

# Listeriosis

*Listeria Monocytogenes*

## **DISEASE REPORTABLE WITHIN 24 HOURS OF DIAGNOSIS**

Per N.J.A.C. 8:57, healthcare providers and administrators shall report by mail or by electronic reporting within 24 hours of diagnosis, confirmed cases of listeriosis to the health officer of the jurisdiction where the ill or infected person lives, or if unknown, wherein the diagnosis is made. A directory of local health departments in New Jersey is available at <http://www.state.nj.us/health/lh/directory/lhdselectcounty.shtml>.

If the health officer is unavailable, the healthcare provider or administrator shall make the report to the Department by telephone to 609.588.7500, between 8:00 A.M. and 5:00 P.M. on non-holiday weekdays or to 609.392.2020 during all other days and hours.



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## 1 THE DISEASE AND ITS EPIDEMIOLOGY

### A. Etiologic Agent

Listeriosis is caused by the bacterium *Listeria monocytogenes*.

### B. Clinical Description

Listeriosis is typically manifested as meningoencephalitis or bacteremia in newborns and adults. Symptoms of meningoencephalitis include fever, headache, stiff neck, nausea, and vomiting. The onset may be sudden or, in the elderly and in those who are immunocompromised, it may be gradual. Delirium and coma may occur.

Newborns, the elderly, immunocompromised persons, and pregnant women are most at risk for severe symptoms. Pregnant women are about 20 times more likely than other healthy adults to get listeriosis, and make up about one third of listeriosis cases reported. In pregnant women, infection can be transmitted to the fetus causing spontaneous abortion, stillbirth, or septicemia in the newborn. The case-fatality ratio in infected newborns is about 30%.

Infections in healthy persons may only amount to only a mild flu-like illness. Asymptomatic infections occur at all ages, although these are of importance during pregnancy.

### C. Reservoirs

Reservoirs for *L. monocytogenes* are soil, water, mud, silage, mammals, and fowl.

### D. Modes of Transmission

*L. monocytogenes* may be acquired by the fetus in utero or during delivery. Listeria can also be transmitted through ingestion of contaminated foods or through contact with infected animals or birds. Person-to-person transmission has also been reported in nosocomial outbreaks of listeriosis.

### **E. Incubation Period**

A range of three to 70 days has been reported, with a median incubation period of about 21 days.

### **F. Period of Communicability or Infectious Period**

Although *L. monocytogenes* may be shed for months in the stool of infected persons, person-to-person transmission is rare. Following delivery, mothers of infected newborns may shed *L. monocytogenes* for seven to ten days in vaginal secretions or urine.

### **G. Epidemiology**

*Listeria* is widely distributed in nature. Most cases of human listeriosis are believed to occur sporadically, but foodborne and nosocomial outbreaks have been documented. Foods associated with infection include unpasteurized milk, soft cheeses, processed meats, and contaminated vegetables. Unlike most other foodborne pathogens, *Listeria* tends to multiply in refrigerated foods that are contaminated. Newborns, the elderly, immunocompromised persons, and pregnant women are at greater risk of infection. About 30% of diagnosed cases occur within the first three weeks of life. In the United States, approximately 2500 cases per year are reported and an estimated 500 deaths per year are related to listeriosis. In 2002, an outbreak of listeriosis that resulted in 54 illnesses, eight deaths, and three fetal deaths and included residents from nine states was traced to consumption of contaminated turkey meat. In New Jersey approximately 30 cases are reported to the New Jersey Department of Health and Senior Services (NJDHSS) annually.

## **2 CASE DEFINITION**

### **A. New Jersey Department of Health and Senior Services (NJDHSS) Case Definition**

#### **1. 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, or neonatal meningitis or bacteremia. Other manifestations can also be observed.

#### **2. 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)
- In the setting of miscarriage or stillbirth, isolation of *L. monocytogenes* from placental or fetal tissue

### 3. Case Classification

#### **CONFIRMED**

A clinically compatible case, AND

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

#### **PROBABLE**

Not used.

#### **POSSIBLE**

Not used.

### **B. Differences from CDC Case Definition**

The NJDHSS and Centers for Disease Control and Prevention (CDC) case definitions are the same.

## **3 LABORATORY TESTING AVAILABLE**

The NJDHSS Public Health and Environmental Laboratories (PHEL) will confirm the identification of *L. monocytogenes* in blood and cerebrospinal fluid. PHEL requests that all laboratories submit within three days all *Listeria* isolates cultured for typing to aid in public health surveillance (NJAC 8:57-1.6 [f]). For more information contact PHEL at 609.292.7368.

PHEL will test implicated food items from a cluster or outbreak. Laboratories must obtain authorization from the IZDP before submitting food samples suspected of contamination with *L. monocytogenes*.

## **4 PURPOSE OF SURVEILLANCE AND REPORTING REQUIREMENTS**

### **A. Purpose of Surveillance and Reporting**

- To identify transmission sources of major public health concern (e.g., a restaurant or commercially distributed food product) and to stop transmission from such sources
- To provide education about reducing the risk of infection

## B. Laboratory Reporting Requirements

The New Jersey Administrative Code (NJAC 8:57-1.6) stipulates that laboratories report (by telephone, by confidential fax, or over the Internet using the Communicable Disease Reporting and Surveillance System [CDRSS]) all cases of listeriosis to the local health officer having jurisdiction over the locality in which the patient lives or, if unknown, to the health officer in whose jurisdiction the healthcare provider requesting the laboratory examination is located. The report shall contain, at a minimum, the reporting laboratory's name, address, and telephone number; the age, date of birth, gender, race, ethnicity, home address, and telephone number of person tested; the test performed; the date of testing; the test results; and the healthcare provider's name and address.

## C. Healthcare Provider Reporting Requirements

The New Jersey Administrative Code (NJAC 8:57-1.4) stipulates that healthcare providers report (by telephone, by confidential fax, or in writing) all cases of listeriosis to the local health officer having jurisdiction over the locality in which the patient lives or, if unknown, to the health officer in whose jurisdiction the healthcare provider requesting the laboratory examination is located. The report shall contain the name of the disease; date of illness onset; and name, age, date of birth, race, ethnicity, home address, and telephone number of the person they are reporting. Additionally, the name, address, institution, and telephone number of the reporting official and other information as may be required by NJDHSS concerning a specific disease should be reported.

## D. Health Officer's Reporting and Follow-Up Responsibilities

The New Jersey Administrative Code (NJAC 8:57-1.7) stipulates that each local health officer must report the occurrence of any case of listeriosis within 24 hours of receiving a report from a laboratory or healthcare provider to the NJDHSS Infectious and Zoonotic Disease Program (IZDP). A report can be mailed or filed electronically over the Internet using the confidential and secure CDRSS.

# 5 CASE INVESTIGATION

## A. Forms

It is the health officer's responsibility to investigate the case and complete a "[Listeria Case Report Form](#)" by interviewing the patient and others who may be able to provide pertinent information. Much of the clinical information can be obtained from the patient's healthcare provider or the medical record. Much of the information required on the form can be obtained from the patient's healthcare provider or the medical record.

- Determine exposure history. Ask the patient about suspect food items consumed and contact with livestock during the three weeks before illness.

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- In a case of an outbreak, immediately notify the NJDHSS IZDP by telephone at 609.588.7500 during business hours and 609.392.2020 after business hours and on weekends and holidays.
- If there have been several unsuccessful attempts to obtain patient information, please fill out the report with as much information as possible. Please note on the report why it could not be completed as well as name and affiliation of the person submitting the report and the person reporting the illness.

After completing the investigation, mail the “Listeria Case Report Form” (in an envelope marked “Confidential”) to IZDP, or file the report electronically over the Internet using the confidential and secure CDRSS.

The mailing address is:

NJDHSS  
Communicable Disease Service  
Infectious and Zoonotic Diseases Program  
PO Box 369  
Trenton, NJ 08625-0369

### B. Entry into CDRSS

The mandatory fields for all cases in CDRSS include: disease, last name, county, municipality, gender, race, ethnicity, case status, report status.

The following table can be used as a quick reference guide to determine which fields in CDRSS are necessary for accurate and complete reporting of listeriosis cases. The first column represents the tabs along the top of the CDRSS screen. The Required Fields column reflects a detailed explanation of the essential data for each tab.

CDRSS Screen	Required Information
<b>Patient Info</b>	Enter disease name (“ <b>LISTERIOSIS</b> ”), patient demographics, patient onset and date report was made to the local health department. There are no subgroups for Listeriosis.
<b>Addresses</b>	Use as needed for additional addresses (e.g., work address, school, temporary NJ address for out-of-state case). Use the <b>Comments</b> section in this screen to record any pertinent information about the alternate address (e.g., the times per week the case-patient attends daycare). Entering an alternate address will allow other disease investigators access to the case if the alternate address falls within their jurisdiction.

CDRSS Screen	Required Information
<p><b>Clinical Status</b></p>	<p>Clinical information such as past medical history, Pre-existing Conditions, any treatment that the patient received, name of medical facility(s) including date of initial healthcare evaluation and dates of hospitalization, treating physician(s), type of infection caused by <i>L. monocytogenes</i> (e.g., bacteremia, encephalitis, meningitis, neonatal sepsis), and mortality status are entered here. If the patient was diagnosed while pregnant or within two weeks of delivery, indicate the outcome of the pregnancy and associated dates.</p> <p><b>(NOTE:</b> If the patient received care from two or more medical facilities, be sure all are recorded in the case including admit/discharge dates so the case can be accessed by all infection control professionals (ICPs) covering these facilities.)</p>
<p><b>Signs/Symptoms</b></p>	<p>Make every effort to get complete information by interviewing the physician, family members, ICP, or others who might have knowledge of the patient’s illness. Check appropriate boxes for signs and symptoms and indicate their onset and resolution.</p>
<p><b>Risk Factors</b></p>	<p>Enter complete information about risk factors including complete food history (If the disease is suspected to be foodborne, record any restaurants at which the patient ate, suspect foods, and date consumed), travel history, any gatherings or outdoor activities attended, and pet or other animal contact and record in the <b>Comments</b> section. <b>(NOTE:</b> If the patient was a newborn, determine if the mother was tested for listeriosis. Determine exposure history of the mother.)</p> <p>When asking about exposure history (food, travel, activities, and so forth) specifically focus on the incubation period range for listeriosis. Ask the patient about suspect food items consumed and any animal contact during the three weeks before illness.</p>
<p><b>Laboratory Eval</b></p>	<p>Laboratory test name “MICROORGANISM IDENTIFIED”, Lab Specimen ID, Specimen, Date specimen collected, Lab Name, Referring Physician Name, Referring Medical Facility name, Test Result i.e., Positive/reactive or Negative/no reactive. If other lab tests were used diagnostically (e.g., bacterial antigen screen), please indicate the type of test(s) used and date(s) tested. Check if isolate was submitted to PHEL for further testing.</p>

CDRSS Screen	Required Information
<p><b>Contact Tracing</b></p>	<p>All potentially exposed contacts are entered into the contact tracing tab for local, county and statewide surveillance efforts. CDRSS requires a “YES” response to one of the two listeriosis exposure questions in order to add case contacts.</p> <p>Contacts are added individually by selecting the Enter Contact By Name feature:</p> <p>Each contact record reflects the period of exposure, symptomatic or asymptomatic, contact demographics, telephone numbers, marital status, primary language, exposure risk i.e., close, casual, unknown, and LHD response activities are noted.</p> <p>An exposure setting is selected for each contact from the drop down to the right of the contact’s name.</p> <p>A summary reflecting the following contact details: total number, name, age, relationship, exposure specifics as well as all LHD recommendations to prevent further transmission of illness are entered into the contact tracing text box.</p>
<p><b>Case Comments</b></p>	<p>Any additional case investigation findings that can not be entered in discrete data fields are documented in the general comment section.</p>
<p><b>Epidemiology</b></p>	<p>Select the route of transmission route, import status of infection i.e., whether the case was imported and from where (another county, state, country), LHD notification of illness and association with high-risk venue type, name, location and last day of attendance.</p> <p>The NJDHSS assigned outbreak or investigation number is selected for all involved cases which automatically populates a summary of the initial report.</p>
<p><b>Case Classification Report Status</b></p>	<p>Case status options are:</p> <p>“REPORT UNDER INVESTIGATION (RUI),” “CONFIRMED,” “PROBABLE,” “POSSIBLE,” and “NOT A CASE.”</p> <ul style="list-style-type: none"> <li>• All cases entered by laboratories (including LabCorp electronic submissions) should be assigned a case status of “REPORT UNDER INVESTIGATION (RUI).”</li> <li>• Cases still under investigation by the LHD should be assigned a case status of “REPORT UNDER INVESTIGATION (RUI).”</li> <li>• Upon completion of the investigation, the LHD should assign a case status on the basis of the case definition. “CONFIRMED” and “NOT A CASE” are the only</li> </ul>

CDRSS Screen	Required Information
	<p>appropriate options for classifying a case of listeriosis.</p> <p>Report status options are: “PENDING,” “LHD OPEN,” “LHD REVIEW,” “LHD CLOSED,” “DELETE,” “REOPENED,” “DHSS OPEN,” “DHSS REVIEW,” and “DHSS APPROVED.”</p> <ul style="list-style-type: none"> <li>• Cases reported by laboratories (including LabCorp electronic submissions) should be assigned a report status of “PENDING.”</li> <li>• Once the LHD begins investigating a case, the report status should be changed to “LHD OPEN.”</li> <li>• The “LHD REVIEW” option can be used if the LHD has a person who reviews the case before it is closed (e.g., health officer or director of nursing).</li> <li>• Once the LHD investigation is complete and all the data are entered into CDRSS, the LHD should change the report status to “LHD CLOSED.”</li> <li>• “LHD CLOSED” cases will be reviewed by DHSS and be assigned one of the DHSS-specific report status categories. If additional information is needed on a particular case, the report status will be changed to “REOPENED” and the LHD will be notified by e-mail. Cases that are “DHSS APPROVED” cannot be edited by LHD staff.</li> </ul> <p>If a case is inappropriately entered as a case of listeriosis the case should be assigned a report status of “DELETE.” A report status of “DELETE” should NOT be used if a reported case of listeriosis simply does not meet case definition. Rather, it should be assigned the appropriate case status, as described above.</p>

**C. Other Reporting/Investigation Issues**

1. Case report forms (Listeria Case Report Form, and/or labs) DO NOT need to be mailed to NJDHSS as long as mandatory fields in CDRSS indicated in section B are completed.
2. Once LHD completes its investigation and assigns a report status of “LHD CLOSED,” NJDHSS will review the case. NJDHSS will approve the case by changing the report status to “DHSS APPROVED.” At this time, the case will be submitted to CDC and the case will be locked for editing. If additional information is received after a case has been placed in “DHSS APPROVED,” you will need to contact NJDHSS to reopen the case. This should be done only if the additional information changes the case status of the report.

3. Every effort should be made to complete the investigation within three months of opening a case. Cases that remain open for three months or more and have no investigation or update notes will be closed by NJDHSS.

## 6 CONTROLLING FURTHER SPREAD

### A. Isolation and Quarantine Requirements (NJAC 8:57-1.10)

None.

### B. Protection of Contacts of a Case

None.

### C. Managing Special Situations

#### *Multistate Clusters*

CDC is working to identify and analyze multistate clusters of listeriosis. Cases that may be part of such clusters will require additional follow-up and data collection from local health departments. Directions on follow-up activities for such situations will be provided by NJDHSS staff on a case-by-case basis.

## 7 OUTBREAK SITUATIONS

If the number of reported cases of listeriosis in a city/town is higher than usual, or if an outbreak is suspected, investigate to determine the source of infection and mode of transmission. A common vehicle, such as food, should be sought and applicable preventive or control measures should be instituted. Consult with the NJDHSS IZDP at 609.588.7500. IZDP staff can help determine a course of action to prevent further cases and can perform surveillance for cases across jurisdictions that may be difficult to identify at a local level.

## 8 PREVENTIVE MEASURES

### A. Environmental Measures

Implicated food items must be removed from the environment. A decision about testing implicated food items can be made in consultation with IZDP and the Food and Drug Safety Program (FDSP). FDSP can help coordinate pickup and testing of food samples. If a

commercial product is suspected, FDSP will coordinate follow-up with relevant outside agencies (e.g., US Food and Drug Administration [FDA], US Department of Agriculture). FDSP may be reached at 609.588.3123.

**NOTE: The role of FDSP is to provide policy and technical assistance with the environmental investigation such as interpreting the New Jersey Food Code, conducting a hazard analysis and critical control point risk assessment, initiating enforcement actions, and collecting food samples.**

The general policy of PHEL is to test only food samples implicated in suspected outbreaks, not in single cases (except when botulism is suspected). The local health officer may suggest that the holders of food implicated in single case incidents locate a private laboratory that will test food or store the food in their freezer for a period of time in case additional reports are received.

## B. Personal Preventive Measures/Education

To avoid infection with *Listeria*:

- Thoroughly cook all meat, including hot dogs, and thoroughly reheat food until steaming hot.
- Wash all raw vegetables. Avoid raw (unpasteurized) milk or foods made from raw milk.
- Avoid contamination of cooked or ready-to-eat foods by raw meats or unwashed vegetables.
- Wash hands, knives, and cutting boards after handling uncooked foods. In addition, individuals at high risk for developing listeriosis (e.g., pregnant women or immunocompromised persons, including individuals taking steroids) should:
  - Avoid soft cheeses. Hard cheeses, processed cheeses, cream cheese, cottage cheese, and yogurt need not be avoided.
  - Cook hot dogs and other ready-to-eat meats (such as sliced deli meat and prepackaged cold cuts) before eating.

## Additional Information

A “Listeriosis Fact Sheet” can be obtained at the NJDHSS at <http://www.state.nj.us/health>

Additional information can be obtained from the FDA’s Center for Food Safety and Applied Nutrition Web site at [www.cfsan.fda.gov](http://www.cfsan.fda.gov).

## References

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