most common mode of transmission is ingestion of food or water that has been contaminated with human or animal feces or food derived from infected animals. Transmission occurs by ingestion of organisms in water or food contaminated by feces of an infected animal or person or food derived from infected animals. Handling raw meat or poultry products, or contact with infected reptiles, can also result in transmission.

E. Incubation Period:

Range 6 hours to 3 days; usually within 12-36 hours after initial exposure.

F. Period of Communicability:

Extremely variable, usually several days to several weeks dependent upon the course of infection. A carrier state can continue for over 1 year in 1% of adults and 5% of children under 5 years of age, especially infants. Prolonged, asymptomatic fecal shedding can promote person-to-person transmission.

G. Susceptibility and Resistance:

Susceptibility is general and is usually increased due to achlorhydria, antacid or broad-spectrum antibiotic use, GI surgery, neoplastic disease, immunosuppressive therapy, or other debilitating conditions including malnutrition. It is possible to become reinfected due to the many serotypes associated with Salmonellosis.

H. Treatment

Antibiotic treatment does not shorten the course of the disease and may prolong carriage and encourage the appearance of resistant strains. Reserve treatment for those with continued high fevers or invasive disease, infants < 2 months, the elderly, debilitated, and those with HIV or sickle cell disease. If treatment is indicated, antibiotic sensitivities should be established before treatment begins.

STANDARD CASE INVESTIGATION AND CONTROL METHODS

Standard investigation activities include the following:

- 1) Confirmation of diagnosis using case definition.
- 2) Collection of demographic data (birth date, county, sex, race/ethnicity)
- 3) Collection of clinical data (symptoms and laboratory results supporting case definition, onset date and time, and if available recovery date and time).
- 4) Determination of risk factors (e.g., close contact with another case, association with daycare, hospital, restaurant or animals, travel history).
- 5) Investigation of epi-links among cases (cluster, household, co-workers, etc).

Standard investigation **includes** completion of the General Investigation Form and Enteric Supplemental Form. Further investigative activity should include:

A. Case Investigation - Identify Potential Source of Infection:

Focus within the incubation period on potential sources of infection:

- Exposure to others with diarrhea in or outside of household. Obtain relationship to case, occupation(s) and dates.
- Food history; 3 days prior to onset, including place of purchase (e.g., poorly cooked meat, poultry or eggs, unpasteurized dairy products, vegetables, fruits or sprouts). Consider food-handling practices or cross-contamination.
- Restaurant or group gathering history, 3 days prior to onset. Obtain name, location of restaurant / gathering, food eaten and exposure dates.
- Contact with animals 3 days prior to onset. Specify type (e.g. pets, reptiles) and location (e.g. farm, petting zoo, school).
- In-state and out-of-state travel up to 1 weeks prior to onset. Obtain dates and locations. (Including hiking, camping or hunting trips.)
- Drinking water sources. Specify type (e.g. private, treated, or bottled)
- Recreational water exposure. Obtain dates, locations and participation type.
- Childcare or residential institution association. Obtain dates and locations.
- Health history; underlying medical conditions, medical/surgical or GI procedures, medicines. (Including over-the-counter and “organic/holistic” or vitamins and herbs.)
- Occupation; those at high-risk for transmitting illness include food handlers, childcare provider and persons involved in direct patient care.
- For infants \leq 3 months of age, if a source is not identified, may need to obtain detailed epidemiologic data and 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.

B. Contact Investigation – Identify Exposed Individuals / Populations:

Consider the following contact types during a *Salmonella* contact investigation:

- General contacts: Household, close contacts and sexual partners of a case.
- Daycare contacts:
 - All direct caregivers and room/classmates of the case in a daycare with only children who are toilet trained or who are all over 2 years of age.
 - All employees and attendees of a daycare with non-toilet trained attendees, if one or more employee or child is infected or if household

- contacts of two or more separate attendees are infected.
- All employees, attendees and household contacts of diapered attendees of a daycare in which outbreak recognition is delayed by ≥ 3 weeks.
 - Individuals who work the same shift in a daycare kitchen with an infectious food handler are also considered contacts.
 - Daycare attendees and employees who eat food prepared by an infected food handler, especially if the food handler handled ready-to-eat foods with bare hands or worked while experiencing diarrhea.
 - With epidemiologic evidence of transmission in a school setting consider those who share similar exposure activities with the cases (e.g. common food/drink, animal or recreational water sources).
 - Food Service Contacts:
 - Co-workers who work the same shift as the infected food handler.
 - 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.

C. Isolation, Work and Daycare Restrictions

- K.A.R 28-1-6 for *Salmonella* (non-typhoidal):
 - Enteric precautions 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 no longer symptomatic.
 - Any asymptomatic and convalescent infected person without diarrhea may be excluded from, and may return to work by the order of the local health officer or the Kansas Secretary of Health and Environment. This measure is usually reserved for control of outbreaks.
- School / daycare attendees and workers are excluded from school or daycare until symptoms have resolved.
- Food handlers are restricted from handling food, or are excluded from work if they serve high risk groups until symptoms of diarrhea, fever or vomiting have resolved for 24 hours. (Refer to the KDHE Foodborne Illness and Outbreak Investigation Manual for more information.)
 - Workers in schools, residential programs, daycare and healthcare facilities, who feed, give mouth care or dispense medications to clients subject to the same restrictions as food handlers.

Note: Exclusion is not allowing the employee to work at the food facility. 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 facility. High risk groups are more likely to experience foodborne disease because they are immunocompromised or older adults in a facility that provides health care or assisted living services, such as a hospital or nursing home; or are preschool age children in a facility that provide custodial care, such as a daycare center.

D. Case Management, Including Follow-up of cases:

- Educate case on measures to avoid future illness and its transmission.

- Follow-up is indicated if a case cares for young children, the elderly or patients or handles food to assure compliance with work restrictions.
- Additional stool cultures are not routinely indicated.
- If necessary, reference the Kansas Community Containment Toolbox for templates concerning isolation measures.

E. Contact Management, Including Protection of Contacts:

- Protection or prophylaxis: None.
- Provide education on avoiding further exposures and to ensure proper medical care is obtained and precautions taken if symptoms develop.
- Symptomatic contact: Considered a probable case; initiate any work or daycare restrictions. Encourage to seek medical evaluation.
- Cultures to confirm epi-linked cases may be warranted in outbreaks.
- Follow-up of contacts may be needed to assure no transmission of disease.

F. Environmental Measures:

- None, unless a commercial food service facility, daycare center, public water supply or commercial raw milk dairy is implicated in transmission. In which case the following activities should be coordinated through the proper regulatory agency:
 - Inspection of the facility.
 - Collection of food, drink or water samples
- Consult the KDHE Foodborne Illness and Outbreak Investigation Manual.
- Proper chlorination or boiling of water prevents illness transmission.
- Clean and sanitize potentially contaminated surfaces with 1% bleach or proper germicides.

G. Education:

- Advise cases and contacts on measures to avoid future exposures.
 - Emphases on hand washing, cleaning fingernails and personal hygiene.
 - Washing hands thoroughly with soap and water before eating/handling food or after handling raw food, after using the toilet, after changing diapers and after handling pets, fowl, reptiles/amphibians or other animals and/or feces.
 - Avoid eating raw or undercooked meat, poultry or eggs. Cook poultry to an internal temperature of at least 170°F (77°C) for breast meat, and 180°F (82°C) for thigh meat – meat no longer pink and juices run clear.
 - 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 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.

- When taking care of someone who has 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 soiled sheets.
- As needed, inform of communicability, incubation period and symptoms.
- Use the “Public Health Fact Sheet on Salmonella” to assist with education.

MANAGING SPECIAL SITUATIONS

A. Outbreak Investigation:

- Notify KDHE immediately, 1-877-427-7317.
- Consult KDHE Foodborne Illness and Outbreak Investigation Manual for outbreaks involving food.
- Consult KDHE Control of Enteric Outbreaks in Child-Care Facilities for circumstances involving child-care.
- Organize and maintain all data related to outbreak:
 - Construct and maintain case listing which includes:
 - KS-EDSS ID,
 - Name, DOB (or age) and any other specific demographics,
 - Symptoms; onset date and time; recovery date and time
 - Source of exposure (i.e., case ID, setting, classroom),
 - Specimen collection date,
 - Lab results,
 - Case status (i.e., confirmed, probable, suspect)
 - Use tracking tools (logbooks, chalkboards or databases) to record actions needed for each suspected case (i.e., deliver stool kit, call)
- 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:
 - 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.
 - Establish protocols for control measures necessary for all likely situations (i.e., exposure in child care center, school).

B. 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 2 weeks.
- Coordinate the collection stool specimens from any other attendees or staff with a history of diarrheal illness within the past 2 weeks.
 - 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.
- Reinforce the need to exclude symptomatic children or staff.
- Educate on how to prevent disease transmission at center and at home.
- If >1 case or suspected case is identified among attendees or workers at a daycare facility, a thorough inspection of the facility is indicated.
 - Contact KDHE and refer to the “Outbreak Investigation” section above.
 - Coordinate activities with the local daycare inspector and the KDHE Child-Care Licensing Program.
 - Exclude all persons with diarrhea, vomiting or other gastrointestinal symptoms from the daycare until 24 hours after the cessation of symptoms. (Continue until the outbreak is considered over with no new cases for 2 week period following the last case’s onset.)
 - Investigate hand washing, diapering and disinfection procedures.
 - Investigate for possible source of infection and routes of transmission:
 - Suspect index case.
 - Animal contact (on-site and field trips).
 - For suspected point source outbreaks, collect menus of food and drinks served during the last 3 days from the first date of onset.
 - Review findings with daycare operator and implement control measures.
 - The day-care 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.
- The facility operator should be instructed to call the health department immediately if new cases of diarrhea occur.
- 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.

C. Case Is a Food Handler or Restaurant Is Implicated:

For one case, proceed with the following activities:

- Coordinate the following activities with the local food facility inspector and the Kansas Department of Agriculture (KDA) as needed.
 - KDA Division of Food safety and Lodging regulates grocery stores, convenience stores, restaurants, schools, senior meal sites, mobile food units, lodging facilities, food wholesalers and warehouses, food processors and food manufacturers.
- Interview the manager and identify other possible cases among staff or patrons within the past 2 weeks.
 - The first page of the “Gastrointestinal Employee Survey” in the KDHE Foodborne Illness and Outbreak Manual can be used as a tool.
- Coordinate the collection of stool samples from any staff member with history of diarrheal illness within the past 2 weeks.
- Refer to the above “Isolation, Work and Daycare Restrictions” for further instruction on exclusion and restriction of food handlers.

- If a case or suspect case is identified among staff or if >1 case or suspected case is associated with the facility, a thorough inspection of the establishment is indicated.
 - For a suspected outbreak, notify the KDHE and refer to the “Outbreak Investigation” section above.
 - Coordinate inspection, collection of any food samples and surveys with the food facility inspector.
 - Use the complete “Gastrointestinal Employee Survey” to identify ill employees.
- The facility operator should be instructed to call the health department if new cases of diarrhea occur.

D. Commercial Dairy or Community Water Source Implicated:

- Consult with the State 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 that a community drinking water system.

E. Public Gathering Implicated:

- Sources may include undercooked meat, cross-contaminated food, improperly stored or handled foods, or food contaminated by food handler.
- Conduct active case finding; ask about recent illness among food handlers.
- 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.”
- If animal sources in public places are implicated:
 - Hygienic and control measures may need to be initiated on farms, petting zoos or fairs. (Refer to Animals in Public Places Compendium)
 - Proper hand washing after handling animals should always be stressed.

F. Health Care Setting Associated:

- Hospitals: *Salmonella spp.*, are occasionally associated with nosocomial infections. Sources of infection include food, person-to-person, contaminated instruments and asymptomatic infants.
 - 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.
- 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. Intentional Contamination

- 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.
- Implement “Chain of Custody” procedures for all samples collected, as they will be considered evidence in a criminal investigation.

DATA MANAGEMENT AND REPORTING TO THE KDHE

- A.** Organize, collect and report data utilizing the “General Investigation Form” and “Enteric Disease Supplemental Form”.
- B.** Report data electronically via KS-EDSS or by fax, include:
 - All essential data that was collected during the investigation, especially data that helps to confirm or classify a case.
 - All information collected on the supplemental form.

ADDITIONAL INFORMATION / REFERENCES

- A. Treatment / Differential Diagnosis:** American Academy of Pediatrics. 2006 Red Book: Report of the Committee on Infectious Disease, 27th Edition. Illinois, Academy of Pediatrics, 2006.
- B. Epidemiology, Investigation and Control:** Heymann. D., ed., Control of Communicable Diseases Manual, 18th Edition. Washington, DC, American Public Health Association, 2004.
- C. Case Definitions:** CDC Division of Public Health Surveillance and Informatics, Available at: http://www.cdc.gov/ncphi/diss/nndss/casedef/case_definitions.htm
- D. Quarantine and Isolation:** Kansas Community Containment Isolation/ Quarantine Toolbox Section III, Guidelines and Sample Legal Orders <http://www.waldcenter.org/Quarantine%20and%20Isolation%20Information%20for%20Health%20Officers.pdf>
- E. Kansas Regulations/Statutes Related to Infectious Disease:** <http://www.kdheks.gov/epi/regulations.htm>
- F. KDHE Foodborne Illness and Outbreak Investigation Manual:** http://www.kdheks.gov/epi/download/kansas_foodborne_illness_manual.pdf
- Section 5, Environmental Health Assessment, including Intentional Contamination of Food investigation guidance.
 - Appendix D, Exclusion and Restriction Requirements for Foodhandlers.
- G. KDHE Control of Enteric Disease Outbreaks in Childcare Facilities:** http://www.kdheks.gov/epi/download/Enteric_Disease_in_Day_care_centersver4.pdf
- H. Animals in Public Places Compendium:** http://www.kdheks.gov/epi/human_animal_health.htm
- I. KDHE Foodborne Illness Resources:** <http://www.kdheks.gov/epi/foodborne.htm>
- J. Additional Information (CDC):** <http://www.cdc.gov/health/default.htm>

Kansas Disease Investigation Guidelines

General Investigation Form

Investigation Information		
Case Type: <input type="checkbox"/> Human Case <input type="checkbox"/> Non-human Case	Disease Name: _____	
Classification: <input type="checkbox"/> Suspect <input type="checkbox"/> Probable <input type="checkbox"/> Confirmed	KS-EDSS Investigation ID: _____	
Outbreak: <input type="checkbox"/> Yes <input type="checkbox"/> No	Outbreak Name: _____	Outbreak #: _____
Onset Date: _____	Diagnosis Date: _____	Report Date: _____
Assigned to (Investigator): _____	Patient Died: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
Patient Information		
Name Type: <input type="checkbox"/> Default/Common <input type="checkbox"/> Legal <input type="checkbox"/> Maiden <input type="checkbox"/> Nickname		
Last: _____	First: _____	Middle: _____
Street: _____	City/State: _____	Zip: _____
Evening Phone #: _____	Daytime Phone #: _____	
Sex: <input type="checkbox"/> Failure to Report <input type="checkbox"/> Female <input type="checkbox"/> Male <input type="checkbox"/> Other <input type="checkbox"/> Transexual <input type="checkbox"/> Unknown		
Race: <input type="checkbox"/> American Indian or Alaska Native <input type="checkbox"/> Asian <input type="checkbox"/> Black or African American <input type="checkbox"/> Native Hawaiian or Other Pacific Islander <input type="checkbox"/> White <input type="checkbox"/> Unknown		
Hispanic / Latino Ethnicity: <input type="checkbox"/> Yes <input type="checkbox"/> No		
Date of Birth: _____	Age: _____	Age Unit: <input type="checkbox"/> Days <input type="checkbox"/> Weeks <input type="checkbox"/> Months <input type="checkbox"/> Years
Parent Information (if under 18)		
Last: _____	First: _____	Middle: _____
Street: _____	City/State: _____	Zip: _____
Evening Phone #: _____	Daytime Phone #: _____	
Work / Occupation or School / Grade		
Worksites / School: _____		
Occupations / Grade: _____		
Travel History		
1st	Destination: _____	Depart Date: _____ Return Date: _____
2nd	Destination: _____	Depart Date: _____ Return Date: _____
3rd	Destination: _____	Depart Date: _____ Return Date: _____
4th	Destination: _____	Depart Date: _____ Return Date: _____

Supplemental Laboratory Report Form

Lab Reports

Laboratory Name: _____

Lab Report Date: _____

Ordering Provider Name: _____

Phone: _____

Facility: _____

Specimen Accession Number: _____

Specimen Collection Date: _____

Organism Name: _____

Organism Species: _____

Organism Serogroup: _____

Organism Serotype: _____

PFGE Results

Pattern 1 KS: _____

Other State: _____

CDC: _____

Pattern 2 KS: _____

Other State: _____

CDC: _____

Pattern 3 KS: _____

Other State: _____

CDC: _____

Additional Results Information

Reported Test Name:

Coded Result:

Text Result:

Numeric Result:

Comments:

Supplemental Contact Form

Contacts

Last: _____ **First:** _____ **Middle:** _____

Street: _____ **City/State:** _____ **Zip:** _____

Evening Phone #: _____ **Daytime Phone #:** _____ **E-mail:** _____

Sex: Failure to Report Female Male Other Transexual Unknown

Race: American Indian or Alaska Native Asian Black or African American Native Hawaiian or Other Pacific Islander White Unknown

Hispanic / Latino Ethnicity: Yes No

Date of Birth: _____ **Age:** _____ **Age Unit:** Days Weeks Months Years

Worksites / School: _____

Occupations / Grade: _____

Exposure Information

Contact Type: Household Sexual Other: _____ **Partner / Cluster Code:** _____

Date of First Exposure: _____ **Date of Last Exposure:** _____ **Frequency:** _____

Nature of Exposure: _____ **Comments:** _____

Testing and Treatment Information

Clinic Code: _____ **Examination Date:** _____

Examination Test: _____ **Examination Result:** _____

Prophylaxis/empiric treatment date: _____ **Drug / Dosage:** _____

Provider (Name / Facility): _____

Disposition and Diagnosis Information

Initiation Date: _____ **Disposition Date:** _____ **Disposition:** _____

Diagnosis: _____ **Referral Type:** Patient Provider **Post-test Counseled :** Yes No

Currently Assigned To: _____ **Follow-up Date:** _____

Risk Factors

Pregnant: Yes No **If Yes, # of Weeks:** _____

Risk factors for complications in contact: None Pregnant Woman HIV Seropositive Unimmunized Index case is a super-spreader

Child younger than 5 Age > 65 Otherwise immunosuppressed (s/p transplant, high dose steroids, etc)

Enteric Disease Supplemental Form

Kansas Department of Health and Environment

Epidemiologic Case History

Condition	
<i>Calicivirus/Norwalk-like virus (norovirus)</i>	<i>Campylobacter Infection (Campylobacter spp.)</i>
<i>Cryptosporidiosis (Cryptosporidium parvum)</i>	<i>Enterohemorrhagic Escherichia coli (EHEC)</i>
<i>Enterohemorrhagic Escherichia coli O157:H7</i>	<i>Enterohemorrhagic Escherichia coli shiga toxin positive (not serogrouped)</i>
<i>Enterohemorrhagic Escherichia coli shiga toxin positive (serogroup non-O157)</i>	<i>Giardiasis (Giardia lamblia)</i>
<i>Salmonellosis (Salmonella spp.)</i>	<i>Shigellosis (Shigella spp.)</i>
<i>Cyclosporiasis (Cyclospora cayetanensis)</i>	<i>Hepatitis A</i>
<i>Listeriosis (Listeria monocytogenes)</i>	

* indicates required fields

Case Type*		Classification*					
<i>Human Case</i>	<i>Non Human Case</i>	<i>Confirmed</i>	<i>Not a Case</i>	<i>Probable</i>	<i>Suspect</i>	<i>Deleted</i>	<i>Unknown</i>

Supplemental Form Status				
<i>Not Done</i>	<i>Form Complete</i>	<i>Form in Progress</i>	<i>Form Approved</i>	<i>Form Sent to CDC</i>

Report Date*
mm/dd/yyyy

Date Investigation Started
mm/dd/yyyy

Patient Demographic Information

* indicates required fields

Last Name*	First Name*	Middle Name	Name Type*	Age
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Age Unit <i>Days Weeks Unknown Months Years</i>	Date of Birth <small>mm/dd/yyyy</small>
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Race* <small>(Check all that apply)</small>		
<i>American Indian or Alaska Native</i>	<i>Asian</i>	<i>Black or African American</i>
<i>Native Hawaiian or Other Pacific Islander</i>	<i>White</i>	<i>Unknown</i>

Ethnicity*		
<i>Hispanic or Latino</i>	<i>Not Hispanic or Latino</i>	<i>Unknown</i>

Sex*					
<i>Failure to Report</i>	<i>Female</i>	<i>Male</i>	<i>Other</i>	<i>Transexual</i>	<i>Unknown</i>

Street Address			
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City	County	State	Zip
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Evening Phone <small>###-###-####</small>	Daytime Phone <small>###-###-####</small>
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Occupation

High Risk Potential: <small>(Check all that apply)</small>	
<i>Contact to a confirmed case</i> _____	<i>Contact to a suspected case</i> _____
<i>Daycare attendee</i> _____	<i>Food handler</i> _____
<i>Direct patient care worker</i> _____	<i>Institutional resident or staff</i> _____
<i>Daycare worker</i> _____	<i>Animal handler</i> _____
<i>Other</i> _____	

If enrolled in day care, please complete the information below.

Name of Facility	Evening Phone <small>###-###-####</small>
-------------------------	---

Street Address		City
County	State	Zip

Person Providing Report

Name of Reporting Facility*

Clinical and Laboratory Data

Individual diagnosed with <i>Hemolytic Uremic Syndrome (HUS) Thrombotic Thrombocytopenic Purpura (TTP)</i>			Was a stool specimen collected? <i>Yes No</i>		
Diarrhea? <i>Yes No Unknown</i>	Number of Stools <i>0 - 2 3 - 10 11 and above</i>	Blood in Stool? <i>Yes No Unknown</i>	Vomiting? <i>Yes No Unknown</i>		
Nausea? <i>Yes No Unknown</i>	Abdominal Cramps? <i>Yes No Unknown</i>	Muscle Ache? <i>Yes No Unknown</i>	Other Symptoms? <i>other</i> _____		
What was the first Symptom		Date of Onset <small>mm/dd/yyyy</small>	Time of Onset		

Clinical and Laboratory Data cont.

Fever? <i>Yes No Unknown</i>	If Yes, specify highest temperature:
--	---

Physician Information

Was a physician consulted for this illness? <i>Yes (please complete the information below) No</i>	Name of physician:
---	---------------------------

Evening Phone ###-###-####	Street Address		
City	County	State	Zip

Antibiotic Information

Was case treated with antibiotics anytime in the 14 days prior to illness? <i>Yes No Unknown</i>	Type of treatment/antibiotic	Reason for taking	Date started <small>mm/dd/yyyy</small>
--	-------------------------------------	--------------------------	--

Date completed <small>mm/dd/yyyy</small>	Was case treated with antibiotics for this illness? <i>Yes No Unknown</i>	Type of treatment:	Date Started: <small>mm/dd/yyyy</small>
--	---	---------------------------	---

Date completed: <small>mm/dd/yyyy</small>	Was organism resistant to antibiotics? <i>Yes No Unknown</i>	If yes, specify resistance pattern:
---	--	--

Is the patient on any medication or receiving any treatment which may suppress their immune system (i.e. Corticosteroids or Cancer Chemotherapy)? <i>Yes No Unknown</i>	If yes please specify medication or treatment:
---	---

Did patient recover? <i>Yes No Unknown</i>	Recover Date <small>mm/dd/yyyy</small>	Recover Time
--	--	---------------------

Exposure/Transmission

Did anyone else (in your family ..) recently have similar symptoms?
Yes (please complete below) No Unknown

Name	Age	Sex	Relationship to Case	Occupation	Symptoms	Date of Onset
						<small>mm/dd/yyyy</small>

Any restaurant, commercial food establishments, or group gatherings visited within the 7 days prior to onset of illness?
Yes (please complete below) No Unknown

Name of Establishment	City, County, State	Foods eaten	Date of Exposure
			<small>mm/dd/yyyy</small>

Travel History

Did the patient Travel prior to the onset of illness?

Yes No Unknown

If yes, please complete below:

Where:	Departure Date: <small>mm/dd/yyyy</small>	Return Date: <small>mm/dd/yyyy</small>
Where:	Departure Date: <small>mm/dd/yyyy</small>	Return Date: <small>mm/dd/yyyy</small>

Water Exposure

Possible water sources:

(Check all that apply)

Municipal Water System _____ *Bottled Water* _____ *Private Well* _____
Rural Water System _____ *Other (specify):* _____

Did patient drink water from other than a treated municipal system (i.e., stream, well)?

Yes No Unknown

Other Possible Exposure Information

Was there contact with pets or animals within 7 days prior to onset?

Yes No Unknown

If yes, please indicate below:

(Check all that apply)

Caged Birds Cats Cattle Chickens Dogs Ducks
Frogs Goats Guinea Pigs Hamsters Horses Lizards
Mice Parakeets Pigeons Pigs Poultry Rabbits
Rats Sheep Snakes Turkeys Turtles Other _____

Other Exposure Information

Other Birds?	If yes, please specify	Other Reptiles?	If yes, please specify
<i>Yes No Unknown</i>		<i>Yes No Unknown</i>	

Other Animals?

Yes No Unknown

If yes, please specify

Were any of these animals ill near the time of onset

Yes No Unknown

If yes, please describe:

Where were the animals located?

(Check all that apply)

Home Farm School Pet Store Zoo Petting Zoo Other _____

Other Possible Exposure Information cont.

Within 7 days prior to onset of illness, did the patient participate in:

Activity	Participation	Date	Location
		mm/dd/yyyy	
Outdoor Activities			
Swimming			
Chlorinated Pool			
Wading Pool			
River/Lake/Pond			

Food History

Did case eat any of the following within 7 days prior to the onset of illness?

Food Product	Consumed	City, County, State	Variety or Brand(s)	Supplier	Supplier City
1. Chicken					
2. Hamburger					
3. Sausage					
4. Hot Dogs					
5. Lunch Meat					
6. Eggs					
7. Milk raw					
8. Milk past.					
8. Fresh juice					
10. Fresh berries					
11. Fresh melon					
12. Other fresh fruit					
13. Lettuce					
14. Alfalfa Sprouts					
Other fresh vegetables		Other Food Item 1		Other Food Item 2	

At what store(s) do you regularly shop for groceries?

SEVEN-DAY ENTERIC QUESTIONNAIRE MODIFIED FOR CHILD CARE STAFF *(telephone interview)*

Hello, my name is _____. I am *(with/calling on behalf of)* the name of health department. We are currently investigating an outbreak of diarrhea and vomiting which has occurred at name of child-care facility. To assist us in our investigation, we are asking parents or guardians of **ALL** children enrolled at name of child-care facility to complete this questionnaire. Your participation is essential in this investigation. All information is confidential and will only be used for public health purposes. Do you have about 15 minutes to complete this questionnaire? (If they answer yes, continue. If they answer no, request a more convenient time to administer this questionnaire)

Diagnosis _____ Date: _____/_____/_____

Last Name: _____ First Name: _____

Date of Birth: ____/____/____ Sex: Male / Female

Street Address: _____

City: _____ State: ____ ZIP Code: _____

Home Phone: (____) _____ - _____

What is your job title? _____

If teacher:

What is the age group of your class? _____

Have you been working at this child-care facility since ____/____/____? **YES / NO**

Do you prepare meals (this includes mixing formula) for the children? **YES / NO**

Do you serve meals to the children? **YES / NO**

Did you have a child with diarrhea or vomiting in your class?

YES / NO

/ **DON'T KNOWS**

If

yes:

When did your first case occur? ____/____/_____

Do you change diapers? **YES / NO**

Do you assist with toileting? **YES / NO**

Were there any activities in your class during the period of ___/___/___ to ___/___/___, which are not noted on your roster? **YES / NO**

If yes:

What	Where	When
_____	_____	___/___/___
_____	_____	___/___/___
_____	_____	___/___/___
_____	_____	___/___/___

Did the children in your class play with any animals during the period of ___/___/___ to ___/___/___? **YES / NO**

If yes:

What type?	Where?	When?
_____	_____	___/___/___
_____	_____	___/___/___
_____	_____	___/___/___
_____	_____	___/___/___

When did you start working at the child-care facility (hire on date)? ___/___/___ (mm/dd/yyyy)

Since ___/___/___ have you had diarrhea, vomiting or fever? **YES / NO**
If no, go to question 8.

Did you completely recover? **YES / NO**

If yes, Date of recovery ___/___/___ (mm/dd/yyyy)
Time: _____ am / pm

When did you first become ill? ___/___/___ (mm/dd/yyyy)

Indicate all symptoms:

Diarrhea (more than 3 loose stools in a 24 hour period)	YES / NO
Bloody Diarrhea: YES / NO	Number of stools/24 hours: _____
Stomach ache: YES / NO	Nausea: YES / NO
Vomiting: YES / NO	Muscle aches/pains: YES / NO
Fever/Chills: YES / NO	Highest temperature: _____
Other symptoms? _____	

Did you see a physician? **YES / NO**

If yes,

Name of physician: _____

Phone Number (____)_____-_____

Were you hospitalized? **YES / NO**

If yes,

Hospital name: _____

Is or was any other family member or close personal contact experiencing any of the above-mentioned symptoms? **YES / NO**

If yes; list names:

Name	Relationship to child	Date of Birth	Onset Date
_____	_____	___/___/___	___/___/___
_____	_____	___/___/___	___/___/___
_____	_____	___/___/___	___/___/___
_____	_____	___/___/___	___/___/___
_____	_____	___/___/___	___/___/___
_____	_____	___/___/___	___/___/___

In the 7 days prior to illness, did you have contact with any of the following animals?

Chicks? **YES / NO** Ducklings? **YES / NO**

Other Birds? **YES / NO** Specify _____

Reptiles (turtles, snakes, lizards, iguanas, etc.) **YES / NO**

Specify _____

Other pets or animals? **YES / NO**

Specify _____

Please indicate location and date of purchase of chicks, ducklings, other birds, or reptiles.

Store _____ City _____

Date: ___/___/___

Excluding activities at the child-care facility, did you visit a farm or petting zoo in the 7 days prior to illness? **YES / NO**

If yes:

Where _____ When ___/___/___ (mm/dd/yyyy)

Where _____ When ____/____/____ (mm/dd/yyyy)

Excluding activities at the child-care facility, did you swim in a lake, river, or pool in the 7 days prior to illness? **YES / NO**

If yes:

Where _____ When ____/____/____ (mm/dd/yyyy)

Where _____ When ____/____/____ (mm/dd/yyyy)

Have you traveled outside the State of Kansas in the 7 days prior to illness?

YES / NO

If yes:

City _____ State _____ Dates: ____/____/____ to ____/____/____

City _____ State _____ Dates: ____/____/____ to ____/____/____

Have you traveled outside the United States of America in the 7 days prior to illness?

YES / NO

If yes:

Country _____ Dates: ____/____/____ to ____/____/____

Country _____ Dates: ____/____/____ to ____/____/____

What is the source of your drinking water (indicate all that apply)?

Public water system? **YES / NO** Name _____

Private well? **YES / NO**

Bottled water? **YES / NO** Name _____

Did you eat in any restaurants in the 7 days prior to illness? **YES / NO**

Please list the restaurants to the best of your recollection:

A) Name _____ City _____ Date ____/____/____

Foods eaten: _____

B) Name _____ City _____ Date ____/____/____

Foods eaten: _____

C) Name _____ City _____ Date ____/____/____

Foods eaten: _____

D) Name _____ City _____ Date ____/____/____

Foods eaten: _____

Did you attend any parties, fairs, carnivals, family/social gatherings, or other events at which food was provided, in the 7 days prior to illness? **YES / NO**

Name/description of event _____ City _____

Date ____/____/____

Foods eaten _____

Indicate which of the following foods that you ate in the 7 days prior to illness. If unsure, answer yes to any foods that you eat routinely. To the best of your recollection, also provide the brand names and the store names and locations where you purchased them.

Raw unpasteurized milk? **YES / NO** Brand _____
Store name _____ City _____

Pasteurized milk? **YES / NO** Brand _____
Store name _____ City _____

Unpasteurized apple cider? **YES / NO** Brand _____
Store name _____ City _____

Ground beef or hamburgers? **YES / NO** Brand _____
Store name _____ City _____

Steaks? **YES / NO** Brand _____
Store name _____ City _____

Chicken? **YES / NO** Brand _____
Store name _____ City _____

Sausage? **YES / NO** Brand _____
Store name _____ City _____

Hot Dogs? **YES / NO** Brand _____
Store name _____ City _____

Lunch Meat? **YES / NO** Brand _____
Store name _____ City _____

Eggs? **YES / NO** Brand _____
Store name _____ City _____

Fresh Juice? **YES / NO** Brand _____
Store name _____ City _____

Fresh Berries? **YES / NO** Brand _____

Store name _____ City _____

Fresh Melon? **YES / NO** Brand _____

Store name _____ City _____

Other Fresh Fruits? **YES / NO** Brand _____

Store name _____ City _____

Lettuce? **YES / NO** Brand _____

Store name _____ City _____

Alfalfa Sprouts? **YES / NO** Brand _____

Store name _____ City _____

Other Fresh Vegetables? **YES / NO** Brand _____

Store name _____ City _____

Other foods, which may have caused your illness? _____

Brand _____ Store name _____

City _____

Comments: _____

Date: _____

Dear _____,

The stool sample for _____, collected on _____ has tested positive for the bacterial pathogen(s):

- E. Coli: O157:H7 Campylobacter Other _____
- Salmonella Shigella

The Following action(s) is necessary:

- None.
- Contact your Local Health Department at _____ for an additional interview.
- Inform your physician that your laboratory tests are positive if he/she is not aware of these results. He/she will decide if antibiotics need to be prescribed. If your physician decides not to treat you with antibiotics please remember that the bacteria may be transmitted to others as long it is present in your stool. This may persist for several weeks even though you may no longer have symptoms. It is important to note that frequent and thorough hand washing will minimize risk of transmission to others.
- You may not work in food handling, direct patient care or occupations involving the care of young children or the elderly until:
- You experience no diarrhea for 24 hours.
 - Your stool specimens test negative 2 consecutive times. (Stool samples should be collected 24 hours apart and no sooner than 48 hours after you last dose of antibiotics.)
 - The local health officer or the Secretary of Health and Environment issues an order allowing you to return to work.
- Your child may not attend school or daycare until:
- He/she experiences no diarrhea for 24 hours.
 - His/her stool specimens test negative 2 consecutive times. (Stool samples should be collected 24 hours apart and no sooner than 48 hours after your last dose of antibiotics.)

Sincerely,

Investigator Name, Title

Phone #

Address Line 1

Address Line 2

City, State Zip Code

Public Health Fact Sheet

Salmonellosis

What is Salmonellosis?

Salmonellosis is a disease of the bowel caused by the bacteria *Salmonella*. It is usually limited to the bowel and in most cases it does not result in any serious medical problems. However, it may spread to other parts of the body, such as the blood and bone and cause serious complications. It may also cause problems for infants, in people who are very old and persons that are immunocompromised.

What are the symptoms?

Symptoms develop within 3 days of exposure and include cramping, diarrhea, fever, nausea and sometimes vomiting. Some people who are infected may have no symptoms at all, but may still pass the *Salmonella* bacteria to others.

How is Salmonellosis spread?

Salmonella is spread by eating or drinking infected food or water. It may also be spread by direct contact with an infected person, animal or reptile. Person-to-person spread may occur in daycare centers and nursing homes where personal hygiene may be poor due to age or disability.

Who gets Salmonellosis?

Anyone can become infected with salmonellosis but infants and young children are more likely to become infected.

How is it diagnosed?

Salmonellosis is diagnosed by laboratory examination of a stool sample.

How is Salmonellosis treated?

Most people recover without treatment. However, small children, the elderly, and others with severe diarrhea should see a doctor.

How can you prevent Salmonellosis?

Some general guidelines are:

- Always refrigerate meats and eggs.
- Always cook meats completely. Never eat raw meat.
- Always cook eggs and food containing raw eggs completely. Never eat dough or batter that contains raw eggs.
- Avoid unpasteurized milk or foods made with unpasteurized milk.
- Always wash your hands with soap and warm water before and after handling food and after using the toilet, changing diapers or playing with animals or reptiles or cleaning up after them.
- Reptiles (including turtles) are not appropriate pets for small children and should not be in the same house as an infant.

This fact sheet is for information only and is not intended for self-diagnosis or as a substitute for consultation. If you have any questions about the disease described above or think that you may have an infection, consult with your healthcare provider. This fact sheet is based on the Centers for Disease Control and Prevention's Health and Safety topic fact sheets.

Are there any restrictions for people with salmonellosis?

Yes, since *Salmonella* is found in the feces, people with diarrhea should not go to school or work. People may return to school or work when they no longer have diarrhea. Children who attend daycare should not attend daycare until diarrhea stopped. If more than one person is ill at the daycare, ill children and staff may be asked to stay at home until diarrhea has stopped for at least 24 hours.

Workers with salmonellosis that handle food may not return to work until their diarrhea stops for at least 24 hours and then they must make sure they carefully wash their hands after using the toilet. This also applies to workers in schools, residential programs, daycare and healthcare facilities who feed, give mouth care or dispense medications to clients.

Where can I get more information?

- Your Local Health Department
- Kansas Department of Health and Environment, Epidemiologic Services
- Section (877) 427-7317
- <http://www.cdc.gov/health/default.htm>
- Your doctor, nurse, or local health center

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