Contact Investigation
Lisle, Illinois
June 5 – 6, 2012

Detecting and Handling a TB Outbreak
Mari Pina, BSN, PHN
June 5, 2012

Mari Pina, BSN, PHN has the following disclosures to make:

• No conflict of interests
• No relevant financial relationships with any commercial companies pertaining to this educational activity
What defines a TB outbreak?

Dependent on several important factors:

- Size of jurisdiction
- Prevalence of disease
- “High Profile” events
  - Highly contagious patient
  - Highly susceptible contacts
  - Genotypic clustering
How do you handle a TB outbreak?

Have a TB Outbreak Response Plan (ORP).
- A procedure manual to help in the timely, systematic and comprehensive response to a TB outbreak
- The “cornerstone” of TB program

Provide training

Key components of ORP

- Notification
- Request for consultation
- Legal authority
- Define ORP team
- Team member’s responsibilities
Key components of ORP(2)

- Type of training is necessary
- How will data be managed and analyzed
- Type of communication network is in place
- When does deactivation of ORP occur
- Evaluation

Types of Investigations

Contact
- 1 case
- Source case often known
- Focus on latent TB infection (LTBI) among contacts
- May find active cases

Outbreak
- More than 1 case
- Source case often unknown
- Focus on active case finding and LTBI among contacts
Why do outbreaks happen? (1)

- **Common elements**
  - Delayed diagnosis for 1 or 2 key spreaders
    - Low index of suspicion of providers
    - TB case not forthcoming with symptoms
  - Risky location facilitated transmission
  - Risky behaviors facilitated transmission
  - Contacts not identified in time to intervene
  - Contacts at high risk for progression to disease (HIV)
  - *Highly infectious TB case (laryngeal)*
Why do outbreaks happen? (2)

Challenging populations
- TB cases refuse to name contacts
- TB cases distrust government officials
- TB cases with different culture, language, race, ethnicity

Steps in disease investigation
- Verify the diagnosis/case definition
- Establish the existence of an epidemic
- Make a quick survey of known cases and the community situation
- Formulate a tentative hypothesis
- Plan/Conduct a detailed investigation
- Analyze the data
- Test Hypothesis
- Formulate conclusions
- Implement control measures
- Make report
- After action review
Verify the diagnosis

- Develop a case definition
  - TB Disease
    - Culture confirmed
    - Clinical case
    - Genotype
  - MDR/XDR
    - Know the current definitions
  - LTBI
    - Close contacts >5mm induration

Establish the existence of an outbreak

- Surveillance ➔ More cases than expected
- Epidemiology ➔ Linked by person, place, time
- Genotyping ➔ Matching patterns
Composition of TB outbreak response team

- Local
  - TB Controller/Program Manager
  - Epidemiologist
  - Public Health Nurses
  - Public Information Officers
  - Support Personnel

- Medical consultants
- Other Stakeholders

Sources of Additional Staffing

- Surge capacity
  - TB staff – data management
  - STD – contact interviews
  - Communicable Disease – data management
  - EIS officers
  - Other public health nurses

**Assure that everyone understands their responsibilities!**

- Mental health – stress
Data management - Key advice

- Must balance extra work of collecting data against the lost information if data are not collected
  - Don’t collect data just for the sake of collecting it

- User friendly!

- Work backwards from intended use

Pointers – Data Manager

- Appoint a data manager
  - Avoid multiple people entering data on multiple copies of the database.
Internal/External Communication

- **Internal** –
  - Establish a scheme of communication
    - Daily/weekly updates
    - Email/conference calls
    - Present data clearly and consistently

- **External** –
  - Establish communication lead

Community Partnerships/Stakeholders

- Many possible partnerships
  - Cultural and ethnic
  - Community clinics
    - Aunt Martha’s
  - Health Care Providers and hospitals
  - Corrections
  - Advocacy Groups
  - Etc…
Deactivation and evaluation

- Deactivation – TB investigations can go on and on – at some point you “need to put a fork in it” and call it dun.
- Evaluation –
  - After action review
  - Lessons learned – outbreak responses real education opportunity
    - Training
    - Share what you have learned – NTCA meeting

Kane County Health Department
TB outbreak

- Epidemiology of Outbreak
- Population Health Interventions
- Population Health Goals
2007

- One active case identified
- Less than compliant
- Prolonged recovery
- Contact investigation: no active household members identified; no other active cases identified at shelter
- No testing for Latent TB conducted
2009 Two Years Later

- November: Case #1 identified at hospital
- December: Case #2 identified
- Knew we had a problem

TB Outbreak Screening

- April 2009 - November 2010 there were approximately 760 persons identified as exposed to TB at the shelter.
- Approximately 360 (47.5%) persons were screened once for TB.
May

Shelter A

Bar A

Jail A

June

Shelter A

Bar A

Jail A
*Note 1 case counted in July 2010 linked to this outbreak was counted in downstate county.
Kane County TB Outbreak
April 2007-May 2012
Based on Treatment Start date, Cases n=35

*Note 1 case counted in July 2010 linked to this outbreak was counted in downstate county.
**TB Outbreak**

- Total cases associated with the Kane County homeless shelter outbreak remains at 35 active cases. First case was reported in 2007.
- Two new cases related to TB outbreak since November 2011.
- 31 cases were counted by Kane County Health Department TB Program and 4 cases counted by other counties (Chicago-2009 case genotypically linked; McLean County-2011 case; Will County-2011 case; Will County-2012 case).
- There are 3 more suspect TB cases reported in 2012 also with a known Epi-Link to the shelter.

<table>
<thead>
<tr>
<th>Year</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kane counted cases</td>
<td>1011</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>13</td>
<td>1</td>
<td>35</td>
</tr>
<tr>
<td>Other counties counted cases</td>
<td>0</td>
<td>0</td>
<td>1 (Chicago)</td>
<td>0</td>
<td>2 (McLean, Will)</td>
<td>1 (Will)</td>
<td>4</td>
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</tbody>
</table>

**TB Outbreak-Therapy Completion Rates**

- Twenty nine cases have completed therapy, four remain on treatment, one is lost to follow up and one is deceased.
- Of 146 latent (at high risk of breakdown to active in two years) cases reported, ten have completed treatment.
- New regimen 3HP for LTBI cases.
## TB Outbreak-Therapy Completion Rates

<table>
<thead>
<tr>
<th>Year</th>
<th>Total cases #</th>
<th>Cases counted for Kane #</th>
<th>Cases counted for other counties #</th>
<th>Cases completed therapy # (%)</th>
<th>Cases ongoing therapy # (%)</th>
<th>Cases lost during therapy # (%)</th>
<th>Cases deceased # (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>1</td>
<td>1</td>
<td>1(100%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>2</td>
<td>1</td>
<td>1(100%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2010</td>
<td>15</td>
<td>15</td>
<td>14(93%)</td>
<td></td>
<td>1(7%)</td>
<td></td>
<td></td>
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<tr>
<td>2011</td>
<td>15</td>
<td>13</td>
<td>2(80%)</td>
<td>2(13%)</td>
<td>1(7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>2</td>
<td>1</td>
<td>0(0%)</td>
<td>2(100%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total completion rates</td>
<td>35</td>
<td>31</td>
<td>29(82%)</td>
<td>4(11%)</td>
<td>1(3%)</td>
<td>1(3%)</td>
<td></td>
</tr>
</tbody>
</table>

- Completion rate approaching 82%
  - 29 cases completed therapy
- One case moved to another county for treatment; one case lost to follow up; one case deceased.
Population Health Interventions

- Monitor health status of homeless shelter residents to identify potential cases
- Diagnose and treat active and latent TB cases, including daily observational therapy
- Investigate contacts to active cases
- Educate shelter staff and residents

Population Health Interventions
Continued

- Enforce compliance for active cases
- Develop shelter policies and plans that support breaking transmission of disease
- Link residents to needed health services
- Mobilize community partnerships
- Evaluate effectiveness of program
Impact on Kane County Health Department

- Staffing
- Financial
- Time
- IDPH involvement
- CDC and NIOSH involvement

Thank You to our Partners

- Kane County Health Department - Disease Prevention and Emergency and Preparedness Staff
- Illinois Department of Public Health
- Illinois Department of Public Health Laboratory
- Hesed House
- CDC
- Provena Mercy Medical Center
- Rush Copley Medical Center
- Provena St. Joseph Hospital, Elgin
- Open Door Clinic
- Dr. James McAuley, Rush Medical Center
- University of Illinois Laboratory
- Cellestis, Inc.
- Chicago Portable X-Ray
- City of Aurora
- NIOSH
- Cook County Department of Public Health- TB Control
- City of Chicago Department of Public Health- TB Control
- Lake County Health Department
- DuPage County Health Department
- McHenry County Health Department
- Heartland Alliance
- Heartland National TB Center, Tyler, Texas
- Aunt Martha’s FQHC