Listeriosis

Disease Plan

Quick Links

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Questions about this disease plan?

Contact the Utah Department of Health Bureau of Epidemiology: 801-538-6191.

✓ CRITICAL CLINICIAN INFORMATION

Clinical Evidence
Signs/Symptoms • Pregnant women: fever, fatigue, myalgia, miscarriage, stillbirth, premature delivery • Non-pregnant individuals: headache, stiff neck, confusion, fever, muscle aches
Period of Communicability • *L. monocytogenes* bacteria can be shed for months in the stool, but not known to spread person-to-person except in the case of mother-to-fetus transmissions. • Mothers of infected newborns can shed bacteria for 7 to 10 days after delivery in vaginal secretions and urine.
Incubation Period • Range of 3-70 days, estimated median of 21 days
Mode of Transmission • Primarily foodborne or mother-to-fetus in utero or during delivery
Laboratory Testing
Type of Lab Test/Timing of Specimen Collection • Culture is the preferred method for *Listeria* diagnosis.
Type of Specimens • CSF, blood, joint, pleural, or pericardial fluid • In the setting of miscarriage or stillbirth, placenta or fetal tissue is acceptable.
Treatment Recommendations
Type of Treatment • Intravenous penicillin or ampicillin with an aminoglycoside, usually gentamicin • In immunocompetent patients with mild illness, ampicillin alone can be given.
Prophylaxis • None
Contact Management
Isolation of Case • None
Quarantine of Contacts • None
Infection Control Procedures
• Standard precautions

✓ WHY IS LISTERIOSIS IMPORTANT TO PUBLIC HEALTH?

Listeriosis is a foodborne bacterial disease that can cause severe invasive infections. In otherwise healthy people, *Listeria* infection is often asymptomatic or presents with mild gastrointestinal symptoms; however, the disease is often severe in the elderly and immunocompromised. In pregnant women, *Listeria* infection can lead to neonatal infection, preterm delivery, or stillbirth. While Utah normally only sees 2-3 cases of listeriosis per year, the majority of these cases are hospitalized.

✓ DISEASE AND EPIDEMIOLOGY

Clinical Description

Symptoms of listeriosis depend on the host. Immunocompromised, neonatal, and elderly persons are typically hospitalized and present with sepsis or meningitis. It may cause meningoencephalitis or bacteremia in newborns and some adults. Meningoencephalitis onset may be sudden with fever, headache, nausea, vomiting, and signs of meningeal irritation. Pregnant women usually experience fever and other non-specific symptoms such as fatigue and aches. Listeriosis has the potential to lead to miscarriage, stillbirth, premature delivery, or serious infection to the newborn. People other than pregnant women typically have symptoms that are more flu like such as headache, stiff neck, confusion, fever, and muscle aches, but can also cause loss of balance and convulsions.

Causative Agent

L. monocytogenes are non-spore forming, motile, gram-positive rods that cause apparent infections primarily in pregnant women, newborns, elderly and immunocompromised persons. Even though 13 serotypes have been identified, 95% of human cases involve strains of serotypes 1/2a, 1/2b, and 4b.

Differential Diagnosis

Clinically, it is difficult to separate *Listeria* infection from many other infectious diseases that can lead to fever and constitutional symptoms. Group B streptococci and *E. coli* also cause septicemia and neonatal meningitis.

Laboratory Identification

Laboratory diagnosis is based on isolation of *L. monocytogenes* from a normally sterile site (i.e., cerebrospinal fluid [CSF], blood, joint, pleural, or pericardial fluid). In the setting of miscarriage or stillbirth, isolation of *L. monocytogenes* from placenta or fetal tissue is acceptable. Serologic testing is not useful in diagnosing acute invasive disease, but can be useful in detecting noninvasive disease in an outbreak. The usefulness of other laboratory methods such as fluorescent antibody testing or polymerase chain reaction to diagnose invasive listeriosis has not been established. Stool samples are of limited use and not recommended.

UPHL: The Utah Public Health Laboratory (UPHL) accepts stool specimens for isolation, serotyping, and Whole Genome Sequencing (WGS). All isolates from other laboratories should be submitted to UPHL.

Treatment

For severe infections, treatment with intravenous penicillin or ampicillin and an aminoglycoside (usually gentamicin) is recommended. In immunocompetent patients with mild infections, ampicillin alone can be given. For penicillin-allergic patients, trimethoprim-sulfamethoxazole or erythromycin is acceptable. Resistance to tetracycline has been shown.

Case Fatality

The case fatality rate is approximately 20-30% in newborns and susceptible groups of adults; and it is estimated to be 18% among non-pregnant women with invasive listeriosis.

Reservoir

L. monocytogenes are common in the environment. The organism is easily recovered from soil, water, sewage, vegetation, silage, commercial meat, and dairy products. Unlike other foodborne pathogens, *L. monocytogenes* can multiply in refrigerated foods.

Transmission

Listeriosis is primarily a foodborne infection. Rare nursery outbreaks have been reported and attributed to contaminated equipment or materials. *L. monocytogenes* may be acquired by the fetus in utero or during delivery. Other than mother-to-fetus transmission, person-to-person transmission is not known to occur.

Susceptibility

Although healthy persons may consume contaminated food without becoming ill, certain persons at high risk for infection may get listeriosis after eating food contaminated with even a few bacteria. Persons at highest risk for infection include:

- Pregnant women – About one third of listeriosis cases happen during pregnancy.
- Newborns – Newborns are very likely to suffer serious effects of infection during their mother's pregnancy. Infants may be stillborn, born with septicemia (bacteria in their blood), or develop meningitis (inflammation of the covering of the brain or spinal cord) very early in life, even if the mother is asymptomatic.
- Persons with weakened immune systems – Includes persons with cancer, diabetes, kidney disease, AIDS, persons who are taking corticosteroids, and the elderly.

Incubation Period

The incubation period ranges from 3-70 days, with an estimated median of 21 days.

Period of Communicability

L. monocytogenes may be shed for months in the stool of an infected person. Following delivery, mothers of infected newborns may shed *L. monocytogenes* for 7 to 10 days in vaginal secretions and urine.

Epidemiology

L. monocytogenes bacteria are widely distributed in nature. Most cases of human listeriosis are sporadic, but foodborne and nosocomial outbreaks have been documented. Foods commonly associated with infection include unpasteurized milk and milk products (including soft cheeses), processed meats, and contaminated vegetables. 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. *L. monocytogenes* causes an estimated 2,500 cases of invasive disease and 500 deaths annually in the United States. There are roughly 2-3 cases of listeriosis reported in Utah each year.

✓ PUBLIC HEALTH CONTROL MEASURES

Public Health Responsibility

- Investigate all suspect cases of disease and fill out and submit appropriate disease investigation forms.
- Provide education to the general public, clinicians, and first responders regarding disease transmission and prevention.
- Identify clusters or outbreak of this disease, and determine the source.
- Identify cases and sources to prevent further transmission.

Prevention

Environmental Measures

Implicated food items must be removed from consumption. A decision about testing implicated food items can be made in consultation with the enteric epidemiologists at the Utah Department of Health (UDOH) and UPHL.

The general policy of UPHL is to test only food samples implicated in suspected outbreaks, not in single cases (except when botulism is suspected). If holders of food implicated in single case incidents would like their food tested, they may be referred to 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. However, in certain circumstances, a single, confirmed case with leftover food that had been consumed within the incubation period may be considered for testing.

Personal Preventive Measures/Education

General recommendations for all persons:

- Thoroughly cook all meat, including hot dogs.
- Wash all raw vegetables thoroughly before eating.
- 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.
- Keep ready-to-eat food cold.
- Wash hands, knives, and cutting boards after handling uncooked foods.

Recommendations for persons with increased risk of developing listeriosis (e.g., pregnant women or immunocompromised persons, including individuals taking steroids):

- Avoid processed meats (e.g., hot dogs, luncheon meats, deli meats, or leftover foods) unless they are reheated to 165°F.
- 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.

Chemoprophylaxis

None.

Vaccine

None.

Isolation and Quarantine Requirements

Isolation: None.
Hospital: Standard precautions.
Quarantine: None.

✓ CASE INVESTIGATION

Reporting

Report any illness to public health authorities that meets any of the following criteria:

Clinical Evidence

- Any person whose healthcare record contains a diagnosis of listeriosis.

Laboratory Evidence

- Any person with *L. monocytogenes* isolated or detected from a normally sterile site, reflective of an invasive infection, by culture or CIDT.
- Any person with *L. monocytogenes* isolated or detected in a specimen from products of conception (e.g., placenta, amniotic fluid, umbilical cord blood) by culture or CIDT at the time of delivery.
- Any person with *L. monocytogenes* isolated or detected from a non-sterile neonatal site (e.g., meconium, tracheal aspirate) by culture or CIDT collected within 48 hours of delivery.
- Any person with *L. monocytogenes* isolated from a non-invasive clinical specimen (e.g., stool, urine, wound) other than those specified for maternal and neonatal specimens.
- Any person with isolation of *Listeria* species other than *L. monocytogenes* (such as *L. ivanovii* and *L. grayi*) from a normally sterile site that reflects invasive disease.

Evidence for Epidemiologic Linkage

- A mother who gave birth to a neonate meeting laboratory criteria for diagnosis with a specimen collection date up to 28 days of birth.
- A neonate born to a mother meeting laboratory criteria for diagnosis with a specimen collected from products of conception at the time of delivery.
- A clinically compatible neonate born to a mother meeting laboratory criteria for diagnosis with a specimen collected from a normally sterile site.

Vital Records Evidence

- Any person whose death certificate lists listeriosis as a cause of death or a condition contributing to death.

Other recommended reporting procedures

- All cases of listeriosis should be reported according to state regulations.
- Reporting should be ongoing and routine.
- Frequency of reporting should follow UDOH's schedule.

Table 1: Criteria to determine whether a case should be reported

Criterion	Listeriosis/*Listeria* Infection	
Clinical Evidence		
Person whose healthcare record contains diagnosis of listeriosis	S	
Evidence of illness compatible with listeriosis in a neonate (e.g., bacteremia, CNS infection, pneumonia, etc.)		N
Laboratory Evidence		
Isolation or detection of *L. monocytogenes* by culture or CIDT from a normally sterile site	S	
Isolation or detection of *L. monocytogenes* by culture or CIDT from products of conception (e.g., placenta, amniotic fluid, umbilical cord blood) collected at the time of delivery	S	
Isolation or detection of *L. monocytogenes* by culture or CIDT from a non-sterile neonatal site (e.g., meconium, tracheal aspirate) collected within 48 hours of delivery	S	
Isolation of *L. monocytogenes* from a non-invasive clinical specimen (e.g., stool, urine, wound)	S	
Isolation of *Listeria* species other than *L. monocytogenes* (such as *L. ivanovii* and *L. grayi*) from a normally sterile site	S	
Epidemiological Evidence		
Mother who gave birth to a neonate meeting confirmatory or presumptive laboratory evidence for diagnosis with a specimen collection date up to 28 days of birth	S	
Neonate born to a mother meeting confirmatory or presumptive laboratory evidence for diagnosis with a specimen collected from products of conception	S	
Clinically compatible neonate born to a mother meeting confirmatory or presumptive laboratory evidence for diagnosis from a normally sterile site		N
Vital Records Evidence		
Person whose death certificate lists listeriosis as a cause of death or a condition contributing to death	S	

Notes:
S = This criterion alone is SUFFICIENT to report a case
N = All "N" criteria in the same column are NECESSARY to report a case.

CSTE Case Definition
Listeriosis, 2018

Clinical Criteria

Invasive listeriosis:

- Systemic illness caused by *L. monocytogenes* manifests most commonly as bacteremia or central nervous system infection. Other manifestations can include pneumonia, peritonitis, endocarditis, and focal infections of joints and bones.

- Pregnancy-associated listeriosis has generally been classified as illness occurring in a pregnant woman or in an infant ≤28 days. Listeriosis may result in pregnancy loss (fetal loss before 20 weeks gestation), intrauterine fetal demise (≥20 weeks gestation), pre-term labor, or neonatal infection, while minimal or no systemic symptoms in the mother. Pregnancy loss and intrauterine fetal demise are considered to be maternal outcomes.
- Neonatal listeriosis commonly manifests as bacteremia, central nervous system infection, and pneumonia, and is associated with high fatality rates. Transmission of *Listeria* from mother to baby transplacentally or during delivery is almost always the source of early-onset neonatal infections (diagnosed between birth and 6 days) and the most likely source of late-onset neonatal listeriosis (diagnosed between 7-28 days).

Non-invasive *Listeria* Infections: *Listeria* infection manifesting as an isolate from a non-invasive clinical specimen suggestive of a non-invasive infection; includes febrile gastroenteritis, urinary tract infection, and wound infection.

Laboratory Criteria

Confirmatory laboratory evidence:

- Isolation of *L. monocytogenes* from a specimen collected from a normally sterile site reflective of an invasive infection (e.g., blood or cerebrospinal fluid or, less commonly: pleural, peritoneal, pericardial, hepatobiliary, or vitreous fluid; orthopedic site such as bone, bone marrow, or joint; or other sterile sites including organs such as spleen, liver, and heart, but not sources such as urine, stool, or external wounds);

  OR

- For maternal isolates: In the setting of pregnancy, pregnancy loss, intrauterine fetal demise, or birth, isolation of *L. monocytogenes* from products of conception (e.g., chorionic villi, placenta, fetal tissue, umbilical cord blood, amniotic fluid) collected at the time of delivery;

  OR

- For neonatal isolates: In the setting of live birth, isolation of *L. monocytogenes* from a non-sterile neonatal specimen (e.g., meconium, tracheal aspirate, but not products of conception) collected within 48 hours of delivery.

Presumptive laboratory evidence:

- Detection of *L. monocytogenes* by CIDT in a specimen collected from a normally sterile site (e.g., blood or cerebrospinal fluid or, less commonly: pleural, peritoneal, pericardial, hepatobiliary, or vitreous fluid; orthopedic site such as bone, bone marrow, or joint; or other sterile sites including organs such as spleen, liver, and heart, but not sources such as urine, stool, or external wounds);

  OR

- For maternal isolates: In the setting of pregnancy, pregnancy loss, intrauterine fetal demise, or birth, detection of *L. monocytogenes* by CIDT from products of conception (e.g., chorionic villi, placenta, fetal tissue, umbilical cord blood, amniotic fluid) collected at the time of delivery;

  OR

- For neonatal isolates: In the setting of live birth, detection of *L. monocytogenes* by CIDT from a non-sterile neonatal specimen (e.g., meconium, tracheal aspirate, but not products of conception) collected within 48 hours of delivery.

Supportive laboratory evidence:

- Isolation of *L. monocytogenes* from a non-invasive clinical specimen, e.g., stool, urine, wound, other than those specified under maternal and neonatal specimens in *Confirmatory laboratory evidence*, above.

Epidemiologic Linkage

For probable maternal cases:

- A mother who does not meet the confirmed case criteria, **BUT**
- Who gave birth to a neonate who meets confirmatory or presumptive laboratory evidence for diagnosis, **AND**
- Neonatal specimen was collected up to 28 days of birth.

OR

For probable neonatal cases:

- Neonate(s) who do not meet the confirmed case criteria, **AND**
  - Whose mother meets confirmatory or presumptive laboratory evidence for diagnosis from products of conception, **OR**
  - A clinically compatible neonate whose mother meets confirmatory or presumptive laboratory evidence for diagnosis from a normally sterile site.

Case Classifications

Confirmed:

- A person who meets confirmatory laboratory evidence.

Probable:

- A person who meets the presumptive laboratory evidence;

OR

- A mother or neonate who meets the epidemiologic linkage but who does not have confirmatory laboratory evidence.

Suspect:

- A person with supportive laboratory evidence.

Comments

Pregnancy loss and intrauterine fetal demise are considered maternal outcomes and would be counted as a single case in the mother.

Cases in neonates and mothers should be reported separately when each meets the case definition. A case in a neonate is counted if live-born.

Table 2: Criteria for defining a case of listeriosis

Criterion	Suspect	Probable		Confirmed		
Clinical Evidence						
Neonatal illness consistent with listeriosis (e.g., bacteremia, CNS infection, pneumonia, etc.)			O			
Pregnancy					O	
Pregnancy loss					O	
Intrauterine fetal demise					O	
Live birth					O	N
Laboratory Evidence						
Isolation of *L. monocytogenes* from a normally sterile site (e.g., blood or cerebrospinal fluid, pleural, peritoneal, pericardial, hepatobiliary, or vitreous fluid; orthopedic site such as bone, bone marrow, or joint; or other sterile sites including organs such as spleen, liver, and heart)				S		
Isolation of *L. monocytogenes* from products of conception (e.g., chorionic villi, placenta, fetal tissue, umbilical cord blood, amniotic fluid) collected at the time of delivery					N	
Isolation of *L. monocytogenes* from a non-sterile neonatal specimen (e.g., meconium, tracheal aspirate) collected within 48 hours of delivery						N
Detection of *L. monocytogenes* by CIDT from a normally sterile site (e.g., blood or cerebrospinal fluid, pleural, peritoneal, pericardial, hepatobiliary, or vitreous fluid; orthopedic site such as bone, bone marrow, or joint; or other sterile sites including organs such as spleen, liver, and heart)		S				
Detection of *L. monocytogenes* by CIDT in products of conception (e.g., chorionic villi, placenta, fetal tissue, umbilical cord blood, amniotic fluid) collected at the time of delivery		S				
Detection of *L. monocytogenes* by CIDT in a nonsterile neonatal specimen (e.g., meconium, tracheal aspirate, but not products of conception) collected within 48 hours of delivery		S				

Isolation of *L. monocytogenes* from a non-invasive clinical specimen (e.g., stool, urine, wound other than those specified under products of conception or nonsterile neonatal specimen)	S					
Epidemiological Evidence						
Mother who gave birth to a neonate who meets the confirmatory or presumptive laboratory evidence from a neonatal specimen collected within 28 days of birth		S				
Neonate whose mother meets the confirmatory or presumptive laboratory evidence for diagnosis from products of conception		S				
Neonate whose mother meets confirmatory or presumptive laboratory evidence for diagnosis from a normally sterile site			N			

Notes:
S = This criterion alone is SUFFICIENT to classify a case
N = All "N" criteria in the same column are NECESSARY to classify a case.
O = At least one of these "O" (ONE OR MORE) criteria in **each category** (categories=clinical evidence, laboratory evidence, and epidemiological evidence) **in the same column**—in conjunction with all "N" criteria in the same column—is required to report a case.

Case Investigation Process

- Assure isolate submission to UPHL.
- Interview the patient to ascertain source of infection.
- Enter case information into UT-NEDSS/EpiTrax.
- Complete and submit CDC's "Listeria Initiative Questionnaire."

Outbreaks

CDC defines a foodborne outbreak as, "an incident in which two or more persons experience a similar illness resulting from the ingestion of a common food." To confirm an outbreak of listeriosis, the same *Listeria* serotype must be isolated from at least two (2) ill persons exposed to food that has been epidemiologically implicated, or from which the same *Listeria* serotype has been isolated. The source of the infection should be identified and measures to identify additional ill persons and/or to remove the source from consumers should be taken.

Case Contact Identification and Management

Neonatal infection/ Maternal Infant Transmission

When neonate is less than one month of age, please use the following data entry procedure.

UT-NEDSS/EpiTrax Data Entry

- The mother is the case-patient, or "parent" CMR.
    - Enter mother's medical record number in parent CMR.
    - Enter mother's symptoms in the parent CMR.
    - Enter mother's exposure history in parent CMR.
    - Add attachments and lab report(s) for mother on parent CMR.

- Neonate is entered as a contact of the mother.
    - Enter neonate medical record number as a contact of the mother.
    - Enter neonate symptoms as a contact of the mother.
    - Enter neonate exposure as a contact of the mother.
    - Add attachments and lab report(s) for neonate as a contact of the mother.
- Neonate may be promoted to own CMR as appropriate.
- When searching UT-NEDSS (EpiTrax) for name of mother or neonate, both CMRs should come up in search results.

✓ REFERENCES

Control of Communicable Diseases Manual (20th Edition), David L. Heymann MD, Ed., 2015.

Council for State and Territorial Epidemiologists. CSTE Position Statements 2018: https://cdn.ymaws.com/www.cste.org/resource/resmgr/ps/2018ps/18-ID-06_FINAL.pdf.

Listeria (Listeriosis). Centers for Disease Control and Prevention website: http://www.cdc.gov/listeria/. Updated October 23, 2020. Accessed January 26, 2021.

Red Book: 2015 Report of the Committee on Infectious Diseases (30th Edition), American Academy of Pediatrics, Ed., 2015.

✓ VERSION CONTROL

Updated December 2015: Added “Why is Listeriosis Important to Public Health” section. Updated “Disease and Epidemiology” section. Updated “Public Health Control Measures” section. Updated “Case Investigation” section. Added “Version Control” section. Added “UT-NEDSS Minimum/Required Fields by Tab” section.

Updated January 2021: Added Critical Clinician Information and Electronic Laboratory Reporting Processing Rules sections. All other sections updated.

✓ UT-NEDSS (EpiTrax) Minimum/Required Fields by Tab

Every field on the *Listeria* Initiative form is required by CDC.
https://www.cdc.gov/listeria/pdf/listeria-case-report-form-omb-0920-0004.pdf

Demographic
- First Name
- Last Name
- Street Number
- Street Name
- City
- State
- County
- Zip Code
- Date of Birth
- Area Code
- Phone Number
- Birth Gender
- Ethnicity
- Race

Clinical
- Disease
- Onset Date
- Is case associated with pregnancy?
- Visit Type
  - (if inpatient) Did *Listeria* cause hospitalization?
- Died
  - (if yes) Date of Death
  - (if yes) Did *Listeria* cause death?
- Symptoms

Laboratory
- Lab Name
- Lab Test Date
- Collection Date
- Specimen Source
- Test Type
- Organism
- Test Result
- Accession Number

Epidemiological
- Food Handler
  - Name of facility where patient handled food
  - Location
  - Did the patient work while ill?
  - Important information including dates
- Healthcare Worker
  - Name of healthcare facility
  - Location
  - Did the patient work while ill?
  - Important information including dates
- Group Living
  - Name of the facility
  - Location
  - Did the patient work/attend while ill?
  - Important information including dates
- Childcare Association
  - Name of the childcare
  - Location
  - Did the patient work/attend while ill?
  - Important information including dates
- Imported From
- Risk Factors
- Risk Factor Notes

Investigation
  - All questions in the investigation tab are to be completed

Contacts
- Does case's infection appear secondary to another person's infection? (if YES, please fill out information in contact table)
- Any contacts ill with similar symptoms? (if YES, please fill out information in contact table)

Reporting
- Date first reported to public health

Administrative
- State Case Status
- Outbreak Associated
- Outbreak Name
- Probable Case?
  - (if YES) Epi-linked or laboratory diagnosed

✓ ELECTRONIC LABORATORY REPORTING PROCESSING RULES

Listeriosis Rules for Entering Laboratory Test Results

The following rules describe how laboratory results reported to public health should be added to new or existing events in UT-NEDSS (EpiTrax). These rules have been developed for the automated processing of electronic laboratory reports, although they apply to manual data entry, as well.

Test-Specific Rules

Test specific rules describe what test type and test result combinations are allowed to create new morbidity events in UT-NEDSS (EpiTrax), and what test type and test result combinations are allowed to update existing events (morbidity or contact) in UT-NEDSS (EpiTrax).

Test Type	Test Result	Create a New Event	Update an Existing Event
Culture	Positive	Yes	Yes
	Negative	No	Yes
	Equivocal	No	Yes
	Other	No	Yes
PCR/Amplification	Positive	Yes	Yes
	Negative	No	Yes
	Equivocal	No	Yes
	Other	No	Yes

Whitelist Rules

Whitelist rules describe how long an existing event can have new laboratory data appended to it. If a laboratory result falls outside the whitelist rules for an existing event, it should not be added to that event, and should be evaluated to determine if a new event (CMR) should be created.

Listeriosis Morbidity Whitelist Rule: If the specimen collection date of the laboratory result is 60 or less after the date of the last positive lab, the laboratory result should be added to the morbidity event.

Listeriosis Contact Whitelist Rule: Never added to contact.

Graylist Rule

We often receive laboratory results through ELR that cannot create cases, but can be useful if a case is created in the future. These laboratory results go to the graylist. The graylist rule describes how long an existing event can have an old laboratory result appended to it.

Listeriosis Graylist Rule: If the specimen collection date of the laboratory result is 30 days before to seven days after the event date of the morbidity event, the laboratory result should be added to the morbidity event.

Other Electronic Laboratory Processing Rules

- If an existing event has a state case status of “not a case,” ELR will never add additional test results to that case. New labs will be evaluated to determine if a new CMR should be created.