

LISTERIOSIS

REPORTING INFORMATION

- **Class B1:** Report by the close of the next business day after the case or suspected case presents and/or a positive laboratory result to the local public health department where the patient resides. If patient residence is unknown, report to the local public health department in which the reporting health care provider or laboratory is located.
- Reporting Form(s) and/or Mechanism: [Ohio Confidential Reportable Disease form](#) (HEA 3334, rev. 1/09), [Positive Laboratory Findings for Reportable Disease form](#) (HEA 3333, rev. 8/05), the local health department via the Ohio Disease Reporting System (ODRS) or telephone
- The [Centers for Disease Control and Prevention \(CDC\) Listeria Case Form](#) (OMB No. 0920-0004) is available for use to assist in local disease investigation and contact tracing activities. This form should be sent to the Ohio Department of Health (ODH), and information collected from the form should be entered into ODRS where fields are available.
- [ODH Enteric Case Report](#) might be useful in follow-up of cases. Do not send this report to ODH; it is for local health department use only.
- Additional reporting information, with specifics regarding the key fields for ODRS Reporting can be located in [Section 7](#).

AGENT

The bacterium, *Listeria monocytogenes*, is a Gram-positive rod; the major serotypes that cause infection are serotypes 1/2a, 1/2b and 4b. It can grow at temperatures as low as 3°C and reproduce in refrigerated foods. The infectious dose is unknown, but may be $< 10^3$ organisms in susceptible persons.

CASE DEFINITION

Clinical Description

In adults, invasive disease caused by *Listeria monocytogenes* manifests most commonly as meningitis or bacteremia. Infection during pregnancy may result in fetal loss through miscarriage or stillbirth, neonatal meningitis or bacteremia. Other manifestations can also be observed.

Laboratory Criteria for Diagnosis

- Isolation of *L. monocytogenes* from a normally sterile site (e.g. blood or cerebrospinal fluid [CSF] or, less commonly, joint, pleural or pericardial fluid) or
- Isolation of *L. monocytogenes* from placental or fetal tissue, in the setting of a miscarriage or stillbirth.

Case Classification

Suspect*: A clinically compatible case with pending laboratory results.

Confirmed: A clinically compatible case that is laboratory confirmed.

Not a Case: This status will not generally be used when reporting a case, but may be used to reclassify a report if investigation revealed it was not a case.

* This case classification can be used for initial reporting purposes to ODH as CDC has not developed a classification.

SIGNS AND SYMPTOMS

There are two main clinical presentations, accounting for over 97% of cases:

- Septicemia: An acute, mild to severe febrile illness, sometimes with influenza-like and/or gastrointestinal symptoms.
- Acute meningoencephalitis: A sudden onset of fever with intense headache, nausea, vomiting and signs of meningeal irritation. Delirium and coma may result.

Infections can be classified into five general categories:

- Infection during pregnancy may be asymptomatic, but it usually a mild, febrile illness (bacteremia) that can cause premature labor with a resultant stillbirth or infected baby. The mother usually survives.
- Granulomatosis infantiseptica is an early grave illness of the neonate due to in utero transmission. Septicemia results in the abscesses and granulomas in multiple organs. There may also be meningoencephalitis.
- Sepsis is a moderate to severe illness of neonates (> 3 days after birth) or (usually) immunocompromised adults.
- Focal infection involves localized lesions in adult or child resulting from direct contact or bacteremia.

DIAGNOSIS

Listeria can be cultured on routinely used media from blood, cerebrospinal fluid, meconium, gastric washings, placenta or other infected tissues. Special techniques (e.g. cold enhancement) may be needed to recover the organism from stool and other sites with mixed flora. Laboratories should send all *Listeria* isolates to ODH Laboratory for serotyping and PFGE analysis. Serologic tests are unreliable.

EPIDEMIOLOGY

Source

Listeria are found widely spread in the environment and in animals. They have been isolated from soil, dust, animal feed, water, sewage, domestic and wild mammalian and avian species, fish, crustaceans and asymptomatic humans. Foods associated with common source outbreaks include raw and contaminated pasteurized milk, soft cheeses and cole slaw. Uncooked hot dogs, ready-to-eat meats, undercooked chicken and unwashed vegetables have also been associated with listeriosis.

Occurrence

The incidence of listeriosis is unknown. It is an uncommon infection and is typically sporadic, although common source foodborne outbreaks have occurred in recent years. Individuals at greatest risk are neonates, the elderly, pregnant women and immunocompromised persons. Approximately 40% of clinical cases occur within the first three weeks of life; in adults, infection occurs mainly after age 40 or among those with underlying disease. *L. monocytogenes* is the cause of up to 10% of community-acquired meningitis. Unapparent infections occur at all ages, although they are of consequence only during pregnancy. Incidence in humans is higher in the summer.

Mode of Transmission

Early onset neonatal infections (onset \leq 3 days after birth) arise from transplacental or ascending intrauterine infection. Late onset neonatal infections (onset > 3 days after birth) can be acquired during passage through the birth canal. Ingestion of contaminated foods, genital contact and inhalation are possible routes of transmission. Skin infections may occur from direct contact with infected animals or soil contaminated

with infected animal feces. In most human cases, the portal of entry is not apparent. The organism may be shed in human stool for several months.

Period of Communicability

Period of communicability is unknown. Asymptomatic fecal and vaginal carriage occurs in humans.

Incubation Period

Estimated to be 3 weeks (mean), with a range of 3-70 days. The fetus is usually infected within several days after maternal disease.

PUBLIC HEALTH MANAGEMENT

Case

No quarantine or strict isolation is necessary. Drainage/secretion precautions may be considered for heavily infected infants. Optimal antimicrobial therapy is uncertain; however, the use of ampicillin plus an aminoglycoside has been recommended due to its effectiveness in animals.

Contact

It appears that many people have contact with and carry the organism, but few develop symptomatic infections. Precautions for those contacts who are immunocompromised may be indicated as it appears that the persons most affected by the disease fall into this category.

Prevention and Control

There is no immunization available. Pregnant women and other high-risk individuals, such as immunocompromised persons and the elderly, should consider the following to minimize the risk of acquiring listeriosis:

- Avoid contact with infective materials such as aborted fetuses of farm animals.
- Avoid soft cheeses such as feta, Brie, Camembert, blue-veined cheeses and Mexican-style cheeses.
- Cook until steaming hot left-over foods or ready-to-eat foods such as hot dogs, lunch meats and cold cuts.
- Avoid food from deli counters.
- Avoid contact with known infected persons.
- Avoid raw (unpasteurized) milk or foods made with raw milk.
- Consume perishable and ready-to-eat foods as soon as possible.
- Do not eat refrigerated pâtés or meat spreads. Canned or shelf-stable pâtés and meat spreads may be eaten.
- Avoid getting fluid from hot dog packages on other foods, utensils, and food preparation surfaces, and wash hands after handling hot dogs, luncheon meats, and deli meats.
- Do not eat refrigerated smoked seafood, unless it is contained in a cooked dish, such as a casserole. Refrigerated smoked seafood, such as salmon, trout, whitefish, cod, tuna or mackerel, is most often labeled as "nova-style," "lox," "kippered," "smoked," or "jerky." The fish is found in the refrigerator section or sold at deli counters of grocery stores and delicatessens. Canned or shelf-stable smoked seafood may be eaten.

What is listeriosis?

Listeriosis, a serious infection caused by eating food contaminated with the bacterium *Listeria monocytogenes*, has recently been recognized as an important public health problem in the United States. The disease affects primarily pregnant women, newborns and adults with weakened immune systems. It can be avoided by following a few simple recommendations.

How great is the risk for listeriosis?

In the United States, an estimated 1,100 persons become seriously ill with listeriosis each year. Of these, 250 die. At increased risk are:

- Pregnant women, who are about 20 times more likely than other healthy adults to get listeriosis. About one-third of listeriosis cases happen during pregnancy.
- Newborns rather than pregnant women themselves suffer the serious effects of infection in pregnancy.
- Persons with weakened immune systems.
- Persons with cancer, diabetes or kidney disease.
- Persons with AIDS, who are almost 300 times more likely to get listeriosis than persons with intact immune systems.
- Persons who take glucocorticosteroid medications.
- The elderly.

Healthy adults and children occasionally become infected with *Listeria*, but they rarely become seriously ill.

How does *Listeria* get into food?

Listeria monocytogenes is found in soil and water. Vegetables may become contaminated from the soil or from manure used as fertilizer. Animals may carry the bacterium without appearing ill and can contaminate foods of animal origin such as meats and dairy products. The bacterium has been found in a variety of raw foods, such as uncooked meats and vegetables, as well as processed foods that become contaminated during processing, such as soft cheeses and cold cuts at the deli counter. Unpasteurized (raw) milk or foods made from unpasteurized milk can contain the bacterium. *Listeria* is killed by pasteurization, and heating procedures used to prepare ready-to-eat processed meats should be sufficient to kill the bacterium; however, unless good manufacturing practices are followed, contamination can occur after processing.

How do you get listeriosis?

You get listeriosis by eating food contaminated with *Listeria*. Babies can be born with listeriosis if their mothers eat contaminated food during pregnancy. Although healthy persons may consume contaminated foods without becoming ill, those at increased risk for infection can probably get listeriosis after eating food contaminated with even a few bacteria. Persons at risk can prevent *Listeria* infection by avoiding certain high-risk foods and by handling food properly.

How do you know if you have listeriosis?

A person with listeriosis usually has fever, muscle aches and sometimes gastrointestinal symptoms such as nausea or diarrhea. If infection spreads to the nervous system, symptoms such as headache, stiff neck, confusion, loss of balance or convulsions may occur. Infected pregnant women might experience only a milk flu-like illness; however, infection during pregnancy can lead to premature delivery, infection of the newborn or even stillbirth. There is no routine screening test for susceptibility to listeriosis during pregnancy,

as there is for rubella and some other congenital infections. If you have symptoms such as fever or stiff neck, consult your doctor. A blood or spinal fluid test (to cultivate the bacteria) will show if you have listeriosis. During pregnancy, a blood test is the most reliable way to find out if your symptoms are due to listeriosis.

Can listeriosis be prevented?

The general guidelines recommended for the prevention of listeriosis are similar to those used to help prevent other foodborne illness, such as salmonellosis.

How can you reduce your risk for listeriosis?

General recommendations:

- Thoroughly cook raw food from animal sources, such as beef, pork or poultry.
- Wash raw vegetables thoroughly before eating.
- Keep uncooked meats separate from vegetables and from cooked foods and ready-to-eat foods.
- Avoid raw (unpasteurized) milk or foods made from raw milk.
- Wash knives, hands and cutting boards after handling uncooked foods.

Recommendations for persons at high-risk, such as pregnant women and persons with weakened immune systems, in addition to the recommendations listed above: Avoid soft cheeses such as feta, Brie, Camembert, blue-veined and Mexican-style cheese. (Hard cheeses, processed cheeses, cream cheese, cottage cheese or yogurt need not be avoided.)

- Cook until steaming hot left-over foods or ready-to-eat foods, such as hot dogs, before eating.
- Although the risk of listeriosis associated with foods from deli counters is relatively low, pregnant women and immunosuppressed persons may choose to avoid these foods or thoroughly reheat cold cuts before eating.
Consume perishable and ready-to-eat foods as soon as possible
- Do not eat refrigerated pâtés or meat spreads. Canned or shelf-stable pâtés and meat spreads may be eaten
- Avoid getting fluid from hot dog packages on other foods, utensils, and food preparation surfaces, and wash hands after handling hot dogs, luncheon meats, and deli meats.
- Do not eat refrigerated smoked seafood, unless it is contained in a cooked dish, such as a casserole. Refrigerated smoked seafood, such as salmon, trout, whitefish, cod, tuna or mackerel, is most often labeled as "nova-style," "lox," "kippered," "smoked," or "jerky." The fish is found in the refrigerator section or sold at deli counters of grocery stores and delicatessens. Canned or shelf-stable smoked seafood may be eaten.

Can listeriosis be treated?

When infection occurs during pregnancy, antibiotics given promptly to pregnant women can often prevent infection of the fetus or newborn. Babies with listeriosis receive the same antibiotics as adults, although a combination of antibiotics is often used until physicians are certain of the diagnosis. Even with prompt treatment, some infections result in death. This is particularly likely in the elderly and in persons with other serious medical problems.