

Yersiniosis

BASIC EPIDEMIOLOGY

Infectious Agent

Yersinia species, a Gram negative bacilli. *Y. enterocolitica* is the species most commonly associated with human infection. *Y. pseudotuberculosis* infection is much less common.

Note *Y. pestis* is separately notifiable as Plague.

Transmission

Transmission is fecal-oral and occurs through ingestion of contaminated food or water.

Transmission may also occur via direct contact with an animal and less commonly with an infected person.

Incubation Period

Probably 3 to 7 days, generally under 10 days.

Communicability

Although fecal shedding occurs with diarrhea and may persist for a prolonged period after symptoms resolve, secondary transmission is rare.

Clinical Illness

Fever with diarrhea (which may or may not contain blood, leukocytes, or mucus) is common in young children. Older children and adults can have fever, abdominal pain, and tenderness in the right lower quadrant of the abdomen (often mistaken with appendicitis) and leukocytosis.

DEFINITIONS

Clinical Case Definition

An illness characterized by diarrhea (sometimes bloody), fever, and abdominal pain; appendicitis-like syndrome and systemic infections can occur

Laboratory Confirmation

- Isolation of *Yersinia* (except *Y. pestis*)* in a clinical specimen.

*For *Yersinia pestis* isolates, see Plague.

Case Classifications

- **Confirmed:** A case that meets the laboratory criteria for diagnosis.
- **Probable:** A clinically compatible case that is epidemiologically linked to a confirmed case.

Note: a case should not be counted as a new case if laboratory results were reported within 365 days of a previously reported infection in the same individual, unless additional information is available indicating a separate infection.

SURVEILLANCE AND CASE INVESTIGATION

Case Investigation

It is recommended that local and regional health departments investigate all reported cases of yersiniosis to identify potential sources of infection. The Yersiniosis Case Investigation Form can be used to record information from the interview. The form is available on the DSHS website: <http://www.dshs.state.tx.us/idcu/investigation/>. Sporadic cases of yersiniosis do not require an investigation form be sent to DSHS EAIDU unless they are identified as part of a multi-jurisdictional cluster or outbreak. Any case associated with a cluster or outbreak should be interviewed.

Case Investigation Checklist

- Confirm laboratory results meet the case definition.
- Review medical records or speak to an infection preventionist or healthcare provider to verify case definition and describe course of illness.
- Interview the case to get detailed food history and risk factor information.
 - Use the Yersiniosis Case Investigation Form to record information from the interview.
 - Note: If the case is not available or is a child, conduct the interview with a surrogate who would have the most reliable information on the case, such as a parent or guardian.
- Provide education to the case or his/her surrogate about effective hand washing, particularly after using the toilet, changing diapers, and before preparing or eating food. Meticulous hand washing is required to prevent transmission. See Prevention and Control Measures.
- Identify whether there is a public health concern: persons should not work as food handlers, child-care or health care workers, or attend child-care as long as they have diarrhea. See Exclusions.
- All confirmed and probable case investigations must be entered and submitted for notification in the NEDSS Base System (NBS). Please refer to the *NBS Data Entry Guidelines* for disease specific entry rules.

Prevention and Control Measures

- Routine hand washing with soap and warm water especially:
 - Before preparing, handling or eating any food.
 - After going to the bathroom.
 - After changing a diaper.
 - After caring for someone with diarrhea.
 - After handling raw food, especially pork.
 - After any contact with animals or their living areas.
- Avoid consuming raw milk or unpasteurized products.
- Follow food safety principles in the kitchen, especially:
 - Cook meat thoroughly
 - Prevent cross-contamination in food preparation areas by thoroughly washing hands, counters, cutting boards, and utensils after they touch raw meat.
 - Separate uncooked meats, hot dogs and other meat packaging from vegetables, uncooked food, and ready to eat foods.
 - Keep the refrigerator at 40°F or lower and the freezer at 0°F or lower.
 - Clean up all spills in your refrigerator right away, especially juices from meat packages, raw meat, and raw poultry.

Exclusions

School/child-care: No exclusions are specified for yersiniosis but the standard exclusion for diarrhea or fever applies:

- Children with diarrhea should be excluded from school/child-care until they are free from diarrhea for 24 hours without the use of diarrhea suppressing medications.
- Children with a fever from any infection should be excluded from school/child-care for at least 24 hours after fever has subsided without the use of fever suppressing medications.

Food Employee: No exclusions are specified for yersiniosis but the standard exclusion for vomiting or diarrhea applies:

- Food employees are to be excluded if symptomatic with vomiting or diarrhea until:
 - Asymptomatic for at least 24 hours without the use of diarrhea suppressing medications OR
 - Medical documentation is provided stating that symptoms are from a noninfectious condition.

Please see Guide to Excluding and Restricting Food Employees in Appendix A.

MANAGING SPECIAL SITUATIONS

Outbreaks

If an outbreak is suspected, notify the appropriate regional DSHS office or DSHS EAIDU at **(800) 252-8239** or **(512) 776-7676**.

The local/regional health department should:

- Interview all cases suspected as being part of the outbreak or cluster.
- Request medical records for any case in your jurisdiction that died, was too ill to be interviewed, or for whom there are no appropriate surrogates to interview.
- Prepare a line list of cases in your jurisdiction. Minimal information needed for the line list might include patient name or other identifier, DSHS or laboratory specimen identification number, specimen source, date of specimen collection, date of birth, county of residence, date of onset (if known), symptoms, underlying conditions, treatments and outcome of case, and risky foods eaten, foods eaten leading up to illness, or other risky exposures, such as animal contact and travel, reported by the case or surrogate.

Line list example:

ID	Name	Age	Sex	Ethnicity	Onset	Symptoms	Food	Animal	Notes
1	NT	34	F	W/N	2/4/16	Bl. D, F	Chicken, eggs	Dog	Dog food
2	PR	2	M	U/U	1/30/16	V,D,F	Chicken, spinach	None	Brother ill

- If the outbreak was reported in association with an apparent common local event (e.g., party, conference, rodeo), a restaurant/caterer/home, or other possible local exposure (e.g., pet store, camp), contact hospitals in your jurisdiction to alert them to the possibility of additional cases.
- Work with any implicated facilities to ensure staff, students, residents, and volunteers receive hand hygiene education, and review hygiene and sanitary practices currently in place including:
 - Policies on and adherence to hand hygiene
 - Storage and preparation of food
 - Procedures for changing diapers and toilet training
 - Procedures for environmental cleaning
- Recommend that anyone displaying symptoms seeks medical attention from a healthcare provider.
- Restrict individuals from handling food, engaging in child-care, healthcare work, or attending child-care, as long as they are symptomatic. See Exclusions in Case Investigation section.
- Enter outbreak into NORS at the conclusion of the outbreak investigation. See Reporting and Data Entry Requirements section.

Note:

- If a food item or food establishment is implicated, the lead epidemiologist for foodborne diseases will notify the DSHS Division of Regulatory Services about the outbreak and the possibility of a common contaminated food source for the cases.
- Decisions about testing implicated food items can be made after consultation with an EAIDU foodborne epidemiologist and the DSHS Laboratory. The general policy is to test only food samples implicated in suspected outbreaks, not in single cases.

REPORTING AND DATA ENTRY REQUIREMENTS

Provider, School, Child-Care Facility, and General Public Reporting Requirements

Confirmed, probable and clinically suspected cases are required to be reported **within 1 week** to the local or regional health department or the Texas Department of State Health Services (DSHS), Emerging and Acute Infectious Disease Branch (EAIDU) at **(800) 252-8239** or **(512) 776-7676**.

Local and Regional Reporting and Follow-up Responsibilities

Local and regional health departments should:

- Enter the case into NBS and submit an NBS notification on all **confirmed and probable** cases.
 - Please refer to the *NBS Data Entry Guidelines* for disease-specific entry rules.
 - A case should not be counted as a new case if laboratory results were reported within 365 days of a previously reported infection in the same individual, unless additional information is available indicating a separate infection. A notification can be sent as soon as the case criteria have been met. Additional information from the investigation may be entered upon completing the investigation.
- If investigation forms are requested, they may be faxed to 512-776-7616 or emailed securely to an EAIDU foodborne epidemiologist.

When an outbreak is investigated, local and regional health departments should:

- Report outbreaks within 24 hours of identification to the regional DSHS office or to EAIDU at **512-776-7676**
- Enter outbreak information into the **National Outbreak Reporting System (NORS)** at the conclusion of the outbreak investigation.
 - For NORS reporting, the definition of an outbreak is two or more cases of similar illness associated with a common exposure.
 - The following should be reported to NORS:
 - Foodborne disease, waterborne disease, and enteric illness outbreaks with person-to-person, animal contact, environmental contact, or an indeterminate route of transmission.
 - Outbreaks as indicated above with patients in the same household.
 - Enter outbreaks into NORS online reporting system at <https://wwwn.cdc.gov/nors/login.aspx>
 - Forms, training materials, and other resources are available at <http://www.cdc.gov/nors/>
- To request a NORS account, please email FoodborneTexas@dshs.state.tx.us
 - Please put in Subject Line: NORS User Account Request
 - Information needed from requestor: name, email address, and agency name
 - After an account has been created a reply email will be sent with username, password, and instructions for logging in.

LABORATORY PROCEDURES

Testing for Yersiniosis is widely available from most private laboratories.

In an outbreak or other special situation, the DSHS Laboratory can culture raw stool or stool in transport medium (e.g., Cary-Blair media) for *Yersinia* species. Contact an EAIDU foodborne epidemiologist prior to submitting raw stool or stool in transport medium for culture.

Specimen Collection

- Submit pure cultures on an agar slant at ambient temperature or 2-8°C (*ice pack*) as soon as possible to ensure viability.

- For raw stool or stool in transport medium, please refer to table below:

Specimen type	Transport time to lab from time of collection	Transport temperature
Raw stool	≤24 hours	4°C (ice pack)
Raw stool	>24 hours	Freeze immediately at ≤-70°C. Ship on dry ice.
Stool in transport solution/medium	Time of collection to ≤3 days	Room temp or 4°C (ice pack)
Stool in transport solution/medium	>3 days	Freeze immediately at ≤-70°C. Ship on dry ice.
All	*The above transport times are optimal for recovery of pathogenic organisms. In the interest of public health, specimens will be accepted up to 30 days from date of collection.	*The above transport temperatures are optimal for the recovery of pathogenic organisms. In the interest of public health, specimens will be accepted at non-optimal temperature transport.

* Note: Pathogen recovery rates decrease over time. For best results, submit ASAP.

Specimen Shipping

- Ship specimens to:

Laboratory Services Section, MC-1947
Texas Department of State Health Services
Attn. Walter Douglass (512) 776-7569
1100 West 49th Street
Austin, TX 78756-3199

Causes for Rejection:

- Missing or discrepant information on form/specimen.
- Transport media was expired.
- Specimen not in correct transport medium.

FOOD SAMPLES AND ENVIRONMENTAL SWABS:

Testing of food and environmental swabs for *Yersinia enterocolitica* is available at the DSHS laboratory. Decisions about testing implicated food items can be made after consultation with an EAIDU foodborne epidemiologist and the DSHS Laboratory.

General policy

- The DSHS lab will only test food samples or environmental swabs from facilities implicated in a suspected outbreak (not associated with single cases).
- In outbreaks, the DSHS lab will not test food samples or environmental swabs unless a pathogen has been identified in a clinical specimen.
- Food samples or environmental swabs must be **collected by a registered sanitarian**

For further questions, please contact an EAIDU foodborne epidemiologist to discuss further.

REVISION HISTORY

April 2017

- Updated statement regarding how often to count a case, only counting a case once per 365 days, in the Definitions and Reporting and Data Entry Requirements section.
- Updated table regarding the submission of raw stool or stool in transport medium in the Laboratory Procedures section.