Fundamentals of Contact Investigation

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Essential Components of a TB Program

The Whole is Equal to the Sum of its Parts

Rutgers Global Tuberculosis Institute
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Essential Components of a TB Program

The Whole is Equal to the Sum of its Parts

- Administrative (Policy)
- Surveillance
- Field
- Social Service
- Clinical/Medical
- Funding
- Education/Training
- Research
- Data Management
- Case Management
- Microbiology/Laboratory

What is Contact Investigation?
Definition (2)

- **Contact Investigation**
  - an activity for identifying people exposed to an individual with infectious or potentially infectious TB, locating and evaluating them for latent TB infection (LTBI) and TB disease and providing appropriate treatment to completion of therapy

Objectives of the Contact Investigation

- Identify all high and low risk contacts
- Medically evaluate all appropriate contacts
- Identify contacts diagnosed with LTBI and provide appropriate treatment to completion of therapy thus *preventing future disease*
- Identify contacts diagnosed with TB disease and provide appropriate treatment to completion of therapy thus *preventing further transmission*
- Identify contacts at high risk of developing TB disease (e.g., children, immunocompromised) and provide appropriate treatment until infection and disease is ruled out
How Do You Think We’re Doing In Contact Investigations In The United States?

(See Handout)

Investigation Priorities - 1

• Initial interviews
  – Initiated and conducted within one business day of case report for infectious persons
  – Initiated and conducted within 3 days of case report for those considered non-infectious

• Re-interview
  – 7-14 days post initial interview
  – Ideally one interview should be conducted in the living space of the index patient
Investigation Priorities - 2

- Infectious period
  - Establishes probable start and end point of potential transmission
  - Not determined with precision/an estimation
  - Brings focus to the interview
  - unable conduct a quality investigation without it

Guidelines for Estimating the Beginning of the Infectious Period

<table>
<thead>
<tr>
<th>Characteristic of Index Case</th>
<th>Likely period of infectiousness</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB symptoms (cough)</td>
<td>AFB sputum smear positive</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Ending the Infectious Period

- According to CDC infectious period is closed when the following criteria are met
  - Effective treatment for ≥ 2 weeks and
  - Diminished symptoms (cough) and
  - Bacteriologic response as evidenced by a decrease in grade of sputum smear positivity

Investigation Priorities - 3

- Assessing the probability of transmission
  - Contact tracing priorities based on the following characteristics
    - Person
    - Place
    - Time
    - Contact
Investigation Priorities - 4

- Concentric circle model
  - Sets parameters of the investigation
  - Defines limits of investigation
  - Identifies contacts at risk of exposure
  - Allows interview to proceed in an orderly fashion
Contact Investigations and Beyond

- Congregate setting investigations
- Expanding contact investigations
- Outbreaks

Investigation A

- Index case
  - Sputum smear positive (4+)
    - Final AFB culture pending
  - Cough x 2 months
  - Chest xray cavitory disease
  - Diagnosed with suspected pulmonary TB/RIPE
  - During infectious period
    - Employed full time (40 hours)
    - Warehouse laborer
    - Multiple tasks
    - 20 coworkers
    - Warehouse 240,000 sq. ft
    - Ceiling height 75 ft.
    - Adequate ventilation
    - All breaks inside/outside warehouse
      - Patient did not use break room

Investigation B

- Index case
  - Sputum smear positive (2+)
    - Final AFB culture pending
  - Cough x 2 weeks
  - Chest xray non-cavitary disease
  - Diagnosed with suspected pulmonary TB/RIPE
  - During infectious period
    - Employed part time (20 hours)
    - Office worker
    - Multiple tasks
    - 5 coworkers
    - Office measure 600 sq. ft
    - Ceiling height 10 ft.
    - Adequate ventilation
    - All breaks inside/outside office
Definition

A congregate setting is an environment where a number of people meet or gather and share the same space for either a *limited* or *extended* period of time.

Common Congregate Setting Sites

- Schools
  - Elementary
  - Secondary
  - Colleges and universities
- Day care centers
- Houses of worship
- Hospitals and other health care settings
- Shelters
- Correctional facilities
- Workplace settings
- Social settings
### Congregate Settings of Interest by Age Group

<table>
<thead>
<tr>
<th>Adolescents</th>
<th>Adults</th>
<th>Elderly</th>
</tr>
</thead>
<tbody>
<tr>
<td>House of Worship</td>
<td>House of Worship</td>
<td>House of Worship</td>
</tr>
<tr>
<td>Travel</td>
<td>Travel</td>
<td>Travel</td>
</tr>
<tr>
<td>Medical Hospital</td>
<td>Medical Hospital</td>
<td>Medical Hospital</td>
</tr>
<tr>
<td>Work</td>
<td>Work</td>
<td>Work</td>
</tr>
<tr>
<td>School</td>
<td>School</td>
<td></td>
</tr>
<tr>
<td>Juvenile DC</td>
<td>Shelters</td>
<td>Shelters</td>
</tr>
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<td></td>
<td>Prisons</td>
<td>Prisons</td>
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<td></td>
<td></td>
<td>Long-term Care</td>
</tr>
<tr>
<td></td>
<td>Drug Tx Center</td>
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</tbody>
</table>

### Determining When to Expand a Contact Investigation

Consideration of the following factors is recommended:

- Achievement of program objectives with high risk contacts
- Extent of recent transmission in identified contacts
  - Unexpected high rate of positive TSTs/QFTs or
  - Evidence of secondary cases or
  - Transmission to contacts aged <5 or
  - Documented TST/QFT conversions or
  - Change in TST status from negative to positive
    - In absence of recent transmission investigation should not be expanded
Challenges in Congregate Setting Investigations

- Depending on the setting the following can be associated with large-scale contact investigations
  - Potential for a large number of identified contacts
  - Potential for vague information for determining contact priorities
  - Potential for incomplete identity and locating information
  - Challenges in maintaining patient confidentiality
  - Collaboration with officials and administrators who are unfamiliar with TB
  - Media coverage

Outbreaks

- An outbreak is defined as meeting the following criteria:
  - 2 or more contacts are identified as being diagnosed with active TB or
  - Any 2 or more cases occurring <1 year of each other are discovered to be linked and genotypic linkage is established

- A TB outbreak is indicative of potential extensive transmission and implies that
  - An undiagnosed, untreated contagious patient may be in the community
  - Index patient may have multiple exposure sites
  - Environments of exposure may be promoting transmission
  - A substandard contact investigation and follow-up may be responsible