

Welcome

Office for State, Tribal, Local and Territorial Support
presents . . .

CDC Vital Signs
**Working Together to Stop Multistate
Foodborne Outbreaks**

November 10, 2015
2:00–3:00 pm (EST)



Centers for Disease Control and Prevention
Office for State, Tribal, Local and Territorial Support

Agenda

2:00 pm	Welcome and Introductions	Dr. Dan Baden Senior Medical Advisor, Office for State, Tribal, Local and Territorial Support, CDC
2:05 pm	Presentations	Ian Williams, PhD Branch Chief, Outbreak Response and Prevention Branch, Division of Foodborne, Waterborne and Environmental Diseases, National Center for Emerging and Zoonotic Infectious Diseases, CDC Tim Jones, MD State Epidemiologist, Tennessee Department of Health Michael P. Doyle, PhD Regents Professor and Director, Center for Food Safety, University of Georgia
2:30 pm	Q&A and Discussion	Dr. Dan Baden
2:55 pm	Wrap-up	
3:00 pm	End of Call	



CDC
Vitalsigns™ Teleconference
to support STLT efforts and build
momentum around the monthly
release of CDC *Vital Signs*



Overview of CDC Vital Signs: Safer Food Saves Lives

Ian Williams, PhD, MS

Chief, Outbreak Response and Prevention Branch

Division of Foodborne, Waterborne, and Environmental Diseases
National Center for Emerging and Zoonotic Infectious Diseases
Centers for Disease Control and Prevention

November 10, 2015

Stopping Multistate Foodborne Outbreaks

- ❑ Contaminated food sent to several states can make people sick with the same germ
- ❑ Foods that cause multistate outbreaks are contaminated before they reach a restaurant or home kitchen
- ❑ Investigating outbreaks reveals problems on farms, during processing, and in distribution
- ❑ Lessons learned from these outbreaks are helping make food safer

Objective of CDC's Vital Signs Report:

Highlight actions food industries and government at all levels can take to stop outbreaks and keep them from happening in the first place

Multistate Foodborne Outbreaks Are Serious and Hard to Solve

- **Multistate outbreaks can be hard to detect**
 - Contaminated food that is grown or produced in a single place can wind up in kitchens across America
 - People in many states may get sick, making it difficult to spot the outbreak
 - Detection requires specialized testing of germs in laboratories across the country
- Multistate outbreaks can be hard to investigate
- Contaminated food can be hard to trace to the source

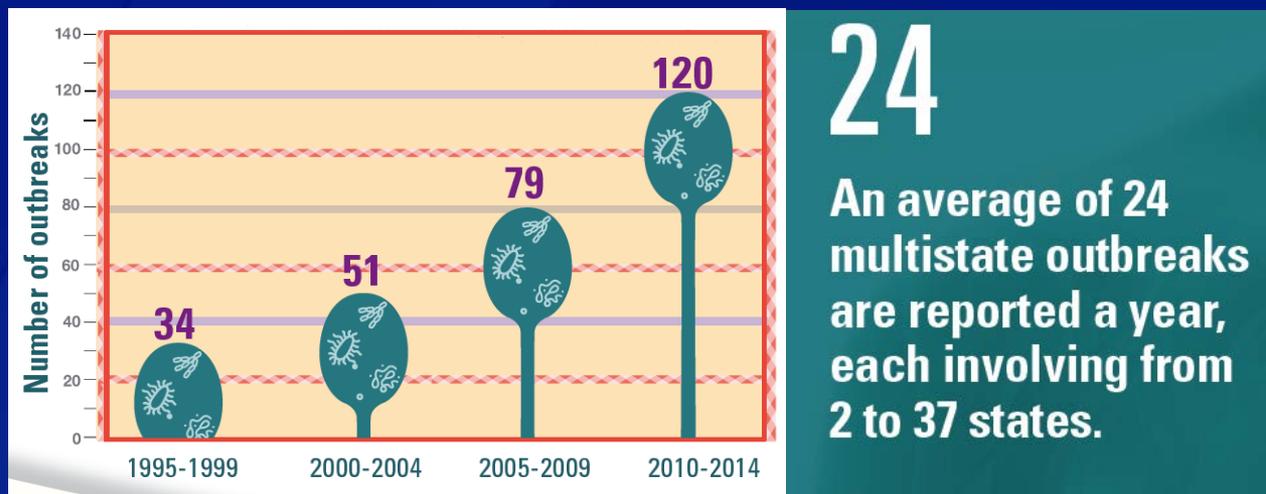
Multistate Foodborne Outbreaks are Serious and Hard to Solve

- Multistate outbreaks can be hard to detect
- **Multistate outbreaks can be hard to investigate**
 - Investigators are dependent on sick people to remember what they ate several weeks earlier
 - If the problem is a contaminated ingredient, people may unknowingly eat it in many different foods
 - Unexpected foods have been linked to recent multistate outbreaks (chia powder, caramel apples)
- Contaminated food can be hard to trace to the source

Multistate Foodborne Outbreaks are Serious and Hard to Solve

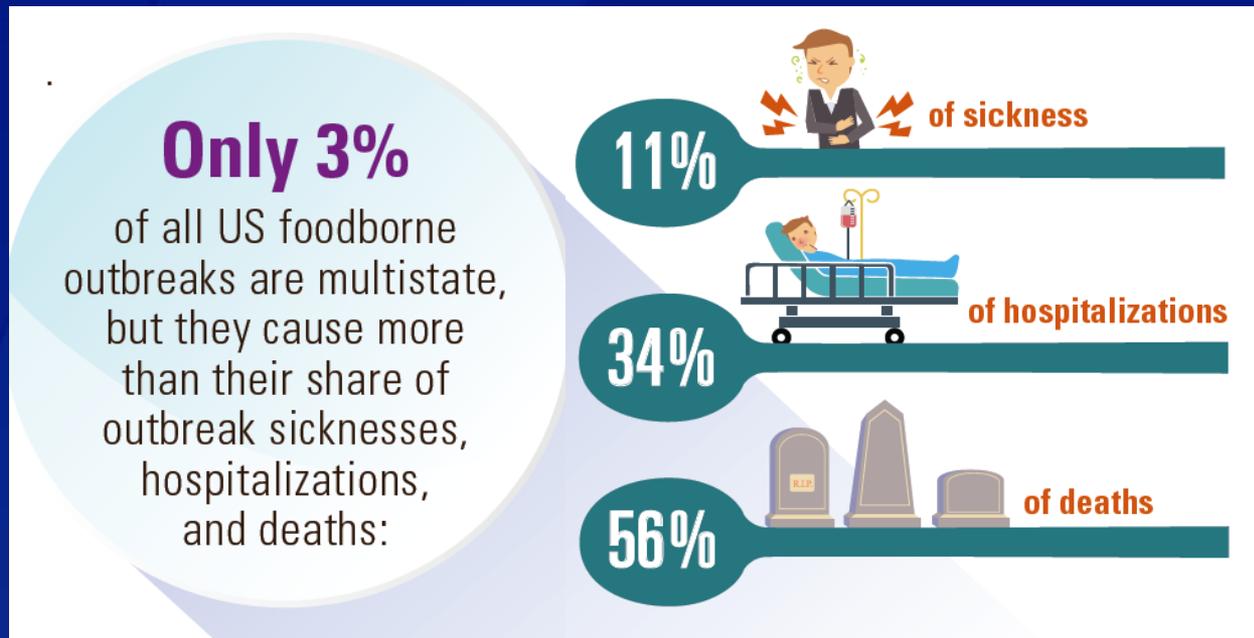
- Multistate outbreaks can be hard to detect
- Multistate outbreaks can be hard to investigate
- **Contaminated food can be hard to trace to the source**
 - Companies may not have complete records of the source or destination of foods
 - Imported food can be even harder to trace to its source, and imports are increasing
 - Many farms may produce the beef in a single burger or the fresh vegetables sold in a single crate

Innovative Methods are Helping Detect and Solve More Multistate Outbreaks



- New DNA sequencing technology is improving our ability to link germs found in sick people and contaminated foods
- Information technology is helping investigators in many places work together
- Efforts by food industries are helping trace contaminated foods to their source

Multistate Outbreaks: Less Common, but More Serious



- ❑ Why? The deadly germs *Salmonella*, *E.coli* and *Listeria* cause 91% of multistate outbreaks

What Can Be Done?

□ Food industries can—

- Keep records to trace foods
- Use store loyalty cards and distribution records to identify what sick people ate
- Recall products linked to an outbreak and notify customers
- Choose only suppliers that use food safety best practices
- Share proven food safety solutions with others in industry
- Make food safety part of company culture
- Meet or exceed new food safety regulations

46%

Almost half of multistate foodborne outbreaks result in product recalls.

What Can Be Done?

□ Federal government agencies can—

- Implement improved food safety laws and regulations
- Work with state and local health departments to
 - Use better methods find and investigate outbreaks
 - Improve food safety inspections and guidelines

□ State and local public health agencies can—

- Encourage clinical labs to send germs to public health labs for advanced testing
- Test the germs from sick people quickly
- Interview sick people promptly
- Test suspect foods, if available
- Participate in national networks to share improved investigative methods

What Can Be Done?

❑ Health care providers can—

- Submit patient samples quickly to public health labs
- Report suspected outbreaks
- Inform patients of those in high risk groups that they have an increased risk of food poisoning

❑ Everyone can—

- Check for food recalls and info on how to handle food safely
- Take action if you think you have a foodborne sickness
- Assist public health investigators by answering questions
- Consider getting a loyalty card where you shop

Summary – Safer Food Saves Lives

- ❑ Multistate foodborne outbreaks are serious and hard to solve
- ❑ Investigating outbreaks often reveals problems on the farm, during processing, or in distribution
- ❑ Lessons learned from outbreaks are helping make food safer
- ❑ Government, at all levels, and food industries need to work together to stop outbreaks and keep them from happening in the first place
- ❑ Vital Signs materials are available at www.cdc.gov/vitalsigns





For more information please contact Centers for Disease Control and Prevention

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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.



Safer Food Saves Lives

A State Health Department Perspective

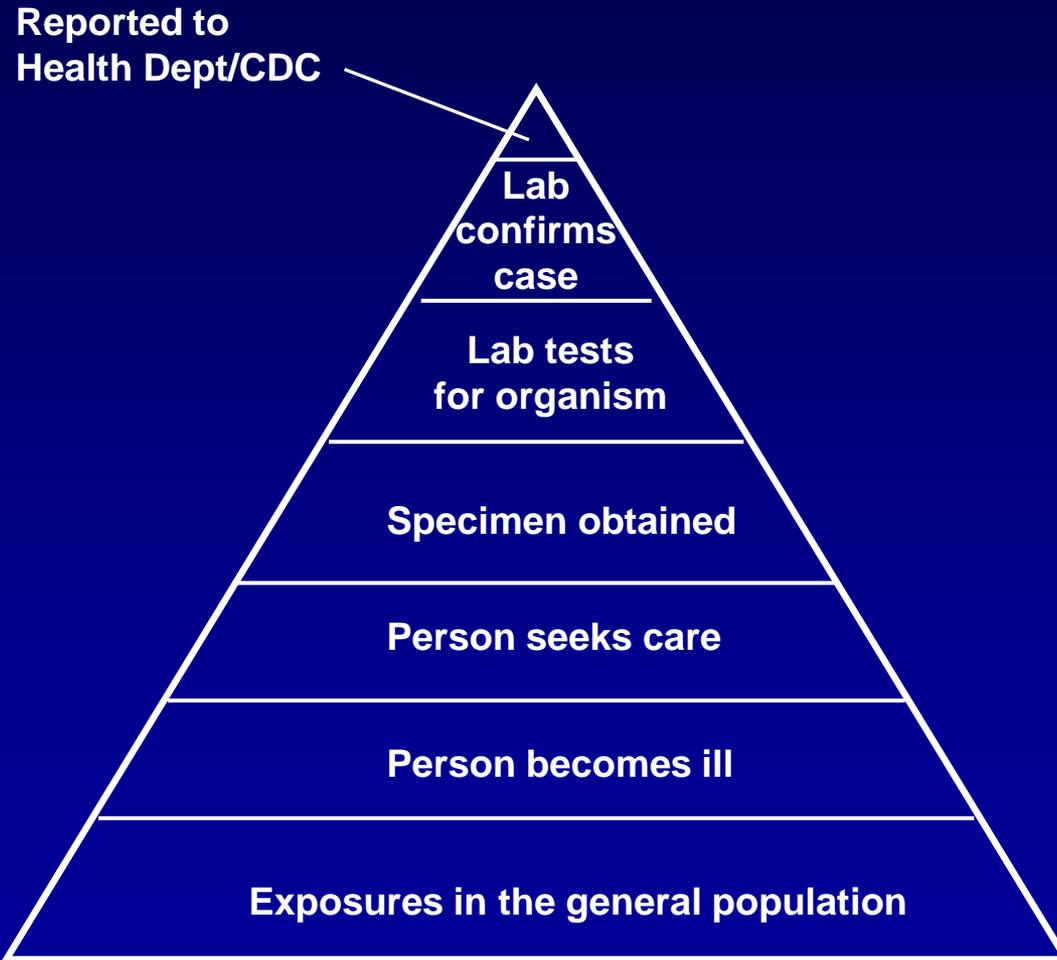
Timothy Jones, MD

State Epidemiologist

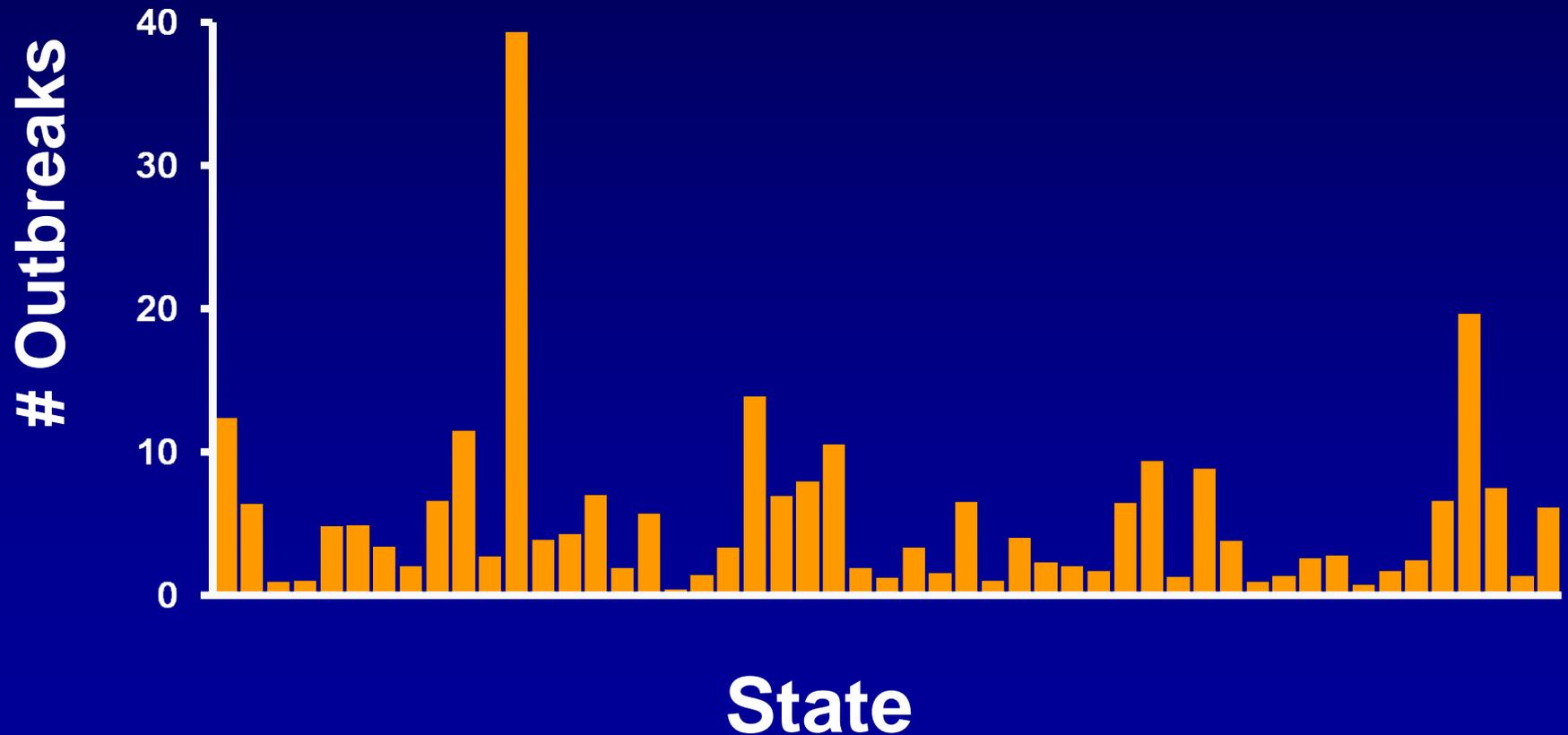
Tennessee Department of Health



Foodborne Disease

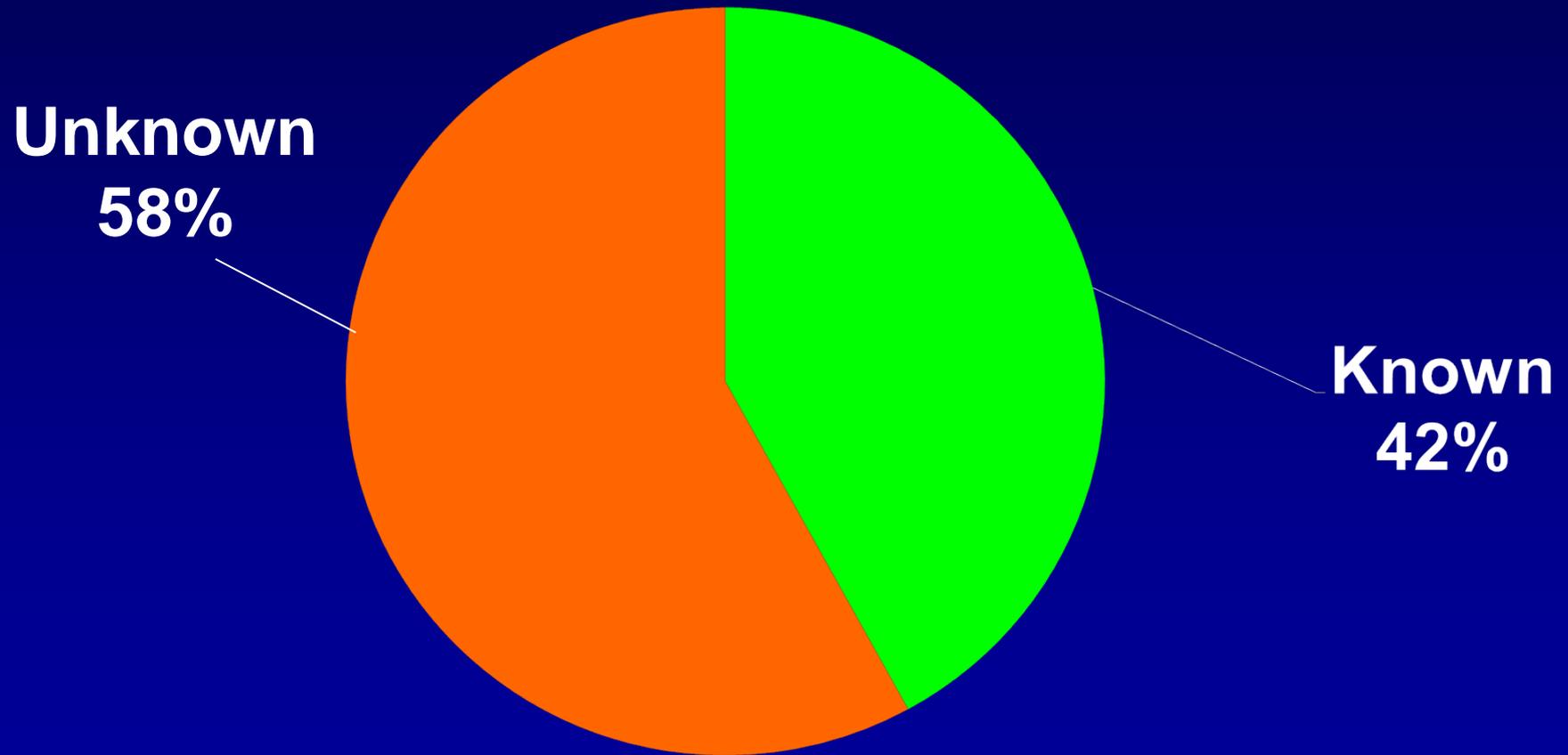


Outbreaks/million per year 1990–2006



Foodborne Illness Vehicle

US, 2011–2013

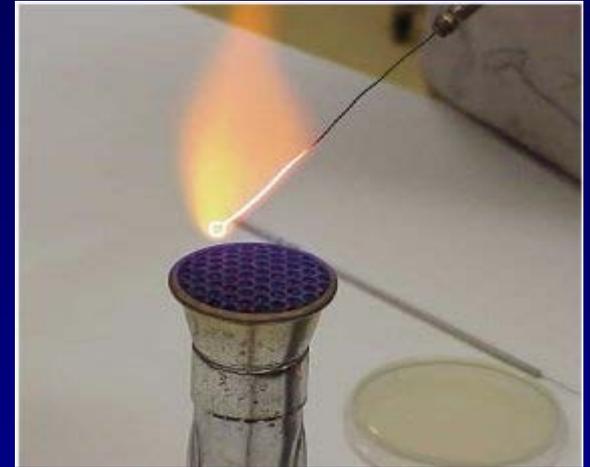




Outbreak Investigation Process

- **Detect cluster**
- **Confirm diagnosis**
- **Develop hypothesis**
- **Perform analytic study**
- **Identify vehicle**
- **Intervene/control**

Bacterial Culture



Performance of the x₁ Gastrointestinal Pathogen Panel, a Multiplex Molecular Assay for Simultaneous Detection of Bacterial, Viral, and

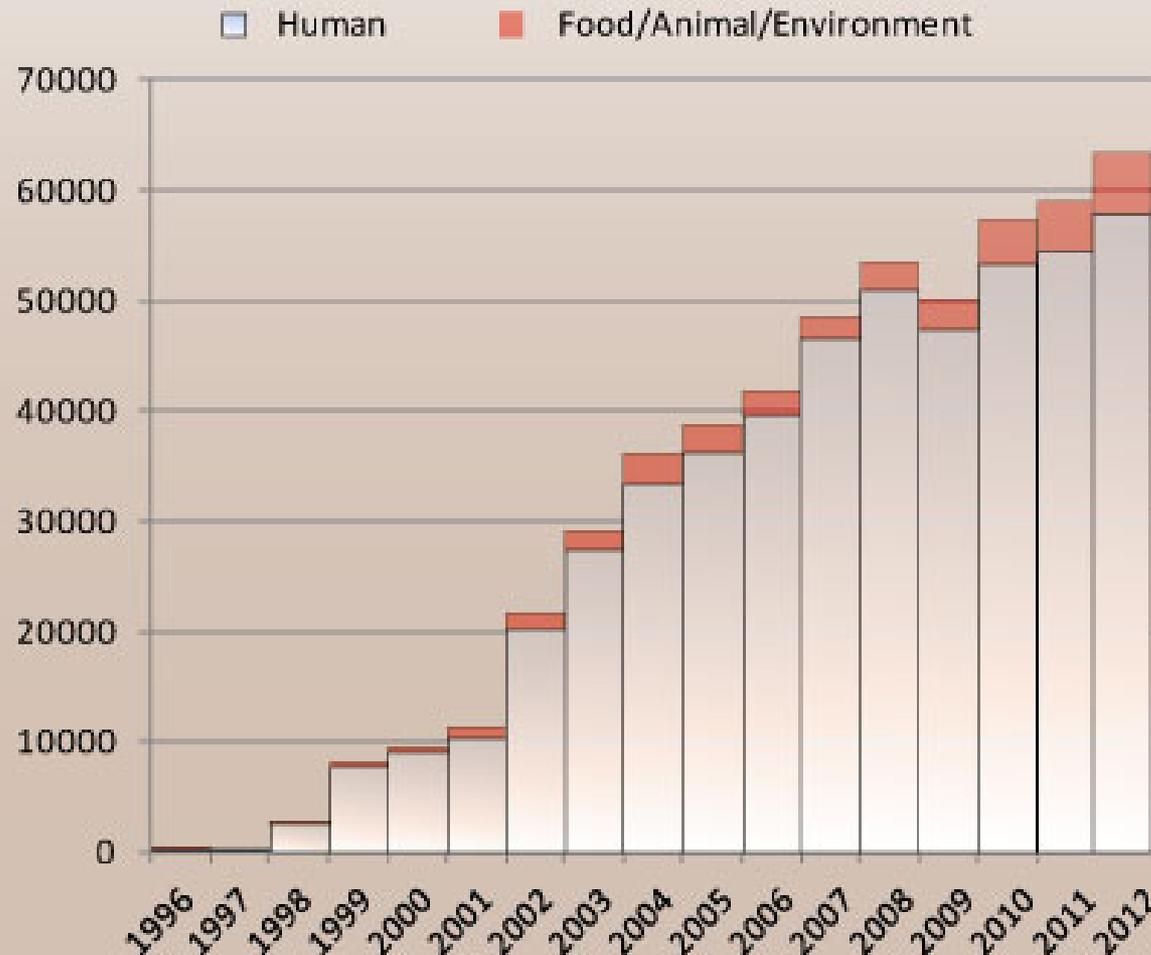
Testing for the pathogen identified was not requested by the physician in 65% of specimens...

on⁴, and Francois Topin^{5*}
The Netherlands
of Medicine, St. Louis, MO 63110, USA
of Toronto, Toronto, ON M5G 2C4, Canada
Kingdom

(GP) is a multiplexed molecular test for 15 gastrointestinal pathogens. The sensitivity and specificity of this test were assessed in 901 stool specimens collected from pediatric and adult patients at four clinical sites. A combination of conventional and molecular methods was used as comparator. Sensitivity could be determined for 12 of 15 pathogens and was 94.3% overall. The specificity across all 15 targets was 98.5%. Testing for the pathogen identified was not requested by the physician in 65% of specimens. The simultaneous detection of these 15 pathogens can provide physicians with a more comprehensive assessment of the etiology of diarrheal disease.

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Isolates Reported to PulseNet USA, 1996-2012



*Entries are individual specimen patterns uploaded to PulseNet USA and include submissions to the Salmonella, Shiga toxin-producing E. coli O157 and non-O157, Shigella, Listeria, and Campylobacter databases.



Challenges in Investigation

- **New food vehicles**
- **Standardizing questionnaires**
- **Multi-agency communication**
- **Work-intensive tracebacks**
- **Competing resources**



Moving Forward

- **Advanced molecular diagnostics**
- **Routine cross-agency collaborations**
- **Training**
- **Centers of Excellence, FoodCore**
- **CIFOR**



PulseNet Driven Investigations

Michael Doyle
Director, Center for Food Safety
University of Georgia



Foodborne Outbreak Detection Tools

- New DNA sequencing technology—such as whole genome sequencing—is improving our ability to link germs found in sick people and contaminated foods
- Information technology is helping investigators in many places work together

New Generation of Foodborne Disease Outbreak Detection

Combining whole genome sequencing with detailed interviews of each ill person results in faster detection and source tracking





Power of Combining Whole Genome Sequencing and Patient Interviews

- *Listeria monocytogenes* (Lm) isolated from a Blue Bell ice cream sample by South Carolina Department of Public Health
 - Whole genome sequencing of this Lm strain matched Lm strain from patients with listeriosis
 - Investigators interviewed patients and reviewed hospital kitchen records
-



Power of Combining Whole Genome Sequencing and Patient Interviews

- CDC PulseNet WGS results linked Blue Bell ice cream to 10 cases of listeriosis, one case dating back to 2010
 - FDA WGS of Lm strains from food processing plants linked the outbreak to Blue Bell ice cream facilities
-



PulseNet Findings Enhance the Safety of Foods

- Foods newly identified by PulseNet as sources of outbreaks have led to food safety enhancements by the food industry



Outbreaks Detected by PulseNet from Contaminated Foods not Previously Associated with Outbreaks

- Peanut butter – *Salmonella* - 425 cases
 - ▲ Company essentially rebuilt the plant to a state of the art facility; validated peanut roasting procedures; industry leader in developing and applying best food safety practices for peanut butter production
 - Ground turkey - *Salmonella* Heidelberg - 136 cases
 - ▲ Company established a threshold number of *Salmonella* (1 per gm) and diverts raw turkey to cooked meat if above threshold
-

Outbreaks Detected by PulseNet from Contaminated Foods not Previously Associated with Outbreaks

- Cookie dough – *E. coli* O157:H7 - 72 cases
 - ▲ Company now uses “pasteurized” flour for making cookie dough, which has been adopted by other companies
 - Red and black ground pepper - *Salmonella* - 272 cases
 - ▲ Mainstream spice processors are applying effective treatments to kill *Salmonella*
-

Outbreaks Detected by PulseNet from Contaminated Foods not Previously Associated with Outbreaks

- Caramel apples – *Listeria monocytogenes* - 35 cases
 - ▲ Keep caramel apples refrigerated and shorten shelf life
 - Rice and wheat puffed cereal - *Salmonella* - 28 cases
 - ▲ New dry cleaning and sanitation procedures developed by industry for low-moisture foods
-

Outbreaks Detected by PulseNet from Contaminated Foods not Previously Associated with Outbreaks

- Cantaloupes – *Listeria monocytogenes* - 147 cases (33 deaths and 1 miscarriage)
 - ▲ Produce industry has adopted procedures for *Listeria* detection and control in processing facilities, including use of advanced decontamination methods and environmental testing
 - Pot pies - *Salmonella* – 272 cases
 - ▲ Ready-to-cook foods (microwaveable) are now being formulated/prepared by some manufacturers as ready-to-eat
 - ◆ Ingredients receive treatments such as precooking, to kill contaminants and avoid food safety issues associated with improper food preparation by consumers
-



PulseNet is a Driver toward Safer Foods

- Detects difficult to identify multistate foodborne outbreaks
 - Reveals contaminated foods not previously associated with foodborne outbreaks
 - Findings have prompted the food industry to apply enhanced food safety interventions
-

CDC *Vital Signs* Electronic Media Resources

Become a fan on Facebook

www.facebook.com/cdc

Follow us on Twitter

twitter.com/CDCgov/

Syndicate *Vital Signs* on your website

<http://tools.cdc.gov/syndication/search.aspx?searchURL=www.cdc.gov%2fvitalsigns>

Vital Signs interactive buttons and banners

<http://www.cdc.gov/socialmedia/tools/buttons/vitalsigns/index.html>

Prevention Status Reports

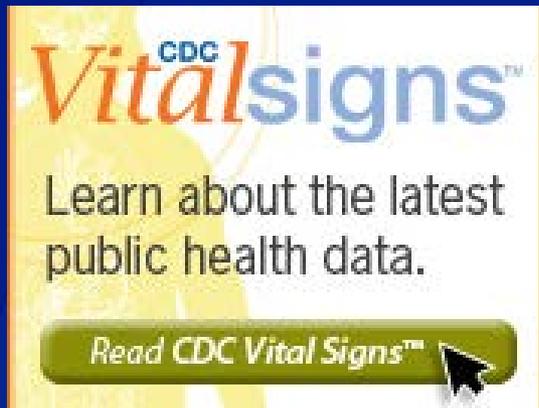
- ❑ The Prevention Status Reports (PSRs) highlight—for all 50 states and the District of Columbia—the status of public health policies and practices designed to prevent or reduce 10 important public health problems.

Topics	
 Excessive Alcohol Use	 Motor Vehicle Injuries
 Food Safety	 Nutrition, Physical Activity, and Obesity
 Healthcare-Associated Infections	 Prescription Drug Overdose
 Heart Disease and Stroke	 Teen Pregnancy
 HIV	 Tobacco Use

www.cdc.gov/psr/

Provide feedback on this teleconference:

OSTLTSFeedback@cdc.gov



Please mark your calendars for the next
Vital Signs Town Hall Teleconference

December 1, 2015

2:00–3:00 pm (EST)

For more information, please contact Centers for Disease Control and Prevention.

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