Using Food and Environmental Isolates to Identify Outbreaks: “Retrospective” (or Prospective?) Investigations

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November 8, 2017
InFORM Conference: Retrospective Outbreak Investigations
How We Detect Multistate Outbreaks: Typical Process
Using Food and Environmental Isolates to Identify Outbreaks
Why Has This Become More Relevant?

- More food and environmental testing by state and federal regulatory agencies
  - More opportunities to find bacteria that might be making people sick

- Increasing use of WGS
  - Provides for more confidence in a link between food/environmental isolates and human illnesses
Deciding When to Follow Up

- When one or more clinical isolates are found that are closely related to a food/environmental isolate, need to decide whether to investigate

- Several factors to consider:
  - How long ago were the illnesses?
  - How long ago was the food/environmental isolate?
  - Characteristics of the suspect foods (e.g., shelf life)
  - Can cases be easily asked about the suspect foods?
  - Assessment of the facility
Allows for More Targeted Epi Questions

- When the decision is made to investigate, more targeted questions can be asked (i.e., can go straight to a focused questionnaire)
  - Shorter interviews
  - Higher likelihood of “success”

- There are still several challenges:
  - Requires work by regulatory agencies to assemble a list of what food products are made by the facility
  - Some facilities make many different products
  - Some facilities don’t make products consumers could recognize (e.g., they make an ingredient that goes into many products)
What Should We Call These Investigations?

- Many names over the years
  - Pre-outbreak
  - Reverse outbreak
  - Retrospective outbreak

- Retrospective:
  1. directed to the past; contemplative of past situations, events, etc.
  2. looking or directed backward

- Prospective:
  1. of or in the future
  2. potential, likely, or expected
Concluding Thoughts

- More of these investigations will happen in the future
  - Expansion of WGS and food/environmental testing

- There is a need to have consensus on how to prioritize which to investigate
  - Also, how to prioritize them compared to traditional investigations

- Results of environmental assessments and facility inspections are critical:
  - Was the food produced in a environment likely to cause human illness?
  - What is the scope of the potential issue in terms of products affected and duration of time?
Today’s Case Study

- A particularly challenging investigation into listeriosis illnesses was being investigated in 2016

- This investigation led to the identification of environmental isolates from a food production facility