Pulmonary Tuberculosis
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Definition

*Tuberculosis* – is a contagious bacterial infection of the lungs caused by Mycobacterium Tuberculosis (TB)

Etiological Agent:

- Mycobacterium Tuberculosis
- Mycobacterium Bovis
- Mycobacterium Avium
Epidemiology

TB Morbidity Trend in the US

- From 1953 to 1984, reported cases decreased by an average of 5.6%.
- From 1985 (22,201) to 1992 (26,673), reported TB cases increased by 20%.
- From 1993 reported TB cases declines to more than 43% in the year 2002 (15,078).

Factors Contributing to the Increase in TB Morbidity: 1985-1992

- Deterioration of the TB public health infrastructure.
- HIV/AIDS epidemic.
- Immigration from countries where TB is common.
- Transmission of TB in congregate setting (e.g., health care facilities, correctional facilities, homeless shelters).
Factors Contributing to the Decrease in TB Morbidity since 1993

Increase efforts to strengthen TB control programs that
* Promptly identify persons with TB
* Initiate appropriate treatment
* Ensure completion of therapy

Factors Contributing to the Decrease in TB Morbidity since 1993

- Caused by: Mycobacterium tuberculosis
- Spread by: Airborne route, Droplet nuclei
- Affected by: Infectiousness of patient, Environmental condition, Duration of exposure
- Most person exposed do not become infected

Tuberculosis Transmission

- Inhaled droplet nuclei with M. tuberculosis
  - Reach alveoli
  - Are taken up by alveolar macrophages
  - Reach regional lymph nodes
  - Enter bloodstream and disseminate
- Chest Radiography may have transient abnormalities
- Specific cell-mediated immune response controls further spread

Pathogenesis

Latent M. Tuberculosis Infection
Latent M. Tuberculosis Infection

- Tuberculin skin test usually positive at 2-10 weeks
- Tubercle bacilli may remain dormant but viable for many years
- No symptoms of active TB disease
- Not infectious
- Usually no progression in 90% of persons

Latent M. tuberculosis infection progresses to active TB in
- A very small number of persons soon after infection (primary progression)
- About 5% of infected persons within first 2 years after infection
- About 5% of infected persons at sometime later in life

Risk of progression greatest in first 2 years after infection
Risk greater if cell-mediated immunity impaired

Active TB Disease

- Produces symptoms (e.g. cough, fever, night sweats)
- May be infectious
- Is both treatable and preventable
Characteristics of TB Patients that Enhance Transmission

- Disease in the lungs, airways, or larynx
- Presence of cough or other forceful expiratory measures
- Presence of acid-fast bacilli (AFB) in the sputum
- Failure of the patient to cover the mouth and nose when coughing or sneezing

Characteristics of TB Patients that Enhance Transmission

- Presence of cavitation on chest radiograph
- Inappropriate or short duration of therapy
- Administration of cough-inducing or aerosol-generating procedures

Environmental Factors that Enhance the Likelihood of Transmission

- Exposure in relatively small, enclosed spaces
- Inadequate local or general ventilation
- Recirculation of air containing infectious droplet nuclei
Initially not apparent, or limited to minor cough and mild fever
Fatigue
Weight loss
Coughing out of blood
Fever and night sweats
Cough producing phlegm

Wheezing
Sweating, excessive
Chest pain
Breathing difficulty

To relieve pulmonary and systemic symptoms
To return the patient to health, work, and family life as quickly as possible
To prevent transmission
Chemotherapy
- Therapy for 6 to 12 months
- First-line medications: isoniazid (INH), rifampicin (RIF), streptomycin (SM), ethambutol (EMB), and pyrazinamide (PZA) for 4 months, with INH and RIF continuing for an additional of 2 months

Second-line medications: capreomycin, kanamycin, ethionamide, para-aminosalicylate sodium, amikacin, cyclizine
- Patient is considered non-infectious after 3 to 3 weeks of continuous therapy
- Vitamin B₆ (Pyridoxine) usually administered with INH

Nursing Goals to patient with Pulmonary TB
- Knowledge about the disease and treatment regimen: Requires good patient teaching and understanding by patient and family
- Adherence to the medication regimen
- Increased activity tolerance
- Absence of complication
Continued Nursing Goals

- Prevent spread of infection:
  - Mouth care
  - Covering mouth and nose when coughing and sneezing
  - Proper disposal of tissue and good handwashing
  - Prevent sensory isolation
  - Improve oxygenation

- Promoting airway clearance
- Encouraging increased fluid intake
- Teach patient to take medication on empty stomach or 1 hour before meals (Food interferes with drug absorption)