

Nursing Perspective of TB Control

Satellite Conference and Live Webcast
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Faculty

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Other Names For Tuberculosis

- TB
- Consumption
- White Plague
- Phthisis
- Scrofula
- Potts Disease



What is TB?

- An airborne disease caused by Mycobacterium Tuberculosis
- Once the leading cause of death in United States
- Preventable and curable
- One - third of the world is infected
- Over 2 million die from TB each year

How is it Spread?

- Spread through the air when infectious people cough, sneeze, or speak
- Spreads easier in small closed spaces where air does not move

Probability TB Will Be Transmitted

- Infectiousness of the person with TB
 - Symptoms such as cough
- Environment where exposure occurred
- Duration of exposure
- Virulence of the organism
 - Some “bugs” are more aggressive



TB Exposure

- Exposure occurs from being in **VERY CLOSE CONTACT** with someone who is sick with TB
 - Breathing the same air



Exposure What Happens Next?

- Infection
 - Healthy immune systems fight off the bacterial infection, so the person doesn't get sick. This is: **Latent TB Infection (LTBI)**, which occurs in **90%** of those infected

Exposure What Happens Next?

- Disease
 - Immuno-suppressed immune systems are unable to fight off the bacterial infection and so the bacteria thrive and progress to active TB disease
 - This occurs in about **10%** of those infected

Differences Between LTBI and TB Disease

- LTBI
 - Positive TB skin test
 - Normal chest X-ray
 - No symptoms
 - Cannot transmit to others
 - May be treated preventively

Differences Between LTBI and TB Disease

- TB Disease
 - Positive TB skin test
 - Abnormal chest X-ray
 - Has symptoms
 - May transmit to others
 - May be treated and cured

Common Sites of TB Disease

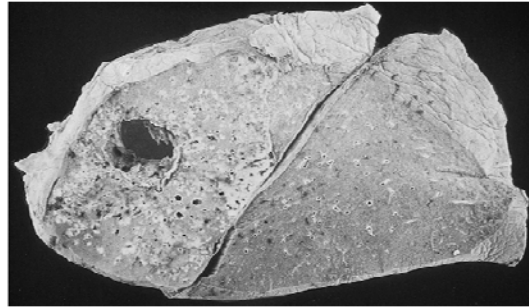
- Lungs (85% of the time)
- Pleura
- Central nervous system (Meningitis)
- Lymphatic system
- Genitourinary systems
- Bones and joints
- Disseminated (miliary TB)

Most Common Site for TB Disease

- Lungs . . . note cavity below

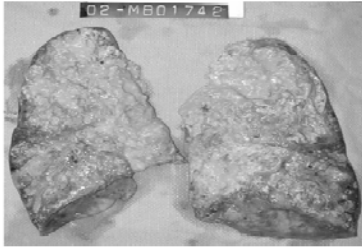


Cavitary Lesion from TB



Casating Granulomous Lung Tissue

- Milky yellow substance like cottage cheese



TB Disease Knee Joint with Open Draining Leg Wound



Persons at Higher Risk for Exposure to TB

- Close contacts of persons known or suspected to have TB
- Unemployed / minority populations / foreign - born people where TB is common
- Residents and employees of high risk congregate settings

Persons at Higher Risk for Exposure to TB

- Health care workers and first responders who serve high risk clients

Conditions That Increase the Risk of Progression to TB Disease

- Recent TB infection
 - 10% within 2 years of exposure
- HIV infection
- Substance abuse
- Diabetes, silicosis, cancer of head or neck, intestinal bypass

Conditions That Increase the Risk of Progression to TB Disease

- Prolonged corticosteroid therapy
- Other immunosuppressive therapy
- Age
 - Very young or very old

Protection: Cover Your Cough

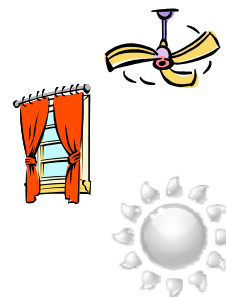


TB patient wears paper mask



Keep Windows Open: Ventilate and Circulate Air

- TB cannot spread outside or in fresh air
- Ultraviolet light kills TB germs



TB Germs are NOT Spread By Handling

- Bedding
- Rubbish
- Clothes or towels
- Food



Health Care Workers Wear an N-95 Mask

- Proper fit testing is needed annually
- Get the right size
- No gaps
- Filters out germs



Tools For TB Diagnosis

- **Bacteriology**
 - Acid Fast Bacilli (AFB) Smear
 - PCR (rapid test) for +AFB Smear Specimens
 - Culture (6 - 8 weeks)
- **Chest X-ray (PA / Lat)**
- **Tuberculin Skin Test (TST)**

Tools For TB Diagnosis

- **Blood Assay for M. tuberculosis (BAMT) Bacteriology**
 - Quantiferon TB Gold
 - QFT - TB Gold
 - T - Spot

Caution!

- **Tuberculin Skin Test (TST) should not be the first test to diagnose disease**
 - It is the test for latent tuberculosis infection
 - Can be used to help support that the patient was infected with TB

Testing For Contacts to TB Cases or TB Suspects

- **Concentric circle method and priority model used to determine who needs testing**
- **T - Spot is preferred or place a TST as soon as contact is identified**
- **5 mm induration considered positive TST**

Testing For Contacts to TB Cases or TB Suspects

- **Second test (T-Spot or TST) done in 10-12 weeks (if first test negative) due to incubation period**

Measuring A Positive TB Skin Test What Really Matters?

- **Measure induration or raised area only**
- **Do not include areas of redness outside the indurated area**
- **Record reading using millimeters (mm)**

Measuring A Positive TB Skin Test What Really Matters?

- Anterior Forearm



Factors Impacting TST Readings: Positive Results

- >5mm = + risk factors
 - Contact, HIV/AIDS, Immunosuppressive therapy, Cancer, Renal Disease, Abnormal CXR, IV Drug Abuser

Factors Impacting TST Readings: Positive Results

- >10mm = + risk factors
 - Foreign born, substance abuser, congregate settings (jail / prison, nursing home), Elderly >70, Healthcare Workers, Low Income (homeless), Medical Conditions (Diabetes, Post Gastrectomy, Corticosteroid Therapy, Silicosis)

Factors Impacting TST Readings: Positive Results

- >15mm = + risk factors
 - General population
 - With no known risk factors listed above

TB Skin Testing Using Two - Step Method

- Use two step testing for the initial skin testing of adults who will be retested periodically
- If first test is positive, consider the person infected
- If first test is negative, repeat in 1-3 weeks

TB Skin Testing Using Two - Step Method

- If second test is positive, consider the person infected
- If second test is negative, consider the person uninfected

Starting Therapy

- **Initial visit / Baseline:**
 - **Skilled assessment**
 - **Symptom review**
 - **Weight**
 - **Vision screening**
 - **Red / green color blindness and acuity**

Starting Therapy

- **Sputum collection**
 - **Daily 3 consecutive days**
- **Laboratory testing**
- **T - Spot**
 - **Mailer provided by Oxford Lab**
- **HIV**
- **Liver Function Test (LFTs)**
- **CBC**

Monitoring Therapy: Sputum Samples

- **Sputum smears**
 - **Initial 3 specimens**
 - **Ideally over 3 consecutive days**
 - **Weekly for SMEAR + after 3 consecutive NEGATIVES, then**
 - **Monthly until the end of therapy**

Monitoring Therapy: Sputum Samples

- **Sputum cultures (same as above)**
 - **Monthly until the end of therapy**
 - **Failure to convert cultures in a timely manner is an indication to extend therapy**

Monitoring Therapy: Chest X-ray

- **Chest X-rays**
 - **Baseline for all TB cases / patients**
 - **Interim 2 - 3 months into therapy**
 - **Closing CXR at end of therapy**

Monthly Monitoring

- **Monthly**
 - **Face-to-face skilled assessment (RN or MD)**
 - **Symptom review / side effects of treatment**
 - **Vision screenings while on EMB**
 - **Weight**

Monthly Monitoring

- Sputum collection for AFB smear and culture during treatment
- Additional laboratory testing requested by physician or as indicated by patient's medical condition

Treatment for TB: Therapy I General Principles

- Use Rifampin (R) Isoniazid (I), Pyrazinamide (P), and Ethambutol (E) together
 - These drugs are the basis of modern short - course (6 - month) therapy
- Always treat with a multiple drug regimen (RIPE)

Treatment for TB: Therapy I General Principles

- Never add a single drug to a failing regimen
- Determine the duration of therapy based on the drugs used
- Partnering with the Alabama Department of Public Health (ADPH) will facilitate directly observed therapy (DOT) for all patients

RIF (Rifampin)

- Rifampin (RIF)
 - Excellent intracellular killing of both active and quiescent organisms
 - Required to shorten therapy to <12 months
 - Increasing evidence for efficacy in the latent stage

INH (Isoniazid)

- Isoniazid (INH)
 - Good killing of actively dividing organisms
 - Documented efficacy in the latent stage

PZA (Pyrazinamide)

- Pyrazinamide (PZA)
 - Good killing of actively dividing organisms in an acidic environment
 - Decreasing effect after first 2 months of therapy
 - Required to shorten therapy to 6 months

EMB (Ethambutol)

- Ethambutol (EMB)
 - Bacteriostatic only
 - Provides extra agent in case of resistance

Diagnosing Tuberculosis

- 81% of all Alabama's cases in 2012 were confirmed by AFB culture
- Can be culture negative and still considered a clinical case
 - 19% of all Alabama's cases in 2012
- A negative TST should not deter diagnosis

Diagnosing Tuberculosis

- Delayed diagnosis occurs often, resulting in a greater chance of secondary cases
- 138 cases were reported in Alabama in 2012

Public Health Laws

- Tuberculosis is a notifiable disease
 - Healthcare workers, hospital administrators, correctional facilities, patient-transport workers, medical examiners, nursing-home administrators, laboratory authorities, pharmacists, school authorities, daycare facilities, emergency medical service employees
- Confirmed or suspected cases must be reported within 24 hours

TB and HIPAA (45-CFR-164.512)

- 45 CFR – 164.512 uses and disclosures for which consent, an authorization, or opportunity to agree or object is not required:
 - (b) Standard: uses and disclosures for public health activities

TB and HIPAA (45-CFR-164.512)

- (1) Permitted disclosures
 - A covered entity may disclose protected health information for the public health activities and purposes describes in this paragraph to:

TB and HIPAA (45-CFR-164.512)

- (i) A public health authority that is authorized by law to collect or receive such information for the purpose of preventing or controlling disease, . . . and the conduct of public health surveillance, public health investigations, and public health interventions; or, at the direction of a public health authority . . .

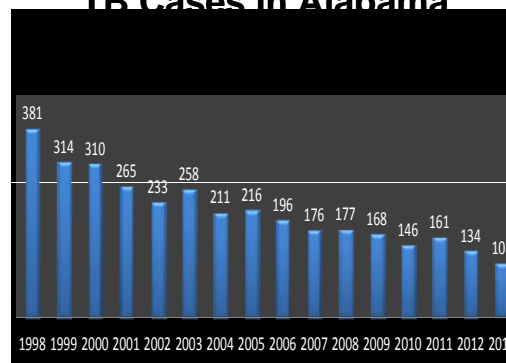
TB Control

- The Division of TB Control has the responsibility to assure that training, education, and services are available for the identification, diagnosis, and treatment of tuberculosis
- Health care workers are encouraged to begin collaborative efforts with TB control staff in their area

TB Control

- Both immediate and long - term gains can be achieved as we work together to protect the public, our staff, and those in our care

TB Cases in Alabama



A Global Perspective

- One - third of the world's population is infected with TB
- Each year, 9 million people around the world become sick with TB
- Each year, there are over 2 million TB - related deaths worldwide
- TB is the leading killer of people who are HIV infected
- 10,528 cases were reported in the United States in 2011

For More Information

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