Pregnancy-associated listeriosis, Foodborne Diseases Active Surveillance Network (FoodNet), 1996-2005

Elaine Scallan, PhD
Foodborne Diseases Active Surveillance Network
Enteric Diseases Epidemiology Branch
Burden of Listeriosis

• Serious illness caused by eating foods contaminated with *Listeria monocytogenes*

• In 1999, CDC estimated 2,500 persons become ill each year in the U.S.
  – At risk populations
    • The elderly
    • Persons with weakened immune systems
    • Newborns
    • Pregnant women
Pregnant women

- Pregnant women are about 20 times more likely than other healthy adults to get listeriosis.
- Pregnant women may experience a mild flu-like illness.
- Infections during pregnancy can lead to miscarriage or stillbirth, premature delivery, or infection of the newborn.
Objective

• Determine the burden and trends in pregnancy-associated listeriosis using surveillance data from the Foodborne Diseases Active Surveillance Network (FoodNet) from 1996-2005
What is FoodNet?

- Established in 1996, principal foodborne disease component of CDC’s Emerging Infections Program
- CDC, USDA-FSIS, FDA, and 10 participating state health departments
- 45 million (~15% of the U.S. population)
FoodNet Active Surveillance

- Active surveillance for laboratory-confirmed infections due to *L. monocytogenes*
- FoodNet personnel routinely contact >650 clinical laboratories serving catchment area
- Standard case report form completed
  - Demographic information, specimen information, and data on hospitalization and patient outcome
Isolation of *L. monocytogenes* from stool, blood, cerebrospinal fluid, amniotic fluid or from the placenta or products of conception

**Pregnancy-associated case**
- Pregnant woman
- Fetus
- Infant ≤31 days old

**Non-pregnancy associated case**
- Male or non-pregnant female >31 days old

Cases are classified based on age:
- <50 years of age
- ≥50 years of age
Incidence calculations

• Incidence rates calculated (per 1 million population per year) using U.S. Census Bureau annual population estimates

• A mother-infant pair was counted as a single pregnancy-associated case

• We used the population of children <1 year old for the denominator for pregnancy-associated cases
Ethnicity classification

- Ethnicity information was reported for 71% of all cases
Listeriosis cases, 1996-2005

1063 listeriosis cases ascertained by FoodNet from 1996 to 2005

166 (15%) pregnancy-associated cases
912 (85%) non-pregnancy associated cases

183 (20%) non-pregnancy associated cases <50 years of age
729 (80%) non-pregnancy associated ≥50 years of age
Incidence of listeriosis

- Pregnancy-associated cases
  - 42.7 cases per million population

- Non-pregnancy associated cases <50 years of age
  - 1 case per million population
Trends in listeriosis, 1996-2005

• Incidence of pregnancy-associated decreased 36%
  – From 51.4 cases per million in 1996-1998 to 32.9 in 2005

• Incidence of non-pregnancy associated cases <50 years decreased 65%
  – From a mean of 1.4 cases per million in 1996-1998 to 0.5 in 2005
## Case characteristics

<table>
<thead>
<tr>
<th></th>
<th>Pregnancy-associated</th>
<th>Non-pregnancy associated &lt;50 years of age</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Female</td>
<td>-</td>
<td>95 (53%)</td>
</tr>
<tr>
<td>Hispanic ethnicity</td>
<td>45 (39%)</td>
<td>27 (22%)</td>
</tr>
<tr>
<td>Hospitalized</td>
<td>151 (91%)</td>
<td>151 (83%)</td>
</tr>
<tr>
<td>Fetal loss or death</td>
<td>28 (17%)</td>
<td>19 (10%)</td>
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Conclusions

• Overall, the incidence of pregnancy-associated listeriosis decreased
  – However, rate of decrease lower than in non-pregnancy-associated cases <50 years of age

• Pregnancy-associated cases more likely to be hospitalized and Hispanic than non-pregnancy-associated cases <50 years of age
Conclusions

• Factors contributing to the observed declines include:
  – Public education interventions targeting at-risk populations that followed reported outbreaks of illness due to unpasteurized milk/cheese and other ready-to-eat foods
  – Efforts by federal and state food safety officials to remove unsafe products from markets
Take home message

- Further declines in pregnancy-associated listeriosis will require continued efforts of industry and government to reduce contamination of the food supply, and targeted education of at-risk groups on prevention of infection with *L. monocytogenes*
Limitations

• Surveillance for *L. monocytogenes* limited to laboratory-confirmed cases
  – Persons without access to health care and persons whose illness was not culture-confirmed were not excluded

• Hispanics population underrepresented in FoodNet compared to the United States population (9% versus 14%)
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FoodNet website:  www.cdc.gov/FoodNet