



Listeria (Listeriosis)

National Enteric Disease Surveillance: *Listeria*

Annual Summary, 2019

Listeria Initiative Data

An overview of the *Listeria* Initiative surveillance system is available on the [Listeria surveillance webpage](#).

We report confirmed and probable cases of listeriosis according to the [Listeriosis 2019 case definition](#). In brief, confirmed cases occur in persons with laboratory confirmation by culture of *Listeria monocytogenes* from a normally sterile site (e.g., blood or cerebrospinal fluid) or from products of conception (e.g., amniotic fluid, placental or fetal tissue). Probable cases occur in persons with presumptive (culture-independent diagnostic test [CIDT]) laboratory evidence of *Listeria monocytogenes* from a normally sterile site or from products of conception or in a mother or neonate who met only an epidemiologic linkage criterion. Thus, in a mother-infant pair in which one has a confirmed case, the other will be either a confirmed or probable case. In the remainder of this report, we call these illnesses simply listeriosis.

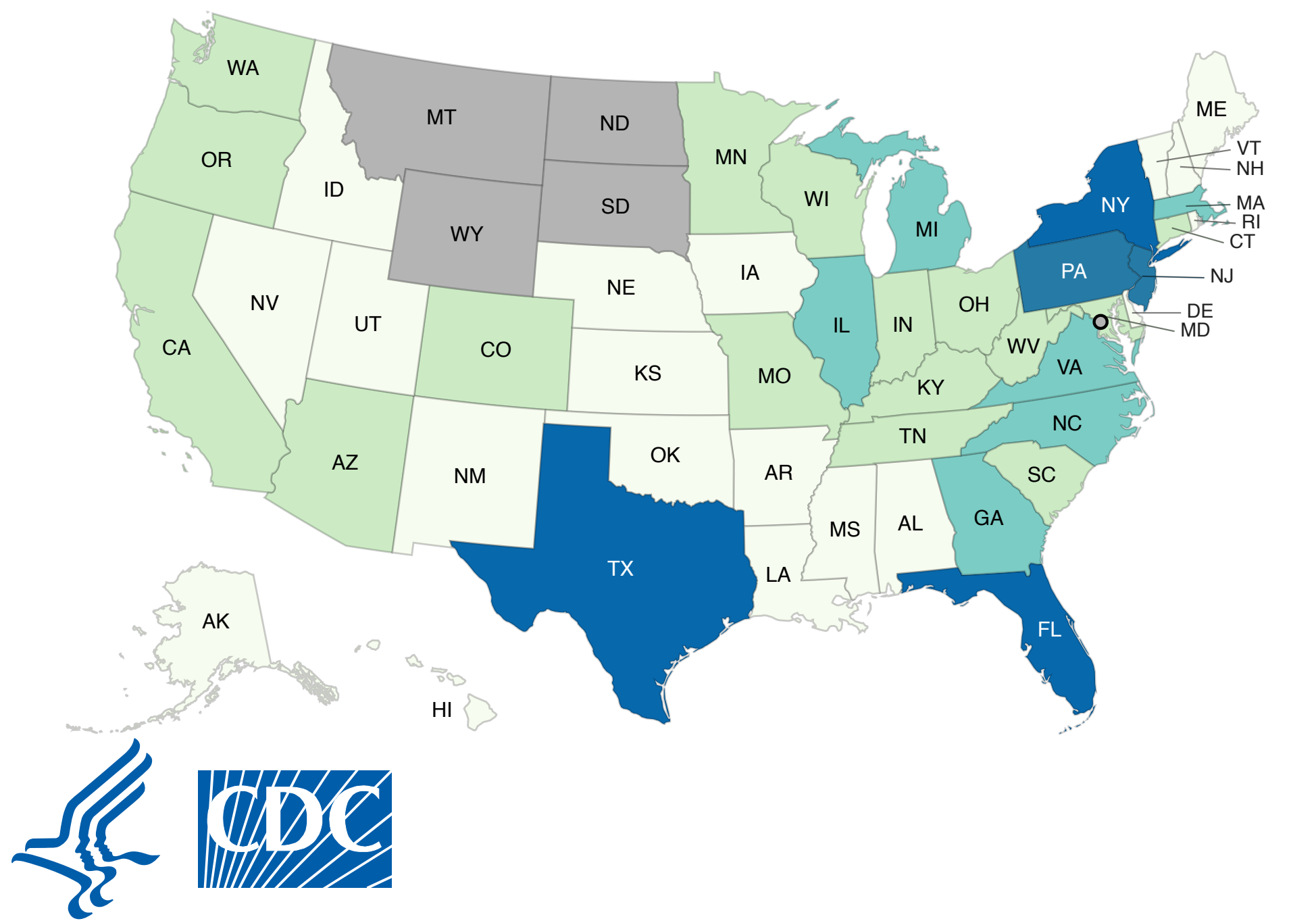
For cases in which *L. monocytogenes* is isolated from multiple anatomical sites, the case is considered to be invasive if any isolate was obtained from a normally sterile site or from products of conception. For cases in which *L. monocytogenes* was isolated from multiple normally sterile anatomical sites, the annual summary reports the most invasive site, using a hierarchy (in descending order of invasiveness: cerebrospinal fluid bone or joint fluid, blood, other sterile site, and products of conception).

Each mother-infant pair in episodes of pregnancy-associated listeriosis is reported as a single report, even when isolates are obtained from both the mother and the infant. The rationale is that an episode of pregnancy-associated listeriosis inherently involves both the mother and the infant, because the infant's infection, in most cases, occurs because the mother ate contaminated food. Reports are classified as pregnancy-associated if illness occurred in a pregnant person or infant ≤ 28 days old; all other cases are considered to not be associated with pregnancy.

- 46 states submitted 792 listeriosis case reports with information about patients in 2019.
 - 765 (97%) reports included one or more patients with listeriosis; these are included in the remainder of the report.
 - 667 (87%) reports were not associated with pregnancy
 - 98 (13%) reports were pregnancy-associated.
 - 17 (2%) reports were for patients with suspected listeriosis, i.e., with isolation from a non-invasive specimen. Of these, 16 were not associated with pregnancy-associated and 1 was pregnancy-associated. These were excluded from further analyses.
 - 9 (1%) reports did not have enough data to categorize illness as confirmed, probable, or suspected. All these cases were not associated with pregnancy. These were excluded from further analyses.

Jurisdictions reporting at least one listeriosis case to the *Listeria* Initiative during 2019 are shown in Figure 1.

Figure 1: Number of reports submitted to the *Listeria* Initiative, by jurisdiction, 2019 (n=765). ^{*,†}



Data Table		
State	Number of Reports Submitted	Cases Reported to
Alabama	10	Both NNDSS and the Listeria Initiative
Alaska	2	Only the Listeria Initiative
Arizona	11	Both NNDSS and the Listeria Initiative
Arkansas	2	Both NNDSS and the Listeria Initiative
California	13	Both NNDSS and the Listeria Initiative
Colorado	11	Both NNDSS and the Listeria Initiative
Connecticut	16	Both NNDSS and the Listeria Initiative
Delaware	3	Both NNDSS and the Listeria Initiative
District Of Columbia	0	Neither NNDSS nor the Listeria Initiative
Florida	49	Both NNDSS and the Listeria Initiative
Georgia	23	Both NNDSS and the Listeria Initiative
Hawaii	10	Both NNDSS and the Listeria Initiative
Idaho	6	Both NNDSS and the Listeria Initiative
Illinois	30	Both NNDSS and the Listeria Initiative
Indiana	20	Both NNDSS and the Listeria Initiative
Iowa	7	Both NNDSS and the Listeria Initiative
Kansas	5	Both NNDSS and the Listeria Initiative
Kentucky	11	Both NNDSS and the Listeria Initiative
Louisiana	10	Both NNDSS and the Listeria Initiative
Maine	5	Both NNDSS and the Listeria Initiative

State ▲	Number of Reports Submitted	Cases Reported to
 Maryland	20	Both NNDSS and the Listeria Initiative
 Massachusetts	29	Both NNDSS and the Listeria Initiative
 Michigan	28	Both NNDSS and the Listeria Initiative
 Minnesota	17	Both NNDSS and the Listeria Initiative
 Mississippi	4	Both NNDSS and the Listeria Initiative
 Missouri	15	Both NNDSS and the Listeria Initiative
 Montana	0	Neither NNDSS nor the Listeria Initiative
 Nebraska	2	Both NNDSS and the Listeria Initiative
 Nevada	7	Both NNDSS and the Listeria Initiative
 New Hampshire	5	Both NNDSS and the Listeria Initiative
 New Jersey	40	Both NNDSS and the Listeria Initiative
 New Mexico	1	Only the Listeria Initiative
 New York	98	Both NNDSS and the Listeria Initiative
 North Carolina	28	Both NNDSS and the Listeria Initiative
 North Dakota	0	Neither NNDSS nor the Listeria Initiative
 Ohio	16	Both NNDSS and the Listeria Initiative
 Oklahoma	6	Both NNDSS and the Listeria Initiative
 Oregon	12	Both NNDSS and the Listeria Initiative
 Pennsylvania	38	Both NNDSS and the Listeria Initiative
 Rhode Island	2	Both NNDSS and the Listeria Initiative
 South Carolina	18	Both NNDSS and the Listeria Initiative
 South Dakota	0	Neither NNDSS nor the Listeria Initiative
 Tennessee	20	Both NNDSS and the Listeria Initiative
 Texas	60	Both NNDSS and the Listeria Initiative
 Utah	2	Both NNDSS and the Listeria Initiative
 Vermont	1	Both NNDSS and the Listeria Initiative
 Virginia	30	Both NNDSS and the Listeria Initiative
 Washington	18	Both NNDSS and the Listeria Initiative
 West Virginia	12	Both NNDSS and the Listeria Initiative
 Wisconsin	18	Both NNDSS and the Listeria Initiative
 Wyoming	0	Neither NNDSS nor the Listeria Initiative
Data table showing data for the United States Map figure.		

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* Number of cases reported to the Listeria Initiative in 2019 are indicated on each jurisdiction that reported.

† All states reported to both the Listeria Initiative (LI) and NNDSS apart from the following: Only LI: Alaska and New Mexico; Neither LI nor NNDSS: Montana, North Dakota, South Dakota, Wyoming, and Washington, D.C.

Listeriosis not associated with pregnancy

Demographic and clinical characteristics of 667 patients with listeriosis not associated with pregnancy are shown in Table 1.

Highlights

- The median age of patients was 71 years.
- Most isolates were from blood (81%) or cerebrospinal fluid (15%).
- 91% of patients were hospitalized.
- 18% of patients died.

Table 1. Demographic and clinical characteristics of patients with listeriosis not associated with pregnancy reported to the *Listeria* Initiative, 2019 (n=667).

Characteristic (number with information)	n	%
Age in years (n=662)*		
Median (Interquartile Range)	71 (61, 81)	
Sex (n=667)*		

Characteristic (number with information)	n	%
Male	344	52
Female	323	48
Ethnicity (n=591)*		
Non-Hispanic	512	87
Hispanic	79	13
Race and Ethnicity (n=569)*,‡		
White Non-Hispanic	390	69
African American/Black Non-Hispanic	57	10
White Hispanic	51	9
Asian Non-Hispanic	45	8
Multiracial Non-Hispanic	9	2
Native American or Alaskan Native Non-Hispanic	1	<1%
Native Hawaiian or Other Pacific Islander Non-Hispanic	1	<1%
Multiracial Hispanic	1	<1%
African American/Black Hispanic	0	<1%
Race not listed Hispanic	11	2
Race not listed Non-Hispanic	3	1
Source of most invasive isolate (n=667)		
Blood	539	81
Cerebrospinal fluid	103	15
Other sterile site¶	22	3
Hospitalized (n=641)	585	91
Died (n=571)	105	18

* Missing and unknown information was excluded from the denominator for each characteristic: age (n=6), ethnicity (n=76), race and ethnicity (n=98).

‡ Race and ethnicity categories with no cases are not listed.

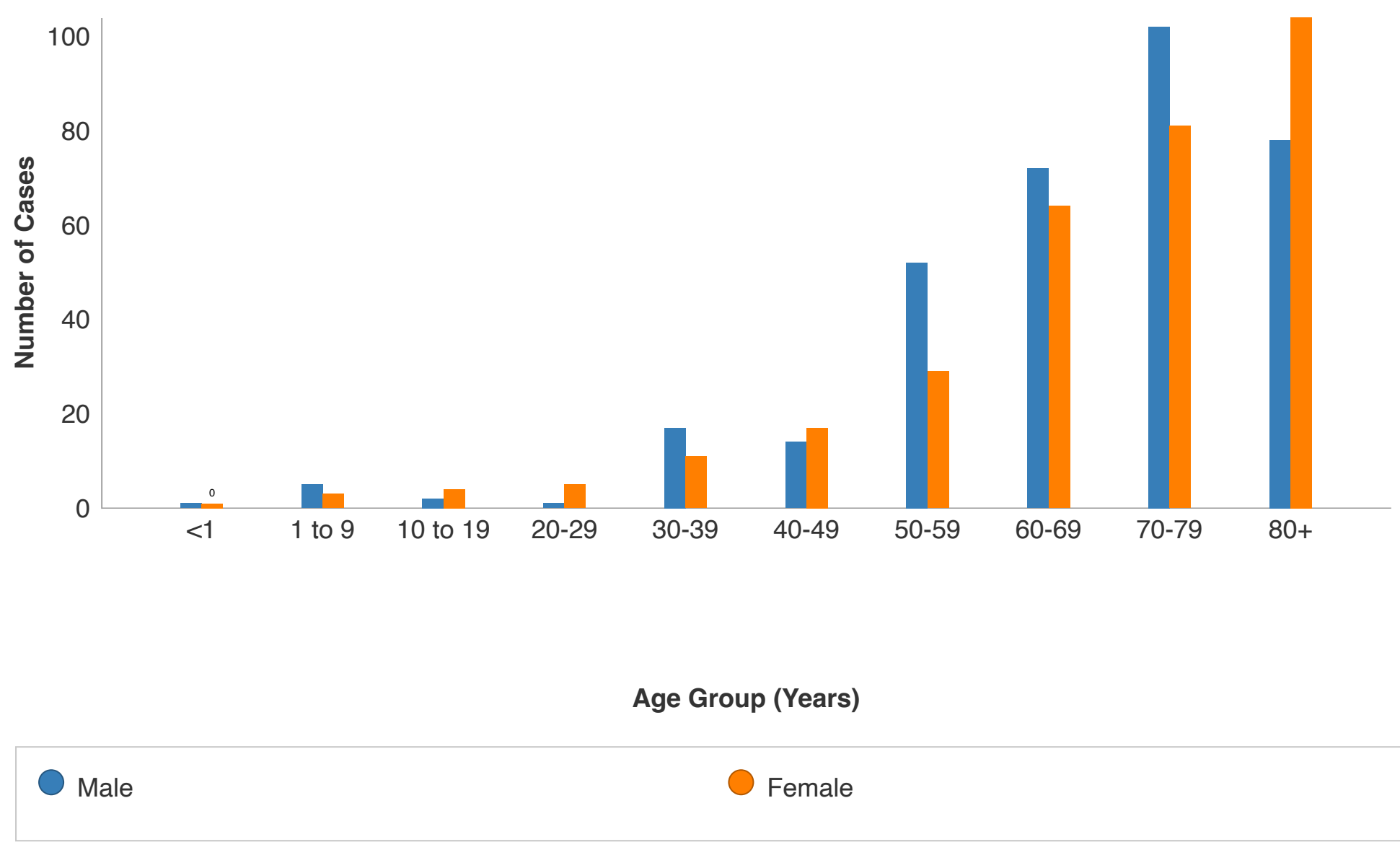
¶ Peritoneal fluid (13), pleural fluid (7), bone or joint fluid (3), eye, (1), aortic tissue (1).

Patients with listeriosis not associated with pregnancy are shown by age group and sex in Figure 2.

Highlight

- The number of patients in each 10-year group increased with age for each older age group among those aged 50–79 years.

Figure 2. Patients with listeriosis not associated with pregnancy, by age group and sex, *Listeria* Initiative, 2019 (n=662*).



[Download Data \(CSV\)](#)

Data Table			
Age Group	Male	Female	
<1	1	0	
1 to 9	5	3	
10 to 19	2	4	
20-29	1	5	
30-39	17	11	
40-49	14	17	
50-59	52	29	
60-69	72	64	
70-79	102	81	
80+	78	104	

* Only patients who had information on both sex and age are included in this figure.

Pregnancy-associated listeriosis

Demographic and clinical characteristics of the 98 pregnancy-associated listeriosis patients are shown in Table 2. All pregnant persons were women.

Highlights

- Among the 98 pregnancies, there were 47 cases in mothers and 51 cases in infants.
 - 51 had *Listeria* detected only in the infant
 - 37 had *Listeria* detected only in the mother
 - 10 pregnancies had *Listeria* detected in both the mother and the infant
- 39% of pregnancies included a woman of Hispanic ethnicity.
- 20% of pregnancies included a fetal death.

- 6% of pregnancies reported a live-born infant death.

Table 2. Demographic and clinical characteristics of episodes of pregnancy-associated listeriosis reported to the *Listeria* Initiative, 2019 (n=98 pregnancies). *

Characteristic (number with information)	n	%
Mother’s age in years (n=92) [¶]		
Median (Interquartile Range)	29 (25, 34)	
Mother’s ethnicity (n=90) [¶]		
Hispanic	35	39
Non-Hispanic	55	61
Mother’s race and ethnicity (n=90) [¶]		
White Non-Hispanic	34	38
White Hispanic	26	29
African American/Black Non-Hispanic	13	14
Asian Non-Hispanic	5	6
Native American or Alaskan Native Non-Hispanic	1	1
Native Hawaiian or Other Pacific Islander Hispanic	1	1
Native Hawaiian or Other Pacific Islander Non-Hispanic	1	1
Race not listed Hispanic	8	9
Race not listed Non-Hispanic	1	1
Source of mother’s most invasive isolate (n=47) [§]		
Blood	44	94
Cerebrospinal fluid	3	6
Source of infant’s most invasive isolate (n=52) [§]		
Blood	32	62
Cerebrospinal fluid	20	38
Isolate only from product of conception	16	16
Hospitalized mothers	51	57
Hospitalized infants [†]	54	86
Pregnancy outcome (n=102)		
Live birth, infant survived	68	67
Live birth, infant died	6	6
Fetal death	20	20
Still pregnant at time of report	8	8

* Mother-infant pairs are counted as a single case.

¶ Missing and unknown information was excluded from the denominator for each characteristic: age (n=6), ethnicity (n=8), race and ethnicity (n=8).

§ For cases in which *L. monocytogenes* was isolated from multiple normally sterile anatomical sites, the annual summary reports the most invasive site, using a hierarchy (in descending order of invasiveness: cerebrospinal fluid, bone or joint fluid, blood, other sterile site, and product of conception).

‡ Products of conception included placenta (n=14), amniotic fluid (n=1), umbilical cord blood (n =1).

† Hospitalization related to *Listeria* infection.

Listeria outbreak investigations

The *Listeria* Initiative was designed to expedite investigation of and response to clusters and outbreaks. (A cluster is defined as 2 or more persons whose isolates are closely genetically related; clusters that were linked to a common source are called outbreaks.) By participating in the *Listeria* Initiative, including use of the standard questionnaire, state and local health departments contribute data on food exposures that can be used for rapid investigation of clusters and for other epidemiological analyses. During 2019, state and local health officials, regulatory agencies, and CDC identified 31 clusters of listeriosis.

More information on *Listeria* outbreaks can be found in [CDC’s National Outbreak Reporting System \(NORS\) Dashboard](#) and in [CDC’s list of multistate foodborne outbreaks](#).

Reporting statistics

Prompt interviewing of all patients with listeriosis, timely submission of *Listeria* Initiative standardized questionnaires to CDC, rapid subtyping by whole-genome sequencing, and uploading of sequencing results to PulseNet allow for rapid detection and investigation of listeriosis clusters. To help meet these objectives, reporting statistics and goals for the *Listeria* Initiative (below) were proposed at the 2012 Council of State and Territorial Epidemiologists (CSTE) Annual Meeting. CDC sends state-specific summaries to state epidemiologists. Health department personnel may also request their state’s reporting statistics by emailing edebresponse@cdc.gov and listeria@cdc.gov.

Table 3	Table 4				
National listeriosis surveillance metrics by year, <i>Listeria</i> Initiative (LI), 2015–2019					
Metrics	2015	2016	2017	2018	2019
Jurisdictions reporting to LI, no.*	49	48	50	48	46
Cases reported to LI, no.†	710	731	750	755	791
Cases reported to NNDSS also reported to LI, %‡	92%	93%	84%	87%	85%
Human isolates reported to PulseNet also reported to LI, %§	88%	89%	91%	88%	72%
Timeliness of reports to LI¶					
Interviews reported to CDC within 7 days of interview date, %	34%	32%	35%	38%	28%
Clinical isolates uploaded to PulseNet within 14 days of specimen collection date, %**	54%	63%	67%	70%	46%
Reporting completeness					
Reports to LI that used the standard LI questionnaire, no.††	84%	89%	97%	98%	99%
Reports with consumption data for 5 historically key foods, %‡‡	61%	61%	68%	66%	66%

* Among 46 districts, not including District of Columbia in 2019.

† For pregnancy-associated case reports, 1 case report includes a mother-infant pair. Details of this definition can be found [here](#).

‡ Calculated among 931 NNDSS case reports in 2019.

§ Calculated among 749 case reports to PulseNet in 2019.

¶ Calculated among cases reports with LI questionnaire submitted.

** Calculated for isolates that are reported to PulseNet with information on submission dates.

†† Calculated for LI case reports.

‡‡ Calculated for LI case reports; information on consumption history for turkey breast, blue cheese, coleslaw, smoked fish, and yogurt.

Proposed national listeriosis reporting goals for 2016 and *Listeria* Initiative (LI) metrics for 2019. *

Metrics	2019	2016 Goal
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Metrics	2019	2016 Goal
Jurisdictions reporting to LI, no.*	46	All
Cases reported to NNDSS also reported to LI, %†	85%	100%
Human isolates reported PulseNet also reported to LI, %‡	72%	100%
Reporting Timeliness§		
Interviews reported to CDC within 7 days of interview date, %	28%	90%
Clinical isolates uploaded to PulseNet within 14 days of specimen collection date, %¶	46%	90%
Reporting Completeness		
Reports using the standard LI questionnaire, %**	99%	100%
Reports with “complete” food history, %††	66%	90%

* Among 46 districts, not including District of Columbia in 2019.

† Calculated among 931 NNDSS case reports in 2019.

‡ Calculated among 749 case reports to PulseNet in 2019.

§ Calculated among case reports with LI questionnaire submitted .

¶ Calculated for isolates that are reported to PulseNet with information on submission dates.

** Calculated for LI case reports.

†† Calculated for LI case reports; information on consumption history for turkey breast, blue cheese, coleslaw, smoked fish, and yogurt.

Other sources of surveillance data

NNDSS data

The National Notifiable Disease Surveillance System (NNDSS) collects and compiles reports of nationally notifiable infectious diseases, including listeriosis. Reports can be found at cdc.gov/mmwr/mmwr_nd/index.html.

FDOSS outbreak data

The Foodborne Disease Outbreak Surveillance System (FDOSS) collects reports of foodborne disease outbreaks from local, state, tribal, and territorial public health agencies. Reports can be found at cdc.gov/foodsafety/fdoss/data/annual-summaries/index.html.

Recommended citation

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Yes

Partly

No