

# Higher incidence of *Listeria* infections among Hispanics: FoodNet, 1996-2000

J.C. Lay<sup>1</sup>, J.K. Varma<sup>1</sup>, R. Marcus<sup>2</sup>, T.F. Jones<sup>3</sup>, S.F. Tong<sup>4</sup>, C. Medus<sup>5</sup>, M. Samuel<sup>6</sup>, P.M. Cassidy<sup>7</sup>, F.P. Hardnett<sup>1</sup>, C.R. Braden<sup>1</sup> and the EIP FoodNet Working Group

<sup>1</sup>Centers for Disease Control and Prevention, Atlanta, GA; <sup>2</sup>Connecticut Emerging Infections Program, Yale University, New Haven, CT;

<sup>3</sup>Tennessee Department of Health, Nashville, TN; <sup>4</sup>Maryland Department of Health and Mental Hygiene, Baltimore, MD; <sup>5</sup>Minnesota Department of Health, Minneapolis, MN;

<sup>6</sup>California Emerging Infections Program, San Francisco, CA; <sup>7</sup>Oregon Department of Human Services, Portland, OR.

## Abstract

**Background:** Listeriosis, a disease caused by infection with *Listeria monocytogenes*, carries high morbidity and mortality. Infection with *L. monocytogenes* has been most commonly associated with the consumption of unpasteurized milk, soft cheeses, hot dogs, and deli meats. Prominent outbreaks among Hispanic communities in Los Angeles and North Carolina have been associated with the consumption of Mexican-style soft cheese made with unpasteurized milk. We sought to determine if people of Hispanic ethnicity have an increased rate of listeriosis in general.

**Methods:** Active surveillance for listeriosis has been conducted in FoodNet sites since 1996. In 2000, listeriosis surveillance was conducted in eight FoodNet sites (California, Connecticut, Georgia, Maryland, Minnesota, New York, Oregon, Tennessee) encompassing approximately 29.5 million persons, or 11% of the US population. We analyzed demographic data on all cases of culture-confirmed listeriosis identified by FoodNet from 1996 to 2000.

**Results:** From 1996 to 2000, a total of 474 culture-confirmed cases of listeriosis were reported in FoodNet sites. The five year average incidence for all sites was 0.4 per 100,000 population, ranging from 0.3 in MN to 0.7 in CT. The average incidence was 0.2 per 100,000 among non-Hispanics and 0.7 among Hispanics during the study period. Among non-Hispanics, the incidence was 0.2 in Native Americans, 0.2 in Blacks, 0.2 in Whites, and 0.4 in Asians. Although the incidence remained higher in Hispanics across almost all age groups, the disparity between Hispanics and non-Hispanics was greatest among infants < 1 year of age (11.9 per 100,000 vs. 1.0 per 100,000 respectively) and among Hispanic women of childbearing age (15-39 years, 1.1 per 100,000 vs. 0.1 per 100,000 respectively). The highest incidence of illness among Hispanic women of childbearing age was observed in the 30-34 age group (2.7 per 100,000). When comparing incidence by gender, Hispanic females (0.9 per 100,000) had a notably higher incidence than Hispanic males (0.5 per 100,000); incidence was similar by gender for non-Hispanics.

**Conclusion:** In FoodNet sites from 1996 to 2000, there was a higher incidence of listeriosis among Hispanics compared with non-Hispanics, particularly in infants and women of childbearing age. Hispanic infants had a 12-fold greater incidence of listeriosis than their non-Hispanic counterparts; for Hispanic women 30-34 years of age, the incidence was 13-fold greater than for non-Hispanic women in the same age group. Additional studies of listeriosis focusing on these groups are needed to determine specific risk factors for infection. To reduce the burden of listeriosis, prevention strategies and educational campaigns that focus on protecting infants and women of childbearing age should be targeted towards the Hispanic community.

## Background

- Each year in the United States *Listeria monocytogenes* causes an estimated
  - > 2,518 illnesses
  - > 2,322 hospitalizations
  - > 504 deaths
- Outbreaks of listeriosis among Hispanic communities have been associated with consumption of Mexican-style cheese made with unpasteurized milk

## Objectives

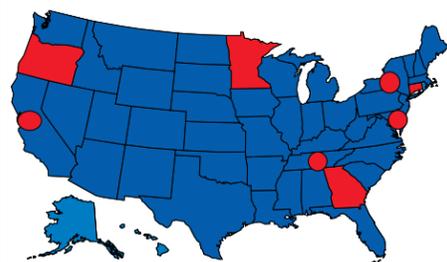
- Determine the incidence of listeriosis in FoodNet sites
- Determine the incidence of listeriosis among racial and ethnic groups
- Determine the high risk age and gender groups for listeriosis

## Methods

### Data Source

- FoodNet is the principal foodborne component of CDC's Emerging Infections Program (EIP)
  - Collaborative effort among USDA, FDA, CDC and nine state health departments (California, Colorado, Connecticut, Georgia, Maryland, Minnesota, New York, Oregon, Tennessee)
  - In 2000, catchment area encompassed 29.5 million persons or 11% of US population
  - Began laboratory-based active surveillance for listeriosis in 1996

### Foodborne Diseases Active Surveillance Network (FoodNet), 2000



Population = 29,507,966 persons

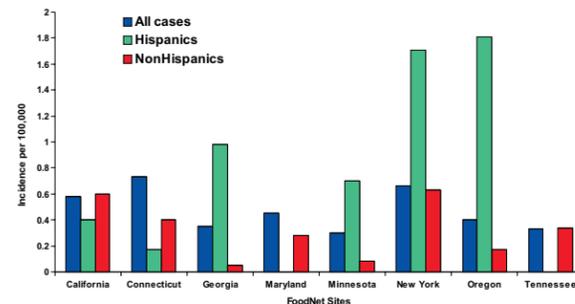
### Data Analysis

- Analyzed demographic data on all cases of culture-confirmed listeriosis identified in FoodNet from 1996 to 2000
- Incidence was calculated using population estimates from the United States Census Bureau
  - > 1999 estimates were used for year 2000

## Results

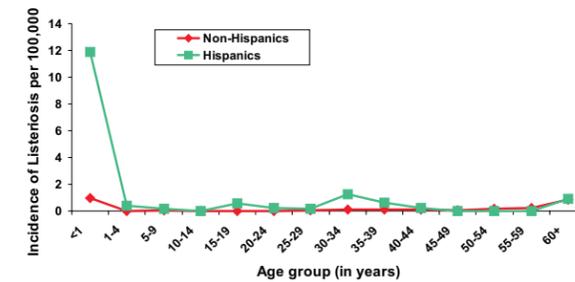
- 474 culture-confirmed cases of listeriosis reported to FoodNet from 1996 to 2000
- Incidence from 1996 to 2000:
  - > 0.4 per 100,000 population for all cases
    - ♦ Range: 0.3 in MN to 0.7 in CT
  - > 0.2 per 100,000 among non-Hispanics
    - ♦ 0.2 per 100,000 in Native Americans
    - ♦ 0.2 per 100,000 in Blacks
    - ♦ 0.2 per 100,000 in Whites
    - ♦ 0.4 per 100,000 in Asians
  - > 0.7 per 100,000 among Hispanics

### Incidence of listeriosis by site, 1996-2000



- Incidence higher in Hispanics across most age groups
- Disparity in incidence between Hispanics and non-Hispanics greatest among:
  - > Infants < 1 year of age
    - ♦ 11.9 per 100,000 in Hispanics (RR= 12.1)
    - ♦ 1.0 per 100,000 in non-Hispanics
  - > Women of childbearing age (15-39 years)
    - ♦ 1.1 per 100,000 in Hispanics (RR=11.0)
    - ♦ 0.1 per 100,000 in non-Hispanics

### Incidence of listeriosis by age group, 1996-2000



- Highest incidence among Hispanic women of childbearing age observed in the 30 to 34 year age group
  - > 2.7 per 100,000 population
  - > RR of 13.4 between Hispanics and non-Hispanic women 30 to 34 years of age

### Incidence of listeriosis among women by age group, 1996-2000

Age	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
Non-Hispanics	0.6	0	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.8
Hispanics	12.1	0.8	0	0	0.8	0.4	0.4	2.7	0.8	0	0	0	0	0

- Hispanic females of childbearing age had a **higher** rate of listeriosis than Hispanics in other comparison age groups.
- Non-Hispanic females of childbearing age had a **lower** rate of listeriosis than non-Hispanics in other comparison age groups.

### Incidence of listeriosis per 100,000 in females by ethnicity and age group

	CHILDBEARING AGE: Ages 15-39	AGE GROUP COMPARISON I: Ages 5-14, 40-54	AGE GROUP COMPARISON II: Ages 0-14, 40-60+
Non-Hispanic	0.1	0.1	0.3
Hispanic	1.1	0	0.6

- Incidence by gender:
  - > Among Hispanics, females (0.9 per 100,000) had higher incidence than males (0.5 per 100,000)
  - > Among non-Hispanics, females (0.2 per 100,000) had lower incidence than males (0.5 per 100,000)

## Conclusions

- In 1996-2000, there was higher incidence of listeriosis among Hispanics compared with non-Hispanics
  - > Particularly in Georgia, Minnesota, New York, and Oregon
  - > Disparity more evident among infants and women of childbearing age
    - ♦ 12-fold greater incidence of listeriosis among Hispanic infants compared to their non-Hispanic counterparts
    - ♦ 13-fold greater incidence of listeriosis among Hispanic women 30 to 34 years of age compared to non-Hispanic women in same age group

## Recommendations

- Additional studies focusing on Hispanics, particularly infants and women, are needed
- Prevention strategies and educational campaigns that focus on protecting infants and women of childbearing age should target the Hispanic community

