CDC Update

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National Center for Environmental Health
Providing the Vital Link

CDC provides the vital link between illness in people and the food safety systems of government agencies and food producers.
Food Safety

- Food safety is part of one of the six winnable battles as identified by CDC’s Director, Dr. Thomas Frieden

- Three Focus Areas
  - **Discovery** – Tracking trends and risk factors, defining the burden, finding new pathogens and drug resistance, and attributing illness to specific foods
  - **Innovation** – Developing new tools, methods, and analytics in epidemiology, laboratory science, and environmental health
  - **Implementation** – Sharing new technology and information with local, state, and federal partners; improving communications; and targeting information to guide policy

- **Website**
  - [http://www.cdc.gov/WinnableBattles/FoodSafety/index.html](http://www.cdc.gov/WinnableBattles/FoodSafety/index.html)
Integrated Food Safety Centers of Excellence

- **Food Safety Modernization Act (2011)** required CDC to designate five centers (CO, FL, MN, OR, TN)
  - No appropriation until FY 2014: CDC gave $200K per center per year in FYs 2012 and 2013
  - Goal: to serve as resources for federal, state, and local public health professionals to respond to foodborne illness outbreaks
  - Unique aspect of centers: activities focus on assisting other states
  - Training, process evaluation/improvement, information systems
  - Academic courses and research: insufficient funds thus far
Integrated Food Safety Centers of Excellence

Accomplishments

- Training needs assessments conducted
- Online training course (almost completed)
- Food source information wiki on CO website
- Just-in-time environmental health training course under development
- Assessments of detection/response capacity
- All sites have active websites

Future Activities

- Improved complaint and information systems
- Training
- Academic courses
CIFOR: Council to Improve Foodborne Illness Outbreak Response

- CIFOR in 2013
  - Law project: state analysis, handbook, menu
  - CIFOR industry guidelines: *Foodborne Illness Response Guidelines for Owners, Operators, and Managers of Food Establishments*
    - Produced by industry and public health
    - 14 tools and guidelines
  - Lab-epi reporting software

- CIFOR in 2014
  - *CIFOR Guidelines for Foodborne Disease Outbreak Response* second edition
  - *Development of Target Ranges for Selected Performance Measures in the CIFOR Guidelines*
  - *CIFOR Guidelines Toolkit* second edition
New Environmental Health Tools to Improve Food Safety

- NCEH launched 2 new food safety tools in April 2014
  - National Voluntary Environmental Assessment Information System
  - E-Learning on Environmental Assessments of Foodborne Illness Outbreaks
National Voluntary Environmental Assessment Information System (NVEAIS)

- **2008**: Issue submitted to CFP to form committee to review proposal to seek conference input on establishing a national reporting system

- **2010**: CFP recommendation to amend FDA’s Voluntary National Retail Food Regulatory Program Standards, Standard 5, Foodborne Illness and Food Defense Preparedness and Response

- **2012**: FDA amended the standards

- **April 2014**: NVEAIS opened nationally for data reporting
Foodborne Illness Outbreak Environmental Assessments

- **Use systems approach**
  - Describe how the environment contributes to the introduction and/or transmission of agents that cause illness
  - Understand contributing factors and environmental antecedents
    - *Contributing factors*- how the outbreak occurred
    - *Environmental antecedents*- why the outbreak occurred

- **Help describe**
  - Risk factors
  - System variability
  - Relationships between risk factors
  - How relationships between risk factors cause system variability

![Disease Triangle](image)
E-Learning on Environmental Assessments of Foodborne Illness Outbreaks

- Use cutting-edge e-learning technologies to develop competency with foodborne illness outbreak environmental assessments and deliver free training over the Internet to enhance global food safety
Published 4 articles in *Journal of Food Protection*

- Inadequate chicken cross contamination prevention and cooking practices
  - Less than half of kitchen managers knew the temperature to which chicken should be cooked

- Handling practices of fresh leafy greens
  - Most restaurants met FDA guidelines for keeping purchase records for shipments of leafy greens
EHS-Net Restaurant Food Safety Studies 2013

- Ground beef handling and cooking practices
  - Chain restaurants and restaurants with food-safety certified managers had safer ground beef practices

- Food worker experiences with and beliefs about working while ill
  - Workers concerned about leaving coworkers short-staffed were more likely to say they had worked with vomiting or diarrhea
Information on Environmental Health Services Work

- Main EHSB page
  - www.cdc.gov/nc eh/ehs

- NVEAIS
  - http://www.cdc.gov/nc eh/ehs/NVEAIS

- e-Learning on Environmental Assessments for Foodborne Illness Outbreaks
  - http://www.cdc.gov/nc eh/ehs/eLearn/E A_FIO

- Research studies
  - http://www.cdc.gov/nc eh/ehs/EHSNet
MMWR - FoodNet

  - Released April 18, 2014

- [http://www.cdc.gov/mmwr/](http://www.cdc.gov/mmwr/)
Figure 4. Relative rates of culture-confirmed infections with *Campylobacter*, STEC* O157, *Listeria*, *Salmonella*, *Vibrio*, and *Yersinia*, and overall measure of change, compared with 1996–1998 rates, by year, FoodNet 1996–2013†

*Shiga toxin-producing Escherichia coli*. †The position of each line indicates the relative change in the incidence of that pathogen compared with 1996–1998. The actual incidences of these infections cannot be determined from this graph. Data for 2013 are preliminary.

§The measure of overall trends in incidence combines data for *Campylobacter*, *Listeria*, *Salmonella*, STEC O157, *Vibrio*, and *Yersinia*, the six key bacterial pathogens for which >50% of illnesses are estimated to be transmitted by food. The model weights by incidence of infection for each pathogen.
### Tracking Trends Among Major Pathogens

#### Food Safety Progress Report for 2012

<table>
<thead>
<tr>
<th>Disease Agents</th>
<th>Percentage change in 2012 compared with 2006–2008</th>
<th>2012 rate per 100,000 Population</th>
<th>2020 target rate per 100,000 Population</th>
<th>CDC estimates that...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campylobacter</td>
<td>14% increase</td>
<td>14.30</td>
<td>8.5</td>
<td>For every Campylobacter case reported, there are 30 cases not diagnosed</td>
</tr>
<tr>
<td><em>Escherichia coli</em> O157</td>
<td>No change</td>
<td>1.12</td>
<td>0.6</td>
<td>For every <em>E. coli</em> O157 case reported, there are 26 cases not diagnosed</td>
</tr>
<tr>
<td>Listeria</td>
<td>No change</td>
<td>0.25</td>
<td>0.2</td>
<td>For every <em>Listeria</em> case reported, there are 2 cases not diagnosed</td>
</tr>
<tr>
<td>Salmonella</td>
<td>No change</td>
<td>16.42</td>
<td>11.4</td>
<td>For every <em>Salmonella</em> case reported, there are 29 cases not diagnosed</td>
</tr>
<tr>
<td>Vibrio</td>
<td>43% increase</td>
<td>0.41</td>
<td>0.2</td>
<td>For every <em>Vibrio parahaemolyticus</em> case reported, there are 142 cases not diagnosed</td>
</tr>
<tr>
<td>Yersinia</td>
<td>No change</td>
<td>0.33</td>
<td>0.3</td>
<td>For every <em>Yersinia</em> case reported, there are 123 cases not diagnosed</td>
</tr>
</tbody>
</table>

For more information, see [http://www.cdc.gov/foodnet/](http://www.cdc.gov/foodnet/)
Preliminary FoodNet 2012 Data
Viral Gastroenteritis

- **Emerging Infectious Diseases** August 2013 themed issue
  - U.S. norovirus burden
  - NORS surveillance summary
  - GII.4 Sydney impact
  - Emergence of GII.6
  - Norovirus immunity
  - Biosense syndromic surveillance
  - Minnesota foodborne illness complaint hotline
  - [http://wwwnc.cdc.gov/eid/content/19/8/contents.htm](http://wwwnc.cdc.gov/eid/content/19/8/contents.htm)

- **Vital Signs**
  - Coming this summer
Annual Burden (Lifetime Risk) of Norovirus Disease—United States

- 570–800 Deaths (1 in 5000–7000)
- 56,000–71,000 Hospitalizations (1 in 50–70)
- 400,000 Emergency Dept Visits (1 in 9)
- 1.7–1.9 million Outpatient Visits (1 in 2)
- 19–21 million Total Illnesses (~5)

Hall 2013 EID
Hepatitis A Outbreak from Pomegranate Arils Imported from Turkey

- Total of 165 cases ate Product A
  - Of these, 117 had a hepatitis A virus (HAV) genotype (IB) uncommonly seen in the United States

- FDA trace back investigation identified pomegranate arils in Product A as the suspect vehicle

- Postexposure prophylaxis (HAV vaccine and immunoglobulin) was offered to persons who ate Product A
2013 Cyclospora Outbreaks

- 631 laboratory-confirmed cyclosporiasis cases reported in 25 states and NYC
  - Comprised at least two distinct outbreaks
  - Linked to fresh produce imported from two different growing regions in Mexico

- Challenges
  - *Cyclospora* is not a well-recognized cause of AGI in the United States.
  - Fresh produce vehicles complicate epidemiologic investigations
  - *Cyclospora* is elusive, which complicates environmental investigations
  - Our inability to definitively link cases to each other or to particular food items or sources leaves large numbers of cases unsolved
  - Determining the end point of an outbreak is difficult and often arbitrary

- Advanced molecular diagnostics have the potential to revolutionize cyclosporiasis surveillance and outbreak response
Thank you!

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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.