

Transmission of TB

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TB Updates for the Community: Partnering to Eliminate TB
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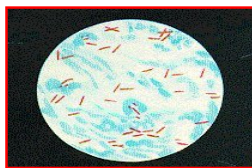
Objectives

- ▶ Explain Transmission and Pathogenesis of Tuberculosis
- ▶ Probability of Transmission and Likelihood of Infection
- ▶ Differentiate Between
 - Latent TB Infection (LTBI)
 - TB Disease
- ▶ Risk Factor for Progression to TB Disease



Tuberculosis

- ▶ Caused by Mycobacterium tuberculosis complex
 - M. tuberculosis
 - M.bovis
 - M. Africanum
 - M.Microtti
- ▶ Atypical mycobacterium
 - NTM, MOTT
 - Mycobacterium Kansasi, M.avium



Positive
AFB Smear

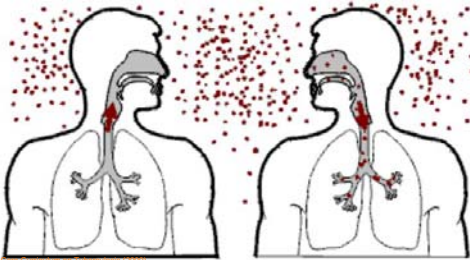
How Are TB Germs Spread By Contagious Person?



- Coughs
- Sneezes
- Shouts
- Sings

You can get TB infection if you spend a lot of time indoors with this person

How TB Is Transmitted From One Person to Another



TB Germs Can Not Be Spread With

- Brief contact
- Sharing dishes and utensils
- Using towels and linens
- Handling food



Probability of Transmission and Likelihood of Infection

What is the Probability TB Will Be Transmitted?

- ▶ Infectiousness of person
with TB
- ▶ Susceptibility of contact
- ▶ Duration of exposure

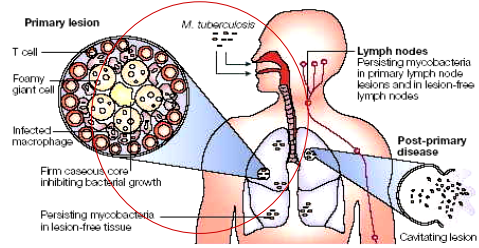


Ventilation and Size of Space Determines Probability of Transmission

- ▶ Concentration of
droplet nuclei in air
(Environment)
- ▶ Majority of contacts
do not become
infected



Latent TB Infection (LTBI)



Balasubramanian et al., 1994

Criteria for LTBI Diagnosis

- ▶ Positive TST
- ▶ Asymptomatic
- ▶ Normal CXR and physical examination
- ▶ **NOT infectious**

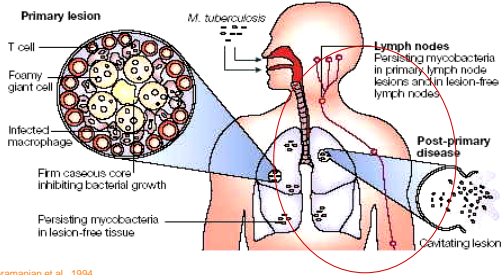


How is LTBI Diagnosed?

- ▶ Using TST
- ▶ TST will become positive
 - Within 2–10 weeks



Active Tuberculosis Disease



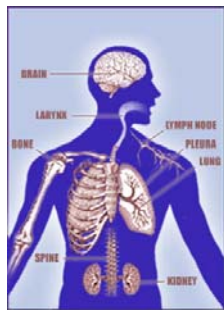
Balasubramanian et al., 1994

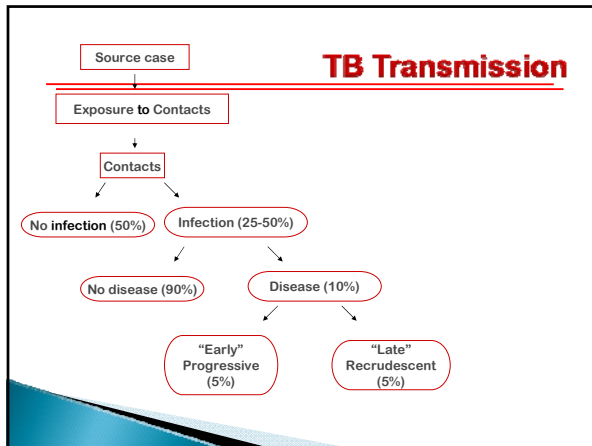
Diagnostic Criteria for TB Disease

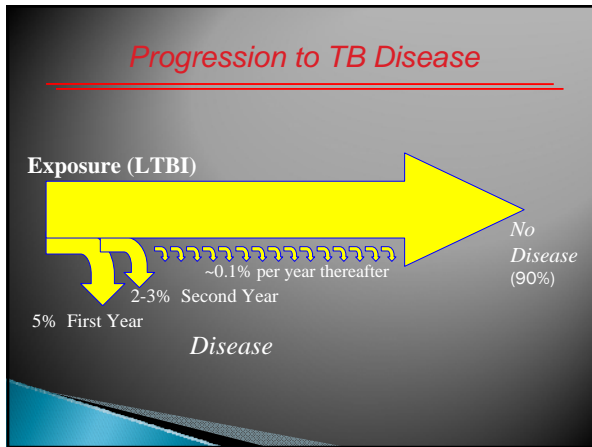
- ▶ Symptoms
 - Cough
 - Night sweats
 - Loss of appetite
 - Fever/chills
 - Fatigue
 - Weight loss
- ▶ Abnormal CXR and/or physical examination
- ▶ Positive AFB smears and/or cultures
- ▶ **MAY BE INFECTIOUS** until adequately treated
- ▶ TST may be positive or negative



Potential Sites of TB Disease







Comparison of Latent TB Infection and TB Disease

<u>TB Infection (LTBI)</u>	<u>TB Disease (Active)</u>
- Skin test positive	- Skin test positive or negative
- CXR normal	- CXR abnormal
- No signs or symptoms	- Positive smears/cultures
- NOT infectious	- Signs/symptoms
	- Infectious

Risk Factors: Who gets TB?

Anyone is susceptible

Risk Factors for TB

- HIV-infected
- Substance abusers (IVDU)
- Homeless
- Inmates in jail and prisons
- Other immune-compromised persons



Other Risk Factors for TB

- Children < 5 years of age
- Health Care Workers
- Elderly, especially in nursing homes
- Immigrants from high prevalence countries



Summary

- ▶ **Transmission and Pathogenesis of Tuberculosis**
 - Airborne disease
 - Majority of contacts do not become infected
- ▶ **Probability of Transmission dependent on:**
 - Infectiousness
 - Susceptibility of the contact
 - Duration of exposure
 - Environment

Summary

- ▶ **Differentiate Between**
 - Latent TB Infection (LTBI)
 - Not contagious
 - No symptoms
 - TB Disease
 - Contagious
 - Symptomatic
- **Highest Risk Factors for Progression to TB Disease**
 - HIV and immune-compromise patients
 - Homeless
 - Drug users
 - Children (< 5 years of age)
 - Immigrants
 - Health Care Workers
 - Living in congregate Settings

Questions?
