Timely Identification of Foodborne Illness

Dr. Wu San Chen, MD, MPH and Dr. Kristal Southern, DVM, MPH

Applied Epidemiology Staff
Office of Public Health Science
Food Safety and Inspection Service, USDA

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The Food Safety and Inspection Service (FSIS) is the public health agency in the U.S. Department of Agriculture responsible for ensuring that the nation's commercial supply of meat, poultry, and egg products is safe, wholesome, and correctly labeled and packaged.

FSIS employs approximately 10,000 total personnel; over 8,000 are field personnel.

FSIS oversees the production of approximately 100 billion pounds of meat, poultry, and pasteurized egg products.
Food Safety and Inspection Service:

**Food Safety is a Complex Challenge**

- Inherent risk of products
- Changes in production, supply chain and distribution
- Changes in epidemiological and microbial ecology
- Emerging pathogens, allergens and chemical hazards
- Increased risk of intentional contamination
- Changes in consumer expectations, demands, and food handling practices
- Increasing at-risk population
The Centers for Disease Control and Prevention estimate that each year roughly 1 in 6 Americans (or 48 million people) get sick, 128,000 are hospitalized, and 3,000 die of foodborne diseases.

About 9.4 million illnesses are caused by known foodborne pathogens.

A smaller number of those illnesses may be attributed to specific food sources.

Food Safety and Inspection Service:
Top Pathogens Contributing to Domestically-Acquired Foodborne Illness and Deaths, 2000-2008

Food Safety and Inspection Service:
Contribution of Different Food Commodities to Estimated Domestically-Acquired Illnesses and Deaths, 1998–2008

<table>
<thead>
<tr>
<th>Food Commodities</th>
<th>Illnesses</th>
<th>Deaths</th>
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<tbody>
<tr>
<td>Produce</td>
<td>46%</td>
<td>23%</td>
</tr>
<tr>
<td>Meat and Poultry</td>
<td>22%</td>
<td>29%</td>
</tr>
<tr>
<td>Dairy and Eggs</td>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>Fish and Shellfish</td>
<td>6.1%</td>
<td>6.4%</td>
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Food Safety and Inspection Service:  
Burden of Illness Pyramid

Food Safety and Inspection Service: Closer Look...Under-Diagnosis

“It’s just a little bug, I will be better soon”  
No Medical Attention

“THAT cannot be normal, I think I’m gonna die”  
Seeks Medical Attention

“Take 2 of these and call me in the morning”  
Clinical Diagnosis

No Confirmed Diagnosis
• May not be included in an outbreak
• Etiology and source remain unknown
• Delays in identifying an outbreak
• Future outbreaks likely

“Looks like food poisoning, but we should run some tests to confirm”  
Laboratory Diagnosis

Confirmed Diagnosis
• More definitive diagnosis
• Begin investigating etiology and source
• Key to prevention and control
Food Safety and Inspection Service: Closer Look....Under-Reporting

“Well, that would definitely explain your symptoms”
Laboratory Confirmed Diagnosis

“It’s food poisoning, it’s can’t last forever”
No Laboratory Confirmed Diagnosis

Confirmed Diagnosis
- More definitive diagnosis
- Begin investigating etiology and source
- Key to prevention and control

No Confirmed Diagnosis
- May not be included in an outbreak
- Etiology and source remain unknown
- Delays in identifying an outbreak
- Future outbreaks likely
Sample *Salmonella* case reporting timeline

- **Person Eats Contaminated Food**
  - Incubation time = 1-3 days
  - Time to contact with healthcare system = 1-3 days
- **Stool Sample Collected**
  - Time to diagnosis = 1-3 days
  - Shipping time = 1-3 days
- **Isolates & Case Reports Received by Public Health Agency**
  - Serotyping and *DNA fingerprinting* = 2-10 days
  - *Salmonella* Identified
- **Patient Becomes Ill**
  - Case Confirmed as Part of Cluster

Food Safety and Inspection Service: Surveillance at FSIS

Specific and Discrete Data
- PulseNet PFGE
- PulseNet MLVA or MLGT
- VetNet
- CCMS
- LEARN
- PHIS
- Salmonella Serotypes
- State and Local PH partners

Information Sharing and Collaboration
- CDC EPI-X
- BCON
- NBIS
- PulseNet SharePoint
- Other PH partners
- Media Reports
FSIS launched the Electronic Consumer Complaint Form (eCCF) on September 27, 2012.

The eCCF provides consumers an additional channel to report issues to FSIS 24 hours a day and enhance FSIS’ current surveillance systems.

Consumer complaints reported to FSIS via the eCCF are reported 1-8 days sooner than other reporting methods!
“New technology might allow health departments to engage with the public to improve foodborne illness surveillance”
Food Safety and Inspection Service: Foodborne Illness Surveillance and Investigation

• Multifaceted, multidisciplinary undertaking

• Require collaboration among local, State and Federal partners of various disciplines

• “Three-Legged Stool” of investigations
  o Epidemiology: Determining who, what, when, where, and how
  o Laboratory: Food, environmental, and clinical samples
  o Environmental Health
    - Traceback and trace-forward
    - Clinical, product, and environmental sampling
    - Facility assessments
### USDA-FSIS Foodborne Illness Investigation Process

<table>
<thead>
<tr>
<th>Investigation Steps</th>
<th>Activities</th>
<th>Major Public Health Partners Involved</th>
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</table>
| **Surveillance and Monitoring** | **Purpose:** Gather information about illnesses to determine linkages and if there is sufficient evidence to initiate an investigation.  
- Receive notification of foodborne illness through communications with public health partners and internal surveillance  
- Conduct interviews  
- Evaluate surveillance data to determine potential involvement of FSIS-regulated product.  
- Reach out to states and other public health partners | **Local/State/Territorial/International Authorities**  
- **Centers for Disease Control (CDC)**  
- **FSIS epidemiologists**  
- **Food and Drug Administration (FDA)**  
- **Media** |
| **Foodborne Illness Investigation** | **Purpose:** Identify the source of the outbreak.  
- Coordinate consumer-level traceback activities to include:  
  - Store record reviews  
  - Collect and analyze shopper card histories  
  - Leftover product testing  
- Review and analyze epidemiologic and laboratory data  
- Create an incident report in the FSIS Food Incident Management System  
- Conduct traceback and traceforward at any identified FSIS establishments | **FSIS epidemiologists, microbiologists, lab specialists, field inspectors and investigators**  
- **Local/State/Territorial/International Authorities**  
- **CDC** |
| **Agency Action** | **Purpose:** To control and prevent illnesses through enforcement actions. This may include:  
- Initiate voluntary product recall, Enhanced Inspection, Issue public health alert, etc. | **FSIS epidemiologists, Investigators, recall managers, communications staff**  
- **Retail Stores or Company** |
| **Close-Out and Final Assessment** | **Purpose:** To review response and identify opportunities for improvement and potential impacts to policy. | **FSIS epidemiologists, Investigators, field personnel and policymakers** |
Lessons Learned from Outbreak Investigations

• Strong relationships with Federal, State, and Local public health partners are essential

• Epidemiological evidence in combination with laboratory findings is key to ensure well-informed assessment

• Early detection and actionable traceback information essential to ensure effective response

• Essential to work with industry to identify contaminated product efficiently and effectively to prevent further illness

• Consumer education and outreach is important and part of the overall strategy to reduce exposure to pathogens known to cause foodborne illness
Food Safety and Inspection Service: Reporting Foodborne Illness to FSIS

Consumer and/or Health Care Provider

State/local DOH
FDA
Other FSIS Offices

FSIS Field and Regional Offices

FSIS Meat & Poultry Hotline

Electronic Consumer Complaint Form (eCCF)

Consumer Complaint Monitoring System (CCMS)

Public Health Specialists

eCCF Triage
Food Safety and Inspection Service:
Reporting Foodborne Illness to FSIS

• USDA Meat and Poultry Hotline:
  1-888-MPHOTLINE (1-888-674-6854); M-F 10am-4pm ET
  OR mphotline.fsis@usda.gov or fsis.outreach@usda.gov

• Online Consumer Complaint Form (Available 24/7):
  See “Report a Problem with Food” from the FSIS homepage to
determine if the complaint is appropriate to report to FSIS.
Online form: https://ccms.fsis.usda.gov

• Contact FSIS Field and Regional Offices OR your FSIS Office of
  Public Health Science Applied Epidemiology Staff Contact
Food Safety and Inspection Service:

What Information Does FSIS Need?

- Description of illness
- Food history
- Clinical laboratory results
- Food and environmental sample results
- Suspected product brand and description
- Purchase locations
- Packaging codes and establishment number...
Food Safety and Inspection Service:
FSIS Consumer Food Safety Education Resources

• FSIS Home Page:  www.fsis.usda.gov

• USDA Meat and Poultry Hotline:
  1-888-MPHOTLINE (1-888-674-6854) OR
  mhotline.fsis@usda.gov  or  fsis.outreach@usda.gov

• “Ask Karen,” FSIS’s Web-based automated response system, available 24/7:
  www.Askkaren.gov  or  PregunteleaKaren.gov
  For mobile devices use  m.askkaren.gov

• Social Media:
  • USDAFoodSafety on YouTube  
  • USDA Food Safety on Twitter  
  • USDA Facebook
Food Safety and Inspection Service:

THANK YOU!

KEEP YOUR FAMILY SAFER FROM FOOD POISONING

CLEAN  SEPARATE  COOK  CHILL

Check Your Steps!