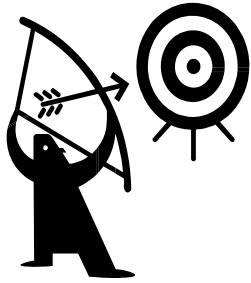


TB CONTACT INVESTIGATION IN JAIL

SESSION TWO: THE STEPS FOR CONDUCTING A TB CONTACT INVESTIGATION IN JAIL



Objective

At the end of this session, you will be able to:

- describe the steps to performing a contact investigation in a jail



The Steps for Conducting a TB Contact Investigation in Jail: An Overview





Notify Jail Management and Health Department Officials Directly

Know who your point people are
at the health department



Question

Who is responsible for making notification to the health department when TB is suspected in your jail facility?

Review Medical Record for TB Patient

Collect the following information
(and dates for):

- previous exposure to TB
- previous diagnosis and treatment of TB
- site of TB disease
- TB symptoms and approximate date symptoms began
- lab test results (e.g., AFB smears, nucleic acid amplification tests), including dates obtained

Review Medical Record for TB Patient (2)

Collect the following information
(and dates for):

- chest x-ray results
- TB treatment (medications, dosage, and when treatment was started)
- method of treatment administration (DOT or self-administered)
- TST/IGRA result
- HIV status



Review Medical Record for TB Patient (3)

Collect the following information and dates for other medical conditions that could affect treatment:

- HIV
- diabetes
- end-stage renal disease
- anti-cancer drugs

Minimal Recommended Data to Collect About TB Patient

- when TB patient was first incarcerated
- movement list, including housing locations
- work history within jail setting
- cellmates
- visits to clinic health services/lab draws
- court appearances
- visitors (i.e., lawyers, children, etc.)
- classes/programs attended

Minimal Recommended Data to Collect About TB Patient (2)

- staff who did lab work and chest x-rays





Question

Where are medical records kept
in your jail facility?

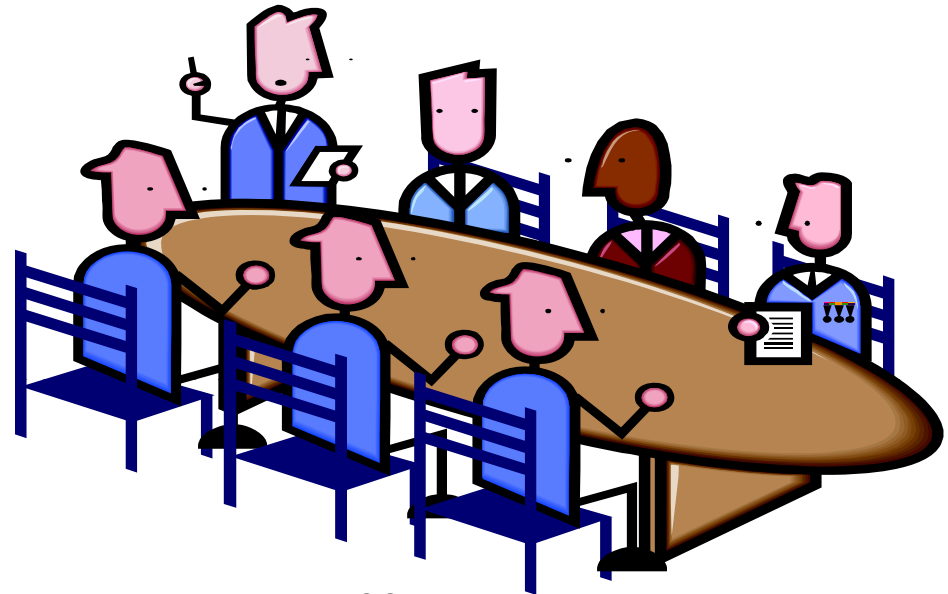
Data Collection and Management

Two systems critical to the efficient conduct of a contact investigation:

- an inmate medical record system containing TST/IGRA results and other relevant information
- an inmate location tracking system



Updating Jail Management Staff



- Update jail management officials on the extent of the exposure, the strategy, process, and action steps for dealing with, identifying, and assessing contacts

Define the Infectious Period

TABLE 2. Guidelines for estimating the beginning of the period of infectiousness of persons with tuberculosis (TB), by index case characteristic

Characteristic				Recommended minimum beginning of likely period of infectiousness
TB symptoms	AFB* sputum smear positive	Cavitary chest radiograph		
Yes	No	No		3 months before symptom onset or first positive finding (e.g., abnormal chest radiograph) consistent with TB disease, whichever is longer
Yes	Yes	Yes		3 months before symptom onset or first positive finding consistent with TB disease, whichever is longer
No	No	No		4 weeks before date of suspected diagnosis
No	Yes	Yes		3 months before first positive finding consistent with TB

SOURCE: California Department of Health Services Tuberculosis Control Branch; California Tuberculosis Controllers Association. Contact investigation guidelines. Berkeley, CA: California Department of Health Services; 1998.

*Acid-fast bacilli.



Centers for Disease Control and Prevention. Guidelines for the investigation of contacts of persons with infectious tuberculosis; recommendations from the National Tuberculosis Controllers Association and CDC, and the Guidelines for using the QuantiFERON®-TB Gold test for detecting *Mycobacterium tuberculosis* infection, United States. MMWR 2005; 54(No.RR-15): [page 9].

Define the Infectious Period (2)

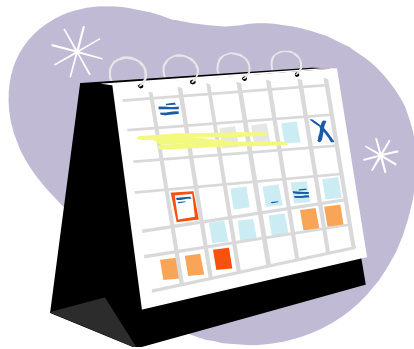
Consider the infectious period “closed” when all of the following has occurred for the TB patient:

- effective/appropriate treatment for ≥ 2 weeks
- diminished symptoms
- shows clinical improvement
- shows lab result response



Determine Exposure Period for Contacts

The exposure period for individual contacts is determined by how much time they spent with the TB patient during the infectious period.



Determine Exposure Period for Contacts (2)



- Frequency and duration
 - how often they spent time together
 - length of each time period



Key Term

“Date of last exposure”

or

“Date exposure was broken”

The last day contact spent time with the TB patient during the TB patient’s infectious period.



Interview the TB Patient



Goals:

- confirm medical review findings
- perform physical assessment
- identify contacts

Interview the TB Patient (2)



Information includes:

- history of prior TB disease or latent tuberculosis infection and treatment history
- TB symptom history and date
- review prior incarceration records for signs and symptoms of TB
- daily activities of the TB patient
- possible jail cell inmate and staff contacts, particularly HIV-infected persons
- community contacts (especially young children) and their locations



Keys to an Effective Interview

Jail and/or health department staff interview
TB patient within 1-3 working days:

- prepare for interview—plan and be flexible
- address patient concerns and provide TB education



Keys to an Effective Interview (2)

- discuss confidentiality and privacy
- build trust and rapport—this is critical
- ask open-ended questions to get detailed information
- express appreciation
- provide an overview of the CI process
- plan for at least two interviews



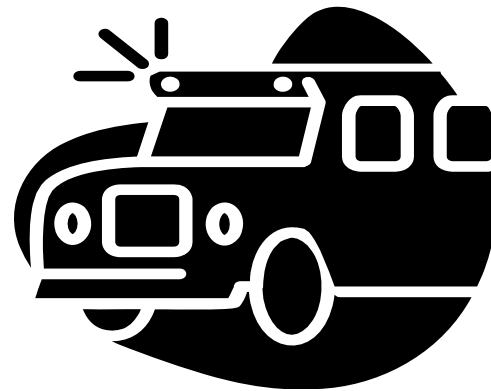
Exercise 1

Given the case scenario, determine the following:

- infectious period for the TB patient
- contacts who were exposed during the infectious period

Obtain Housing and Movement History for the TB Patient

Goal: To identify inmates, staff, and volunteers who may have been exposed during the TB patient's infectious period, including visitors and transferred or released inmates



Obtain Housing and Movement History for the TB Patient (2)

Identify all locations and the length of time spent in each location:

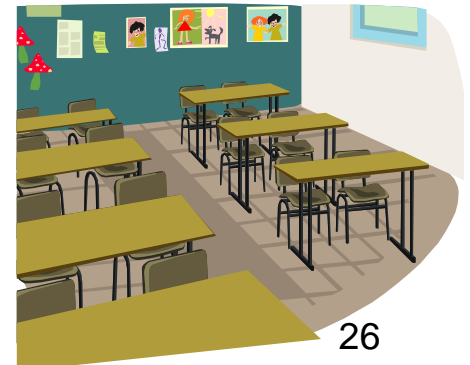
- cells (single, double, holding, isolation, multiple occupancy, open dorm)
- bunk/cell mates
- general population areas
- court



Obtain Housing and Movement History for the TB Patient (3)

Identify all locations and the length of time spent in each location (cont'd):

- programs (e.g., GED, substance abuse)
- Intake/booking/custody department
- clinic, church
- school/classroom
- transportation to other areas





Question

Who would you contact at your jail to research a TB patient's movement records?

Visit Exposure Site(s)

Examine the environments where the TB patient spent time during the infectious period. Assess what areas are more likely to be conducive to the transmission of TB by determining the following:

- number of inmates who are housed together at one time
- housing arrangement (e.g., cells versus dorms, court and court holding sites, classrooms)
- general size of the air space

Visit Exposure Site(s) (2)

Assess which areas are more likely to be conducive to the transmission of TB by determining the following:

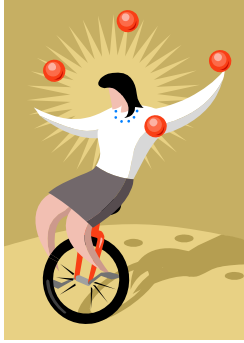


- basics of the ventilation system (e.g., whether air is re-circulated, or if isolation room is in negative air pressure)
- pattern of daily inmate movement (e.g., when eating, working) and recreation schedule
- availability of data on other inmates housed at the same time as the TB patient



Question

How might you determine airflow in a defined area in your jail?



Prioritizing Contacts

Prioritize contacts on a scale of “high”, “medium”, or “low” according to duration and intensity of exposure and risk factors for becoming infected with TB and progressing to TB disease

Prioritizing Contacts (2)

These persons are considered high-priority:

- contacts with most exposure to TB patient
- HIV-infected or other immunosuppressed contacts (regardless of duration of exposure)

Factors for Assigning Contact Priorities

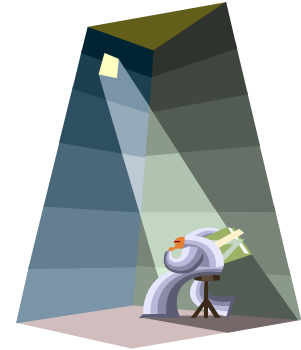
- Characteristics of TB Contacts

- age (<5 years)
- immune status (e.g., auto-immune disorders)
- other medical conditions (silicosis, diabetes mellitus, and status after gastrectomy or jejunioileal bypass surgery)



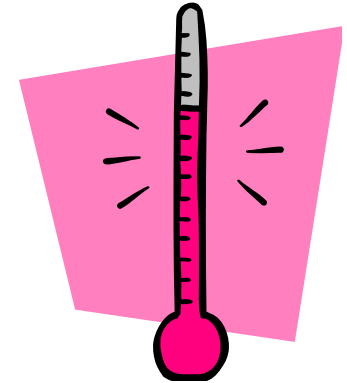
Factors for Assigning Contact Priorities (2)

- Exposure—air circulation patterns
 - air volume, ventilation, and duration
 - intensity and frequency of duration



- Characterize grading exposure settings by size
 - "1" = size of a single cell (most likely transmission)
 - "2" = size of a 2 or 4 man cell
 - "3" = size of an open dorm
 - "4" = size of a community hall or larger (less likely transmission)

Classification of Contacts



- Any contacts who are not classified as high- or medium-priority are assigned as low-priority
- Priority classifications should be reconsidered throughout the investigation as findings are analyzed



Exercise 2

Given the following information, prioritize which contacts are “high”, “medium”, or “low”

Time Frames for Initial Follow-Up of Contacts of Persons Exposed to TB

TABLE 3. Time frames for initial follow-up of contacts of persons exposed to tuberculosis (TB)

Type of contact	Business days from listing of a contact to initial encounter*	Business days from initial encounter to completion of medical evaluation†
High-priority contact: index case AFB§ sputum smear positive or cavitory disease on chest radiograph (see Figure 2)	7	5
High-priority contact: index case AFB sputum smear negative (see Figure 3)	7	10
Medium-priority contact: regardless of AFB sputum smear or culture result (see Figures 2–4)	14	10

SOURCE: California Department of Health Services Tuberculosis Control Branch; California Tuberculosis Controllers Association. Contact investigation guidelines. Berkeley, CA: California Department of Health Services; 1998.

*A face-to-face meeting that allows the public-health worker to assess the overall health of the contact, administer a tuberculin skin test, and schedule further evaluation.

†The medical evaluation is complete when the contact’s status with respect to *Mycobacterium tuberculosis* infection or TB disease has been determined. A normal exception to this schedule is the delay in waiting for final mycobacteriologic results, but this applies to relatively few contacts.

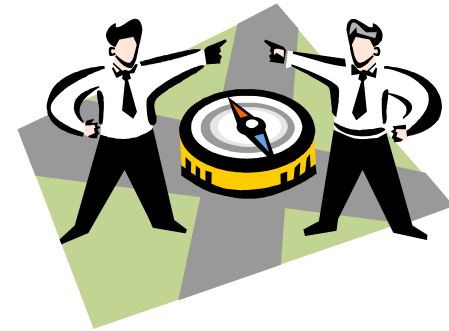
§Acid-fast bacilli.



Centers for Disease Control and Prevention. Guidelines for the investigation of contacts of persons with infectious tuberculosis; recommendations from the National Tuberculosis Controllers Association and CDC, and the Guidelines for using the QuantiFERON®-TB Gold test for detecting *Mycobacterium tuberculosis* infection, United States. *MMWR* 2005; 54(No.RR-15): [page 11].

Locate and Assess Contacts

- Develop contact lists and documentation
 - identify inmate (and staff) contacts from each location where the TB patient spent time
 - document exposed contacts according to current status (e.g., still incarcerated, released, or transferred)
- Interview contacts within 1-3 days of identification
- Gather background health information



Locate and Assess Contacts (2)

- Perform in-person assessment of patient's health (conduct symptom review)
 - for incarcerated contacts, may be able to conduct review of medical records
- Administer TB tests (TST or IGRA) on contacts (interpretation of skin test reaction: an induration transverse diameter of $\geq 5\text{mm}$ is considered positive)
- Prioritize contacts

Review Medical Record for Each High- and Medium-Priority Contact



Record dates carefully for:

- previous *M. tuberculosis* infection or disease and related treatment
- contact's verbal report and documentation of previous TST/IGRA results
- current symptoms of TB illness (e.g., cough, chest pain, hemoptysis, fever, chills, night sweats, appetite loss, weight loss, malaise, or exhaustion)

Review Medical Record for Each High- and Medium-Priority Contact (2)

Record carefully (and get dates) for:

- medical conditions or risk factors making TB disease more likely

Minimal Data Recommended Concerning Each Contact

- Date admitted to facility
- Start and end dates for exposure
- Name and aliases (“street names”)
- Social security number
- Date of birth
- Locating information and whom to notify in an emergency
- Primary language and preferred language



Minimal Data Recommended Concerning Each Contact (2)

- Frequency, duration, and time frame of interactions with TB patient
- Previous history of and documentation for TB disease or latent TB infection
- Medical risk factors for progression of infection to TB disease
- New TST/IGRA information, chest x-ray

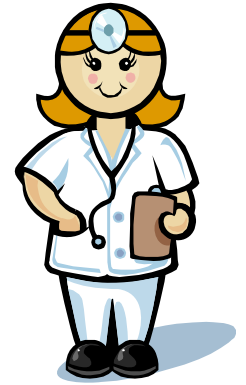
Minimal Data Recommended Concerning Each Contact (3)

For those contacts who tested positive during their evaluation, and who have previously been treated for TB:



- dates of treatment
- treatment regimen (medication, dosing schedule, any changes to these)
- methods of supervising treatment (e.g., directly observed treatment)

Conduct Medical Evaluation of Contacts



All contacts should:

- have a symptom review completed using standard TB Symptom Review form
- have TST/IGRA administered
 - in contacts, a TST with an induration diameter ≥ 5 mm is considered positive
 - if initial TST/IGRA is negative, a second test is needed 10 weeks from the date of initial test
 - receive chest x-ray and medical evaluation, if indicated

Conduct Medical Evaluation of Contacts (2)

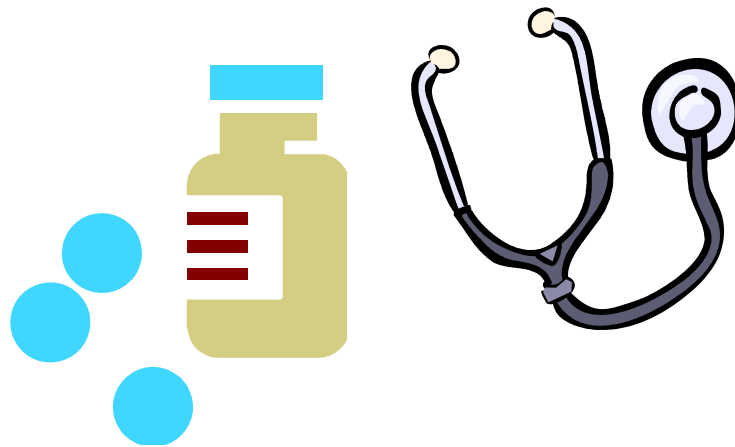
- Contacts who have TB symptoms:
 - symptomatic contacts should be placed immediately in isolation and receive medical evaluation regardless of TST /IGRA status
 - a contact can have active TB even though he/she may have a negative TST/IGRA
 - if symptomatic contact is a staff member, he/she must be excluded from work until evaluated

Conduct Medical Evaluation of Contacts (3)

- Contacts who have a history of a previous positive TST/IGRA
 - if no documentation of previous positive test, refer for another test (TST if the previous test was TST; IGRA if the previous test was IGRA)
 - if repeat test is positive or there is written documentation of previous test result, conduct symptom review
 - also interview to see if treatment for LTBI was ordered and, if so, completed

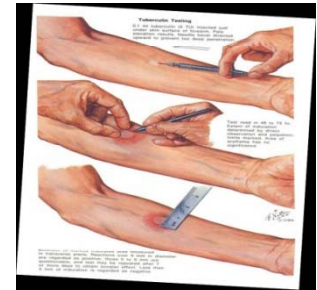
Evaluate HIV-Infected Contacts Promptly

- LTBI therapy should be initiated promptly among these contacts once TB disease has been excluded



Place and Read Initial TSTs or IGRAs on Eligible Contacts

- Place an initial TST (or draw blood for an IGRA) on possible contacts when a TB patient is identified
- Referrals should be made for contacts who have been released or transferred before receiving their initial TST or IGRA





Questions

- Who places and reads the TST?
- Who draws blood for an IGRA?
- Who is responsible for getting IGRA sample to the lab?

Make Referrals for Contact Evaluation

Make referrals to the local health department for the following:

- inmate contacts of the infectious TB patient who have been released or transferred to another facility
- family members or frequent visitors of the TB patient





Calculate the Infection Rate

$$\text{Infection rate} = \frac{\# \text{ of new positives} \times 100}{\text{Total \# of contacts tested}} \\ \text{(per exposure environment)}$$

Example:

10 contacts were identified: 2 had previously positive TSTs; therefore, 8 were newly tested, and 4 of those were positive

Calculate the Infection Rate (2)

$$\text{Infection rate} = \frac{4 \times 100}{8} = 50\%$$

- Use only newly identified positive results to calculate
- If previous skin test results are unknown, any positive result should be considered a newly identified positive reaction



Exercise 3

Given the following scenario, calculate the infection rate

Place and Read Follow-Up TST/IGRA

8-10 weeks after “date exposure was broken” (which is the last day contact spent time with the TB patient during the TB patient’s infectious period)



Calculate Infection Rate from Second Round of Testing



Writing a Summary Report

Report will include:

- why contact investigation was started
- number of contacts
- number of high- and medium-priority contacts
- transmission rates
- number of contacts started on treatment

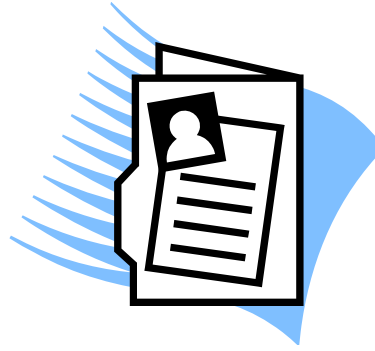


Writing a Summary Report (2)

Report will include (cont'd):

- number of community contacts (outside the jail) referred for evaluation to public health department
- number of new cases found
- problems encountered





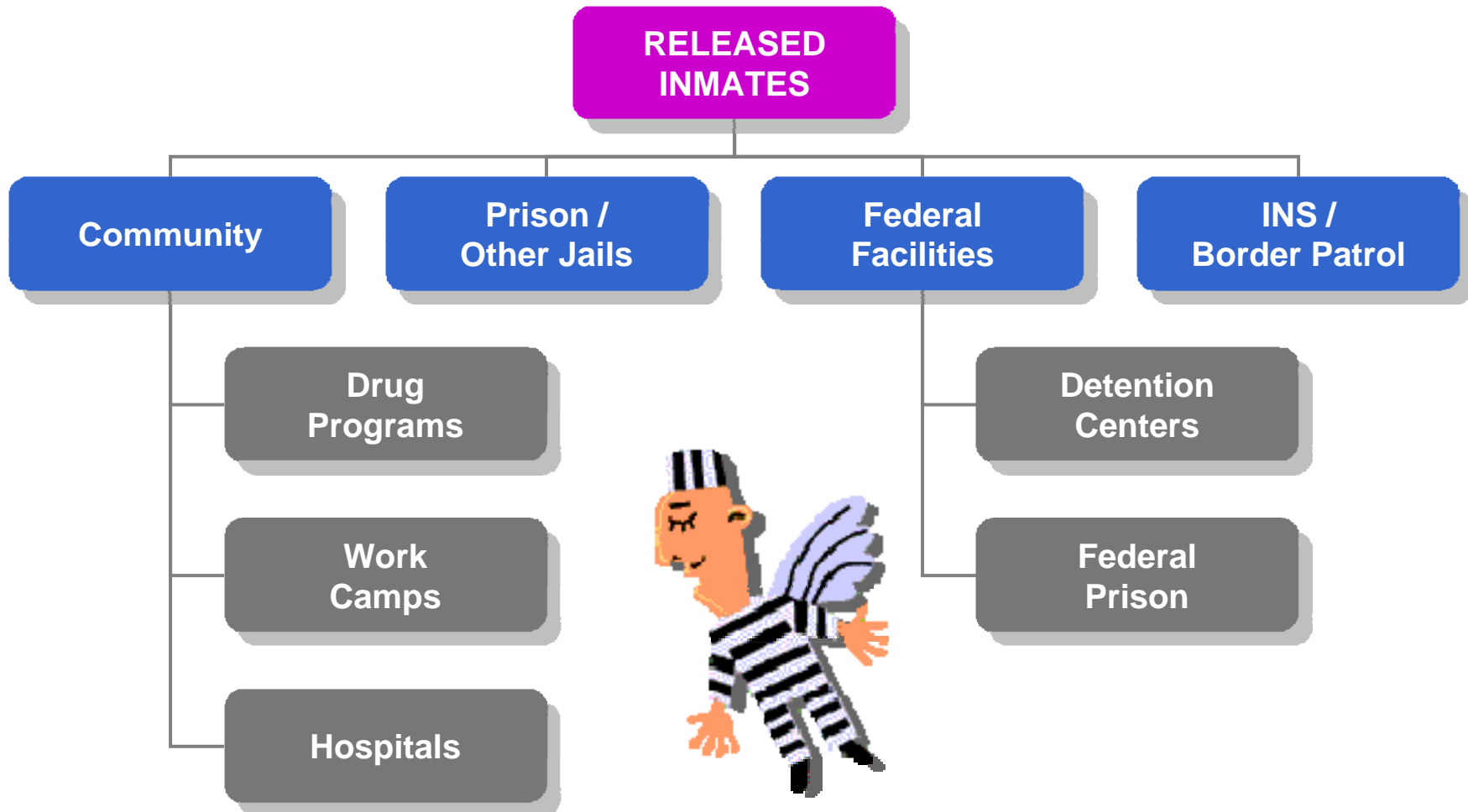
Case Studies

Post-Contact Investigation Steps

- Continuity of care: discharge planning
 - ensure follow-up care and treatment when contacts are transferred to another facility or released to community



Continuity of Care for TB Case and Contacts





Conclusion: Key Points

- Diagnose TB before inmates and staff are exposed
- Establish formal collaboration between jail and public health officials **BEFORE** a contact investigation is needed
- Notify jail officials when TB is suspected
- Notify public health department
- Set up data management and collection system



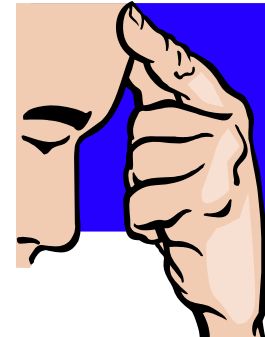
Conclusion: Key Points (2)

- Review TB patient's medical record:
 - onset of symptoms
 - infectiousness (how infectious)
 - infectious period
 - date no longer infectious
 - sites where transmission may have occurred in jail
 - individuals whom the TB patient or jail classifications staff can identify as contacts



Conclusion: Key Points (3)

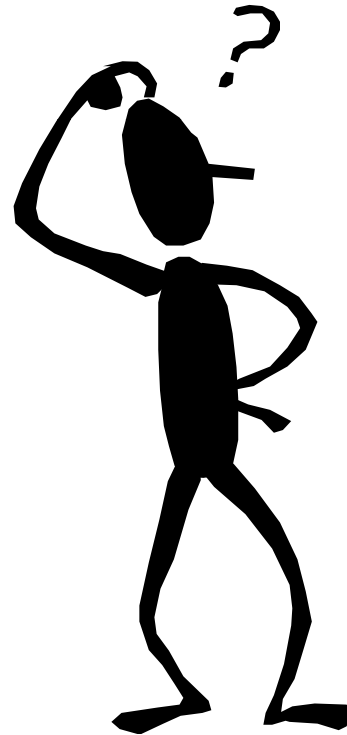
- Identify and locate high- and medium-priority contacts
 - educate contacts about TB
 - evaluate contacts (i.e., symptom review, TST/IGRA)
 - treatment, if needed



Remember: Think TB!

Screen for TB during intake – diagnose TB before inmates and staff are exposed. Protect your jail facility from contagious disease and other hazards

Any Questions??



Centers for Disease Control and Prevention (CDC)

- The Centers for Disease Control and Prevention (CDC) Division of Tuberculosis Elimination (DTBE) <http://www.cdc.gov/tb>

Guidelines available online:

- CDC's Morbidity and Mortality Weekly Report <http://www.cdc.gov/mmwr>
- Questions and Answers About TB <http://www.cdc.gov/tb/faqs/>
- TB Education & Training Resources Website www.findtbresources.org

Regional Training and Medical Consultation Centers

- Francis J. Curry National Tuberculosis Center, San Francisco, CA www.nationaltbcenter.edu
- Heartland National TB Center, San Antonio, TX www.heartlandntbc.org
- New Jersey Medical School Global TB Institute, Newark, NJ www.umdnj.edu/ntbcweb
- Southeastern National TB Center, Gainesville, FL <http://sntc.medicine.ufl.edu/>