

# **ILLNESS OUTBREAK INVESTIGATIONS**

**McHenry County Board of Health**

*August 24, 2015*

**MCDH**

# Certified Local Health Department

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- Infectious Disease

- Control of Communicable Diseases
- Investigate Reported or Suspected Cases of diseases

- Food Protection

- Potable Water Supply

- Private Sewage Disposal

- Community Health Plan/Needs Assessment

# What is an Outbreak?

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- Two (2) or more unrelated persons experience a similar illness after a common exposure
- Includes a single case of illness of botulism or chemical poisoning
- Types:
  - Foodborne, Waterborne, Person to Person, Other Environmental Exposure, etc.
- Historical Outbreaks:
  - Norovirus, Salmonella, Campylobacter, Clostridium perfringens, *Staphylococcus aureus*, *Bacillus cereus*, *E.coli* 0157:H7, Legionella

# Investigation Team

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- Public Health Administrator
  - Administrative Manager
  - Public Information Officer
  - Director of Nursing
  - Communicable Disease Coordinator
  - Epidemiologist
  - Director of Environmental Health
  - Manager of Veterinary Public Health
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- Illinois Department of Public Health
  - Other Counties, Other State Health Departments
  - Centers for Disease Control and Prevention

# OBJECTIVES

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- Stop the Spread of Illness
- Identify a Causative Agent
- Identify Mode of Transmission
- Develop Recommendations/ Implement Control Measures to Prevent Future Illness

# Reports of Illness

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## ● Reportable Diseases

- Laboratories, Health Care Providers

## ● General Public/ Ill Individuals

- Encourage Reporting of Illness
- 24/7 Response Capability – Answering Service/On-Call Staff

## ● Establishment

- Food Establishment, Long-Term Care Facility, School

## ● Illinois Department of Public Health, CDC

- Siren Alerts

# Investigation Process

## ● Communicable Disease Section

- Symptoms/Common Exposure/Environment
- Develop a Hypothesis Questionnaire
- Establish A Case Definition
- Interviews of Ill/Well
- Report to IDPH
- Distribution of Sample Kits
- Identification of Etiologic Agent

## ● Epidemiologist – Statistical Analysis of Data

- Attack Rates for Exposure
- Age/Gender Distribution
- Onset/Incubation Periods
- Duration of Illness
- Identify Statistically Significant Associations

## ● Environmental Health – Mode of Transmission

- Onsite Inspections
- Interview/Observe Foodhandlers
  - Review Foodhandling Procedures
  - Evaluate processes
- Collection of food/ice/water samples
- Identification of Breakdowns in Process

Administrative  
Overview

# Barriers

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## ● Recall Bias

- 72 hour food histories
- Lag time from event to illness

## ● Misconceptions

- Last Food Eaten
- Figured Out Which Food It Is
- Could Not Be a Home Prepared Food

## ● Lack of Cooperation

- Cooperation greater with sick individuals, decreases as they feel better
- Don't Want to implicate a relative/friend
- Fear of Getting Someone in Trouble
- Surprised by Complexity of Investigation (intrusive)
- Fear of Consequences
- Conflicting Information

## ● Lack of Samples

- No food for sampling
- Testing Limitations – Food/Norovirus
- Not willing to provide stool samples

# What Happened?

## Data Analysis

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- **Statistical Information**

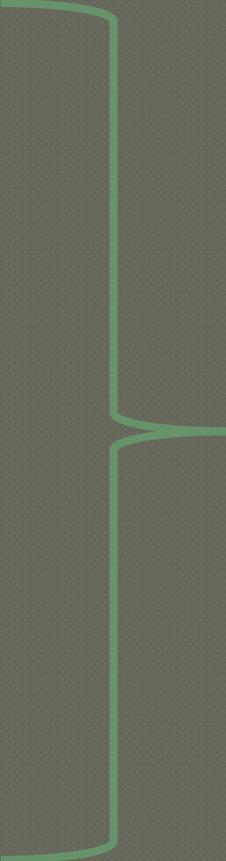
- Onset of illness
- Duration
- Symptoms

- **Laboratory Results**

- Stool Samples
- Food Samples
- Ice/Water Samples
- Surface Swabs

- **Environmental Health Investigation**

- Process Evaluation



**FINAL  
REPORT**

# Example – Funeral Luncheon

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- Permitted Food Establishment - Bar
- Outside Caterer – Food
- Estimated 60 – 70 attendees
- Many Ill
- Symptoms – Vomiting and Diarrhea
- Menu:
  - Chicken
  - Pork Roast
  - Mashed Potatoes
  - Gravy
  - Vegetables
  - Salad
  - Bar Drinks
  - Ice

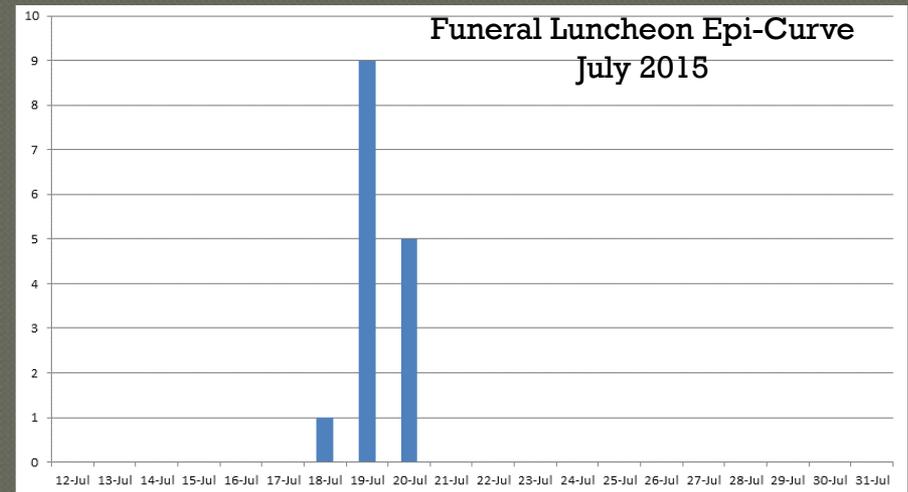
# Investigation

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- 79 Attendees
- 9 Foodhandlers
- Unpermitted Caterer – Family Friend
- Limited Cooperation/Conflicting Information
  - Who prepared food
  - Leftovers
  - How foods were prepared
  - Who Attended
- No Food Available for Testing
- Ice/Water Samples
- Stool Samples from Attendees and Foodhandlers
- 1 Hospitalized Individual
- Critical Errors in Foodhandling – Cooking Temperatures
- Alleged undercooked/raw chicken served

# Findings

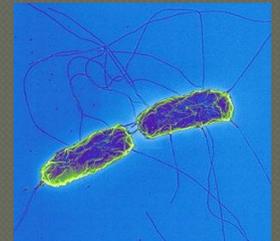
- 79 Attendees
  - 16 Interviewed – 9 ill and 7 well
- 9 Foodhandlers
  - 8 Interviewed – 6 ill and 2 well
- Case Definition:
  - Someone who attended the funeral luncheon and consumed food, with onset of illness 24 – 72 hours after eating, with 2 or more diarrheal and/or vomiting incidents within 24 hours.
- Average Incubation Period
  - 28 hours
- Average Duration of Illness
  - 5.25 days



# Findings

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- 1 Individual Hospitalized for 5 days
- 4 Stool Samples positive for *Salmonella typhimurium* JPXX01.1212
  - *Salmonella typhimurium* associated with poultry
- Chicken Statistically Associated With Illness
- Caterer failed to verify the minimum internal temperature
  - Subsequent exercise with caterer/staff, chicken at 137 degrees F when assumed to be done. Minimum temperature is 165 degrees F
- Caterer was not permitted to provide food to the public



# Summary

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- Preparing Final Report
- Causative Agent: *Salmonella typhimurium* JPXX01.1212
  - Same fingerprint – single source
- Mode of Transmission: undercooked chicken
- Corrective Action:
  - Properly Permitted, Approved Facility
  - Correct Thermometers for Food
  - Verify Minimum Internal Cooking Temperatures
  - Closely Monitored
  - Additional Action