

Yersiniosis

Investigative Guidelines

October 2016

1. DISEASE REPORTING

1.1 Purpose of Reporting and Surveillance

1. To identify sources of infection and to prevent further disease transmission from such sources.
2. To assess the risk of the case transmitting infection to others, and to prevent such transmission.
3. To identify other cases.

1.2 Laboratory and Physician Reporting Requirements

Laboratories and physicians are required to report yersiniosis within one working day of identification/diagnosis to the local health departments. Reports should not be delayed for serotyping or final laboratory confirmation. Laboratories must forward isolates to the Oregon State Public Health Laboratory (OSPHL).

1.3 Local Health Department Reporting and Follow-Up Responsibilities

1. Report all confirmed and presumptive (but *not* suspect) cases to the Oregon Public Health Division (PHD) (see definitions below) by the end of the calendar week of initial physician/lab report.
2. Begin follow-up investigation within one working day. Use Orpheus or the Yersiniosis Case Investigation Form.

2. THE DISEASE AND ITS EPIDEMIOLOGY

2.1 Etiologic Agent

Yersinia is a Gram-negative bacillus. In this country, intestinal infection in humans is caused by *Y. enterocolitica* and less commonly by *Y. pseudotuberculosis*. For both species, serotypes causing disease may vary in different geographic areas; *Y. enterocolitica* type O3 is responsible for most outbreaks in the United States.

2.2 Description of Illness

Yersiniosis is an intestinal infection typically occurring as acute febrile diarrhea (especially in young children), which may be bloody. Involvement of abdominal lymph nodes causing right-sided abdominal symptoms may be mistaken for appendicitis (especially in older children and adults). Complications include

Yersiniosis

erythema nodosum (in about 10% of adults, particularly women), and postinfectious arthritis (with a predilection for HLA-B27 genetic type); these complications tend to resolve within a few months. Bloodstream infection may also occur, most often among people with iron overload (e.g., hemochromatosis) or those with underlying immunosuppressive illness or therapy.

2.3 Reservoirs

Animals are the principal reservoir for *Yersinia*. The pig is the principal reservoir for pathogenic *Y. enterocolitica*; asymptomatic pharyngeal carriage is common in swine, especially in the winter. *Y. pseudotuberculosis* is widespread among many species of avian and mammalian hosts, particularly among rodents and other small mammals.

2.4 Modes of Transmission

Transmission takes place by eating and drinking contaminated food or water, or by contact with infected animals or less commonly infected people. *Y. enterocolitica* has been isolated from a variety of foods; however, pathogenic strains are most commonly isolated from raw pork or pork products. In the United States, preparation of chitterlings (pork intestines) in the household may result in infection. In contrast to most foodborne pathogens, *Y. enterocolitica* is able to multiply under refrigeration and low-oxygen conditions. *Y. enterocolitica* has been recovered from natural bodies of water.

Sick animals, including farm animals and pets such as kittens and puppies, have been implicated.

Nosocomial infection has been reported, as well as rare reports of transmission by blood transfusion from donors who had no symptoms or mild gastrointestinal illness.

2.5 Incubation Period

Probably 3–7 days, generally <10 days.

2.6 Period of Communicability

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

2.7 Treatment

Uncomplicated cases of diarrhea due to *Y. enterocolitica* typically resolve without antibiotic treatment. However, in more severe or complicated infections, antibiotics such as aminoglycosides, doxycycline, trimethoprim-sulfamethoxazole, or fluoroquinolones may be useful. The organism is usually resistant to penicillin, ampicillin, and first-generation cephalosporins.

3. CASE DEFINITIONS, DIAGNOSIS AND LABORATORY SERVICES

Some laboratories have started using culture-independent diagnostic tests (CIDTs), which detect the presence of a specific antigen (e.g., direct fluorescent antibody tests) or genetic sequence of a bacterium (PCR). However, if the organism is not cultured, we will have no subtyping for public health purposes. If PCR is positive for *Yersinia*, laboratories in Oregon will generally perform reflex culture; if the follow-up culture is negative, the case should be classified merely as “suspect.” When you get a positive PCR test before the culture result, please proceed to interview the case, because most of them will turn out to be culture-positive — i.e., true cases. If you get the culture result before the interview, and it is negative, you do not need to interview the case, because PCR-positive but culture-negative cases will remain merely “suspect. “

3.1 Confirmed Case Definition

Anyone with *Yersinia* cultured from any site.

3.2 Presumptive Case Definition

Compatible illness (diarrhea and fever) in someone epidemiologically linked to a confirmed case.

3.3 Suspect Case (not reportable to PHD)

Anyone with an undiagnosed febrile diarrheal illness; or with a positive PCR test, but whose culture is negative.

3.4 Services Available at Oregon State Public Health Laboratory (OSPHL)

The OSPHL provides isolate identification, speciation and stool culturing for *Yersinia* species (test must specifically be requested). For isolate identification, submit a pure isolate of the organism growing on an agar slant that will support growth (e.g., nutrient or blood agar). A swab with stool on it, completely submerged in a Cary-Blair tube, is required for stool culturing. Both specimens may be sent without a cold pack. All specimens must be properly packaged in double containers with absorbent material around them. Use the Bacteriology/Parasitology form (#60). The OSPHL began using bar-coded labels with assigned numbers on test requisition forms starting early May 2009. The new bar-coded forms are available only by ordering using the Stockroom Order Request form (#71–54) <https://public.health.oregon.gov/LaboratoryServices/Documents/stock3.pdf> or call 503-693-4100 to order by phone.

4. ROUTINE CASE INVESTIGATION

4.1 Case Interview

1. Identify Possible Source of Infection

Ask about exposures in the 2–10 days prior to onset:

Yersiniosis

- Consumption of high-risk foods, including raw pork, chitterlings, tofu, unpasteurized milk or unpasteurized dairy products (e.g., soft cheeses made with raw milk);
- Handling or preparation of raw pork in the household, including chitterlings (pig intestines);
- Contact with animals, especially pigs, but also other animals including pet dogs, cats, rodents and birds;
- Blood transfusions; and
- Name, date, and location of meals eaten at restaurant or public gatherings

4.2 Identify Potentially Exposed Persons

Collect name, age, onset date, and contact information of people with similar illness.

4.3 Environmental Evaluation

An environmental evaluation is usually not needed since the source of the infection is rarely determined with certainty.

5. CONTROLLING FURTHER SPREAD

5.1 Patient/Household Education

1. Basic instruction about hand washing after defecation or diaper changing and before food preparation should be provided to cases and potentially exposed contacts.
2. As indicated, provide other pointers about minimizing fecal exposure in daily life.

5.2 Isolation of Case

Standard precautions are adequate to prevent transmission of yersiniosis.

5.3 Occupational Restrictions

Work or child care restrictions: Food handlers, child-care attendees and providers, and health-care personnel with diarrhea should be excluded from work while symptomatic; however, no specific measures are needed to prevent or control transmission from asymptomatic carriers.

5.4 Restrictions on Household Contacts

None.

5.5 Follow-up Stool Cultures

Routine follow-up cultures are not indicated.

5.6 Environmental Measures

In outbreak situations, implicated food products will be recalled.

6. MANAGING SPECIAL SITUATIONS

6.1 Outbreaks

Although rare, yersiniosis outbreaks are important to identify and investigate, particularly if young children are affected. However, such investigations are difficult, require special questionnaires and active surveillance, and may involve complex environmental evaluations. Consultation with ACDP is essential before beginning any special investigation.

UPDATE LOG

March 2016: Added culture independent tests (CIDTs) under §3. Revised suspect case definition. (Shiferaw).

December 2015: Placed into new template and corrected spelling and link errors. (Leslie Byster)

May 2010: Created.