

# **LISTERIOSIS (INVASIVE)**

## **Disease Overview**

Invasive Listeriosis is caused by the bacterium *Listeria monocytogenes*. The bacteria are widespread in the environment and are found in soil, surface water, vegetation, and a wide range of wild and domestic animals. It is extremely hardy and survives drying and freezing.

## **Symptoms**

Non-invasive infection is often asymptomatic or causes mild illness with fever, muscle aches, and sometimes, nausea and vomiting. In some instances, the bacterial infection is invasive with systemic illness and symptoms can be serious; meningitis encephalitis (an infection of the brain or its surrounding tissues) and/or septicemia (blood poisoning). Death can occur. Infected pregnant women may have mild symptoms, but it may lead to premature delivery, stillbirth, or infection of the newborn.

## **Reservoir**

The organism is widespread in the environment.

Unlike most other foodborne pathogens, *Listeria* can multiply in refrigerated foods that are contaminated. The organism can also form biofilms that can attach to surfaces, for example, stainless steel surfaces in food production facilities, and have increased resistance to sanitizers, disinfectants, and antimicrobial agents.

## **Mode of Transmission**

The main route of transmission for people is the consumption of contaminated food. *Listeria* can grow in low temperatures and is tolerant of salt and nitrates. Thus, the bacteria can survive in processed, preserved, and refrigerated foods. *Listeria* does not alter the taste of food.

Many foods have been associated with illness. Commonly implicated foods include:

- Raw foods, such as uncooked meats and vegetables
- Processed meat/fish products that become contaminated after processing, for example hot dogs, pate, and deli meats.
- Unpasteurized milk and other dairy products, such as soft cheeses
- Foods produced in food processing facilities with difficult to clean sites that have become colonized by the bacteria

Other routes of transmission occur: direct transmission from animals (causes cutaneous infection often associated with obvious occupational exposure); direct contact with contaminated environments; transplacental transmission in pregnant women; exposure during birth and nosocomial transmission in hospital nurseries.

## **Incubation Period**

Variable, cases have occurred 3 – 70 days after exposure (median 3 weeks).

## Period of Communicability

Asymptomatic carriers occur and infected individuals can shed the organisms in stool for several months.

Mothers of infected newborn infants can shed the organisms in vaginal discharges and urine for 7-10 days after delivery.

## Risk Factors

Increased risk for acquiring/severe illness:

- Pregnant women, newborns, people with weakened immune systems and the elderly.

## Surveillance Case Definition

### Confirmed case

Laboratory confirmation of infection with symptoms:

- isolation of *Listeria monocytogenes* from a normally sterile site (e.g. blood, cerebral spinal fluid, joint, pleural or pericardial fluid)

OR

- in the setting of miscarriage or stillbirth, isolation of *L. monocytogenes* from placental or fetal tissue (including amniotic fluid and meconium)

## Diagnosis and Laboratory Guidelines

For symptomatic patients only, isolation of *L. monocytogenes* from a normally sterile site, such as blood, cerebrospinal fluid or amniotic fluid/placental or fetal tissue. The cultures can be expected to take one to two days to grow. A negative culture does not rule out infection in presence of strong clinical suspicion. Serological tests are unreliable and not recommended at present.

Serotyping should be performed on all isolates especially during outbreaks. Finding isolates with the same PFGE pattern may be consistent with but does not prove a common source, whereas isolates with dissimilar PFGE patterns presumptively came from different sources. Isolation of *Listeria monocytogenes* is from urine, stool, blood, environmental, food, or other. Turnaround time at NML is 21 days.

## Reporting

Per Policy 2.2 Disease and Event notification to OCMOH and Disease and Event Reporting section

- Enhanced Surveillance. For all confirmed cases, an enhanced surveillance form should be completed, and information sent to OCMOH on a weekly basis (Enteric Database).
- Routine surveillance (RDSS) for all confirmed cases.

## Case Management

### Education

Case or relevant caregiver should be informed about:

- Nature of infection, length of communicable period and mode of transmission
- Enteric disease precautions
- Hand washing
- Food safety
- Animal handling
- High risk groups should not consume unpasteurized milk (or products made with unpasteurized milk); processed meats (ready-to-eat meats, hotdogs); refrigerated smoked seafood unless heated until steaming hot or it is a canned or shelf-stable product; or leftover foods unless heated until steaming hot.

### Investigation

Obtain detailed food history and risk foods for the past month. The prolonged incubation period makes recall difficult.

Consider direct exposure to animals, for example farms.

### Exclusion/Social Distancing

Follow exclusion period guidelines for cases under investigation (cases, symptomatic and asymptomatic contacts) identified in high-risk individuals (food handlers, caregivers, and individuals in daycare centres and kindergartens).

### Treatment

Invasive *Listeria* infections are associated with a high mortality rate, and thus effective antibiotic treatment is essential. Empiric treatment that covers for *L. monocytogenes* should be started promptly if invasive listeriosis is suspected.

### Immunization

Not applicable

## Contact Management

### Education

As per contact management

### Investigation

Identify contacts with significant exposure to cases (household contacts).

### Exclusion/Social Distancing

Not applicable.

**Prophylaxis**

Not applicable

**Immunization**

Not applicable

**Outbreak Management**

Activate the local outbreak plan when an outbreak is declared.