NEARS: Improving the Future of Foodborne Illness Outbreak Data Reporting

Vince Radke, MPH, RS, CP-FS, DAAS, CPH
Division of Emergency and Environmental Health Services (DEEHS)
Environmental Health Services Branch
Presentation Overview

- Food safety goals and priorities
- Foodborne illness outbreak data
- Environmental assessment data
- Overview of NEARS
- Outcomes and benefits
Food Safety Goal and Priorities

- **Centers for Disease Control and Prevention**
  - National Center for Environmental Health (NCEH)

- **Goal**
  - Improve environmental health practice to prevent foodborne outbreaks

- **Priorities**
  - Improve reporting of environmental factors that contribute to foodborne illness outbreaks
  - Strengthen federal, state, local and industry policies and practices
Foodborne Illness Outbreak Investigation Data

- Epidemiologic
- Laboratory
- Environmental Health
Foodborne Illness Outbreak Investigation Data

Source: https://www.cdc.gov/foodsafety/outbreaks/investigating-outbreaks/index.html
ENVIRONMENTAL HEALTH DATA

Foodborne Illness Outbreak Investigations
Environmental Assessment Data as Part of Foodborne Illness Outbreak Investigations

Environmental Assessment

- Data describes how the environment contributes to the introduction and/or transmission of agents that cause illness

  - Identify contributing factors
  - Identify environmental antecedents (i.e. root causes)
  - Generate recommendations for informed interventions
Environmental Assessment Data as Part of Foodborne Illness Outbreak Investigations

**Contributing Factors**

Factors that caused the outbreak

*How* the outbreak occurred

---

**Environmental Antecedents**

Factors that led to the contributing factors

*Why* the outbreak occurred
Environmental Assessment Data as Part of Foodborne Illness Outbreak Investigations

**Outbreak**
- Norovirus
- Outbreak caused by salad eaten at a restaurant

**Contributing Factors**
- Worker did not properly wash hands after using restroom
- Worker prepared salad using bare hands
- Worker worked while ill

**Environmental Antecedents**
- Hand sinks did not have soap
- Workers lacked training on proper handwashing
- Restaurant did not offer workers paid sick leave
NATIONAL ENVIRONMENTAL ASSESSMENT REPORTING SYSTEM (NEARS)

Foodborne Illness Outbreak Investigations
The Need to Improve Reporting of Environmental Assessment Data

- Environmental assessment data are key to:
  - Understand how and why outbreaks occur
  - Develop appropriate guidelines, policies and practices
  - Prevent future outbreaks

- Engage food safety officials conducting environmental assessments

- Increase environmental assessment data reported to CDC

- Link to National Outbreak Reporting System (NORS)
  - Strengthen foodborne illness outbreak data (link Epi, Lab, & EH data)
National Environmental Assessment Reporting System (NEARS)

- Launched 2014
- Companion surveillance system to NORS
- State and local retail food safety programs report data to NEARS from foodborne outbreak environmental assessments
- Data includes outbreak contributing factors and environmental antecedents
National Environmental Assessment Reporting System (NEARS) Participants

- 16 state agencies
- 9 local agencies
National Environmental Assessment Reporting System (NEARS)

Number of Outbreaks Reported

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Outbreaks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>110</td>
</tr>
<tr>
<td>2015</td>
<td>114</td>
</tr>
<tr>
<td>2016</td>
<td>180</td>
</tr>
</tbody>
</table>
Linking NORS and NEARS Outbreak Data

- **Outbreak Response**

  - Initial Exposure: 5/16/2015
  - Last Exposure: 5/16/2015
  - First Ill: 5/17/2015
  - Last Ill: 5/19/2015
  - Local Report: 5/19/2015
  - Establishment Identified for Environmental Assessment: 6/15/2015
  - First contact with Establishment Management: 6/15/2015
  - Manager Interview: 6/15/2015
  - Observations Made: 6/15/2015

  **NORS NEARS**

  

  27 days
Linking NORS and NEARS Outbreak Data

- Polices and Practices to Outbreak Size

Mean Suspected Primary Norovirus Cases by Employee Restroom Soap Availability

<table>
<thead>
<tr>
<th>Soap</th>
<th>No Soap</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.9</td>
<td>26.5</td>
</tr>
</tbody>
</table>

Number of Cases

NORS

NEARS
OUTCOMES AND BENEFITS

National Environmental Assessment Reporting System (NEARS)
Immediate Outcomes for Reporting Environmental Assessment Data to NEARS

- **Food Safety Programs**
  - Increase reporting of environmental assessment data
  - Access to practical information about conducting environmental assessments
    - NEARS Data Reporting Instrument
    - CDC’s Environmental Assessment Training Series (EATS)
  - Access to a free data entry and storage system
Long-Term Outcomes for Reporting Environmental Assessment Data to NEARS

Improve Retail Food Safety

- Identify what environmental antecedents are associated with outbreak occurrences

- Identify what environmental antecedents are associated with outbreak types (e.g., bacterial vs. viral) or specific pathogens

- Identify what environmental antecedents are associated with specific contributing factor (CF) categories (contamination, proliferation, survival) or specific CFs
Long-Term Outcomes for Reporting Environmental Assessment Data to NEARS

New York City Department of Health and Mental Hygiene

- Improve reporting of environmental assessment data

Benefit of Reporting Environmental Assessment Data to NEARS

- **Retail Food Safety Programs**
  - Receive annual reports from CDC summarizing:
    - Data from your program
      - Document and track foodborne outbreak response data
      - Meet FDA Retail Food Regulatory Program Standards
        - Standard 5: Foodborne Illness and Food Defense Preparedness and Response
  - Collaboration/communication with other NEARS participants
In 2015, a total of 114 outbreaks were reported to NEARS. This summary provides information on characteristics of those outbreaks and the establishments where they occurred.

The data included in this summary were collected by NEARS participants in California, Connecticut, Davis County, Utah, Fairfax County, Virginia, Harris County, Texas, Minnesota, New York City, New York State, Rhode Island, Tennessee, and Wisconsin.

### Average # of Visits to Complete an Environmental Assessment

- **2 Visits**

### Contributing Factors

- **C10**
- **C11**
- **C12**

### Outbreak Characteristics

- **Average # of visits to complete an environmental assessment:** 2 Visits
- **88% outbreaks reported to NORS**
Anticipated Benefit of Reporting Environmental Assessment Data to NEARS

- **Retail Food Safety Programs**
  - Strengthen national description of foodborne illness outbreak data
  - Prevent foodborne illness cases and deaths
  - Mitigate social and economic disruptions (food production and manufacturing) when epidemics are prevented
  - Cost savings

Begin Reporting Environmental Assessment Data to NEARS

- Commit to conducting environmental assessments

- Complete NEARS Registration Form(s)
  - State Notice and Acknowledgment of Local Participation
  - Notice of Participation Form
    - https://www.cdc.gov/nceh/ehs/nears/registration.htm

- Complete CDC’s free online Environmental Assessment Training Series (EATS)
Thank You!

E-MAIL: VRADKE@CDC.GOV

For more information, contact NCEH
1-800-CDC-INFO (232-4636)
Follow us on Twitter @CDCEnvironment

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.