

# FUNDAMENTALS OF CONTACT INVESTIGATION

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# WHAT IS CONTACT INVESTIGATION?



# CONTACT INVESTIGATION

A systematic process to identify persons (contacts) who were exposed to someone with infectious TB disease; assess contacts for infection with *M. tuberculosis* and TB disease; and provide contacts with treatment for latent TB infection or TB disease, if necessary



# TB ELIMINATION

- ❑ The highest priority of any effective TB elimination effort is the identification of individual with TB, prompt initiation of appropriate treatment and completion of therapy
- ❑ The second highest priority is the identification of contacts with sufficient exposure to a suspected or confirmed infectious TB case in order to be evaluated and treated for LTBI



# GOALS OF THE CONTACT INVESTIGATION

01

Identify all high and low risk contacts

02

Medically evaluate all appropriate contacts

03

Identify contacts diagnosed with LTBI and provide appropriate treatment to completion of therapy thus preventing future disease

04

Identify contacts diagnosed with TB disease and provide appropriate treatment to completion of therapy thus preventing further transmission

05

Identify contacts at high risk of developing TB disease (e.g., children, immunocompromised) and provide appropriate treatment until infection and disease is ruled out

# WHO IS RESPONSIBLE FOR CONTACT INVESTIGATION

- ❑ A contact investigation require personnel in the Health department, such as a Nurse Case Manager
- ❑ Other health care delivery systems, such as a Public health Reps to fulfill multiple functions and skills



# KEY TERMS



**Index Case:** Is the person with suspected or confirmed infectious or potentially infectious TB disease for whom a contact investigation is initiated



**Contacts:** are individuals identified by the Public Health Department who have had exposure to a person with suspected or confirmed potentially infectious TB disease

# SOURCE CASE

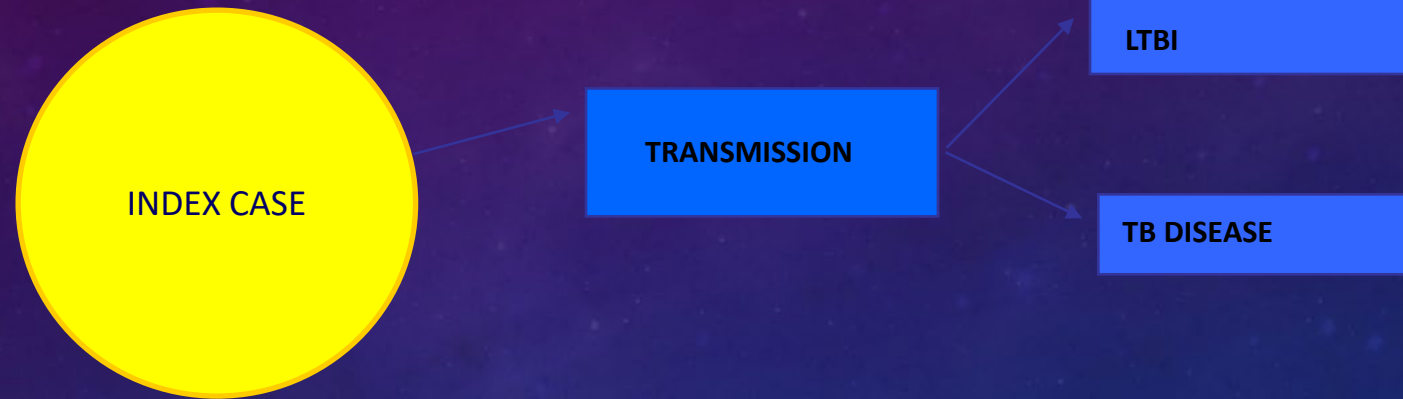
- ❑ Source case—a person with TB disease who is responsible for transmitting *M. tuberculosis* to another person or persons
- ❑ Source case investigation—a method used to identify a source case; usually done when a young child is found to have TB disease





# CONTACT VS. SOURCE CASE INVESTIGATION

## CONTACT INVESTIGATION



## SOURCE CASE INVESTIGATION



# EXPOSURE

- ❑ Exposure: occurs when an individual shares air with an infectious or potentially infectious TB suspect or case.
- ❑ Exposure Period: is the period during which an individual is exposed to a potentially infectious index case
  - Not all individual are necessarily classified or evaluated as contacts

# EXPOSURE PERIOD

- ❑ Begins:
  - whenever an individual is exposed to an index case during infectious period
- ❑ Ends:
  - whenever exposure to the index case is broken and not resumed during the infectious period

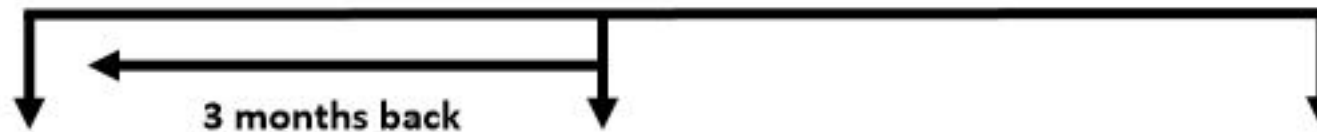
# INFECTIOUS PERIOD

Infectious period —time during which a TB case is potentially capable of transmitting *M. tuberculosis*

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

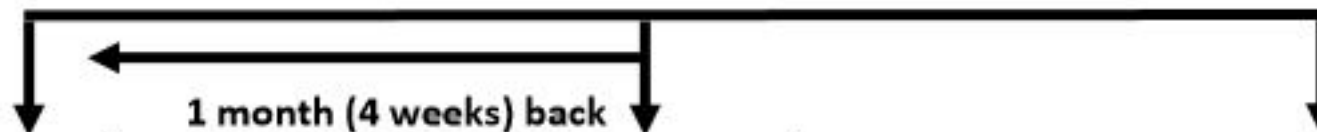
# DETERMINING THE INFECTIOUS PERIOD

For TB cases/suspects with symptoms, positive smears, and/or cavitory disease



Date of beginning of infectious period	Date of symptom onset or first finding consistent with TB, whichever longer	Date of end of infectious period for CI is 2 weeks after treatment is started, diminished symptoms, AND mycobacteriologic response, and/or effective isolation.
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For TB cases/suspects with no symptoms, negative smears, and non-cavitory disease



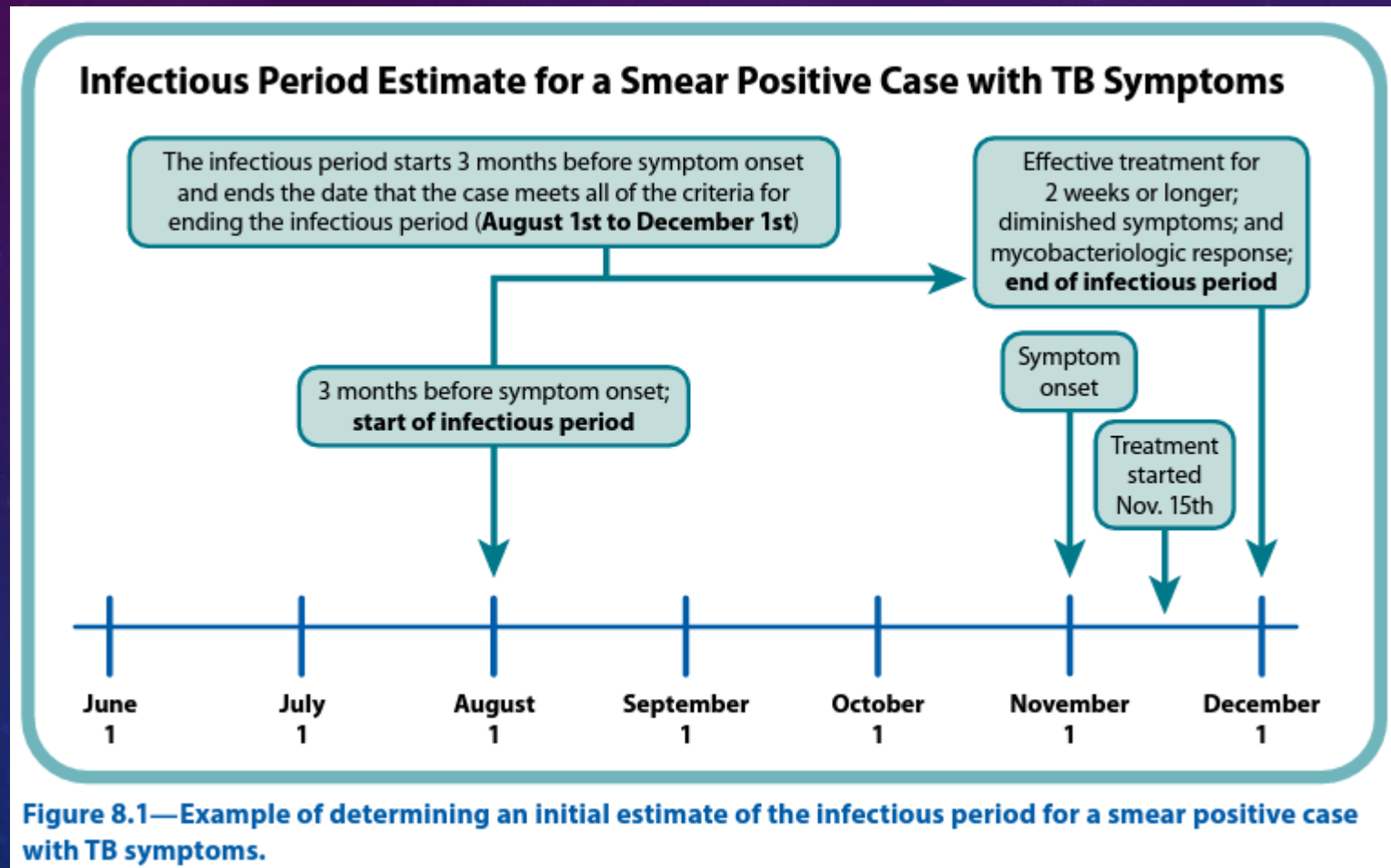
Date of beginning of infectious period	Date of symptom onset or first finding consistent with TB, whichever longer	Date of end of infectious period for CI is 2 weeks after treatment is started, diminished symptoms, and/or effective isolation
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# GUIDELINES FOR ESTIMATING THE BEGINNING OF THE INFECTIOUS PERIOD

**Table 8.1—Recommendations for Estimating the Start of the Infectious Period by Case Characteristics**

Case with Respiratory TB Symptoms	Case with Positive Sputum Smear	Case with Pulmonary Cavity on Chest X-ray	Recommended Minimum Beginning of the Infectious Period
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

# INFECTIOUS PERIOD ESTIMATE FOR A SMEAR POSITIVE CASE WITH TB SYMPTOMS



# INFECTIOUS PERIOD ESTIMATE FOR A SMEAR NEGATIVE CASE WITHOUT TB SYMPTOMS AND NO CAVITES

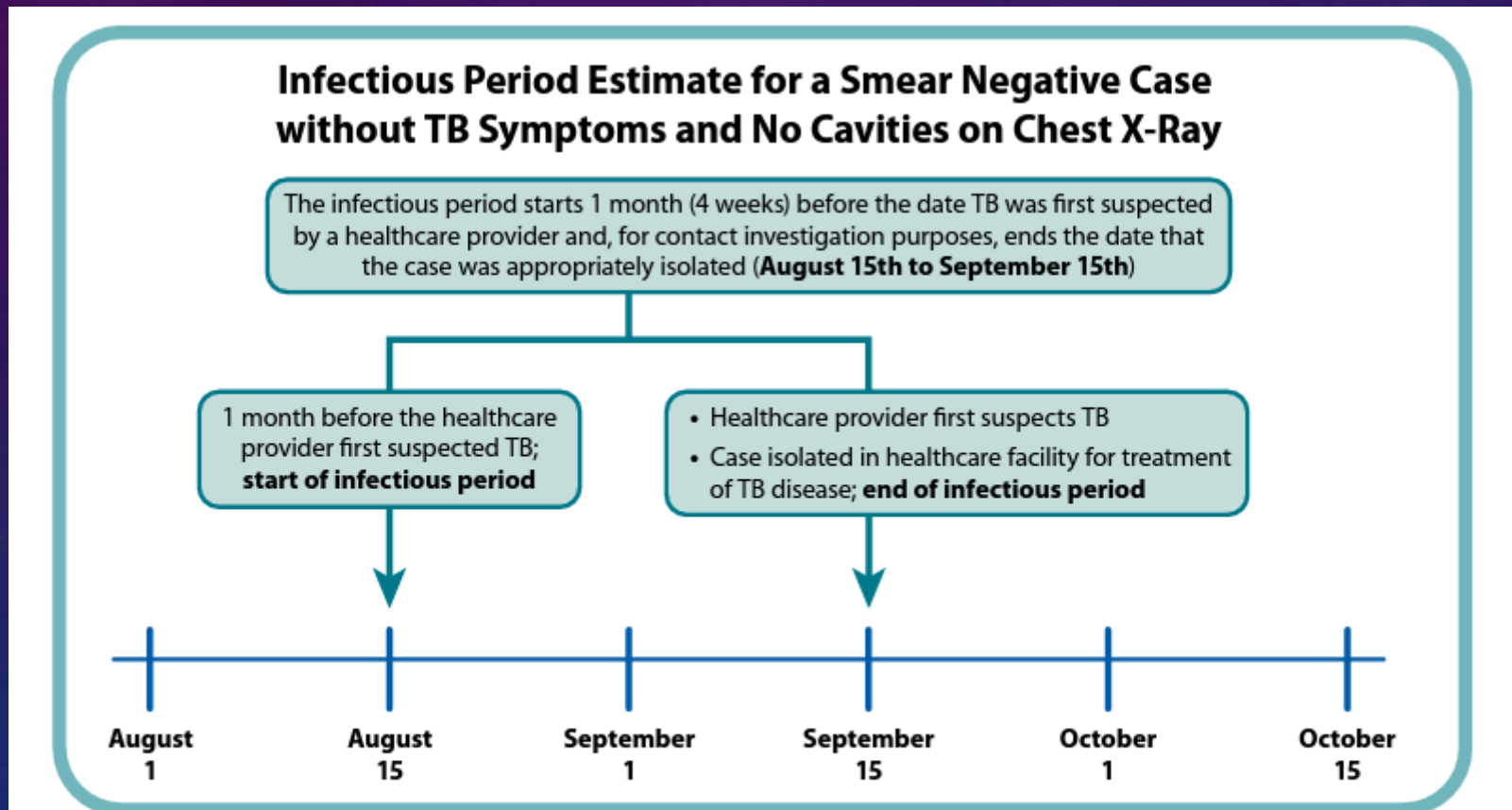


Figure 8.2—Example of determining an initial estimate of the infectious period for a smear negative case who does not have TB symptoms or a cavity on chest x-ray.



# END OF INFECTIOUS PERIOD



Effective treatment for > 2 weeks



Significantly diminished coughed  
if initially symptomatic



Biological end date

Three sputum smears negative  
for AFB collected > 8 hours apart



## BIOLOGICAL END DATE VS EXPOSURE BROKEN

- ❑ Bacteriologic response as evidenced by a decrease in grade of sputum smear positivity
- ❑ End date for purposes of contact investigation (community exposure broken)
  - ❑ Patient may still be infectious but is no longer in contact with those exposed

# EFFECTIVE CONTACT INVESTIGATION PROCESS



Building trust and rapport with the patient



Exchange information



Review exposure assessment



Compile list of contacts



Test for LTBI



Provide treatment and recommendations



Conduct follow up interview, if needed

# EFFECTIVE INTERVIEWING PROCESS

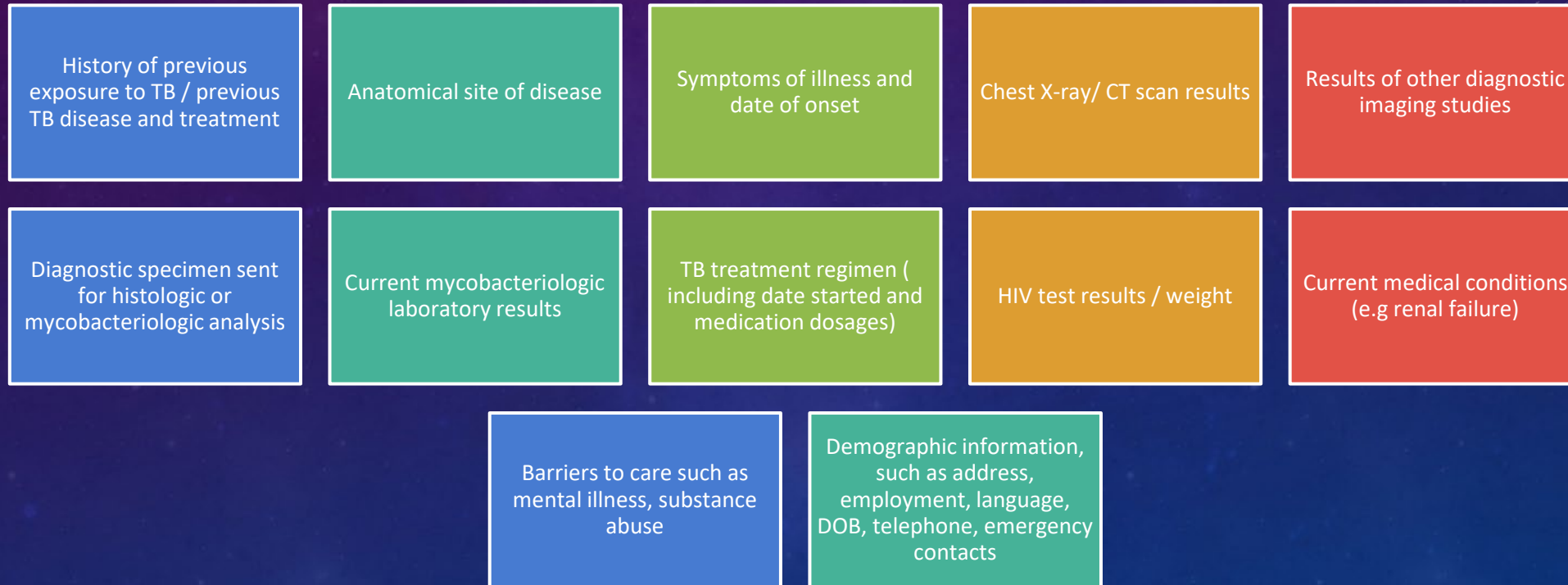
A minimum of two interviews is recommended

Listen to the concerns of the patient and never become obsessed with the information you are trying to gather

Always express appreciation for the opportunity to speak with the index case

The first priority in effective TB prevention and control program is treatment completion of an individual with active TB

# PRE-INTERVIEW PHASE ( RECORD REVIEW)



# INITIAL INTERVIEW



## Initial interviews

Initiated and conducted within one business 1 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



# INITIAL INTERVIEW

Provide	Provide education base on information collected during record review
Confirm, clarify or resolve	Confirm, clarify or resolve any discrepancies in the demographic information
Assess	Assess for presence of symptoms such as cough /hemoptysis and their onset
Determine	Determine if index case will be managed by a private physician or publicly
Provide	Provide information on what to expect when managed publicly

# PRIORITY FOR TESTING & EVALUATION OF CONTACTS

- Contacts sharing residence with index case
- Contacts at high risk for acquisition of LTBI
- Contacts at low risk for acquisition of LTBI





# ASSESSING PROBABILITY OF TRANSMISSION

Contact tracing priorities based on the following characteristics

- Person
- Place
- Time
- Contact



# POTENTIAL FOR TRANSMISSION OF TB

- A person with a sputum smear positive for Acid Fast Bacilli (AFB) or Nucleic acid amplification test (NAAT) positive for MTB or a culture positive for MTB
- A person with cavitation on a chest radiography or clinical findings indicative of pulmonary tuberculosis
- A person whose chest radiography or respiratory symptoms improve on anti-tuberculosis medication
- A person with respiratory symptoms indicative of pulmonary TB



# FACTORS ASSOCIATED WITH INFECTIOUSNESS

**Table 8.2—Factors Associated with Infectiousness and Noninfectiousness**

Factors Associated with More Infectiousness	Factors Associated with Less Infectiousness
Presence of a cough	No cough
Cavity in the lung	No cavity in the lung
Acid-fast bacilli on sputum smear	No acid-fast bacilli on sputum smear
TB of the lungs, airway, or larynx	Most extrapulmonary (non-respiratory) TB
Patient not covering mouth or nose when coughing	Patient covering mouth or nose when coughing
Not receiving adequate treatment or having prolonged illness	Receiving adequate treatment for 2 weeks or longer
Undergoing cough-inducing procedures	Not undergoing cough-inducing procedures
Positive sputum cultures	Negative sputum cultures

For more information on infectiousness, see *Module 5, Infectiousness and Infection Control*.

# INDIVIDUALS AT RISK FOR RAPID PROGRESSION TO TB DISEASE

HIV infection

On corticosteroid therapy (equivalent of > 15mg/day of prednisone for >1 mon)

On tumor necrosis factor (TNF) alpha blocker therapy

On renal dialysis (end stage renal disease)

With cancer of the head or neck

On cancer chemotherapy

Children under the age of 5 years

# TRANSMISSION OF MTB IS LIKELY TO OCCUR UNDER THESE CONDITIONS

- Settings Where Transmission of M. tuberculosis is Likely Another factor to consider when prioritizing among contact investigations is the setting in which transmission may have occurred.
- Transmission is more likely if there is a high concentration of M. tuberculosis in the air.
- The concentration of bacteria in the air is affected by the setting's
  - Size
  - Ventilation
  - Air Cleaning System
- Time spend in a setting with infectious patient



# CONGREGATE SETTING

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.

# CONGREGATE SITE OR SETTING

Residential living  
or treatment  
facility

Nursing home

Hospice

Jail / Prison

Shelter

Workplace

Childcare center

School

# OBJECTIVES OF CONGREGATE SITE ASSESSMENT

Meet	Meet with appropriate authorities to identify potential contacts
Provide	Provide education to authorities and potential contacts
Minimize	Minimize anxiety due to exposure
Assess	Assess contact status and individual risk for exposure
Build	Build credibility and maintain control identifying individuals determined to be contacts at high risk and proceeding to low-risk contacts



# 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

# MAINTAINING CONFIDENTIALITY

Confidentiality must be preserved in the following

- Performing contact investigations
- Collecting and analyzing data
- Conducting program evaluation
- Referring patients to other jurisdictions



# FUNDAMENTALS OF PATIENT RIGHTS

## Patient Rights

Basic rules of conduct between patients and any health care personnel involved in medical evaluation, treatment, or management of the patient.

## Health care personnel

Any person managing the care of a TB patient.

- Respecting patient rights ensures a successful patient-health care personnel relationship.
- Maintaining confidentiality is a key component of this relationship.

# MAINTAINING CONFIDENTIALITY

## Confidentiality

Protecting all patient information, including patient records and information discussed or identified during patient-health care personnel encounters.

- Strong patient-health care personnel relationship is built on trust and protection of confidentiality
- Revealing personal information to others without the patient's permission can threaten the patient's trust in health care personnel
  - May result in serious consequences
- Health care personnel are responsible for protecting patient information
  - They should become familiar with the confidentiality laws in their jurisdiction

# DETERMINING WHEN TO EXPAND A CONTACT INVESTIGATION

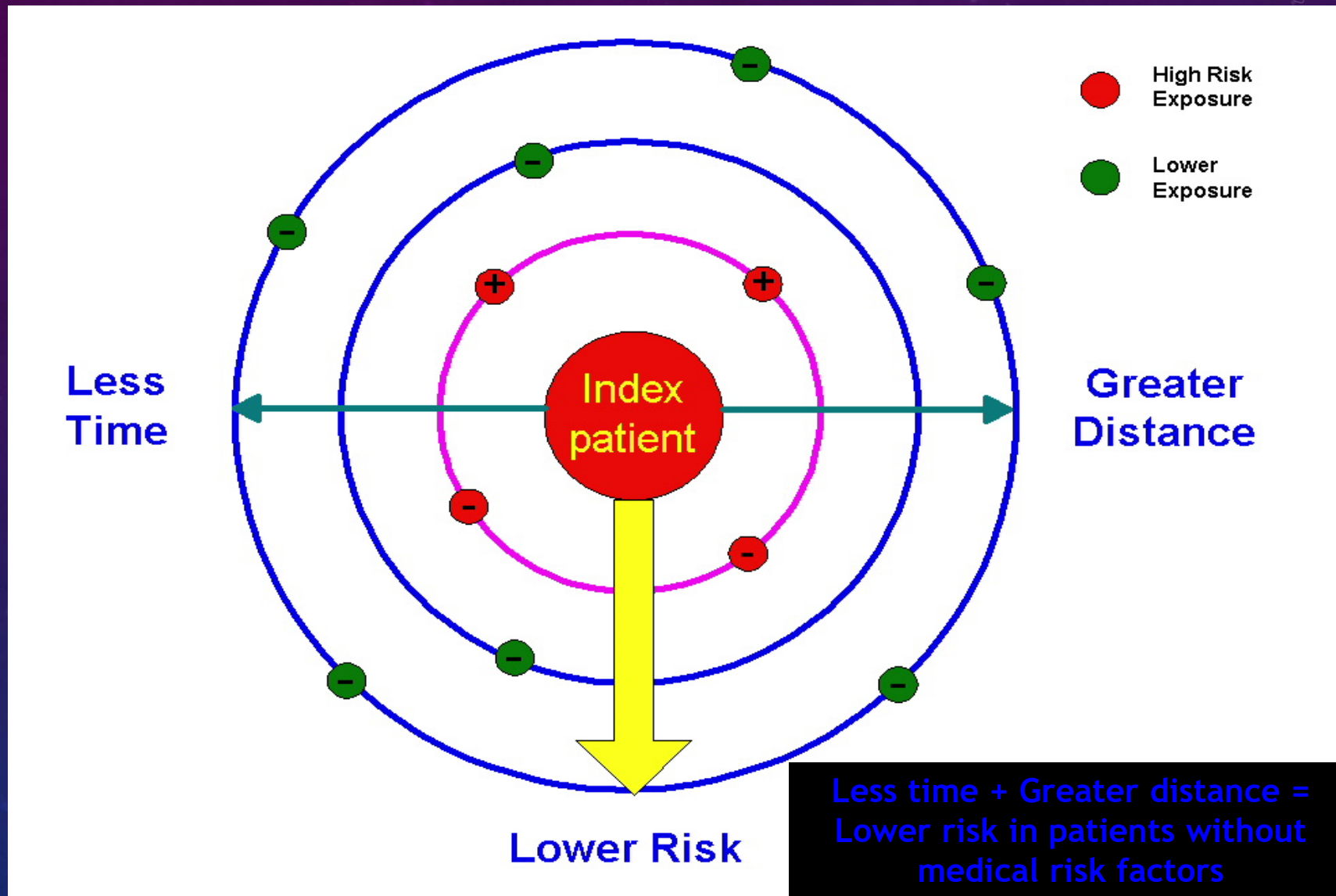
- Consideration of the following factors is recommended
  - Achievement of program objectives with high risk contacts
  - Extent of recent transmission in identified contacts
    - Unexpected high rate of positive TSTs/IGRAs or
    - Evidence of secondary cases or
    - Transmission to contacts aged <5 or
    - Documented TST/IGRA conversions or
    - Change in TST status from negative to positive
      - In absence of recent transmission investigation should not be expanded

# 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

# Concentric Circle Model in TB Control Identifying Contacts at Risk of Exposure



# 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



# CLOSURE OF INVESTIGATION

- Consistent with local health department standards of practice for closing a contact investigation
  - Dependent upon conclusion of all initial and post exposure testing, medical evaluations, and completion of latent treatment of all appropriate contacts

**Thank you!**

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