Council to Improve Foodborne Outbreak Response (CIFOR) Update

Don Sharp, MD, DTM&H
Food Safety Office, DFWED/NCEZID/CDC

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Council to Improve Foodborne Outbreak Response (CIFOR)
About CIFOR

- **Vision**: Local, state, and federal partners collaborating effectively to reduce the burden of foodborne illness in the U.S.

- **Mission**: To improve methods at the local, state, and federal levels to detect, investigate, control, and prevent foodborne disease outbreaks

- **Products**: identify barriers/gaps, develop projects and workgroups to address the barriers/gaps
CIFOR is 10 years old!

• Since first meeting in January 2006:
  – FoodCORE, CDC (2009)
  – FSMA (2011)
  – FDA CORE (2011)
  – OutbreakNet Enhanced, CDC (2015)

• Strategic Planning: new 5 Yr. Plan in 1/16
CIFOR

Epidemiology Update

Kirk Smith, DVM, MS, PhD
CIFOR Co-Chair
Manager - Foodborne, Waterborne, Vectorborne, and Zoonotic Diseases Section, Minnesota Department of Health
CIFOR Guidelines for Foodborne Disease Outbreak Response

- Developed by a workgroup with representatives from state, local, and federal levels and all disciplines
- Recommendations are based on existing guidelines and practices
- Incorporated input from external reviewers and public review
- 1st edition in 2009: 198 pages
- 2nd edition in 2014: 255 pages
CIFOR Guidelines Chapter Titles

1. Overview of CIFOR Guidelines
2. Fundamental Concepts of Public Health Surveillance and Foodborne Disease
3. Planning and Preparation
4. Foodborne Disease Surveillance and Outbreak Detection
5. Investigation of Clusters and Outbreaks
6. Control Measures
7. Multijurisdictional Outbreaks
8. Performance Indicators
9. Legal Preparation
2nd Edition of the CIFOR Guidelines

- Adds significant changes in the foodborne disease outbreak investigation and response framework since 2009, especially Food Safety Modernization Act (FSMA)
- Adds new information about model practices in outbreak investigation and response
- Updated statistics, references, and examples
- Improved readability
- Adds linkage to 2nd Ed. of CIFOR Guidelines Toolkit
- Not intended to be a major re-write
CIFOR Guidelines Toolkit

A process and supporting materials to help agencies and jurisdictions:

• Become more familiar with recommendations in the Guidelines
• Systematically evaluate their current foodborne disease detection and outbreak response activities
• Identify appropriate Guidelines recommendations to improve performance
• Make plans to implement those recommendations
CIFOR Guidelines Toolkit

- “Repackaging” of recommendations from the CIFOR Guidelines
- Stepwise process, guided by easy-to-use worksheets
- Helps agency/jurisdiction zero in on most appropriate recommendations
- Second edition released in spring 2015
CIFOR Guidelines and Toolkit Implementation Trainings

Winter/Spring 2016:

• State Implementation Trainings on the CIFOR Guidelines and Toolkit
  – Watch for announcement of availability of grants to hold trainings

• Need help facilitating a training?
  – A Food Safety Center of Excellence might be able to help
CIFOR Guidelines and Toolkit Implementation Training Grants

- Provide support to state and large urban (>1 million pop.) health depts to conduct training workshop(s) using the Guidelines and Toolkit.
- Grant funds (~$5,000) can be used for:
  - Travel support (for facilitators/trainers)
  - Meeting room space, renting A/V equipment
  - Facilitator contract, other training expenses
- Trainings must be completed by May 31, 2016.
Intended Audience for CIFOR Trainings

• The training workshops should bring together multidisciplinary food safety investigation teams together, including but not limited to:
  – State Epidemiologist
  – State-level foodborne disease epidemiologists
  – Laboratory scientists
  – Environmental health specialists
  – Senior level regulators
  – Senior level reps from State Ag department
  – Public health nurses, if appropriate
“You can’t improve what you don’t measure”

The Two Most Important Quotes In Business

Written by Dave Lavery on Tuesday, June 25, 2013
Categories: Dave Lavery

If you don’t know Peter Drucker, you should: he’s known as the man who invented modern business management. He wrote 59 books on the subject and is widely regarded as the greatest management thinker of all time.

And Peter Drucker is credited with two of the most important quotes in business management.

Here’s the first: “If you can’t measure it, you can’t improve it.”

When you think about this quote, it should immediately become apparent how true it is. Because, if you can’t measure something, and know the results, you can’t possibly get better at it. For example, it’s nearly impossible to lose weight without stepping on a scale once in a while to measure your results - if you don’t, you have no idea if you are succeeding or not.

Or it’s like trying to improve your golf game, but never keeping score, so you don’t know if you’re actually getting better or not. Makes sense, right?

Now, in business, Drucker’s quote is particularly true. If you can’t measure every part of your business, you can’t manage or grow it.

You Can’t Improve What you Don’t Measure

Posted by Todd Smith

The old adage “Measure twice and cut once” is practical advice for everyone, especially carpenter layers, tailors, and carpenters.

My lesson today is on measurements; however, it’s about a different kind of measurement. It’s about the importance of measuring your performance.

Dr. H. James Harrington has been involved in quality and performance improvement projects since the 1950s. He summarizes well what this lesson is all about. “Measurement is the first step that leads to control and eventually to improvement. If you can’t measure something, you can’t understand it. If you can’t understand it, you can’t control it. If you can’t control it, you can’t improve it.”
Development of Target Ranges For Selected Performance Measures in CIFOR Guidelines

- Target ranges were developed for 16 performance indicators in the CIFOR Guidelines
- Measures cover key areas at state and local levels
- Include Epi, Lab, and EH functions
- Abridged and full versions available at www.cifor.us
- Released in spring 2014
<table>
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<th>CIFOR performance measure</th>
<th>Measurement methods</th>
<th>Target range</th>
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<tbody>
<tr>
<td><strong>1. Foodborne illness complaint reporting system:</strong></td>
<td>If an agency has any complaint system in place and it is used to review foodborne illness complaints, it will be considered acceptable. If an agency has an electronic database that can be systematically reviewed to link complaints, it will be considered preferable.</td>
<td><strong>Preferable:</strong> Electronic database <strong>Acceptable:</strong> System to log complaints</td>
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<td><strong>Metric:</strong> Agency maintains logs or databases for all complaints or referral reports from other sources alleging food-related illness, food-related injury or intentional food contamination, and routinely reviews data to identify clusters of illnesses requiring investigation.</td>
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<tr>
<td><strong>2. Outbreaks detected from complaints:</strong></td>
<td>Determine the number of foodborne illness complaints that were received during the year. This will be the denominator for the metric. Determine the number of foodborne illness outbreaks that were detected as a result of a foodborne illness complaint investigation during the year. This will be the numerator for the metric. Divide the numerator by the denominator and multiply by 1,000. This will convert the observed numbers into a standardized rate.</td>
<td><strong>Preferable:</strong> &gt; 20 outbreaks / 1,000 complaints <strong>Acceptable:</strong> 10-20 outbreaks / 1,000 complaints *Evidence base may not always support value judgment on range. Very low numbers of documented complaints could inflate the observed rate.</td>
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<tr>
<td><strong>Metric:</strong> Outbreaks detected from complaints: Number outbreaks detected as a result of foodborne illness complaints. Rate of outbreaks detected per 1,000 complaints received.</td>
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<td><strong>3. Foodborne illness outbreak rate:</strong></td>
<td>Determine the population of the jurisdiction. This will be the denominator for the metric. Determine the number of foodborne illness outbreaks that were reported during the year. This will be the numerator for the metric. Divide the numerator by the denominator and multiply by 1,000,000. This will convert the observed numbers into a standardized rate.</td>
<td><strong>Preferable:</strong> &gt; 6 outbreaks / 1,000,000 population <strong>Acceptable:</strong> 1-6 outbreaks / 1,000,000 population</td>
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<td><strong>Metric:</strong> Number foodborne outbreaks reported, all agents. Rate of outbreaks reported per 1,000,000 population.</td>
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| 4. **Confirmed cases with exposure history obtained:**        | Determine the number of confirmed cases reported. This will be the denominator for the metric. Determine the number of confirmed cases with exposure history obtained. This will be the numerator for the metric. Divide the numerator by the denominator and multiply by 100. This will convert the observed numbers into a standardized rate. | **A. *Salmonella***  
Preferable: > 75% of cases  
Acceptable: 50-75% of cases  

**B. *E. coli* (STEC)**  
Preferable: > 75% of cases  
Acceptable: 50-75% of cases  

**C. *Listeria***  
Preferable: > 75% of cases  
Acceptable: 50-75% of cases |
| 5. **Isolate/CIDT-positive clinical specimen submissions to PHL:** | Determine the number of confirmed cases reported. This will be the denominator for the metric. Determine the number of isolates and clinical specimens from patients diagnosed by culture independent diagnostic test (CIDT), submitted to the PHL. This will be the numerator for the metric. Divide the numerator by the denominator and multiply by 100. This will convert the observed numbers into a standardized rate. | **A. *Salmonella***  
Preferable: > 90% of isolates/ CIDT-positive clinical specimens  
Acceptable: 60-90% of isolates/ CIDT-positive clinical specimens  

**B. *E. coli* (STEC)**  
Preferable: > 90% of isolates/ CIDT-positive clinical specimens  
Acceptable: 60-90% of isolates/ CIDT-positive clinical specimens  

**C. *Listeria***  
Preferable: > 90% of isolates/ CIDT-positive clinical specimens  
Acceptable: 60-90% of isolates/ CIDT-positive clinical specimens |
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<th>CIFOR performance measure</th>
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| 6. PFGE subtyping of isolates: | Determine the number of isolates submitted to the PHL. This will be the denominator for the metric. Determine the number of isolates with PFGE information. This will be the numerator for the metric. Divide the numerator by the denominator and multiply by 100. This will convert the observed numbers into a standardized rate. | | A. *Salmonella*  
Preferable: > 90% of isolates  
Acceptable: 60-90% of isolates  

B. *E. coli* (STEC)  
Preferable: > 90% of isolates  
Acceptable: 60-90% of isolates  

C. *Listeria*  
Preferable: > 90% of isolates  
Acceptable: 60-90% of isolates |
| 7. Isolate/CIDT-positive clinical specimen submission interval: | For each isolate or clinical specimen from a patient diagnosed by culture independent diagnostic test (CIDT), determine the date of specimen collection and the date of receipt at the PHL. Determine the number of calendar days between these dates, which is the isolate/CIDT-positive clinical specimen submission interval. Analyze the distribution of all known isolate/CIDT-positive clinical specimen submission intervals for the year. Report the median value for isolates/CIDT-positive clinical specimens with known isolate/CIDT-positive clinical specimen submission intervals.  
Determine the percentages of isolates/CIDT-positive clinical specimens with missing information for which an isolate/CIDT-positive clinical specimen submission interval cannot be determined. Although this is not part of the target range, it is an important process metric that affects the usefulness of the target range to guide performance improvement. | | A. *Salmonella*  
Preferable: < 7 days  
Acceptable: 7-8 days  

B. *E. coli* (STEC)  
Preferable: < 7 days  
Acceptable: 7-8 days  

C. *Listeria*  
Preferable: < 7 days  
Acceptable: 7-8 days |
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</table>
| 8. Isolate subtyping interval: | For each isolate, determine the date of receipt at the PFGE laboratory and the date of upload to PulseNet. Determine the number of calendar days between these dates, which is the isolate subtyping interval. Analyze the distribution of all known isolate subtyping intervals for the year. Report the median value for isolates with known isolate subtyping intervals. Determine the percentages of isolates with missing information for which an isolate subtyping interval cannot be determined. Although this is not part of the target range, it is an important process metric that affects the usefulness of the target range to guide performance improvement. | A. *Salmonella*  
Preferable: $\leq 4$ days  
Acceptable: 5-6 days  
B. *E. coli* (STEC)  
Preferable: $\leq 4$ days  
Acceptable: 5-6 days  
C. *Listeria*  
Preferable: $\leq 4$ days  
Acceptable: 5-6 days |
<p>| 9. PHEP <em>E. coli</em> O157 and <em>Listeria</em> subtyping interval: | Determine the number of isolates submitted to the PHL. Determine the number of isolates for which PFGE subtyping was performed. This will be the denominator for the metric. Determine the number of primary patterns from subtyped isolates uploaded to PulseNet. Determine the number of results from PFGE subtyped isolates that were submitted to PulseNet within four working days of receipt at the PFGE laboratory. This will be the numerator for the metric. Divide the numerator by the denominator and multiply by 100. | Acceptable: $\geq 90%$ of PFGE subtyping results submitted to PulseNet within 4 working days. |</p>
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<th><strong>Target range</strong></th>
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| **10. Outbreak clinical specimen collections:**  
**Metric:** Outbreak clinical specimen collections: Number and % of outbreak investigations with clinical specimens collected and submitted to PHL from two or more people. | Determine the number of foodborne illness outbreaks that were investigated. This will be the denominator for the metric. Determine the number of outbreaks for which clinical specimens were collected and submitted to PHL from two or more people. This will be the numerator for the metric. Divide the numerator by the denominator and multiply by 100. | Preferable: > 75% of outbreaks  
Acceptable: 50-75% of outbreaks |
| **11. Cluster investigation interval:**  
**Metric:** Median number days from initiation of investigation to identification of source. | Determine the number of clusters that were detected by the PHL. Determine the number and percentage of clusters where a source was identified. For each cluster for which a source was identified, determine the date at which the investigation was initiated and the date at which the source was identified. Determine the number of calendar days between these dates, which is the cluster investigation interval. Analyze the distribution of all known cluster investigation intervals for the year. Report the median value for investigations with known cluster investigation intervals. | Preferable: < 7 days  
Acceptable: 7-21 days |
| **12. Complaint investigation interval:**  
**Metric:** Median number days from initiation of investigation to implementation of intervention. | Determine the number of foodborne illness complaints that were investigated. Determine the number and percentage of foodborne complaint investigations that led to an intervention. For each complaint investigation that led to an intervention, determine the date at which the investigation was initiated and the date at which an intervention was initiated. Determine the number of calendar days between these dates, which is the complaint investigation interval. Analyze the distribution of all complaint investigation intervals for the year. Report the median value for complaint investigation intervals. | Preferable: < 7 days  
Acceptable: 7-21 days |
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<tr>
<td><strong>13. Cluster source identification:</strong></td>
<td>Determine the number of clusters that include five or more cases. This will be the denominator for the metric. Determine the number of clusters for which a source was identified that include five or more cases. This will be the numerator for the metric. Divide the numerator by the denominator and multiply by 100.</td>
<td>Preferable: &gt; 20% of clusters with &gt;5 cases</td>
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<tr>
<td><strong>Metric:</strong> Number and % of clusters with more than five cases in which a source was identified.</td>
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<td><strong>14. Outbreak etiology reported to NORS:</strong></td>
<td>Determine the number of foodborne outbreaks that were investigated. This will be the denominator for the metric. Determine the number of outbreaks for which an etiology was identified and reported to NORS. This will be the numerator for the metric. Divide the numerator by the denominator and multiply by 100.</td>
<td>Preferable: &gt; 68% of outbreaks*</td>
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<tr>
<td><strong>Metric:</strong> Number and % of outbreaks for which etiology was identified and reported to the National Outbreak Reporting System (NORS).</td>
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<td><strong>15. Outbreak vehicle reported to NORS:</strong></td>
<td>Determine the number of foodborne outbreaks that were investigated. This will be the denominator for the metric. Determine the number of outbreaks for which a vehicle was identified and reported to NORS. This will be the numerator for the metric. Divide the numerator by the denominator and multiply by 100.</td>
<td>Preferable: &gt; 60% of outbreaks*</td>
</tr>
<tr>
<td><strong>Metric:</strong> No. and % of outbreaks for which a vehicle was identified and reported to NORS.</td>
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<td><strong>16. Outbreak contributing factor reported to NORS:</strong></td>
<td>Determine the number of foodborne outbreaks that were investigated. This will be the denominator for the metric. Determine the number of outbreaks for which a contributing factor was identified and reported to NORS. This will be the numerator for the metric. Divide the numerator by the denominator and multiply by 100.</td>
<td>Preferable: &gt; 55% of outbreaks*</td>
</tr>
<tr>
<td><strong>Metric:</strong> Number and % of outbreaks for which contributing factors were identified and reported to NORS.</td>
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### Definitions for components of the CIFOR performance measures

1. **Foodborne illness complaint reporting system:**
   - **Foodborne illness complaint:** A report of illness experienced by one or more persons following exposure to a specific event or establishment.
   - **Foodborne illness complaint log:** A paper registry of complaints that records information about the complaint and specific establishment.
   - **Foodborne illness complaint database:** An electronic database that records information about the complaint and specific establishment in a searchable format.

2. **Outbreaks detected from complaints:**
   - **Outbreak detected from a complaint:** A foodborne illness outbreak that was detected as a result of a foodborne illness complaint investigation.
   - **Foodborne illness outbreak:** The occurrence of two or more similar illnesses resulting from ingestion of a common food.
   - **Foodborne illness complaint:** A report of illness experienced by one or more persons following exposure to a specific event or establishment.

3. **Foodborne illness outbreak rate:**
   - **Foodborne illness outbreak:** The occurrence of two or more similar illnesses resulting from ingestion of a common food.
   - **Foodborne illness outbreak rate:** The number of confirmed foodborne illness outbreaks within a jurisdiction during a year, divided by the population of the jurisdiction x 1,000,000.

4. **Confirmed cases with exposure history obtained:**
   - **Confirmed case:** Case reported to local or state health department by clinical laboratory with confirmed *Salmonella*, Shiga toxin-producing *E. coli* (STEC) or *Listeria* infection.
   - **Exposure history:** An interview (of any format) that assesses exposures prior to onset of illness. The assessment should go beyond assessment of high risk settings and prevention education to ascertain food consumption/preference or other exposure data. For STEC this should include disease-specific data elements identified by CSTE and for *Listeria* it should include completing the *Listeria* case form.

5. **Isolate/CIDT-positive clinical specimen submissions to PHL:**
   - **Isolate:** Primary isolates of *Salmonella*, Shiga toxin-producing *E. coli* (STEC) or *Listeria*, limited to first or representative isolate or sample for each case.
   - **CIDT-positive clinical specimen:** Clinical specimens forwarded to PHL for confirmation and isolation from patients diagnosed with *Salmonella*, Shiga toxin-producing *E. coli* (STEC) or *Listeria* by culture independent diagnostic test (CIDT).
   - **PHL:** State or local public health laboratory designated to serve as a reference laboratory for confirmation and subtyping of isolates for jurisdiction.
C-MET
Web-based reporting tool now available!

Need help assimilating data? A CoE might be able to help.

www.cifor.us/projmetrics.cfm
2. Outbreaks detected from complaints:

**Metric**
Number outbreaks detected as a result of foodborne illness complaints. Rate of outbreaks detected per 1,000 complaints received.

**Measurement Method**
Determine the number of foodborne illness complaints that were received during the year. This will be the denominator for the metric. Determine the number of foodborne illness outbreaks that were detected as a result of a foodborne illness complaint investigation during the year. This will be the numerator for the metric. Divide the numerator by the denominator and multiply by 1,000. This will convert the observed numbers into a standardized rate.

Preferable Range
21 - 1000 outbreaks/ 1,000 Complaints

Acceptable Range
10 - 20 outbreaks/ 1,000 Complaints

Save Answer
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<td><strong>Submit New Response</strong></td>
<td><strong>Past Responses</strong></td>
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<td>1. Foodborne illness complaint reporting system:</td>
<td>10/02/15 0 10/02/15 0 9/01/15 5 6/26/15 1</td>
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<tr>
<td>2. Outbreaks detected from complaints:</td>
<td>10/02/15 67 outbreaks/ 1,000 Complaints 9/10/15 45 outbreaks/ 1,000 Complaints 9/10/15 30 outbreaks/ 1,000 Complaints 9/03/15 22 outbreaks/ 1,000 Complaints 7/30/15 15 outbreaks/ 1,000 Complaints 6/26/15 22 outbreaks/ 1,000 Complaints</td>
</tr>
<tr>
<td>3. Foodborne illness outbreak rate:</td>
<td>7/29/15 10 outbreaks/ 1,000,000 population 6/26/15 2 outbreaks/ 1,000,000 population 6/26/15 8 outbreaks/ 1,000,000 population</td>
</tr>
<tr>
<td>4a. Confirmed cases with exposure history obtained - Salmonella:</td>
<td>7/29/15 95 % of cases</td>
</tr>
<tr>
<td>4b. Confirmed cases with exposure history obtained - E.coli (STEC):</td>
<td>10/29/15 55.98999 % of cases 9/03/15 55.2 % of cases</td>
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<tr>
<td>4c. Confirmed cases with exposure history obtained - Listeria:</td>
<td>9/10/15 90 % of cases</td>
</tr>
<tr>
<td>5a. Isolate/CIDT-positive clinical specimen submissions to PHL - Salmonella:</td>
<td>7/29/15 89 % of isolates</td>
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Efficacy and Timeliness of Foodborne Outbreak Investigations

- No systematic efforts to evaluate foodborne outbreak investigations
  - Are investigations improving over time?
  - To what extent might CIFOR Guidelines be influencing investigations?
  - Are Guidelines being followed? Which parts?
  - Are there gaps in the Guidelines?

- No widely accepted quantitative indicators of outbreak investigation efficacy, timeliness
New CIFOR-CoE Working Group on Evaluating the Efficacy and Timeliness of Foodborne Outbreak Investigations

- Approved in September 2015
- Focus on multijurisdictional outbreaks
- Develop formal methods and processes for evaluating outbreak investigations
- Evaluate selected investigations
- Recommend additions/improvements to CIFOR Guidelines (or existing areas to emphasize)
- Stay tuned
New White Paper:

Product Tracing in Epidemiologic Investigations of Outbreaks due to Commercially Distributed Food Items – Utility, Application, and Considerations

• Published October 2015
• Collaboration between authors from State Health, State Ag, CDC, FDA, & Academia
• [http://www.cifor.us/clearinghouse/tooldetail.cfm?id=290](http://www.cifor.us/clearinghouse/tooldetail.cfm?id=290)
• [http://mnfoodssafetycoe.umn.edu](http://mnfoodssafetycoe.umn.edu)
White Paper on Product Tracing in Epi Investigations: Audiences

• Primary targets include local and state agencies
  – Public Health
  – Environmental Health
  – Agriculture

• Because most pertinent outbreaks are multi-jurisdictional, federal public health and regulatory agencies also are primary targets
White Paper on Product Tracing in Epi Investigations

- When to use it
- Who uses it
- How to use it
- Roles and communication
- Challenges and pitfalls
- Examples
Product Tracing in Epidemiologic Investigations of Outbreaks due to Commercially Distributed Food Items – Utility, Application, and Considerations

Kirk Smith¹, Ben Miller², Katie Vierk³, Ian Williams⁴, Craig Hedberg⁵

¹Minnesota Department of Health, St. Paul, MN; ²Minnesota Department of Agriculture, St. Paul, MN; ³United States Food and Drug Administration, College Park, MD; ⁴Centers for Disease Control and Prevention, Atlanta, GA; ⁵University of Minnesota School of Public Health, Minneapolis, MN

October 2015

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Questions?
kirk.smith@state.mn.us

http://www.cifor.us/clearinghouse/tooldetail.cfm?id=290

or

http://mnfoodsafetycoe.umn.edu
CIFOR Laboratory Update

Dave Boxrud, MS
Supervisor, Molecular Epidemiology, Minnesota DoH
CIFOR Epi/Lab Application

- Domestic, open source application
- Designed to help sites more quickly identify potential clusters within their jurisdictions
- Runs on Internet Explorer and Mozilla web browsers, Windows XP and 7 platforms, and Oracle database
- Accepts laboratory data files in a prescribed format
- Built in reports provide “30-day” and historical analyses
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Date Range From: 09/05/2014 To: 10/25/2014
Pilot Project Successes

- Substantial increase in number of clusters detected
- Significant time savings in cluster detection process ($\leq 20$ minutes start to completion)
- Allows for four, additional pathogens to be monitored in Tennessee
- Software has freed up a microbiologist in Texas
Pilot Project Limitations

• IT resources will likely be essential at the jurisdictional level for developing an input file
• Ongoing IT support will be needed for any troubleshooting and/or enhancements
• Level of discrimination offered by the reports may not be sufficient for high volume states
Getting the Software

• The software is available on the CIFOR website at [http://www.cifor.us](http://www.cifor.us) under Current Projects.
• A detailed user guide covers all aspects of the software including installation, creating an import file, running the reports, and reporting issues.
• For questions regarding use of the software please contact Kirsten Larson at [kirsten.larson@aphl.org](mailto:kirsten.larson@aphl.org)
• For technical questions regarding the software please contact Gary Jones at [gary.jones09@gmail.com](mailto:gary.jones09@gmail.com)
Diarrheal Outbreaks of Unknown Etiology (OUE) Tool

- **Purpose:**
  - to provide adequate specimens for second-tier testing and pathogen discovery should the etiology prove elusive

- **Scope:**
  - the guidelines include both infectious and non-infectious agents

- **Target Audience:**
  - primarily intended for state health departments

- Organized by syndromes and outbreak profiles
- Specimen collection/testing/storage/shipping
OUE Tool

- Created by CIFOR
- Made into a Filemaker program by Oregon Dept of Health
- Minor changes to be made
- Will be made available on the CIFOR website
**Purpose:** This file provides recommendations on the collection, shipment, and storage of foodborne/diarrheal disease outbreak specimens based on syndromes and specific outbreak profiles. It is designed to provide adequate specimens for second-tier testing and pathogen discovery. Since optimal specimen types vary by disease, and since information needed to determine the likely agent is often absent or fragmentary, a variety of scenarios are presented.

- **For all outbreaks,** optimal specimens collected universally should include:
  1) Stool preserved in Cary Blair
  2) Raw stool

**Note:** If it is not feasible to collect both types of specimens, prioritize Cary Blair; however, every effort should be made to obtain some raw stools if possible.

- **IMPORTANT:** All outbreak specimens should be saved until an etiology is determined and/or should additional testing need to be done.
Found 3 symptom profiles matching your Filter selection.

**CIFOR OUE Specimen Collection**

**Shipment and Retention Guidelines**

**Key Feature: DIARRHEA**

Abdominal Cramping, Bloody Diarrhea, Diarrhea, Vomiting

Median Incubation Period ≥ 24 hours

Abdominal Cramping, Bloody Diarrhea, Diarrhea, Fever ≥ 101°F, Vomiting

Median Incubation Period ≥ 24 hours

Bloody Diarrhea, Diarrhea, Fever ≥ 101°F  Other: Possible death among ≥ 1 case(s)

Select one or more symptoms (click on/off)

- Diarrhea
- Vomiting
- Bloody Diarrhea
- Abdominal Cramping
- Prolonged Diarrhea
- Other
- Fever ≥ 101°F
- Show all

CIFOR Council to Improve Foodborne Outbreak Response

Detect • Investigate • Control • Prevent
Key Feature: DIARRHEA

- **Symptoms**: Bloody Diarrhea, Diarrhea, Fever ≥ 101°F
  - Other: Possible death among ≥ 1 case(s)

- **Median Incubation Period**: unknown

- **Mean Duration**: unknown

- **Primary suspected agents**: Salmonella Typhi/Paratyphi, Salmonella spp. (non-Typhi), Norovirus, Listeria monocytogenes

- **Secondary suspected agents**: Bacillus anthracis (GI), Yersinia pestis (GI), SARS coronavirus or other enteric viruses

- **Rule out, if possible**: Salmonella spp. (all including Typhi/Paratyphi), Shigella spp., Norovirus, Listeria monocytogenes, Campylobacter spp., STEC

  * (before submission for novel pathogen testing, unless situation calls for immediate outside assistance)
CIFOR Environmental Update

- **Environmental Members**
  - AFDO: Association of Food & Drug Officials
  - CDC: Centers for Disease Control/Food Safety/Environmental Health Specialist Network (EHS-Net)
  - FDA: Food & Drug Administration (adding RRT)
  - NACCHO: National Association of County & City Health Officials
  - NASDA: National Association of State Departments of Agriculture
  - NEHA: National Environmental Health Association
  - USDA/FSIS: U.S. Department of Agriculture/Food Safety & Inspection Service
Environmental Role

• Detect
  – Many outbreaks detected from complaints
• Investigate
• Control
• Prevent
## Food Safety Progress Report for 2013

<table>
<thead>
<tr>
<th>Disease Agents</th>
<th>Percentage change in 2013 compared with 2006–2008</th>
<th>2013 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>13% increase</td>
<td>13.82</td>
<td>8.5</td>
<td>For every Campylobacter case reported, there are 30 cases not diagnosed</td>
</tr>
<tr>
<td>Escherichia coli O157</td>
<td>No change</td>
<td>1.15</td>
<td>0.6</td>
<td>For every E. coli O157 case reported, there are 26 cases not diagnosed</td>
</tr>
<tr>
<td>Listeria</td>
<td>No change</td>
<td>0.26</td>
<td>0.2</td>
<td>For every Listeria case reported, there are 2 cases not diagnosed</td>
</tr>
<tr>
<td>Salmonella</td>
<td>No change</td>
<td>15.19</td>
<td>11.4</td>
<td>For every Salmonella case reported, there are 29 cases not diagnosed</td>
</tr>
<tr>
<td>Vibrio</td>
<td>75% increase</td>
<td>0.51</td>
<td>0.2</td>
<td>For every Vibrio parahaemolyticus case reported, there are 142 cases not diagnosed</td>
</tr>
<tr>
<td>Yersinia</td>
<td>No change</td>
<td>0.36</td>
<td>0.3</td>
<td>For every Yersinia 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 2013 Data
<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Healthy People 2020 target rate</th>
<th>2014 rate</th>
<th>Change compared with 2006-2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campylobacter</td>
<td>8.5</td>
<td>13.45</td>
<td>13% increase</td>
</tr>
<tr>
<td><em>E. coli O157</em></td>
<td>0.6</td>
<td>0.92</td>
<td>32% decrease</td>
</tr>
<tr>
<td>Listeria</td>
<td>0.2</td>
<td>0.24</td>
<td>No change</td>
</tr>
<tr>
<td>Salmonella</td>
<td>11.4</td>
<td>15.45</td>
<td>No change</td>
</tr>
<tr>
<td>Vibrio</td>
<td>0.2</td>
<td>0.45</td>
<td>52% increase</td>
</tr>
<tr>
<td>Yersinia</td>
<td>0.3</td>
<td>0.28</td>
<td>22% decrease</td>
</tr>
</tbody>
</table>

*Culture-confirmed infections per 100,000 population

1 2006-2008 were the baseline years used to establish Healthy People 2020 targets

*Shiga toxin-producing *Escherichia coli O157
Use Outbreak and Illness Reports to Guide Controls

• Campylobacter up 13%
  – Increase in raw milk consumption
  – Undercooked chicken livers in restaurants
• Salmonella – No change since 2006-08
  – Undercooked chicken, eggs
  – Produce
• Vibrio
  – Global warming = warmer water temps and increased shellfish illnesses in Summer
CIFOR Guidelines

• Incorporated into:
  – Manufactured Food Regulatory Program Standards
  – Voluntary National Retail Food Regulatory Program Standards (metric - Standard 5 1d maintain illness complaint log)
  – Rapid Response Team Manual
    • Chapter 4
  – Louisiana State University “Coordinated Response to Food Emergencies” and “Managing Food Emergencies…” courses
Indiana & Wisconsin are non-funded RRTs
Need for Guidelines

• In teaching 26 LSU courses around the country
  – Many health departments still go to the last place where the person ate that is generally not the cause of illness
  – Outbreaks keep happening from same places
• Salmonella and Listeria
  – E.g. S. Newport from Delmarva produce...
Need for Guidelines

• Need to shorten the time from identification to implementation of effective controls to reduce the number ill
• Need to identify and eliminate the root cause so illness does not continue
• Need to follow-up to assure a system is in place to prevent reoccurrence
• Need to work with industry to be effective in preventing additional illnesses

• Provide guidance & tools to encourage industry to take an educated role in outbreak investigation & response

• Targeted to owners, operators, and managers of food establishments

• Developed by workgroup of CIFOR Council representatives and industry representatives
CIFOR Industry Workgroup

30 members including from industry:

• National Restaurant Association - Chris Melchert
• Yum! Brands - Becky Stevens-Grobbelaar
• Burger King Corporation - Mary Sandford
• Consultant - Catherine Adams Hutt
• US Foods - Frank Ferko
• Cargill - Mike Robach and Joe Scimeca
• FMI - Hilary Thesmar
• Publix - Michael Roberson
• Windsor Foods - Tom Foegle
• Consultant - Gale Prince
• Also reps from CDC, FDA, USDA, AFDO, NACCHO, NAPHV, NASDA, NEHA
Development of Target Ranges For Selected Performance Measures in the CIFOR Guidelines

- Target ranges were developed for 16 performance indicators in the CIFOR Guidelines
- Measures cover key areas at state and local levels
  - Surveillance system
  - Follow up on complaints, cases and isolates
  - Investigations of clusters
  - Outbreak summaries and reporting to NORS
- Include epi, lab, and EH functions
- Abridged and full versions available at [www.cifor.us](http://www.cifor.us)
- Released in spring 2014
**Toolkit Focus Areas**

- **Planning and Preparation**
  - Relationships
  - Necessary resources
  - Communication

- **Surveillance and Outbreak Detection**
  - Complaint systems
  - Pathogen-specific surveillance

- **Investigation of Outbreaks and Clusters**
  - Initial steps
  - Epidemiology investigation
  - Environmental health investigation
  - Laboratory investigation

- **Control Measures**
  - Control of source and secondary spread
  - Food recall
For More Information About CIFOR:

- Visit the CIFOR website: www.cifor.us

- Contact the CSTE National Office: Dhara Shah, MPH
  Senior Research Analyst
dshah@cste.org