PREVENTION OF TUBERCULOSIS

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- 25 to 50 % of persons exposed to intimate contact with active PTB - latent infection with TB.
- Exposure to index case for ≥ 12 hours - high risk of infection.
- Immunosuppressed persons - increased risk of infection and active disease compared with immunocompetent.

Risk factors

- History of positive PPD test
- TB exposure
- Travel or emigration from a TB endemic area
- Exposure in relatively small, enclosed spaces
- Lack of adequate ventilation
- Substance abuse
- Silicosis
- Advanced age

Risk factors

- HIV
- Diabetes mellitus
- Low body weight
- Organ transplants
- Corticosteroids/ immunosupressants
- End-stage kidney disease
- Cancer chemotherapy
- Advanced age

Prevention

- Administrative controls reduce patient exposure
- Environmental controls reduce concentration of infectious droplet nuclei
- Personal respiratory protection protects in areas where concentration of droplet nuclei cannot be adequately reduced by other means.

Prevention

- Administrative control: Early diagnosis of potentially infectious TB patients, prompt isolation of patients, prompt initiation of ATT
- Environmental control: Proper ventilation in rooms of patients, controlling direction of airflow, use of air filtration and ultraviolet germicidal irradiation
- Personal control: personal respiratory protective devices

TB prevention - the BCG vaccine

- Freeze-dried preparation from living culture of Calmette-Guerin attenuated strain of M. bovis
- Local tissue response begins 2–3 weeks after vaccination, with scar formation and healing within 3 months
- Side effects—ulceration at vaccination site and regional lymphadenitis (1–10%)
- Vaccines vary in efficacy (80% to 0%)

BCG Vaccination

- Does not reduce the risk for infection
- Does decrease risk for progression from latent TB infection to active TB, especially disseminated or CNS disease in children
- Induces TST reactivity - tends to wane with time
- Presence or size of TST reactions after vaccination does not predict the degree of protection afforded
- Recommended for routine use at birth in countries with high tuberculosis prevalence
- HIV-infected adults and children should not receive BCG vaccine

Latent Tuberculosis Infection

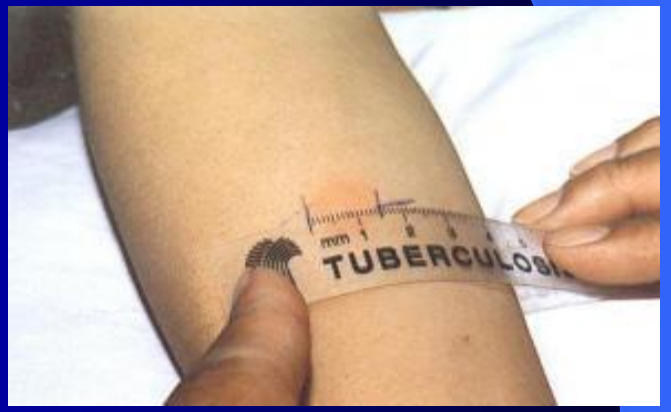
Latent TB Infection	TB Disease
M. tuberculosis in the body	
Tuberculin skin test reaction usually positive	
No symptoms	Symptoms such as cough, fever
Chest x-ray usually normal	Chest x-ray usually abnormal
Sputum smears and cultures negative	Sputum smears and cultures usually positive
Not infectious	Often infectious before treatment
Not a case of TB	A case of TB

Latent Tuberculosis Infection: Chemoprophylaxis

- Treatment of selected persons with LTBI aims at preventing active disease
- 6- to 12-month course of INH reduces risk of active TB in infected people by - 90%
- In absence of reinfection, protective effect is believed to be lifelong
- Most candidates for Rx of LTBI are identified by TST / IGRA in defined high-risk groups

Tuberculin Skin Testing (TST) Mantoux method

- 5 tuberculin units of polysorbate-stabilized PPD should be injected intradermally into the volar surface of the forearm
- Reactions are read at 48–72 h as transverse diameter (in mm) of induration
- Diameter of erythema is not considered



Tuberculin Reaction Size and Treatment of LTBI

Risk Group	Tuberculin Reaction Size, mm
HIV-infected /immunosuppressive therapy	≥ 5
Close contacts of tuberculosis patients	≥ 5
Recently infected persons (2 years)	≥ 10
Persons with high-risk medical conditions	≥ 10
Low-risk persons	≥ 15

Treatment of LTBI

- Tuberculin-negative contacts, especially children & infants, should receive prophylaxis for 2–3 months after contact ends and should then undergo repeat TST.
- Those whose results remain negative should discontinue prophylaxis.
- HIV-infected contacts should receive a full course of treatment regardless of TST results.

Revised Drug Regimens for Treatment of LTBI in Adults

Drug	Interval and Duration	Comments
Isoniazid	Daily for 9 months	
Isoniazid	Daily for 6 months	Regimen not indicated for HIV-infected persons, those with fibrotic lesions on CXR or children.
Rifampin	Daily for 4 months	Regimen is used for contacts of patients with INH-resistant, rifampin-susceptible TB.

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