Guiding Health Care Personnel through Contact Investigation

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Essentials of TB Nurse Case Management Online

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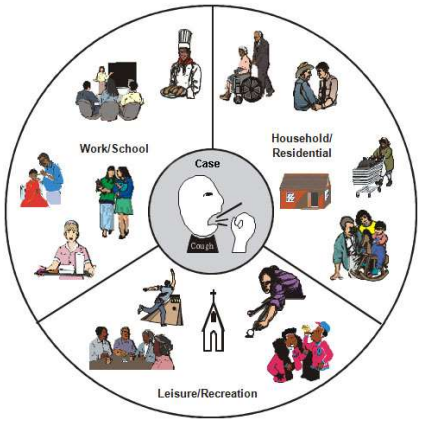
What is a Contact Investigation?

A systematic process to:

- Identify persons (contacts) exposed to someone with infectious TB disease
  - Household members
  - Friends
  - Co-workers
  - Others (cellmates, shelter residents, etc.)
- Assess contacts for infection with *M. tuberculosis* and TB disease
- Provide appropriate treatment for contacts with LTBI or TB disease



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Importance of Contact Investigation

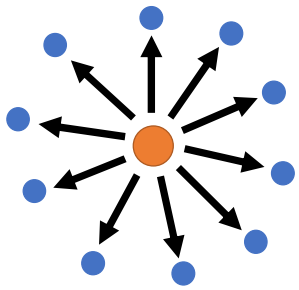
Contact investigations allow TB programs to:

- Stop transmission
- Identify the source case
- Prevent future cases of TB disease
- Evaluate and treat recently exposed persons

*On average, 10 contacts are identified for each case

-20% to 30% of household contacts have LTBI

-1% of contacts have TB disease



Source

Contact

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Conducting Contact Investigations is one of the highest priorities within TB programs in the United States

- Only second to the detection and treatment of TB disease

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Keep in mind…

A full CI is required for all persons that have been confirmed to have <u>infectious forms of TB disease</u>

- Generally, TB of lungs, airway, or larynx

State and local health departments have legal responsibility to

- Investigate active TB reported in their jurisdiction
- Evaluate effectiveness of TB investigations

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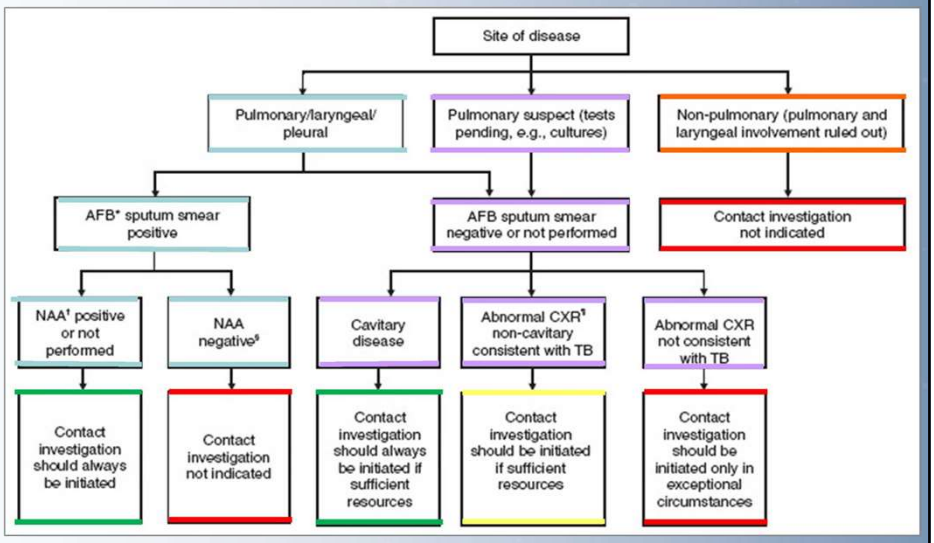
Initiating Contact Investigation

Things to consider:

- Site
- Radiographic findings
- Infectiousness
- PCR/Gene expert



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Case Study: Scenario 1

- A nurse at University Hospital calls to report a 37 y/o male originally from Eritrea with a history of cough and weight loss for the last 4 months. The patient's chest x-ray presents an opacity in the right apex and right mid lung. Sputum was collected that came back 4+ AFB positive and the PCR is also Mtb positive.

YES!

Abnormal CXR consistent with TB

AFB Smear Positive

PCR Positive

Does a contact investigation need to be initiated? Why or why not?

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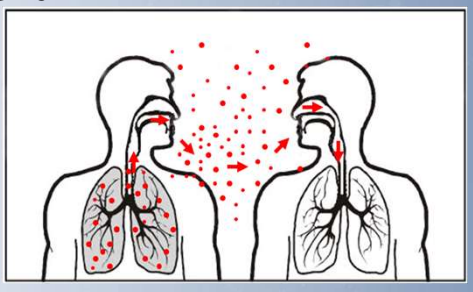
The Infectious Period

- The time in which a person with TB is **most likely** to transmit the *M. tuberculosis* bacteria
  - Infectious period is key for CI
    - Identifies contacts most likely to be exposed
    - Important for accurate identification in a congregate setting
  - Will identify when and what contacts will need a repeat TST or IGRA (initial negative test ; 8-10 weeks following most recent exposure



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Estimating the Start of the Infectious Period

Characteristic of Case			Likely Period of Infectiousness
TB symptoms	AFB sputum smear positive	Cavitary chest x-ray	
Yes	No	No	3 months before symptom onset or first finding consistent with TB disease, whichever is longer
Yes	Yes	Yes	3 months before symptom onset or first finding consistent with TB disease, whichever is longer
No	No	No	1 month (4 weeks) before date of suspected diagnosis
No	Yes	Yes	3 months before finding consistent with TB disease

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Case Study: Scenario 2

Recap: A nurse at University Hospital calls to report a 37 y/o male originally from Eritrea with a history of cough and weight loss for the last 4 months. The patient's chest x-ray presents an opacity in the right apex and right mid lung. Sputum was collected that came back 4+ AFB positive. The PCR is also Mtb positive.

When should the estimated infectious period begin?

~ 7 months

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Before the interview…

It is important to know as much about your index case prior to the first interview. Being knowledgeable in the following could create opportunities to develop rapport and break down barriers that can lead to a successful CI:

- Personal details and demographics
- Substance abuse, mental illness, or other issues
- Social, or behavioral risk factors increasing the risk of TB
- Known contact names, particularly children or persons with weakened immune systems
- History of jail or homelessness
- History of immigration or travel
- TB medical history (site, infectiousness, symptoms, regimen, CXR results, smear results, etc.)

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Conducting Interviews: Time Frame

- The main goal of a TB interview is to identify persons exposed to someone with infectious TB disease
- Two interviews minimum (initial interview and re-interview):
  - The initial interview:
    - should be conducted within 1 business day of reporting for persons with infectious TB and no more than 3 business days for others
  - The second interview (re-interview):
    - conducted 1 to 2 weeks later
- More interviews may be necessary to develop rapport or build on previously collected information

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Conducting Interviews: Settings

Initial case interview should be conducted:

- In-person
- At a hospital, TB clinic, in the home, or any convenient location that allows for privacy
- Using appropriate infection prevention measures (e.g., respirators, masks,) and ventilation
- In primary language
- With cultural sensitivity

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Conducting Interviews: Questions

Ask about the following during their infectious period:

- Places WHERE they spent time
- Persons with WHOM they spent time
- Participation in activities and events (*WHAT* and *WHEN*)

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Case Study: Scenario 3

Index Case

37 y/o male originally from Eritrea with a history of cough and weight loss for the last 4 months. The patient's chest x-ray presents an opacity in the right apex and right mid lung. Sputum was collected that came back 4+ AFB positive. The PCR is also Mtb positive.

What information do we have that could be helpful in building a successful contact investigation?

Demographics: age, gender, language
History of immigration
TB medical history

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Prioritizing Contacts

- Once contact information is obtained, priority for immediate assessment should be assigned to individual contacts based on the following:

- Have symptoms of TB disease
- Risk for development of TB disease
- Had repeated or extended exposure to the person with active TB
- Were exposed to the index case in an environment where transmission was likely, such as a small, crowded, or poorly ventilated room or vehicle
- Were exposed to TB undergoing medical procedures that can release substantial numbers of *M. tuberculosis* into the air (e.g., bronchoscopy)

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High Priority Contacts

- High priority contacts are most likely to be infected
- Factors contributing to high priority status
  - Immunosuppressed
    - HIV; disease occurs more frequently and more rapidly than with any other factor
    - Corticosteroids - >15 mg daily for >4 weeks
    - Multiple cancer chemotherapy agents
    - Anti-rejection drugs for organ transplants
    - Tumor necrosis factor alpha antagonists
    - Children under 5
      - TB disease is more likely to occur once infected
      - Incubation or latency period is briefer

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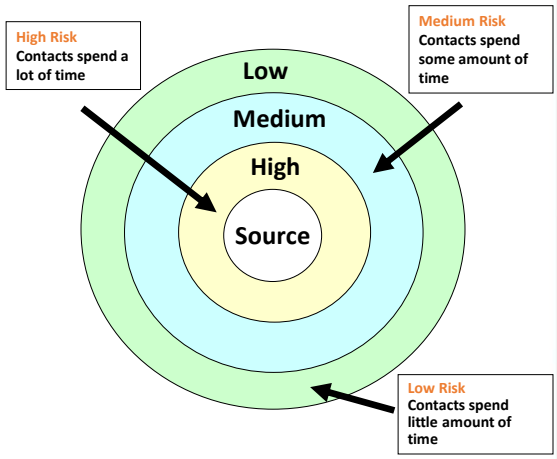
Concentric Circle Tool

- The concentric circle should <u>only</u> be used as a secondary tool to help further prioritize contacts based on exposure (duration, frequency, and distance)



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Case Study: Scenario 4

- While interviewing the patient at the hospital he mentions that he lives with his wife and 5 children:
  - 32 year old wife
  - 15 year old male
  - 13 year old female
  - 4 year old female
  - 3 year old male
  - 17 month old male

Which of these contacts are considered high priority contacts?

Everyone!

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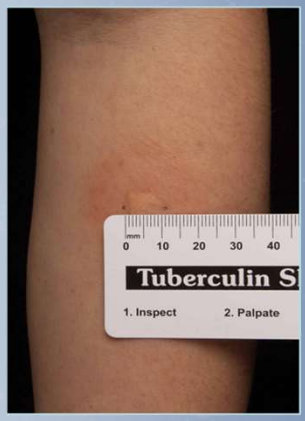
Contact Assessment

- Contacts should receive a TST or IGRA unless a previous, documented positive result exists
- A TST induration of 5 mm or larger is positive
- A contact with a
  - Positive TST or IGRA should be medically examined for TB disease
  - Negative TST or IGRA should be re-tested 8 to 10 weeks after date of last exposure



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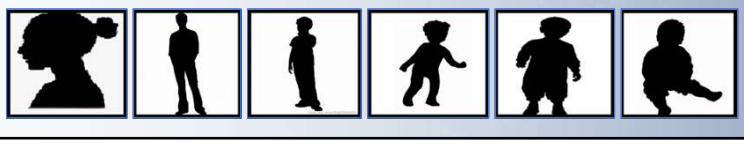
Case Study: Scenario 5

All of the household contacts received TST/IGRA's the day after the initial interview along with medical history:

- Wife: IGRA Positive, cough, weight loss, change in voice, chest pain
- 15 year old: IGRA Positive, BCG, asymptomatic, previously treated for LTBI
- 12 year old: IGRA Positive, BCG, cough
- 4 year old: 18 mm TST, BCG, cough and runny nose
- 3 year old: 15mm TST, BCG, hx of prior positive TST and negative IGRA
- 17 mo. old: 14mm TST, cough

Who should be further evaluated to rule out TB disease?



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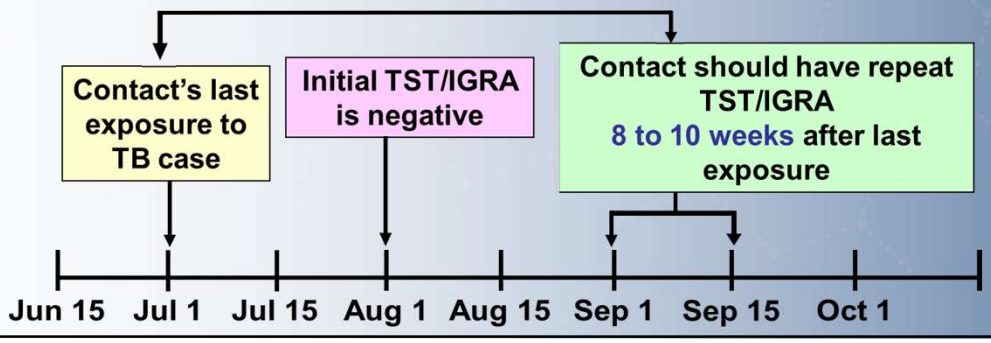
Window Period

- The window period is the time span between the contact's last exposure and when a TST or IGRA can reliably detect infection
- It takes 2 to 10 weeks after TB infection for the body to mount an immune response that is detectable by a TST
- Therefore, it is recommended to repeat a TST or IGRA for contacts 8 to 10 weeks after date of last exposure to a TB case



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Later (Re)Prioritization of Contacts

- Re-examine priority level assigned to contacts throughout the investigation
  - If evidence of significant transmission has occurred in priority contacts, CI may need to be expanded to additional contacts
- However, investigation should not expand to additional contacts if doing so would compromise TB program's ability to assess and treat the known priority contacts

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Case Study: Scenario 6

After receiving chest x-rays and full medical examinations the family was diagnosed as the following:

Wife: Active TB Disease
15 y/o: Active TB Disease
12 y/o: Active TB Disease
4 y/o: Active TB Disease
3 y/o: LTBI
17 m/o: Active TB Disease

Now that the family has been evaluated and diagnosed, have we completed their full contact investigation?

No!

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Thank You!

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