Listeria

Listeria is a Class C Disease and must be reported to the state within five business days.

Listeriosis is an infection usually caused by eating food contaminated with the bacterium *Listeria monocytogenes.* A Gram-positive non-spore forming rod-shaped bacterium, *Listeria monocytogenes* is found in soil and water. Vegetables can become contaminated from the soil, or from manure used as fertilizer. Animals can carry the bacterium without appearing ill and can contaminate foods of animal origin, such as meat and dairy products.

This bacterium can grow in relatively high salt and cold environments, and has been found in a variety of raw foods, such as uncooked meats and vegetables as well as processed foods that become contaminated after processing, such as soft cheeses and ready-to-eat deli meats. Unpasteurized (raw) milk or foods made from unpasteurized milk may contain the bacterium.

Epidemiology

Listeria monocytogenes infection (listeriosis) is rare but causes severe invasive disease (e.g., bacteremia, meningitis, and fetal death). Listeriosis has been nationally notifiable since 2000. Listeriosis is acquired predominately through contaminated food; it occurs most frequently among pregnant women and their newborns, older adults, and persons with certain immunocompromising conditions. Pregnancy-associated listeriosis is usually a mild illness but can be associated with fetal death and severe neonatal disease.

The incubation period is variable, ranging from three to 70 days; the median incubation period for foodborne transmission is thought to be three weeks. Listeriosis infections are usually characterized by fever and muscle aches, sometimes preceded by diarrhea or other gastrointestinal symptoms. Listeriosis primarily affects older adults, pregnant women, newborns, and adults with weakened immune systems. Healthy adults and children occasionally get infected with Listeria, but they rarely become seriously ill. Immunocompetent persons may experience acute febrile gastroenteritis or no symptoms. Almost all diagnosed cases have "invasive" infection, in which the bacteria spread beyond the gastrointestinal tract. These symptoms are host-dependent.

Pregnant woman are approximately 20 times more likely than other healthy adults to get listeriosis; about one in six cases of listeriosis occur during pregnancy. Pregnant women typically experience a mild, flu-like illness followed by miscarriage, stillbirth, premature delivery, or life-threatening infection of the newborn.

Fetal or neonatal cases rather than the pregnant women themselves, suffer the serious effects of infection in pregnancy. Infected mothers can spread the bacterium to their fetus, causing stillbirth or abortion. Infection may not be apparent until after birth and may lead to meningitis, brain injury and death of the neonate. In 2005, the U.S. incidence rate in neonates younger than 28 days old was 52.8 per 100,000. The case fatality rate in neonates is 20% to 30%.

In older adults and persons with immunocompromising conditions, septicemia and meningitis are the most common clinical presentations. The incidence rate among people 65 years of age or older was reported as 0.78 per 100,000 in 2011.

In 2011, the incidence of reported listeriosis in the U.S. was 0.28 infections per 100,000 population. Progress toward the Healthy People 2020 (objective number FS-1.3) of 0.20 infections per 100,000 population is measured through the Foodborne Diseases Active Surveillance Network (FoodNet), which conducts active surveillance for listeriosis in ten U.S. states. FoodNet reported a preliminary annual incidence of Listeria monocytogenes in 2011 of 0.24 infections per 100,000 population, similar to the rate reported to the Centers of Disease Control and Prevention (CDC) National Notifiable Diseases Surveillance System (NNDSS).

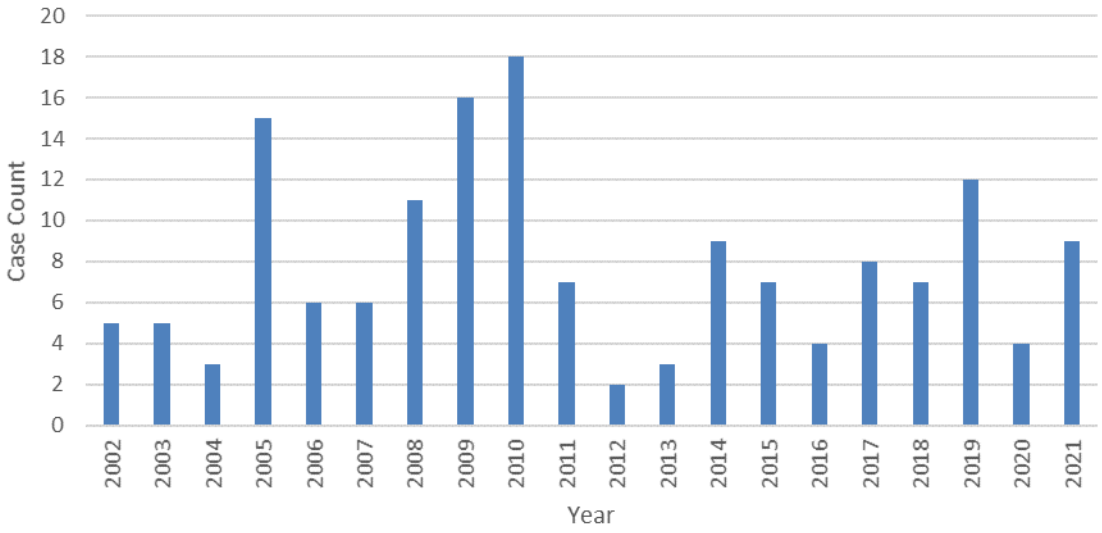
The Listeria Initiative is an enhanced surveillance system designed to aid public health authorities in the rapid investigation of listeriosis outbreaks by combining molecular subtyping results with epidemiologic data collected by state and local health departments. As part of the Listeria Initiative, the CDC recommends that all clinical isolates of *L. monocytogenes* be forwarded routinely to a public health laboratory for pulsed-field gel electrophoresis (PFGE) subtyping, and submission of these PFGE patterns to PulseNet, the National Molecular Subtyping Network for Foodborne Disease Surveillance. In addition, communicable disease programs are asked to interview all listeriosis patients promptly using the standard Listeria Initiative case form, available at in English and Spanish at http://www.cdc.gov/listeria/surveillance.html.

The Listeria Initiative has allowed for timely identification and removal of contaminated food during outbreaks, including a large outbreak in 2011 linked to whole cantaloupes from a single farm that resulted in 147 illnesses, 143 hospitalizations, 33 deaths, and one miscarriage. A second outbreak of listeriosis in 2011 was linked to ackawi and chive cheeses made from pasteurized milk; these cheeses were produced by a single manufacturer. In addition, illnesses associated with consumption of blue cheese made from unpasteurized milk were investigated.

Incidence

From 1965 to 2001, reports of listeriosis in Louisiana were sporadic. Reports of listeriosis have been increasing since 2002 with the highest number of cases (18 cases) being reported in 2010 (Figure 1).

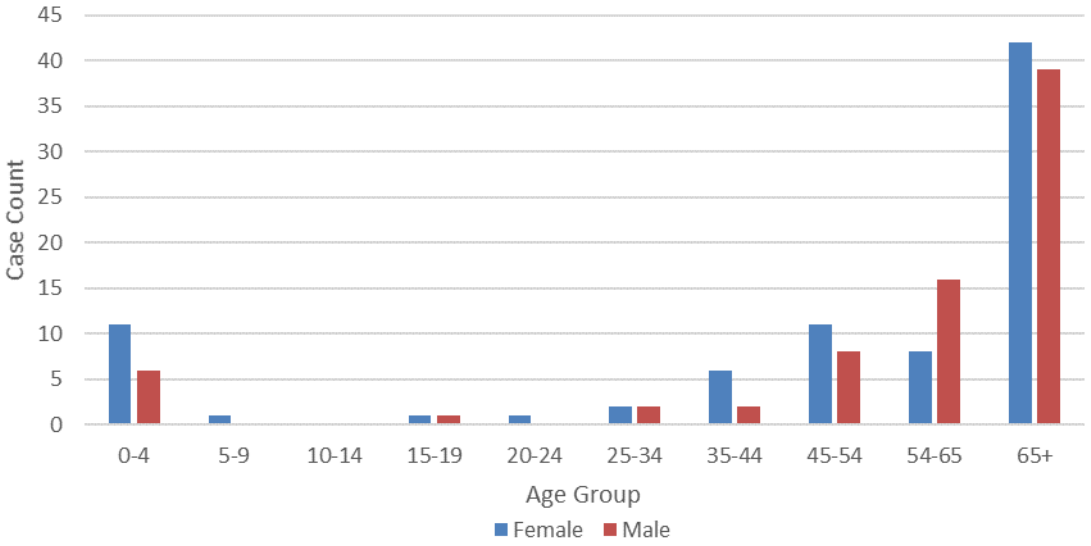
Figure 1: Reported Listeriosis cases – Louisiana, 2002-2021



Age Group Distribution

The majority of the listeriosis cases in Louisiana are 65 years of age or older. There is also a relatively high number of cases in the newborn to the one-year old and 45 to 64-year old age groups (Figure 2).

Figure 2: Listeriosis Cases by Sex and Age Group - Louisiana, 2002-2021

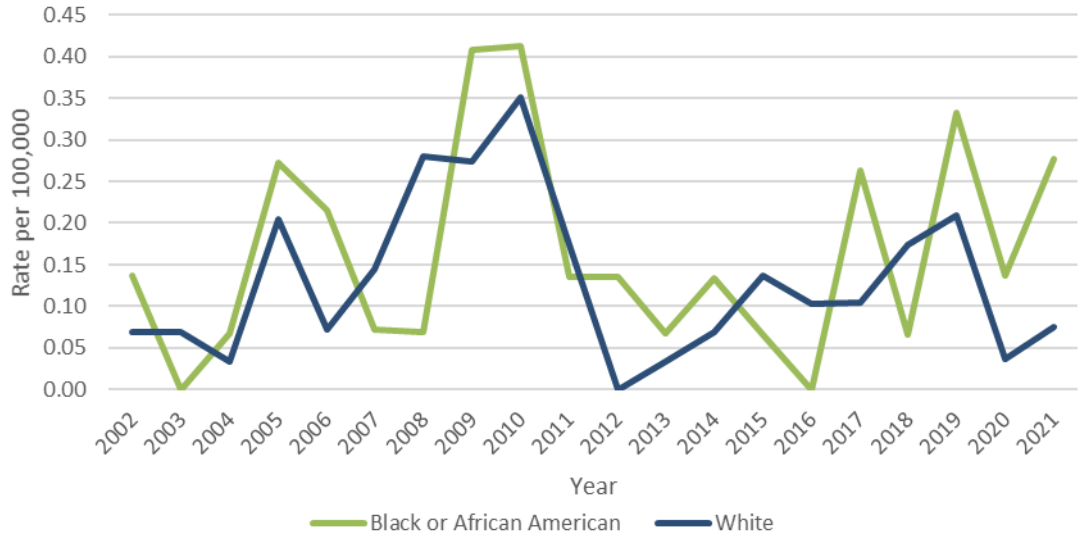


The age distribution of listeriosis cases for females is very similar to that of males.

Race

The rate of reported cases of Listeriosis cases fluctuate by race, but with similar trends across years (Figure 3).

Figure 3: Listeriosis Cases by Race - Louisiana, 2002-2021



Geographic Distribution

The geographic distribution of Listeria cases in Louisiana includes both urban rural parishes (Table).

Table: Reported Listeriosis 10-Year Incidence Rate by Parish - Louisiana, 2012-2021

Parish	10-Year Incidence 2012-2021	Parish	10-Year Incidence 2012-2021
Acadia	0.00	Madison	0.00
Allen	0.40	Morehouse	0.00
Ascension	0.41	Natchitoches	0.00
Assumption	0.00	Orleans	0.31
Avoyelles	0.00	Ouachita	0.00
Beauregard	0.27	Plaquemines	0.00
Bienville	0.00	Pointe Coupee	0.00
Bossier	0.08	Rapides	0.23
Caddo	0.16	Red River	0.00
Calcasieu	0.15	Richland	0.00
Caldwell	0.00	Sabine	0.00
Cameron	0.00	Saint Bernard	0.22
Catahoula	0.00	Saint Charles	0.00
Claiborne	0.63	Saint Helena	0.00
Concordia	0.00	Saint James	0.00
De Soto	0.00	Saint John the	0.00
East Baton Rouge	0.18	Saint Landry	0.12
East Carroll	0.00	Saint Martin	0.19
East Feliciana	0.51	Saint Mary	0.00
Evangeline	0.00	Saint Tammany	0.08
Franklin	0.00	Tangipahoa	0.08
Grant	0.00	Tensas	0.00
Iberia	0.00	Terrebonne	0.09
Iberville	0.00	Union	0.00
Jackson	0.63	Vermilion	0.00
Jefferson	0.11	Vernon	0.00
Jefferson Davis	0.00	Washington	0.22
La Salle	0.04	Webster	0.00
Lafayette	0.51	West Baton Rouge	0.00
Lafourche	0.67	West Carroll	1.83
Lincoln	0.21	West Feliciana	0.00
Livingston	0.07	Winn	0.00

Seasonality

There is no seasonal variation in the number of listeriosis cases reported or hospitalized in Louisiana.

The Hog Head Cheese Outbreak – October, 2010

Follow up is routinely conducted on all *Listeria* cases reported in Louisiana. Outbreaks or clusters of Listeriosis require more intense and focused investigations. By August of 2010, 14 cases of Listeriosis were reported in Louisiana; 12 of these cases were confirmed by the State Public Health Lab. After being confirmed by the State Lab, isolated bacteria are submitted to the State's Pulse Field Gel Electrophoresis (PFGE) lab. There, enzymes are used to cut the bacteria's DNA to determine the DNA "fingerprint" or pattern. These patterns are uploaded onto a database (PulseNet) supported by the CDC and used by State and County Public Health Labs.

PFGE patterns from the following bacteria are commonly uploaded onto PulseNet: *Salmonella, Shigella, Campylobacter, E. coli, Listeria,* and *Vibrio*. Clusters and outbreaks are detected through this database as bacterial DNA patterns are compared from across the country. Isolates from food and environmental samples can also be uploaded onto PulseNet which can aid in focusing the outbreak investigation. A cluster of eight *Listeria* cases in Louisiana were detected through PulseNet. Eight of the 12 isolates submitted to the State's PFGE lab had the same DNA pattern. This finding triggered a more thorough investigation into the cases. It was discovered that three of the cases reported eating hog head cheese. Samples of the product were collected and tested for *Listeria* at the CDC. One of the samples grew *Listeria monocytogenes* with a PFGE pattern that matched the PFGE pattern of the human isolates. The positive *Listeria* culture resulted in the recall of 500,000 pounds of hog head cheese as well as sausage that was produced at the same facility.