

Listeriosis

Investigative Guidelines

August 2016

1. DISEASE REPORTING

1.1 Purpose of Reporting and Surveillance

1. To determine whether the case's source of infection may be of public health concern;
2. To collect in a timely fashion exposure data that will help investigate an outbreak should it transpire that the case is part of one.

1.2 Laboratory and Physician Reporting Requirements

Physicians and laboratories are required to report cases to the local health department (LHD) within one working day; laboratories must submit 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) by the end of the calendar week of initial physician or lab report. Use Orpheus or the standard case report form.
2. Begin follow-up investigation within one working day. Use Orpheus or the Listeriosis case investigation form.. Enter all data into Orpheus by the end of the week.
3. As indicated, complete summary forms (available from Acute and Communicable Disease Prevention (ACDP) for foodborne disease outbreaks when investigation is complete.

2. THE DISEASE AND ITS EPIDEMIOLOGY

2.1 Etiologic Agent

Listeria monocytogenes is a Gram-positive rod. The serotypes isolated most frequently from humans in the U.S. include 1/2a, 1/2b and 4b.

2.2 Description of Illness

Listeriosis is primarily an illness of pregnant women, newborns, the elderly and immunocompromised persons, though both sporadic cases and outbreaks have occurred in the immune-competent. Listeriosis may consist of only an influenza-like illness with high fever, headache and myalgias. It may present as a gastrointestinal illness with flu-like symptoms plus diarrhea (approximately 68%

Listeriosis

in four reported outbreaks) and vomiting (in 35%). Invasive listeriosis produces sepsis or meningitis. In pregnant women, listeriosis may cause miscarriages or stillbirths. The case fatality rate of invasive listeriosis may be as high as 30% in infants infected prenatally, and 25%–30% in non-pregnant adults.

Most cases of listeriosis are sporadic rather than epidemic. However, several large outbreaks have been associated with consumption of contaminated foods.

2.3 Reservoirs

L. monocytogenes is common in the environment. It is easily recovered from soil, water, sewage, vegetation, silage, commercial meat and dairy products. Domestic and wild mammals, birds, and man may be asymptomatic carriers of *Listeria* in their intestinal flora. Up to 5% of humans may be excreting *L. monocytogenes* in their stools at any given time.

2.4 Modes of Transmission

L. monocytogenes is primarily a foodborne infection. Consumption of contaminated food items has been identified as the source of infection in both sporadic and outbreak-associated cases. The largest recorded outbreak of listeriosis to date was associated with eating Mexican-style soft cheese.

Listeria can be found in a variety of foods, including cheeses (especially Brie, Camembert, Roquefort, Bleu), hot dogs, lettuce, cole slaw and other salad items, ready-to-eat foods purchased from store delicatessens, and in raw milk. Cross-contamination of ready-to-eat foods may also play a role in transmission.

Women who are infected during pregnancy may pass *L. monocytogenes* to the fetus, either transplacentally or at birth. Infection in the fetus may manifest as stillbirth, or as meningitis or sepsis in the neonate. Transmission in neonatal nurseries, presumably on the hands of medical/nursing staff, has been documented.

2.5 Incubation Period

Not known with certainty but probably ranges from days to several weeks. In the big Los Angeles outbreak linked to Mexican-style soft cheese, the incubation period averaged 31 days (range: 3–70 days).

2.6 Period of Communicability

Person-to-person transmission, other than from mother to fetus or newborn, is rare.

2.7 Treatment

The optimal therapy for listeriosis has not been established in controlled trials. A combination of ampicillin and an aminoglycoside (gentamicin) is usually used. In penicillin-allergic patients, sulfamethoxazole/trimethoprim, or, if the allergy is not IgE-mediated, meropenem, may be used. Ampicillin is the preferred treatment for maternal-fetal listeriosis.

3. CASE DEFINITIONS, DIAGNOSIS AND LABORATORY SERVICES

3.1 Confirmed Case Definition

Person from whom *Listeria monocytogenes* is isolated from a normally sterile site, usually blood or cerebrospinal fluid, **or during a point-source outbreak, from stool.**

3.2 Presumptive Case Definition

Sepsis or meningitis in a neonate, or an elderly or immunocompromised person, from whom *L. monocytogenes* is isolated from a non-sterile site or who was exposed to the same suspected source of infection as one or more confirmed cases; or fever and malaise in a woman who miscarries, and from whom *L. monocytogenes* is isolated from a non-sterile site or who has been exposed to the same suspected source as a confirmed case.

3.3 Suspect Case (not reportable to PHD)

Anyone with an influenza-like illness (fever, headache, myalgia) or sepsis or meningitis; or a pregnant woman with a miscarriage or stillbirth.

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

OSPHL provides isolate confirmation for *L. monocytogenes*. Clinical laboratories are required to forward isolates to OSPHL. Serologic testing is unreliable because of cross-reactivity with other bacterial species, and it is not readily available. In the event of an outbreak, contact ACDP for assistance in determining which additional specimens should be collected for laboratory study.

4. ROUTINE CASE INVESTIGATION

Interview all cases or their surrogates who may be able to provide pertinent information.

4.1 Clinical Data

Collect the following data for each case.

1. Ask if case has any symptoms. If so, ask onset date.
2. If the case is hospitalized, ask name of hospital, date of admission and discharge. If transferred to another hospital, get the hospital name.
3. Outcome.
4. Determine the clinical illness — sepsis, meningitis, amnionitis.
5. Ask whether patient is pregnant or immunocompromised or has underlying medical conditions such as cancer or is taking corticosteroids or chemotherapy.
6. If pregnant, ask about outcome of pregnancy.
7. Ask whether the fetus or neonate had culture-confirmed listeriosis. If yes, determine the type of infection — meningitis, bacteremia, sepsis.

Listeriosis

8. Ask about high-risk foods such as luncheon meats, hot dogs, soft cheeses, and salad items.

4.2 Identify Possible Source of Infection

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

Since 2004, we have asked that you conduct a detailed supplemental interview with all cases (or their proxies). For most people this will take 20–40 minutes. This is part of a multi-state/CDC effort to better identify and control what has been a series of outbreaks eventually traced to widely distributed commercial products, notably luncheon meats and hot dogs.

Listeria has a long incubation period, and subtyping is unusually complicated to do, making it difficult to recognize outbreaks in a timely manner. Also, cases are often widely scattered, with no more than one or two in any single state. Interviewing cases months after the fact about specific food exposures has proven predictably frustrating.

The information you collect on this supplemental questionnaire, which was developed by CDC in consultation with a number of states, will be used to assess potential vehicles should the case eventually be determined to be part of an outbreak. Take a few minutes to familiarize yourself with the questionnaire before you use it! If you have any questions, give ACDP a call.

5. CONTROLLING FURTHER SPREAD

With the exception of mother-to-fetus/newborn, person-to-person transmission of listeriosis is rare. To prevent the possible spread in nurseries, strict hand washing by personnel should be enforced. In addition, food handlers, child-care 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.

6. MANAGING SPECIAL SITUATIONS

Although rare, listeriosis outbreaks are important to identify and investigate because of the life-threatening nature of the disease and the likelihood that there is a continuing common source of infection in the community. 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

August 2016: Placed into new template and corrected spelling and link errors.

Added reporting via Orpheus application; changed reporting time from one week to one working day. Updated statement regarding antibiotic treatments. (Leslie Byster, Beletshachew Shiferaw)

September 2010: Update style