

Typhoid Fever Investigation Guidelines

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Typhoid Fever

Disease Management and Investigative Guidelines

SURVEILLANCE CASE DEFINITION

A. Clinical Description for Public Health Surveillance:

An illness caused by *Salmonella typhi* that is often characterized by insidious onset of sustained fever, headache, malaise, anorexia, relative bradycardia, constipation or diarrhea, and nonproductive cough. However, many mild and atypical infections occur. Carriage of *S. typhi* may be prolonged.

B. Laboratory Criteria for Diagnosis:

Isolation of *S. typhi* from blood, stool, or other clinical specimen. Isolation of the organism is required for confirmation. Serologic evidence alone is not sufficient for diagnosis. Asymptomatic carriage should not be reported as typhoid fever.

C. Case Classification:

- Confirmed: A clinically compatible case that is laboratory confirmed. Serologic evidence alone is not sufficient for confirmation.
- Probable: A clinically compatible case that is epidemiologically linked to a confirmed case in an outbreak.

D. Laboratory Tests:

Isolates must be sent to the State Public Health Laboratory. Mailing Address: Division of Health and Environment Laboratories, Forbes Field, Building # 740, Topeka, KS 66620-0001. All serology specimens will be forwarded to the CDC Laboratory for testing.

- Laboratory Kit: For cultures use an Enteric Kit; for serology, call the laboratory for instructions.
- Specimen: Feces or culture isolate for culture samples, blood for serology.
- Amount: marble size feces sample, call the laboratory for instructions of other samples.
- Remarks: For additional information and/or questions concerning isolate collection, sample transport and laboratory kits call (785) 296-1620. An online manual of laboratory tests is also available at <http://www.kdhe.state.ks.us/labs/links.html>

E. Bioterrorism Potential:

None.

F. Outbreak Definition:

A single case should be actively pursued to determine whether there is an outbreak with unidentified cases having been exposed to the same source. The situation should be treated as a public health emergency until additional

cases and the possibility of an unidentified contaminated source has been ruled out.

INVESTIGATOR RESPONSIBILITIES

A. Investigative Priorities:

- Conduct an epidemiological investigation to identify the possible source of infection and to locate additional cases and/or contacts in the community.
- Determine if the case is involved in a high-risk occupation or other special situation is involved (e.g., foodhandler, daycare, etc.).
- Report all confirmed cases to the Bureau of Epidemiology & Disease Prevention, using established methods.
- If the case is lab-confirmed, make sure that an isolate is forwarded to the State Public Health Laboratory.
- Follow-up on work restrictions placed on high-risk employees (e.g., foodhandler, direct patient care provider) to assure compliance.
- For persons identified as typhoid carriers, complete a Typhoid Carrier Agreement.

B. Notifications:

- There are no special notifications or additional reporting requirements.
- Mail or deliver notification letter and/or disease fact sheet to case, contacts and other appropriate individuals or groups (if appropriate and/or requested).

EPIDEMIOLOGY

Worldwide, approximately 17 million cases and 600,000 deaths occur annually. In the United States, less than 500 cases occur annually and 70% of these are acquired while traveling abroad; travelers to Asia, Africa and Latin America are at higher risk. Antimicrobial resistant strains are becoming more prevalent. Outbreaks have occurred in the United States from food that had been imported from other countries. Outbreaks do not result from floods or other disasters in countries that are not endemic for typhoid, such as the United States.

DISEASE OVERVIEW

A. Agent:

Typhoid fever is a bacterial disease caused by *Salmonella typhi*.

B. Clinical Description:

Typhoid fever is a systemic infectious disease, symptoms include: sustained fever, headache, malaise and anorexia. Vomiting and diarrhea are typically absent, but constipation is frequently reported. Bradycardia, enlargement of the spleen and rose spots on trunk may also occur. Ulceration of Peyer's patches in the ileum in late untreated disease causes bloody diarrhea. Mild

and atypical infections are common. Relapses are common. The case-fatality rate is <1% with prompt antibiotic treatment.

- Differential Diagnosis: Appendicitis, cholecystitis, other diseases with fever or rash, typhoid carrier.

C. Reservoirs:

S. typhi only infects humans; chronic carriers (e.g., “Typhoid Mary”) are the most important reservoirs.

D. Mode(s) of Transmission:

Person-to-person, usually via the fecal-oral route. Fecally contaminated drinking water is a commonly identified vehicle. *S. typhi* may also be found in urine and vomitus and, in some situations, these could contaminate food or water. Shellfish grown in sewage-contaminated water are also potential vehicles, as are vegetables grown in night soil in developing countries. Flies can mechanically transfer the organism to food, where the organism then multiplies to achieve an infective dose.

E. Incubation Period:

The incubation period depends amount of infective dose. Range 3 days to 1 month; average 8-14 days.

F. Period of Communicability:

The disease is communicable for as long as the infected person excretes *S. typhi* in their excreta, usually after the 1st week of illness through convalescence. Approximately 10% of untreated cases will excrete *S. typhi* for 3 months and between 2-5% of all cases become chronic carriers.

G. Susceptibility and Resistance:

Susceptibility is general. Specific immunity follows recovery from clinical disease and/or active immunization.

H. Treatment

The increasing prevalence of resistant strains directs proper therapy; as such, antibiotic sensitivity tests should be obtained on all typhoid isolates.

Ciprofloxacin is considered the drug of choice with chloramphenicol, amoxicillin and TMP-SMX having high efficacy if the particular strain is shown to be sensitive. Relapse is common and retreatment is indicated as necessary.

STANDARD CASE INVESTIGATION AND CONTROL METHODS

Standard investigation activities include the following: 1) Confirmation of the diagnoses (*i.e.*, case definition), 2) Collection of relevant demographic and clinical data (e.g., age, sex, disease syndromes and/or symptoms), 3) Determination of the setting (e.g., community, hospital, daycare or other facility), and 4) Investigation of possible epidemiologic links among cases

(e.g., cluster, household, co-workers, etc). This can be accomplished by completing the appropriate sections of the Typhoid investigation form. Most of the information can be obtained from the case person, healthcare provider and/or the medical record. The investigator may want to also review previously reported cases in the region and/or state. Additional investigation activities include:

A. Identify Potential Source of Infection:

To help identify the source of the infection, the investigator should focus their investigation within the incubation period and on the following potential source(s) of infection.

- Date and source of first positive culture.
- Household contact roster. Include visitors within incubation period. Name, address, relationship, occupation, dates of contact. History of typhoid or exposure or similar illness; if so, where and when. Identify those persons involved in special situations (e.g., foodhandler, daycare, etc.).
- Travel itinerary during incubation period. Include places and dates. If travel out of country, include mode of travel. If possible, identify suspect food or beverage ingested, where it was obtained and how contaminated.
- If case occurred in commercial travel group, investigate all members of group.

B. Identify Potential Exposed Individuals / Populations:

There are several types of contacts to consider when dealing with a typhoid investigation, they include:

- General: Household, close contacts and sexual partners of a case.
- Daycare: All employee direct caregivers and enrollee roommates of a case.
- School: Close contacts of a case when there is epidemiological evidence of transmission in the school setting.
- Food service:
 - Coworkers of an infectious food handler
 - Patrons of the establishment with an infectious food handler if the food handler directly handled, without gloves, food not to be further cooked prior to eating and the infected employee had diarrhea when working or the hygiene of the food handler or the facility's sanitation practices are deficient.

C. Isolation, Work and Daycare Restrictions:

If the case works in a high-risk occupation or other special situation is involved (e.g., foodhandler, daycare, etc.) then the following guidelines should be followed:

- Remove from work until case has 3 consecutive feces and urine cultures taken at least 48 hours apart. The cultures should be taken at least 48 hours after discontinuation of antibiotic therapy.

- If any of the tests are positive, cultures must be repeated monthly until 3 consecutive negative cultures are obtained.
- If a contact works in a high-risk occupation or other special situation is involved (e.g., foodhandler, daycare, etc.) then the following guidelines should be followed:
 - Symptomatic: Confirm diagnosis. If positive, follow as a case. If negative, remove from work until 2 consecutive feces and urine cultures taken at least 24 hours apart are negative.
 - Asymptomatic: Remove from work until 2 consecutive feces and urine cultures, taken at least 24 hours apart, are negative.

D. Follow-up of Cases:

- Precautions: Blood/body fluids and enteric precautions until clinical recovery.
- Follow-up with case and obtain 3 consecutive feces and urine cultures taken at least 48 hours apart, beginning at least 48 hours after discontinuation of antibiotic therapy to assure antimicrobial therapy was successful and to assess for chronic carrier status. The case may continue to work if not involved in a sensitive occupation.

E. Protection of Contacts:

Follow-up with all contacts to assure compliance with control measures and to determine if any have become infected.

- Routine immunization with typhoid vaccine is of limited value for family, household and medical providers that have been in direct contact with a case. The use of vaccine may be considered if a contact has been exposed to a typhoid carrier.

F. Environmental Measures:

If the source of infection appears to be associated with a daycare facility, restaurant, dairy, or public drinking water supply; or, if the case attends, or works at, a day care facility or works as a food handler, health care provider, or residential care provider, an environmental evaluation may be indicated.

G. Education:

Provide basic instruction to cases and potentially exposed contacts about:

- The importance of personal hygiene, emphasize hand washing and the proper cleaning fingernails;
- The proper disposal of feces, urine, and fomites;
- Assuring their milk and other dairy products are pasteurized;
- The importance of seeking medical care should contacts develop symptoms or cases symptoms worsens and/or return.

MANAGING SPECIAL SITUATIONS

A. Case Attends or Works at a Day Care Facility:

- Interview the operator and check attendance records to identify suspect cases that may have occurred during the previous month.
- Instruct the operator and other staff in proper methods for food handling and hand washing, especially after changing diapers.
- If other confirmed or suspected cases have occurred, collect stool specimens from all staff members and children who are symptomatic or who have had diarrhea during the previous 2 weeks.
- If other possible cases are identified, complete a sanitary inspection.
- Instruct the operator to notify the health department immediately if new cases of diarrhea occur.
- Call or visit once each week for 2 weeks after onset of the last case to verify that surveillance and appropriate hygienic measures are being carried out.

B. Case is a Food Handler or a Commercial Food Source Implicated:

- Conduct an environmental evaluation of the facility and verify (by interviewing the operator and reviewing worker attendance records) if any employees have had any illness suggestive of typhoid within the past month. Ask about any complaints of illness from patrons during the past month.
- Employees with a suspicious history within the past month must submit a single stool specimen for culture; symptomatic employees should obviously be excluded until disease status is ascertained.
- The extent of further investigation depends on circumstances. If necessary consult with the local Health officer, the on-call epidemiologist and KDHE.

C. Food Served at a Public Gathering Implicated:

- Determine if anyone who prepared food for the gathering had any symptoms suggestive of typhoid at any time during the previous month. Find out if any other food preparers or attendees became ill within 3 weeks after the gathering.
- Collect stool specimens for culture from any food handlers with suggestive histories. (This is mandatory if the individual works for a commercial food service facility.)
- The extent of further investigation depends on circumstances. If necessary consult with the local Health Officer, the on-call epidemiologist and KDHE.

D. Case Works at a Health Care or Residential Care Facility:

- Consult with the Infection Control Practitioner. Determine if there has been any unusual incidence of typhoid-compatible illness within the past month. If so, investigate these reports to with an eye towards identifying possible common-source outbreaks or any continuing sources of exposure.
- If indicated, conduct an environmental evaluation of the facility.

- The extent of further investigation depends on circumstances. If necessary consult with the local Health Officer, the on-call epidemiologist and KDHE.

E. Chronic Carriers:

Presumptive and confirmed carriers are subject to certain restrictions that are enforced by the local Health Officer and itemized in the Typhoid Fever Carrier Agreement. This agreement, which should be signed by carrier, provides that they will:

- Not to work as a foodhandler or provide personal care in daycare or residential care facilities.
- Notify the local Health Officer at once of any change in address or occupation;
- Will notify the health officer at once of any suggestive illness among household members or other personal contacts.
- Will provide specimens for culture as required by the local Health Officer.
- Chronic carriers may be released from their agreement following 6 consecutive, negative stool cultures and 1 urine culture. Such specimens must be collected at least 72 hours apart.

ADDITIONAL INFORMATION / REFERENCES

- American Academy of Pediatrics. 2003 Red Book: Report of the Committee on Infectious Disease, 26th Edition. Illinois, Academy of Pediatrics, 2003.
- Heymann. D., ed., Control of Communicable Diseases Manual, 18th Edition. Washington, DC, American Public Health Association, 2004.
- Case definitions for Infectious Conditions Under Public Health Surveillance, Division of Public Health Surveillance and Informatics, Nationally Notifiable Infectious Diseases, United States 2005. Available at: <http://www.cdc.gov/epo/dphsi/PHS/infdis2005.htm>
- Kansas Department of Health and Environment, Bureau of Epidemiology. Disease Protocols, 2001.
- County of Los Angeles, Department of Health, Public Health Programs and Services, Communicable Diseases Manual, June 2003.
- Oklahoma State Department of Health, Communicable Diseases Division. The Epidemiologic Follow-up of Communicable Diseases in Oklahoma, 2001.
- Missouri Department of Health and Senior Services, Section of Communicable Disease Control & Veterinary Public Health, Communicable Disease Investigation Reference Manual. 2001.
- Oregon Health Services Website. Available at <http://www.ohd.hr.state.or.us>
- Commonwealth of Massachusetts, Department of Public Health Website. Available at <http://www.state.ma.us/dph/>
- CDC Website. Available at <http://www.cdc.gov/health/default.htm>

TYPHOID FEVER SURVEILLANCE REPORT

CDC NO.:
(1-5)

Form Approved OMB No. 0920-0009

Instructions:

– Please complete this form only for new, symptomatic, culture-proven cases of typhoid fever. –

DEMOGRAPHIC DATA

1. Reporting State: <input type="text"/> <input type="text"/> (6-7)	2. First three letters of patient's last name: <input type="text"/> <input type="text"/> <input type="text"/> (8-10)	3. Date of birth: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (11-16) Mo. Day Yr.	or Age: <input type="text"/> <input type="text"/> (17-18) (in years)
4. Sex: (18) 1 <input type="checkbox"/> Male 2 <input type="checkbox"/> Female	5. Does the patient work as a foodhandler? (20) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk.	6. Citizenship: (21) 1 <input type="checkbox"/> U.S. 8 <input type="checkbox"/> Other: _____ 9 <input type="checkbox"/> Unk.	

CLINICAL DATA

7. Was the patient ill with typhoid fever? (fever, abdominal pain, headache, etc) (22) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk.	If Yes, give date of onset of symptoms: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (23-28) Mo. Day Yr.	8. Was the patient hospitalized? (29) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk.	If Yes, how many days was the patient hospitalized? <input type="text"/> <input type="text"/> (30-31) Days	9. Outcome of case: (32) 1 <input type="checkbox"/> Recovered 2 <input type="checkbox"/> Died 9 <input type="checkbox"/> Unk.
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LABORATORY DATA

10. Date <i>Salmonella typhi</i> first isolated: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (33-38) Mo. Day Yr.	Site(s) of isolation: (check all that apply) (39) 1 <input type="checkbox"/> Blood 2 <input type="checkbox"/> Stool 3 <input type="checkbox"/> Gall bladder 8 <input type="checkbox"/> Other (specify): _____ (40-55)
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11. Was antibiotic sensitivity testing performed on this (these) isolate(s) at the laboratory? (Please contact the clinical laboratory for this information) (56) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk.	If Yes, was the organism resistant to:	• Ampicillin:(57) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Not tested	• Chloramphenicol:(58) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Not tested	• Trimethoprim-sulfamethoxazole:(59) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Not tested	• Fluoroquinolones (e.g., Ciprofloxacin):(60) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Not tested
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EPIDEMIOLOGIC DATA

12. Did this case occur as part of an outbreak? (two or more cases of typhoid fever associated by time and place) (61) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk.

13. Did the patient receive typhoid vaccination (primary series or booster) within five years before onset of illness? (62) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk.	If Yes, indicate type of vaccine received:	• Standard killed typhoid shot (Wyeth-Ayerst):(63) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk. <input type="text"/> <input type="text"/> (64-65) Year received:	• Oral Ty21a or Vivotif (Berna) four pill series:(66) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk. <input type="text"/> <input type="text"/> (67-68)	• VICPS or Typhim Vi shot (Pasteur Merieux):(69) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk. <input type="text"/> <input type="text"/> (70-71)
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14. Did the patient travel or live outside the United States during the 30 days before the illness began? (72) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk.	If Yes, please list in order the countries visited during the 30 days before the illness began: (other than the United States)	Date of most recent return or entry to the United States: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (137-142) Mo. Day Yr.	
1. _____ (73-86)	2. _____ (89-104)	3. _____ (105-120)	4. _____ (121-136)

15. Was the purpose of the international travel:	a.) Business?(143) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk.	d.) Immigration to U.S.?(148) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk.
b.) Tourism?(144) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk.	e.) Other?(147) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk.	(if other, specify): _____ (148-164)
c.) Visiting relatives or friends?(145) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk.		

16. Was the case traced to a typhoid carrier?(165) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk.	If Yes, was the carrier previously known to the health department?(166) 1 <input type="checkbox"/> Yes 0 <input type="checkbox"/> No 9 <input type="checkbox"/> Unk.
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17. Comments: _____

18. Name of Person Completing Form: _____
Address: _____
Telephone: (_____) _____ Date: _____ / _____ / _____
Mo. Day Yr.

– THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS FORM –

Please send a copy to your STATE EPIDEMIOLOGY OFFICE and the
FOODBORNE AND DIARRHEAL DISEASES BRANCH, CENTERS FOR DISEASE CONTROL AND PREVENTION,
Mailstop A-38, Atlanta, Georgia, 30333. • Fax: (404) 639-2205

Public reporting burden of this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to DHHS Reports Clearance Officer, Paperwork Reduction Project (0920-0009); Rm 531H, H.H. Humphrey Bldg., 200 Independence Ave., SW, Washington, DC 20201. While your response is voluntary your cooperation is necessary for the understanding and control of this disease.

Typhoid Investigation and Documentation Checklist

TASK	DATE	INITIAL
Report Received:	___/___/___	_____
Assigned to Investigator:	___/___/___	_____
Initial Entry into State Surveillance System:	___/___/___	_____
Meet Case Definition: <input type="checkbox"/> Yes <input type="checkbox"/> No	___/___/___	_____
Case Interview Completed: <input type="checkbox"/> Yes <input type="checkbox"/> No MOGE Reason: _____	___/___/___	_____
High Risk Type Identified (If Applicable): <input type="checkbox"/> Food Handler <input type="checkbox"/> Daycare Provider <input type="checkbox"/> Healthcare Provider <input type="checkbox"/> Other "High Risk"	___/___/___	_____
3 Stool & Urine Sample Neg: <input type="checkbox"/> Yes <input type="checkbox"/> No	___/___/___	_____
Biologic Sample to State Laboratory: <input type="checkbox"/> Yes <input type="checkbox"/> No	___/___/___	_____
Contacts Interviewed: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> None	___/___/___	_____
Names: _____		

New Case(s) Identified: <input type="checkbox"/> Yes <input type="checkbox"/> No	___/___/___	_____
Names: _____		

Site Investigation: <input type="checkbox"/> Yes <input type="checkbox"/> No	___/___/___	_____
Active Surveillance Neg. (If Applicable):	___/___/___	_____
Letter/Information Sheet(s) Sent: <input type="checkbox"/> Yes <input type="checkbox"/> No	___/___/___	_____
Completed Disease Worksheet:	___/___/___	_____
Case Closed and Filed:	___/___/___	_____
Case Name: _____	Number: _____	
Principal Investigator: _____	Date: _____	
Case Reviewed By: _____	Date: _____	

KANSAS NOTIFIABLE DISEASE FORM

Today's Date: ___ / ___ / ___

Patient's Name: _____
Last First Middle

Day Phone: _____ **Evening Phone:** _____

Residential Address: _____

City: _____ **Zip:** _____ **County:** _____

Ethnicity: Hispanic or Latino Not Hispanic or Latino Unknown

Race: American Indian/Alaska Native Asian Black or African American
Native Hawaiian or Other Pacific Islander White Unknown
(Circle all that apply)

Sex: M F **Date of Birth:** ___ / ___ / ___ **Age if DOB unknown:** _____

Disease Name: _____

Symptoms:
Onset: ___ / ___ / ___ **State the 3 most prominent symptoms:**

Symptom 1: _____ Symptom 2: _____ Symptom 3: _____

Outbreak associated? Y N Died? Y N

Institutional Residence? None Nursing Home Correctional Residential Hospital Psych

Physician Name: _____ **Physician Phone:** _____

Laboratory Information:

Specimen Collection Date: ___ / ___ / ___ Date Reported To You: ___ / ___ / ___

Name of Test Performed: _____ Results of Test: _____

Name of Laboratory: _____ Laboratory Results Attached? Y N

Treatment Information:

Date of Treatment: ___ / ___ / ___ Treatment Type and Dosage: _____
Treatment Status: Complete On-going Discontinued

Name of person reporting: _____ **Phone:** _____

Comments: _____

Mail reports to your local health department or to: BEDP – Disease Surveillance, 1000 SW Jackson, Suite 210, Topeka, KS 66612-1274. Reports can also be *faxed toll free* to: 1-877-427-7318. (Rev. 04/2004)

Case and Contact(s) Management Worksheets

Contents:

- **Case Activity and Travel Worksheet – Infectious Period**
To be used to track activities and travel of a case during the infectious period.
- **Case Transportation Worksheet – Infectious Period**
To be used to track detailed travel activities of a case during the infectious period.
- **Primary Contact(s) / Site Worksheet**
To be used to create a line listing of contacts of a case. May also be used to identify sites and/or places that infections may have occurred (e.g., daycare, school, etc.).
- **Contact Tracking / Tracing Form**
To be used for individual tracking of all contacts identified on the Primary Contact(s) / Site Worksheet.
- **Contact Surveillance Form**
To be used to track the signs and symptoms associated with the disease amongst the contacts.

Worksheet Instructions

- **Case Activity and Travel Worksheet — Infectious Period:** This worksheet is to be used to track the case's daily activities and travel during the infectious period. It is intended to help the investigator capture detailed information in an organized format.
 - The upper portion of the worksheet contains information specific to the case including name and information specific to the disease including incubation period, treatment dates, etc.
 - The upper portion also contains a Case Number. The Case Number is a number assigned by the investigator to each case. It is important to assign this number as it serves as the link between this worksheet and the Case Transportation, Primary Contact, Contact Tracking and Contact Surveillance Worksheets.
 - The lower portion of the worksheet is a "blank" calendar that the investigator may use to record the case's activities and travel during the infectious period. The "key" to the checkboxes is located on the bottom of the worksheet.
- **Case Transportation Worksheet - Infectious Period:** This worksheet is to be used if there is a need to capture detailed travel information (*i.e.*, airline flight information) about a case and/or contacts. It is anticipated that this worksheet may never be used but is included in the case/contact management worksheets for use should the situation arise.
 - The upper portion of the worksheet contains information specific to the case including name and information specific to the disease including incubation period, treatment dates, etc.
 - The upper portion also contains a Case Number. The Case Number is a number assigned by the investigator to each case. It is important to assign this number as it serves as the link between this Worksheet and the Case Activity, Primary Contact, Contact Tracking and Contact Surveillance Worksheets.
 - The lower portion of the worksheet is structured to allow the investigator to capture detailed travel information.
- **Primary Contact(s) / Site Worksheet:** This worksheet is to be used to create a line listing of the contacts of a case.
 - The upper portion of this worksheet contains information about the case and the lower portion contains the names and key information about the contacts. The Case Number is a number assigned by the investigator to each case. It is important to assign this number as it serves as the link between this worksheet and the Case Activity, Case Transportation, Contact Tracking and Contact Surveillance Worksheets.
 - The Contact Information portion of the worksheet contains the column entitled "Contact Worksheet #". Each contact is assigned a number by the investigator and detailed information about the contact is captured on the Contact Tracking / Tracing Worksheet. It is important to assign this number as it serves as the link between these two Worksheets.
- **Contact Tracking / Tracing Worksheet:** This worksheet is used to capture detailed information about each contact identified on the Primary Contacts / Site Worksheet.
 - The case information portion of this worksheet contains two data fields. The Case Number is a number assigned by the investigator to each case and links this worksheet to the Case Activity, Case Transportation and Contact Surveillance Worksheets. The Contact Worksheet # links this Worksheet to an individual line listing on the Primary Contacts / Site Worksheet.
 - The remaining sections of the Worksheet are intended to provide specific contact identification, exposure data, follow-up and disposition information about each contact.
- **Contact Surveillance Worksheet:** This worksheet is used to track the signs and symptoms associated with the disease amongst the contacts. It is intended to be "self reported" and used by the contact(s) during quarantine.
 - The case information portion of this worksheet contains two data fields. The Case Number is a number assigned by the investigator to each case and links this worksheet to the Case Activity, Case Transportation and Contact Surveillance Worksheets. The Contact Worksheet # links this Worksheet to an individual line listing on the Primary Contacts / Site Worksheet.

Case Activity and Travel Worksheet – Infectious Period (Please Print)

CASE INFORMATION

Name of Primary Case: _____
Last First Middle Nickname / Alias: _____

Case Number: _____ Interview Date: ____/____/____ Interviewer Name: _____

Infectious Period Start Date:¹ ____/____/____ Symptom Onset Date: ____/____/____ Treatment Start Date: ____/____/____

Clinical Improvement Date: ____/____/____ Disease or Condition Under Surveillance: _____

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Date: <input type="checkbox"/> F <input type="checkbox"/> R <input type="checkbox"/> C <input type="checkbox"/> O	Date: <input type="checkbox"/> F <input type="checkbox"/> R <input type="checkbox"/> C <input type="checkbox"/> O	Date: <input type="checkbox"/> F <input type="checkbox"/> R <input type="checkbox"/> C <input type="checkbox"/> O	Date: <input type="checkbox"/> F <input type="checkbox"/> R <input type="checkbox"/> C <input type="checkbox"/> O	Date: <input type="checkbox"/> F <input type="checkbox"/> R <input type="checkbox"/> C <input type="checkbox"/> O	Date: <input type="checkbox"/> F <input type="checkbox"/> R <input type="checkbox"/> C <input type="checkbox"/> O	Date: <input type="checkbox"/> F <input type="checkbox"/> R <input type="checkbox"/> C <input type="checkbox"/> O
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Key: F = Fever, R = Rash, C = Cough, O = Other

¹The period of infectiousness may begin before the case is symptomatic and last after symptoms have abated. Refer to the disease specific protocols for detailed information.

Case Transportation Worksheet – Infectious Period (Please Print)

CASE INFORMATION

Name of Primary Case: _____ Nickname / Alias: _____
Last First Middle

Case Number: _____ Interview Date: ____/____/____ Interviewer Name: _____

Infectious Period Start Date:² ____/____/____ Symptom Onset Date: ____/____/____ Treatment Start Date: ____/____/____

Clinical Improvement Date: ____/____/____ Disease or Condition Under Surveillance: _____

TRAVEL INFORMATION Complete as much information as possible for each type of public transportation used by case during infectious period.

Date of Travel	Time of Travel (AM/PM Circle)	Transport Type (e.g., bus, plane, etc)	Carrier / Company Name	Route / Flight #	Origin City	Origin State	Origin Country	Destination City	Destination State	Destination Country
____/____/____	____:____ AM PM									
____/____/____	____:____ AM PM									
____/____/____	____:____ AM PM									
____/____/____	____:____ AM PM									
____/____/____	____:____ AM PM									
____/____/____	____:____ AM PM									

Page _____ of _____

²The period of infectiousness may begin before the case is symptomatic and last after symptoms have abated. Refer to the disease specific protocols for detailed information.

Primary Contact(s) / Site Worksheet (Please Print)

CASE INFORMATION

Name of Primary Case: _____ Nickname / Alias: _____
Last First Middle

Case Number: _____ Interview Date: ____/____/____ Interviewer Name: _____

Site Name or Place: _____ Disease or Condition Under Surveillance: _____

CONTACT INFORMATION

Name of Person (Last, First) and/or Name of Site	Location	Phone Number	Date of First Exposure	Date of Last Exposure	Contact Form #	Call Back Date
		()	__/__/__	__/__/__		__/__/__ <input type="checkbox"/> N/A
		()	__/__/__	__/__/__		__/__/__ <input type="checkbox"/> N/A
		()	__/__/__	__/__/__		__/__/__ <input type="checkbox"/> N/A
		()	__/__/__	__/__/__		__/__/__ <input type="checkbox"/> N/A
		()	__/__/__	__/__/__		__/__/__ <input type="checkbox"/> N/A
		()	__/__/__	__/__/__		__/__/__ <input type="checkbox"/> N/A
		()	__/__/__	__/__/__		__/__/__ <input type="checkbox"/> N/A
		()	__/__/__	__/__/__		__/__/__ <input type="checkbox"/> N/A
		()	__/__/__	__/__/__		__/__/__ <input type="checkbox"/> N/A
		()	__/__/__	__/__/__		__/__/__ <input type="checkbox"/> N/A

Contact Tracking / Tracing Form (Please Print)

CASE INFORMATION

Name of Primary Case: _____ Case Number: _____
Last First Middle

Contact Form Number: _____
 This number ties this form to the Primary Contact(s) / Site Worksheet

CONTACT INFORMATION

Contact Name: _____ Nickname/Alias: _____
Last First Middle

Address: _____ Phone Number: () _____
Street City State Zip

Alternative Contact: _____ Parent Spouse Friend Other
Last First Middle

Address: _____ Phone Number: () _____
Street City State Zip

School/Employer Name: _____ Address: _____
Street City State Zip

DEMOGRAPHICS

Date of Birth: ___/___/___ Age: ___ Gender: Male Female
 Height: _____ Weight: _____ Hair Color: _____ Complexion: _____

Race: White Black Asian
 Am. Indian / AK Native Native HI. / Pacific Islander

Hispanic / Latino
 Yes No

EXPOSURE INFORMATION

Date of 1st Exposure: ___/___/___
 Date of Final Exposure: ___/___/___
 Case/Contact Type: _____
 1 = Household contact, family member, others spending ≥ 3hrs in household with an infectiousness case.
 2 = Non-household contact with contact < 6 feet with an infectious case ≥ 3 hrs.
 3 = Non-household contact with contact < 6 feet with an infectious case ≤ 3 hrs.
 4 = Non-household contact with contact ≥ 6 feet with an infectious case ≥ 3 hrs.
 5 = Non-household contact with contact ≥ 6 feet with an infectious case ≤ 3 hrs.
 6 = Other, specify: _____

CONTACT / FOLLOW UP DATES

Date Contact Form Initiated: ___/___/___
 Date of Contact Notification: ___/___/___
 Follow up Date: ___/___/___
 N/A
 Disposition Date: ___/___/___
 Notes: _____

DISPOSITION

Located:
 Referred for Treatment
 Referred for Assessment
 Already Hospitalized
 Isolated
Other: _____

Not Located:
 Unable to Locate
 Moved to Another Jurisdiction
 Location: _____
Deceased:
 Disease Suspected
 Unrelated to Disease

Contact Surveillance Form (Please Print)

CASE INFORMATION (Filled out by interviewer)

Case Number: _____

HOUSEHOLD / CONTACT INFORMATION (Filled out by interviewer)

Contact Name: _____ Nickname/Alias: _____
Last First Middle

Address: _____ Phone Number: () _____
Street City State Zip

Sex: Male Female Age: _____ Date of Household Visit: ___/___/___ Contact Form Number: _____
This number ties this form to the Primary Contact(s) / Site Worksheet

MISC. INFORMATION (Filled out by interviewer)

Date of Last Exposure to Case: ___/___/___ Date Vaccinated or Prophylaxis: ___/___/___ Call Back Date: ___/___/___

HOUSEHOLD OR CONTACT CLINICAL SIGNS TRACKING (Filled out by contact or household member)

Instructions: Record Your Temperature Each Day In The Boxes Below. If Fever Is Greater Than 101°F Call The Following Telephone Number Immediately: () _____

Daily Temp	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 16	Day 17	Day 18	Day 19	Day 20	Day 21	Day 22	Day 23	Day 24	Day 25	Day 26	Day 27	Day 28

Instructions: If Symptoms Develop, Mark The Symptoms Started And Call The Telephone Number Listed Above Immediately

Symptoms	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 16	Day 17	Day 18	Day 19	Day 20	Day 21	Day 22	Day 23	Day 24	Day 25	Day 26	Day 27	Day 28

NOTES (Record any additional symptoms, observations or questions for the investigator)

Date: _____

Subject: Typhoid Carrier Agreement

I, _____ acknowledge that I am a typhoid carrier and that in order that I might be placed under modified isolation I hereby agree that:

- I will not at any time handle, prepare or cook any food or drink to be consumed by others than my immediate family.
- I will not work as a foodhandler or provide personal care in daycare or residential care facilities.
- I will notify the local Health Officer or health department at once of any suggestive illness among household members or other personal contacts.
- I will thoroughly wash my hands with soap and water after each visit to the toilet.
- If my residence is not connected to a municipal sewage treatment system, I agree to have an onsite sewage treatment facility that complies with the minimum standards as determined by the Kansas Department of Health and Environment.
- I will notify the health officer or the local health department within 1 week of any change of address.
- I will submit such fecal and urine specimens as may be requested by the Health Department.
- If I become ill and require hospital or institutional care, I will inform the superintendent or person in charge of such hospital or institution that I am a typhoid carrier.
- I understand that failure to abide by the provisions of this agreement subjects me to necessary enteric precautions as determined by the local Public Health Officer.

Signed: _____

Address: _____

I have explained these provisions of this agreement and hereby grant permission for the above named person to be in free communications with others as long as they comply with the conditions of this agreement.

Signed: _____
Health Officer

Date:

Dear _____,

The stool sample collected on _____ has tested positive for the bacterial pathogen *Salmonella typhi* (Typhoid Fever).

The following actions are necessary:

- None.
- Contact your Local Health Department for an additional interview.
- Inform your physician that your laboratory results are positive if he/she is not aware of these results. He/she will decide what antibiotics need to be prescribed.
- Test negative for *Salmonella typhi*:
Three (3) consecutive feces and urine cultures are necessary. They must be taken at least 48 hours apart, beginning at least 48 hours after the discontinuation of antibiotic therapy to assure antimicrobial therapy was successful. You may continue to work if not involved in foodhandling, patient care or occupations involving the care of young children or the elderly

You may not work in food handling, patient care or occupations involving care of young children or the elderly until you are:

- Free of diarrhea for 24 hours.
- Complete all the medication prescribed by your physician.
- Test negative for *Salmonella typhi*.
You may not work until you have had 3 consecutive feces and urine cultures taken at least 48 hours apart. The cultures should be taken at least 48 hours after discontinuation of antibiotic therapy. If any of the tests are positive, cultures must be repeated monthly until 3 consecutive negative cultures are obtained before being allowed to return to work.

Sincerely,

Investigator Name, Title
Phone #
Address Line 1
Address Line 2
City, State Zip Code

	Public Health Fact Sheet Typhoid Fever
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What is typhoid fever?

Typhoid fever is a life-threatening illness caused by the bacterium *Salmonella typhi*. In the United States about 500 cases occur annually and 70% of these are acquired while traveling internationally. It is common in the developing world where it affects about 17 million people and kills 600,000 annually.

What are the symptoms of typhoid fever?

Persons with typhoid fever usually have a sustained high fever between 103°-104° F (39° - 40° C). Additional symptoms include: weakness, stomach pains, headache, and loss of appetite. In some cases, patients have a rash of flat, rose-colored spots. The only way to know for sure if an illness is typhoid fever is to have a stool or blood test.

How is typhoid fever spread?

Typhoid fever is spread person-to-person, usually via the fecal-oral route. You can get typhoid fever if you eat food or drink beverages that have been handled by a person who is shedding *S. typhi* or if sewage contaminated with *S. typhi* bacteria gets into the water you use for drinking or washing food.

How is the disease treated?

You will probably be given an antibiotic to treat the disease. Persons given antibiotics usually begin to feel better within 2-3 days, and death rarely occurs. However, persons who do not get treatment may continue to have fever for weeks or months and as many as 20% may die from complications of the infection. If you are being treated for typhoid fever, it is important to do the following:

- Keep taking the prescribed antibiotics for as long as the doctor has asked you to take them.
- Wash your hands carefully with soap and water after using the bathroom and do not prepare or serve food for other people; this will lower the chance that you will pass the infection on to someone else.
- Have your doctor perform a series of stool cultures to ensure that no *S. typhi* bacteria remain in your body.

How can you avoid typhoid fever?

Two actions can protect you from typhoid fever (if in an area where the disease is common), they are: avoid risky foods and drinks and get vaccinated against typhoid fever. If traveling to an area where typhoid fever is common, the following precautions are recommended:

- Drink bottled water or bring it to a rolling boil for one minute before drinking. Bottled carbonated water is usually safer than uncarbonated water. Other safe beverages include tea and coffee made with boiled water and carbonated bottled beverages with no ice.
- Eat foods that have been thoroughly cooked and still hot and steaming. Avoid raw vegetables and fruits that cannot be peeled.
- When you eat raw fruit or vegetables that can be peeled, peel them yourself. Do not eat the peelings.
- Avoid foods and beverages from street vendors. It is difficult for food to be kept clean on the street and many travelers get sick from food bought from street vendors.

Both injectable and oral vaccines are available. Visit a doctor or travel clinic to discuss your vaccination options. Even if you are vaccinated, it is still more important to be aware of what you are eating and drinking. The vaccines are not 100% effective and avoiding risky foods and drinks will also help protect you against other illnesses, including: cholera, dysentery and hepatitis A.

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

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.