

Yersiniosis

Investigative Guidelines

February 2019

REPORT WITHIN 1 WORKING DAY

1. DISEASE REPORTING

1.1 Purpose of Surveillance and Reporting

1. To identify outbreaks and potential sources or sites of ongoing transmission.
2. To assess the risk of the case transmitting infection to others, and to prevent such transmission.
3. To educate people about how to reduce their risk of infection.
4. To identify other cases.
5. To better characterize the epidemiology of this infection.

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 final laboratory confirmation. Laboratories must forward positive specimens to the Oregon State Public Health Laboratory (OSPHL).

1.3 Local Health Department Reporting and Follow-Up Responsibilities

1. Report all confirmed, presumptive and suspect cases to the Oregon Public Health Division (OPHD) Acute and Communicable Disease Prevention Section (ACDP) (see definitions below) as soon as possible, and no later than the end of the calendar week of initial physician/lab report. Enter information about the case into Orpheus as you gather it during your investigation.
2. Begin follow-up investigation of cases within one working day. Use the *Yersinia* case investigation form or enter data directly into Orpheus. Enter all data into Orpheus as soon as possible, and no later than seven days after the initial report.
3. Ensure that labs forward all patient specimens to OSPHL for further characterization as required by law.

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 acute intestinal infection typically occurring as acute febrile diarrhea (especially in young children) that 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 erythema nodosum (in about 10% of adults, particularly women), postinfectious arthritis (with a predilection for HLA-B27 genetic type), and bloodstream infection. These complications tend to resolve within a few months. Bacteremia occurs 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* spp. 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* can 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 as the source of human *Y. pseudotuberculosis*.

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 under 10 days.

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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. Prolonged asymptomatic shedding has been reported.

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 and first-generation cephalosporins.

2. CASE DEFINITIONS, DIAGNOSIS AND LABORATORY SERVICES

Some laboratories have started using culture-independent diagnostic tests (CIDTs), which detect the genetic sequence of a bacterium using a polymerase chain reaction (PCR) test. However, if no culture is done, we will have no subtyping for public health purposes. If PCR is positive for *Yersinia* spp., some laboratories in Oregon will do reflex culture. Laboratories should automatically forward positive specimens to OSPHL for additional typing. When you get a PCR-positive test before the culture result, please proceed to interview the presumptive case; most will be confirmed by culture. A repeat positive laboratory result within 365 days is not counted as a new case unless it is a different species.

3.1 Confirmed Case Definition

Anyone with *Yersinia* spp. cultured from any site.

3.2 Presumptive Case Definition

A CIDT-positive case; or someone with clinically compatible illness (diarrhea or abdominal pain) epidemiologically linked to a confirmed or presumptive case.

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

OSPHL provides isolate identification, serotyping, and stool culturing for *Yersinia* species. For complete specimen collection instructions, please visit the OSPHL Lab Test Menu at www.healthoregon.org/labtests. Complete all required fields on the General Microbiology Test Request Form (#60), available at www.bitly.com/phl-forms.

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). To order, choose the *Yersinia* spp. (non-*Y. pestis*) ID box on the Test Request Form.

For stool culture, submit stool in Cary Blair transport media to the fill line on the vial. To order, choose the *Yersinia* spp. (non-*Y. pestis*) Culture box on the Test Request Form.

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All specimens must be properly packaged for transport. Contact OSPHL with questions about submitting specimens.

4. CASE INVESTIGATION

4.1 Case Interview

Identify Possible Source of Infection

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

- Consumption of
 - 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 pigs
- Contact with other animals, including pet dogs, cats, rodents and birds
- Blood transfusion
- Meals eaten at restaurant or public gatherings (collect name, date, and location)

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.

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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 Epidemiology staff is essential before beginning any special investigation.

UPDATE LOG

February 2019: updated case definition to include PCR-positive cases without culture as presumptive per CSTE case definition. Not considered a new case until specimens are >365 days apart. Updated recommendation for Orpheus data entry and testing at OSPHL. (June Bancroft)

March 2016: Added culture independent test (CIDT) under §3. Revised suspect case definition. (Beletshachew Shiferaw)

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

May 2010: Created.