Outbreak Investigation Steps

Outbreak Investigations

Infectious Disease Epidemiology Section
Office of Public Health
Louisiana Dept of Health & Hospitals
800-256-2748
www.infectiousdisease.dhh.louisiana.gov

Outbreaks

What is an outbreak?
An outbreak or an epidemic is an increase in disease above what is expected in a specific population at a specific time.

How do we determine if there is an outbreak going on?
Disease Surveillance Data

Outbreak Timeline

Steps of an Outbreak Investigation

- Surveillance system to keep track of infections/illness
  - Electronic data system that keeps track of positive laboratory results, diagnosis

- Recognize cluster/outbreak/unexpected number of illness/infection
  - Manually check the numbers
  - Algorithm in the system detects increase in cases
  - Report from the public

People get sick!
Initial Report
Information Gathering
Outbreak Investigation
No Outbreak Investigation
Interventions to stop transmission
Prevention Education and Training
Do Nothing!
Monitoring
Outbreak Investigation Steps

Disease Surveillance

Two types of Surveillance:

- Passive Surveillance – Routine reporting of cases to health departments by healthcare providers.
- Active Surveillance – Health departments solicit cases from healthcare providers, usually when an epidemic is suspected, in progress, or winding down.

Steps of an Outbreak Investigation

- Threshold that would trigger an investigation
  - What triggers an investigation?
  - What constitutes an outbreak?
    - Depends on the pathogen

Cluster/outbreak is Identified

- Verify the diagnosis/pathogen/infection
  - Lab confirmed?
  - If possible, do PFGE patterns match?
- Collect additional information on cases
  - Demographics, hospital stay history, location of bed, medical history, carrier status, etc
- Establish a case definition

Cluster/outbreak is Identified

- Create a timeline for each case
  - When were they admitted, relevant lab results, symptom onset, transfers, procedures, etc
- Look for commonalities between the cases
  - Using information on cases, lab results and the timeline, look for commonalities between cases
Outbreak Investigation Steps

Prevention

- Implement control measures to prevent spread of infection/additional cases
  - Depends on pathogen
- Implement control measures to prevent future cases

Communication

- Most outbreak investigations have some urgency
- Public, public health officials, other officials, hospital management...
  - They are concerned
  - They want to find out the cause and the remedy applied ASAP
  - Urgency should not translate into panic & sloppy investigation
  - Time is necessary
    - To collect the information
    - To locate the cases
    - To run lab tests
  - Overanxious people need to be told about the process and estimated time to carry out a proper investigation
- If preliminary prevention was addressed: NO PROBLEMS

Types of Outbreaks at Hospitals

HAI pathogens- Acinetobacter; C. diff; CRE; Klebsiella; Pseudomonas; Staphylococcus aureus; VISA/VRSA; VRE

Norovirus- among patients and staff

Legionella- potable water; decorative fountains

Foodborne- cafeteria

Unexpected- Listeria and ice cream; Mucormycosis and linen; contaminated equipment or drugs
Injection Practices:
- Needles are used for only one patient
- Syringes are used for only one patient
- Medication vials are always entered with a new needle
- Medication vials are always entered with a new syringe
- Multi-dose injectable medications are used for only one patient