

Key Findings and Public Health Messages

- The California Department of Public Health (CDPH) received reports of 868 cases of listeriosis with estimated symptom onset dates from 2001 through 2008. This corresponds to an average incidence rate of 0.30 cases per 100,000 Californians.
- Annual listeriosis incidence rates in California decreased by 26.5 percent from 2001 (0.34 per 100,000) to 2008 (0.25 per 100,000). However, incidence rates were elevated from 2004 through 2006 (average rate: 0.34 per 100,000) and then decreased thereafter.
- During the surveillance period, 73 (8.4 percent) cases were reported to have died with listeriosis during the surveillance period.
- Average listeriosis incidence rates during the surveillance period were highest among children under 1 year of age (1.65 per 100,000), and adults 65 years of age or older (1.17 per 100,000). Among Californians 15 to 44 years of age, the average rate of listeriosis was 3.6 times higher in women (0.25 per 100,000) than in men (0.07 per 100,000).
- From 2001 through 2008, CDPH received reports of 2 foodborne outbreaks of listeriosis (1 confirmed, 1 suspected) involving 84 cases. The confirmed outbreak involved 28 cases and was associated with delicatessen turkey meat.
- Improving the safety of processed meats and educational outreach to high-risk consumers such as pregnant women, the immunocompromised, and the elderly may provide the best opportunities for reducing listeriosis.

Background

In the United States (US), listeriosis is an uncommon but important foodborne illness and is associated with an estimated 2,500 severe infections and 500 deaths each year¹. *Listeria monocytogenes* is ubiquitous in the environment and immunocompetent persons may have only a mild acute febrile illness or gastroenteritis. However, listeriosis is a leading cause of foodborne-related deaths in the US because of the severity of illness among certain populations. The elderly, immunocompromised persons, and pregnant women and neonates are at increased risk for severe illness including meningo-encephalitis and/or septicemia. Infected pregnant women may experience only a mild illness but infection can lead to premature delivery, miscarriage, stillbirth, or serious infection in the newborn.

Consuming contaminated foods, including unpasteurized milk products and ready-to-eat meats, is the leading source of infection. Outbreaks of listeriosis have been associated with deli meats and unpasteurized milk products including Mexican-style fresh soft cheese². On rare occasions, pasteurized milk has been implicated in outbreaks³. Unlike other foodborne pathogens, *Listeria* will multiply in refrigerated temperatures. The national *Healthy People 2010* target objective for listeriosis is no more than 0.25 new cases per 100,000 people.

We describe here the epidemiology of listeriosis in California from 2001 through 2008. Data for 2008 are provisional and may differ from data in future publications. For a complete discussion of the definitions, methods, and limitations associated with this report, please refer to Technical Notes⁴.

California reporting requirements and surveillance case definitions

California Code of Regulations, Title 17, requires health care providers to report suspected cases of listeriosis to their local health department within one working day of identification or immediately by telephone if an outbreak is suspected. Clinical and reference laboratories must also notify the local health department when laboratory testing yields evidence suggestive of *Listeria*; notification must occur within one working day after the health care provider has been notified.

California regulations require local health officers to

report to CDPH cases of listeriosis. CDPH officially counted cases that satisfied the Centers for Disease Control and Prevention (CDC) surveillance case definition. During the surveillance period, CDC defined a confirmed case as one with *L. monocytogenes* isolated from a normally sterile site or, in the setting of a miscarriage or stillbirth, isolation of *L. monocytogenes* from placental or fetal tissue.

Epidemiology of listeriosis in California

CDPH received reports of 868 cases of listeriosis with estimated symptom onset dates from 2001 through 2008. This corresponds to an average incidence rate of 0.30 cases per 100,000 Californians. Incidence rates decreased by 26.5 percent from 2001 (0.34 per 100,000) to 2008 (0.25 per 100,000) [Figure 1]. However, incidence rates were elevated from 2004 through 2006 (average rate: 0.34 per 100,000) and then decreased thereafter. During the surveillance period, 73 (8.4 percent) cases were reported to have died with listeriosis.

Average listeriosis incidence rates were highest among children under 1 year of age (1.65 per 100,000), and adults 65 years of age or older (1.17 per 100,000). Incidence rates among children under 1 year of age decreased by 71.8 percent from the combined years 2001 and 2001 (2.27 per 100,000) to the combined years 2007 and 2008 (0.64 per 100,000) [Figure 2]. The ratio of female to male cases was 1.2:1.0. Among Californians 15 to 44 years of age, the average incidence rate of listeriosis was 3.6 times higher in women (0.25 per 100,000) than in men (0.07 per 100,000). Incidence rates by race/ethnicity were not calculated due to the substantial portion of missing data (21.7 percent). However, listeriosis cases with complete information reported race/ethnicities that were similar to those expected based on the demographic profile of California [Figure 3].

Average incidence rates for the surveillance period were similar in Northern California and Southern California. During the years 2007 and 2008 combined, 16 counties reported incidence rates (range: 0.30 per 100,000 - 1.66 per 100,000) that were above the *Healthy People 2010* target objective [Figure 4].

From 2001 through 2008, CDPH received reports of 1 confirmed and 1 suspected foodborne outbreak of

Figure 1. California listeriosis case counts and incidence rates

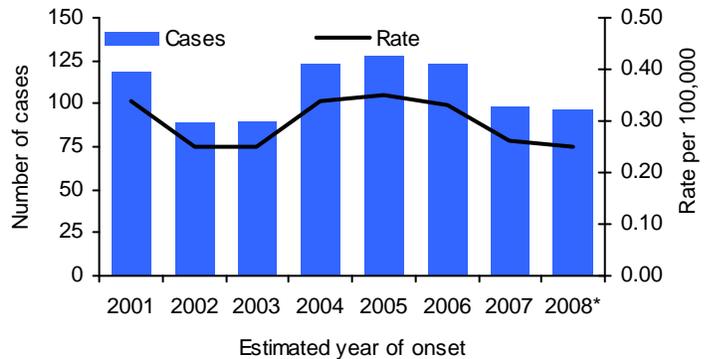


Figure 2. California listeriosis incidence rates by age and time period

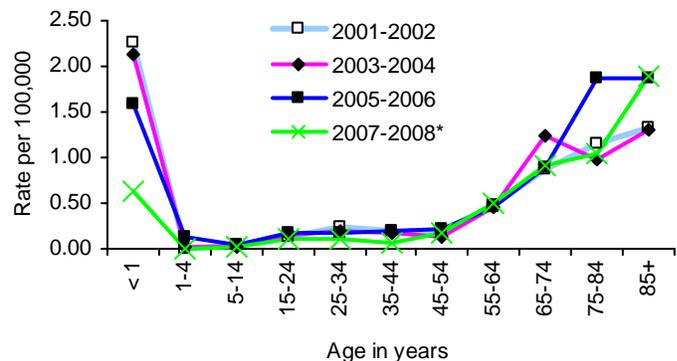
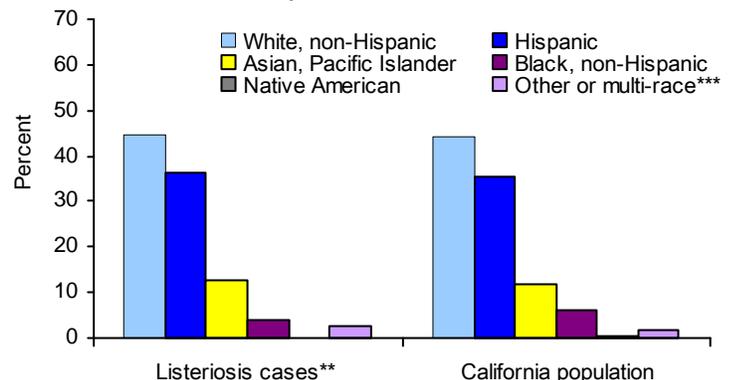


Figure 3. California listeriosis cases and population by race/ethnicity 2001 - 2008*



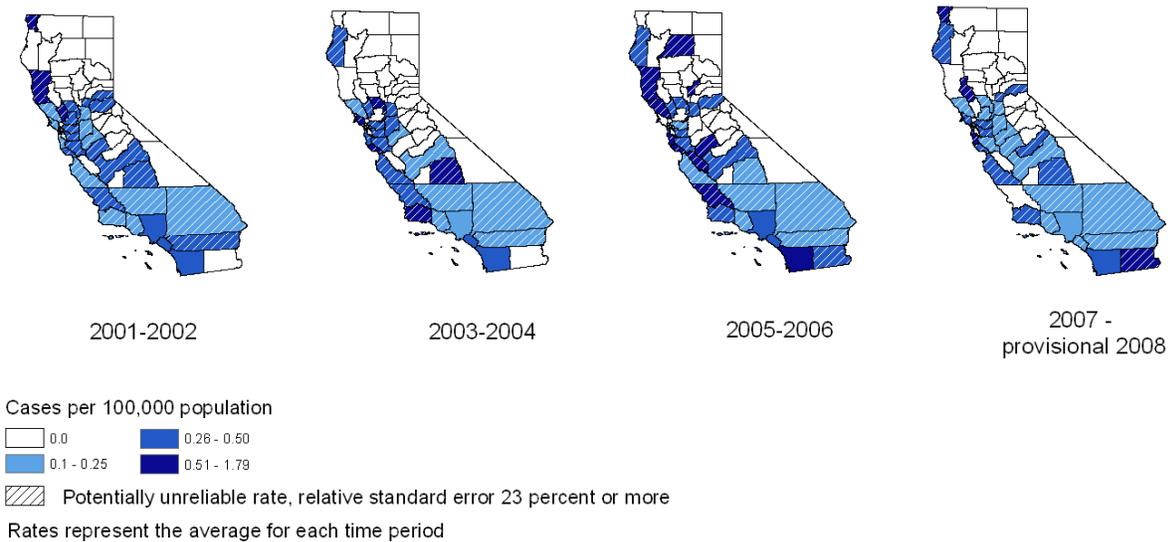
Notes for Figures 1-3

*2008 data are provisional

**Unknowns were excluded

***Includes cases who identified 'other' as their race and Californians ('population') who identified more than one race

Figure 4. California county-specific listeriosis incidence rates



listeriosis involving 84 cases. The confirmed outbreak occurred in 2001, involved 28 cases, and was associated with delicatessen turkey meat.

Comment

During the surveillance period, the highest annual number of listeriosis cases (128) was reported in 2005. From 2001 to 2008, annual incidence rates have decreased modestly. However, why incidence rates were higher during the period 2004 through 2006 is unexplained. Increases during this period were also reported nationally. The average annual incidence for the surveillance period (0.30 per 100,000) was 16.7 percent above the *Healthy People 2010* target objective (0.25 per 100,000) although the incidence rate in 2008 (0.25 per 100,000) met the target. As expected, incidence rates were elevated in the very young and the elderly. Although we did not have data on pregnancy, we noted increased incidence rates among women of childbearing age.

Improving the safety of processed meats and educational outreach to high-risk consumers such as pregnant women, the immunocompromised, and the elderly may provide the best opportunities for reducing listeriosis. Additionally, continued surveillance of human infections, especially in combination with enhanced molecular characterization of infecting strain types, may help detect dispersed, previously unrecognized disease clusters.

References and resources

¹Mead PS, Slutsker L, Dietz V et al. Food-related illness and death in the United States. *Emerg Infect Dis* 1999;5:607-25.

<http://www.cdc.gov/ncidod/eid/Vol5no5/pdf/mead.pdf>

²Centers for Disease Control and Prevention. Outbreak of listeriosis associated with homemade Mexican-style cheese -- North Carolina, October 2000-January 2001. *MMWR* 2001;50(26);560-2.

³Centers for Disease Control and Prevention. Outbreak of *Listeria monocytogenes* infections associated with pasteurized milk from a local dairy -- Massachusetts, 2007. *MMWR* 2008;57(40);1097-1100.

⁴Epidemiologic Summaries of Selected General Communicable Diseases in California, 2001-2008: Technical Notes
<http://www.cdph.ca.gov/data/statistics/Documents/technicalnotes-episummary-aug2409.pdf>

Centers for Disease Control and Prevention
listeriosis information webpage
http://www.cdc.gov/nczved/dfbmd/disease_listing/listeriosis_gi.html

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