



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

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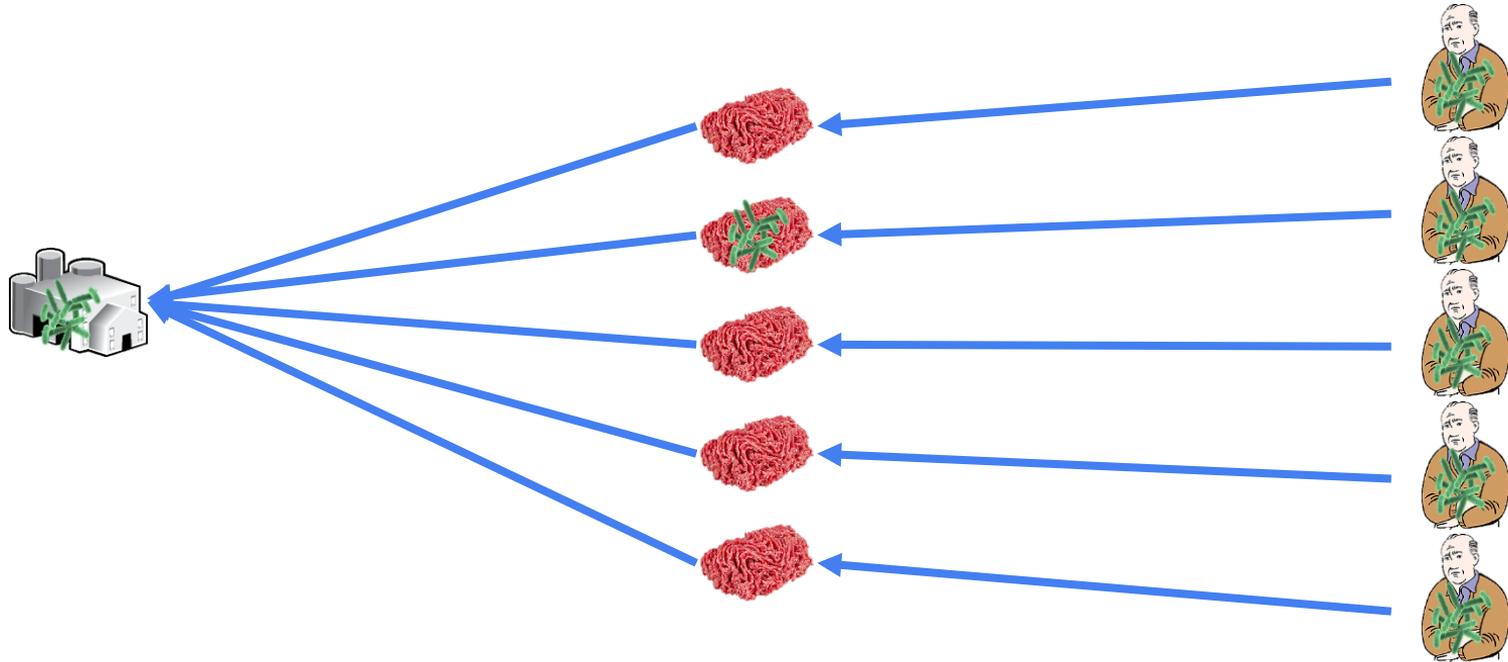
Outbreak Response and Prevention Branch

Division of Foodborne, Waterborne, and Environmental Diseases

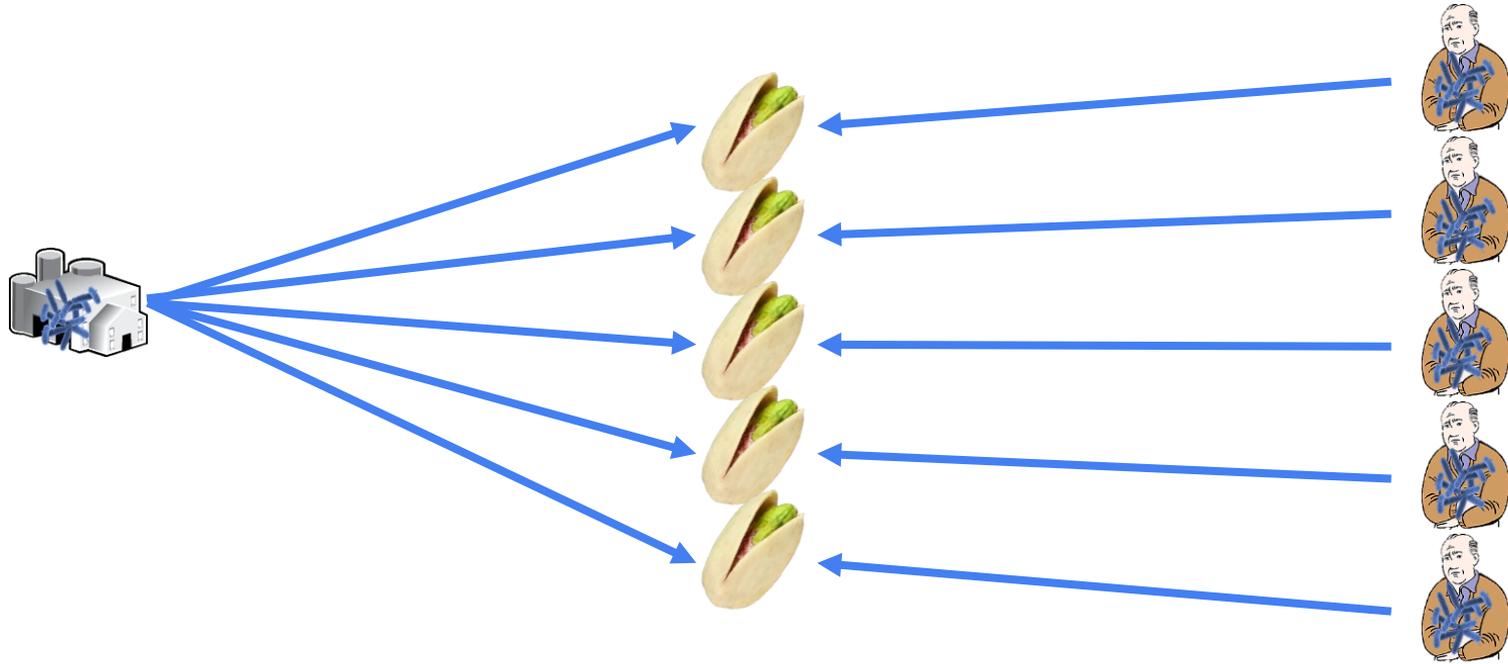
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InFORM Conference: Retrospective Outbreak Investigations

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