WHAT IS TB?

TB is a disease caused by a bacterium called Mycobacterium tuberculosis (M. tuberculosis).

The bacteria usually attack the lungs, but can attack any part of the body such as lymph nodes, bones and joints, the brain and other organs.

- If TB is treated properly, most people can be cured of TB
- If TB is NOT treated properly, people can die from TB or develop drug-resistant forms of TB
TRANSMISSION OF M. TUBERCULOSIS

- *M. tuberculosis* spread via airborne particles called droplet nuclei
- Expelled when person with infectious TB coughs, sneezes, shouts, or sings
- Transmission occurs when droplet nuclei inhaled and reach the alveoli of the lungs, via nasal passages, respiratory tract, and bronchi
TB HISTORY

• Caused by Mycobacterium tuberculosis
• Found in Egyptian mummies, circa 2400 BC
• Around 460 BC, Hippocrates termed the disease phthisis or “consumption”
  • “almost always fatal”
  • “most widespread disease of the time”
PUBLIC HEALTH THREAT IDENTIFIED

• An edict issued by the Republic of Lucca (central Italian peninsula), 1699:
  • “Henceforth, human health should no longer be endangered by objects remaining after the death of a consumptive. The names of the deceased should be reported to the authorities, and measures undertaken for disinfection”
1720- Benjamin Marten theorized the TB could be caused by “Wonderfully minute living creatures…..It may be therefore very likely that by an habitual lying in the same bed with a consumptive patient, constantly eating and drinking with him, or by very frequently conversing so nearly as to draw in part of the breath he emits from the lungs, a consumption may be caught by a sound person”
Dr. Herman Brehmer

- Developed TB, was told to find a healthier climate, so he traveled to the Himalayan mountains, where he became cured of TB
  - 1854- submitted his doctoral dissertation- “Tuberculosis is a Curable Disease”
  - Codified the concept of the “Sanatoria” in 1863
  - Exposed to “continuous fresh air” and “good nutrition”
AND THE BALL SLOWLY STARTED ROLLING....

• 1865-French Military doctor (Jean-Antoine Villemin) found that consumption could be passed from humans to cattle and from cattle to rabbits.....
• Previous to this, it was believed that consumption arose *spontaneously* in each affected organism
• 1882- Robert Koch- stained M. Tuberculosis
HOWEVER,

- Treatment still centered around the sanatoria, where rest and proper nutrition was the main tool used to combat the infection
  - Isolated the sick
  Circa 1800- early 1900s, other cures included lung collapsing, artificial pneumothorax, surgical limiting of the lung, and radiation
1940-60s- STREPTOMYCIN, AND OTHER DRUGS

• Previously, other drugs had been available, but were too toxic to use on animals or humans
• Streptomycin became THE front line drug in the fight against TB
• Quickly, TB became streptomycin resistant, but it was found that two or more drugs would overcome this problem
GLOBAL THREAT

Although TB is preventable and treatable, it is not just a disease of the past. It is still one of the world’s deadliest diseases.

An estimated **2 billion people**, or one third of the world's population, are infected with *M. tuberculosis*.

- Each year, approximately
  - 9 million people develop TB disease
  - 1.4 million people die of TB disease
GLOBAL RESURGENCE

Contributing factors:

• Inadequate funding for TB control programs
  HIV epidemic

• Increased immigration from countries where TB is common

• Spread in homeless shelters and correctional facilities

• Increase and spread of multidrug-resistant TB
HIGH-RISK GROUPS FOR TB INFECTION FOREIGN-BORN/IMMIGRANTS

In the U.S., LTBI and TB disease often occur among people born in areas of the world where TB is common:

- Asia
- Africa
- Russia
- Eastern Europe
- Latin America

The pie chart shows the percentage of high-risk groups:
- Mexico (23%)
- Philippines (11%)
- India (8%)
- Vietnam (8%)
- Guatemala (3%)
- Haiti (3%)
- Other Countries (38%)
UNITED STATES

• TB disease was once the leading cause of death in the United States. After the discovery of drugs that could treat TB in the 1950s, death rates began to drop dramatically.

• TB is still a problem in the United States
  • Approximately 9 to 14 million people are infected with M. tuberculosis
  • In 2010, over 11,000 people developed TB disease
FIGURE 2. Number and rate of tuberculosis (TB) cases among U.S.-born and foreign-born persons, by year reported — United States, 1993–2011*

Source: National Tuberculosis Surveillance System.
* Data are updated as of February 22, 2012. Data for 2011 are provisional.
Percentage of TB Cases Among Foreign-born Persons, United States®

2000

2010

≥50%
25%–49%
<25%

*Updated as of July 21, 2011*
In Texas:

- 51.3 percent of reported TB cases in 2010 were among Hispanics
- 18.4 percent were among African Americans,
- 14.8 percent were among Whites, 14.8 percent were among Asians
- 0.7 percent were among persons of unknown ethnicity

TB rates are higher along the Texas-Mexico border.
## TEXAS COUNTIES

<table>
<thead>
<tr>
<th>County</th>
<th>2007 Cases</th>
<th>2008 Cases</th>
<th>2009 Cases</th>
<th>2010 Cases</th>
<th>2011 Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bexar</td>
<td>72</td>
<td>81</td>
<td>93</td>
<td>87</td>
<td>97</td>
</tr>
<tr>
<td>Cameron</td>
<td>74</td>
<td>55</td>
<td>48</td>
<td>50</td>
<td>37</td>
</tr>
<tr>
<td>Collingsworth</td>
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<td>0</td>
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<td>1</td>
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<tr>
<td>Dallas</td>
<td>218</td>
<td>220</td>
<td>195</td>
<td>188</td>
<td>206</td>
</tr>
<tr>
<td>Deaf Smith</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>El Paso</td>
<td>40</td>
<td>68</td>
<td>57</td>
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<td>37</td>
</tr>
<tr>
<td>Garza</td>
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<tr>
<td>Harris</td>
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<td>Lubbock</td>
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<td>Terry</td>
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<td>44</td>
<td>61</td>
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<td>52</td>
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</table>
## RISK FACTORS* AMONG TB CASES AGES 18+, TEXAS 2010

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign born</td>
<td>58%</td>
</tr>
<tr>
<td>Excess alcohol use</td>
<td>21%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>16%</td>
</tr>
<tr>
<td>Prison/Jail Inmate</td>
<td>11%</td>
</tr>
<tr>
<td>Non-injection drug use</td>
<td>9%</td>
</tr>
<tr>
<td>HIV positive</td>
<td>9%</td>
</tr>
<tr>
<td>Homeless</td>
<td>6%</td>
</tr>
<tr>
<td>Health Care Worker</td>
<td>3%</td>
</tr>
<tr>
<td>Injection drug use</td>
<td>2%</td>
</tr>
<tr>
<td>Migrant Farm Worker</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

*Note: Individuals can have more than one risk factor.*
TARGETED TESTING

- Used to identify and treat persons who are at high risk of developing TB, once infected with M. Tuberculosis
  - HIV/AIDS
  - Persons recently infected with M. Tuberculosis
  - Cigarette smokers
  - ETOH/Drug abusers
MEDICAL EVALUATION FOR TB

Medical History

Symptoms of pulmonary TB:
- Prolonged cough (3 weeks or longer), hemoptysis
- Chest pain
- Loss of appetite, unexplained weight loss
- Night sweats, fever
- Fatigue
MEDICAL EVALUATION

• Done anytime a pt. has a (+) Mantoux or IGRA test
  • Consists of five parts
    • Medical history
    • Physical exam
      • HIV test/counseling
    • Test for TB infection (TST or IGRA)
    • CXR
    • Bacteriological exam
      • NAA test
BACTERIOLOGICAL EXAM, CONT.

• AKA- how do we kill this thing?
  • Mono- resistant
    • Resistant to one TB treatment drug
  • Poly-resistant
    • Resistant to at least two TB treatment drugs (but not both isoniazid and rifampin)
  • MDRTB
    • Resistant to both isoniazid and rifampin
  • XDR-TB
    • Resistant to both of the above, plus any fluoroquinolone and at least one of three injectable second line drugs
TB S/S

- Fatigue
- Malaise
- Weight loss/loss of appetite
- Coughing
- Enlarged lymph nodes
- Night Sweats
MEDICAL EVALUATION FOR TB

Test for M. tuberculosis Infection

Two methods for detecting M. tb infection:

• TST and IGRAs
  • TST and IGRAs help differentiate persons with M. tb infection from those not infected
  • Negative reaction to either does not exclude diagnosis of TB or LTBI
IGRA

• Interferon-gamma release assays
  • QuantiFERON-TB Gold in Tube (QFT-GIT)
  • T-SPOT
    • Obtain a blood sample, send to lab
      • If pt. is infected with M Tuberculosis, the blood cells will release interferon-gamma in response to the test
CHEST X-RAY

- With active TB, classic cloudy CXR
  - Not conclusive, due to other disease processes that damage the lungs
  - If immunocompromised, CXR may appear normal
ADMINISTERING THE TST

- Inject 0.1 ml of PPD (5 tuberculin units) into forearm between skin layers

- Produce wheal (raised area) 6–10 mm in diameter

- Follow universal precautions for infection control
READING THE TST

- Trained health care worker assesses reaction 48–72 hours after injection
- Palpate (feel) injection site to find raised area
- Measure diameter of induration across forearm; only measure induration, not redness
- Record size of induration in millimeters; record “0” if no induration found
MANTOUX SKIN TEST

- Given SQ, between skin layers
  - Wait 24 hours, observe reaction (if any)
  - DO NOT care about or measure the red area
  - DO care about the swelling (Induration)
  - DO measure the induration (and the induration ONLY, not the red area)

Did the non-compliant patient miss the reading?
  - Must repeat the test

NOT effective with those who have taken the BCG vaccine—gives false positives.
WHAT CONSTITUTES A POSITIVE MANTOUX SKIN TEST? THAT DEPENDS…..

- CDC classification of tuberculin reaction: An induration (palpable raised hardened area of skin) of more than 5–15 mm (depending upon the person's risk factors) to 10 Mantoux units is considered a positive result, indicating TB infection.

- 5 mm or more is positive in
  - HIV-positive person
  - Recent contacts of TB case
  - Persons with nodular or fibrotic changes on CXR consistent with old healed TB
  - Patients with organ transplants and other immunosuppressed patients

  - A tuberculin test conversion is defined as an increase of 10 mm or more within a 2-year period, regardless of age.
WHAT CONSTITUTES A POSITIVE MANTOUX SKIN TEST? THAT DEPENDS…..

10 mm or more is considered positive for:

- People who have come into the US within the last 5 years from areas of the world where TB is common
- Injection drug users
- Residents and employees of high risk congregate settings
- Mycobacteria laboratory personnel
- Persons with conditions that increase risk for progressing to TB disease
- Infants, children and adolescents to adults in high-risk categories
WHAT CONSTITUTES A POSITIVE MANTOUX SKIN TEST? THAT DEPENDS.....

15 mm or more is considered positive in anyone, including persons with no risk factors
# LTBI VS. TB DISEASE

<table>
<thead>
<tr>
<th>Person with LTBI (Infected)</th>
<th>Person with TB Disease (Infectious)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has a small amount of TB bacteria in his/her body that are alive, but inactive</td>
<td>Has a large amount of active TB bacteria in his/her body</td>
</tr>
<tr>
<td><strong>Cannot</strong> spread TB bacteria to others</td>
<td>May spread TB bacteria to others</td>
</tr>
<tr>
<td>Does <strong>not</strong> feel sick, but may become sick if the bacteria become active in his/her body</td>
<td>May feel sick and may have symptoms such as a cough, fever, and/or weight loss</td>
</tr>
<tr>
<td>Usually has a TB skin test or TB blood test reaction indicating TB infection</td>
<td>Usually has a TB skin test or TB blood test reaction indicating TB infection</td>
</tr>
<tr>
<td>Radiograph is typically normal</td>
<td>Radiograph may be abnormal</td>
</tr>
<tr>
<td>Sputum smears and cultures are negative</td>
<td>Sputum smears and cultures may be positive</td>
</tr>
<tr>
<td>Should consider treatment for LTBI to prevent TB disease</td>
<td>Needs treatment for TB disease</td>
</tr>
<tr>
<td>Does <strong>not</strong> require respiratory isolation</td>
<td>May require respiratory isolation</td>
</tr>
<tr>
<td>Not a TB case</td>
<td>A TB case</td>
</tr>
</tbody>
</table>
LATENT TB INFECTION (LTBI)

- Granulomas may persist (LTBI), or may break down to produce TB disease

- 2 to 8 weeks after infection, LTBI can be detected via TST or interferon-gamma release assay (IGRA)

- The immune system is usually able to stop the multiplication of bacilli

- Persons with LTBI are not infectious and do not spread organisms to others
LTBI TREATMENT REGIMENS

Isoniazid (INH)

- 9-month daily regimen is preferred: 270 doses within 12 months

- Effective for HIV-infected as well as HIV-uninfected persons

- Can be given twice weekly via DOT: 76 doses within 12 months

- Children should always receive 9 months of therapy
LTBI TREATMENT REGIMENS

Isoniazid (INH) (cont.)

- 6-month regimen also generally acceptable: 180 doses within 9 months

- Can be given twice weekly via DOT: 52 doses within 9 months

- Not recommended for children, HIV infected, persons whose x-rays suggest previous TB
TB DISEASE

• In some, the granulomas break down, bacilli escape and multiply, resulting in TB disease

• Can occur soon after infection, or years later

• Persons with TB disease are usually infectious and can spread bacteria to others

• Positive *M. tb* culture confirms TB diagnosis
HIGH-RISK GROUPS FOR TB INFECTION
CLOSE CONTACTS

- Close contacts are people who spend time with someone who has infectious TB disease

- May include:
  - Family members
  - Coworkers
  - Friends

- On average, 20 – 30% of close contacts become infected with TB
According to CDC, “The responsibility for successful TB treatment is clearly assigned to the public health program or the private provider, not to the patient”
CARE

• To develop treatment plan where patient is assessed, interviewed and treated

• Implement appropriate and continuous therapy
**MAJOR GOALS OF TB TREATMENT**

- Cure patient, minimize risk of death/disability, prevent transmission to others
- Provide safest, most effective therapy in shortest time
- Prescribe multiple drugs to which the organisms are susceptible
- Never treat with a single drug or add single drug to failing regimen
- Ensure adherence and completion of therapy
DEVELOP TREATMENT AND MONITORING PLAN

• Plan should include

• Description of treatment regimen

• Methods for assessing/ensuring adherence

• Monitoring methods for treatment response and adverse events
ADHERENCE

- Nonadherence results in inadequate treatment.
- Can lead to treatment failure, relapse, ongoing transmission, and drug resistance.
- Clinician responsible for completion of therapy.
- To ensure adherence, provide education, case management, DOT, incentives and enablers, and combination pills.
- If these fail, take more restrictive action.
CASE MANAGEMENT

- Strategy to ensure patients complete treatment; includes
  - Assigning responsibility to case manager
  - Conducting regular systematic review
  - Developing plans to address barriers to adherence
  - Case managers must ensure patients are educated about TB, therapy is continuous, and contacts are evaluated properly
DIRECTLY OBSERVED THERAPY (DOT)

- Health care worker watches patient swallow each dose
- DOT is preferred management strategy for all patients
- Can reduce acquired drug resistance, treatment failure, and relapse
- Nearly all regimens can be intermittent if given as DOT
- DOT reduces total number of doses and encounters
- For drug-resistant TB, use daily regimen and DOT
CURRENT ANTI-TB DRUGS

10 drugs FDA-approved for treatment of TB

- Isoniazid (INH)
- Rifampin (RIF)
- Pyrazinamide (PZA)
- Ethambutol (EMB)
- Rifapentine (RPT)
- Streptomycin (SM)
- Cycloserine
- Capreomycin
- ρ-Aminosalicylic acid
- Ethionamide
CURRENT ANTI-TB DRUGS (CONT.)

Four first-line drugs considered standard treatment:

- Isoniazid (INH)
- Rifampin (RIF)
- Pyrazinamide (PZA)
- Ethambutol (EMB)

Rifabutin and rifapentine also considered first-line drugs in some circumstances

Streptomycin (SM) formerly first-line drug, but now less useful owing to increased SM resistance
WHY ARE WE HERE

• Monitor response to treatment

• Educate each patient about TB, treatment and infection control.

• Evaluate each contact
PROVIDE TRAINING AND EDUCATION

• Staff
• Health-Care Providers and Members
  • Medical/nursing schools
  • Community-based organizations
  • Professional societies
  • Minority advocacy groups
PROVIDE TRAINING AND EDUCATION CONT.

- Infection Control
- Environmental Control
- Administrative Control

Regular intervals for up-to-date and accurate knowledge
ACKNOWLEDGMENT

• Centers for Disease Control and Prevention

• www.cdc.gov/tb

• www.dshs.state.tx.us
Rick Tull, Program Specialist
PHEP/HSR1
REQUEST FOR RESPONSE
TB RESPONSE

Health Service Region 1 -- PHEP
Based on the ICS Structure

• The primary goal is to decrease the number of individuals who may become ill.

• The role of Public Health is to provide the vaccine and/or medication
THE ROLE OF PUBLIC HEALTH

• Public Health will provide the vaccine and/or medication resources.
INCIDENT COMMAND STRUCTURE

- Site Director
  - Safety Officer
  - Security Director
  - Transportation Coordinator

- Logistics Manager
  - Supply Coordinator
  - Inventory Control Technician
  - Food Service Coordinator
  - Maintenance / Custodian
  - Communications Coordinator
  - Information Technology Technician

- Plans/Intel Manager (at EOC/RCC)
  - Dispensing Coordinator
  - Medical Screener
  - Vaccinator/Dispenser
  - Medical Evaluator
  - Ill Client Evaluator
  - Emergency Medical Support
  - Triage Staff
  - Contact Evaluator

- Operations Manager
  - Triage Coordinator
  - Education Coordinator
  - Greater
  - Educator
  - Translator
  - Exit Educator
  - Crisis Counselor

- Admin/Finance Manager
  - Records Clerk / Data Entry
  - Volunteer Coordinator
  - Floaters
INCIDENT ACTION PLAN

Incident Action Plan for

TB Clinic

Operational Period

<table>
<thead>
<tr>
<th>Date From:</th>
<th>6/12/12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time From:</td>
<td>07:00a</td>
</tr>
<tr>
<td>Date To:</td>
<td>6/12/12</td>
</tr>
<tr>
<td>Time To:</td>
<td>15:00p</td>
</tr>
</tbody>
</table>

Hear Act Learn Treat Tuberculosis
INCIDENT OBJECTIVES (ICS 202)

<table>
<thead>
<tr>
<th>Incident Name:</th>
<th>Operational Period:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB</td>
<td>Date From: 3/21/12</td>
</tr>
<tr>
<td></td>
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<td>Time From: 9:00a</td>
</tr>
<tr>
<td></td>
<td>Time To: 15:30p</td>
</tr>
</tbody>
</table>

3. Objective(s):
1. Ensure the safety of staff and clients through the use of universal precautions as well as appropriate precautions against the transmission of TB following recommendations of TB clinical staff and CDC guidelines.
2. Decrease the number of persons infected with TB via the use of the TB screening tools provided by the DSHS TB program staff and the placement of Tuberculin Skin Tests, referral for chest x-rays, as well as the use of acute triage.
3. The TB clinic will consist of the placement of Tuberculin Skin Tests to all persons identified as potentially exposed to TB as well as immediate referral for chest x-ray of any individuals found to be symptomatic for TB infection.
4. The clinic will be completed in compliance with NIMS protocols and use of the Incident Command System.
5. DSHS Region 1 will work with available DSHS staff, local health department and other local government staff, as well as local schools of nursing to insure appropriate and adequate quantity and qualifications to meet staffing requirements.

4. Operational Period Command Emphasis:
TB Clinic has been requested with the emphasis on skin testing for TB, reading the tests and identifying individuals exposed to TB and properly assist them.
<table>
<thead>
<tr>
<th>Item</th>
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<th>Have</th>
<th>Need</th>
<th>Location</th>
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<td>6</td>
<td>0</td>
<td>Case 1</td>
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<tr>
<td>Hand Sanitizer</td>
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<td>16</td>
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<td></td>
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<tr>
<td>Alcohol Pads</td>
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<tr>
<td>Gloves</td>
<td>1L/6M</td>
<td>1L/6M</td>
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<td>Syringes</td>
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<tr>
<td>Calipers</td>
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<td>16</td>
<td>0</td>
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<tr>
<td>Masks Ear loop</td>
<td>6 bxs</td>
<td>6 bxs</td>
<td>0</td>
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<td>1 box</td>
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<td></td>
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<td>- Education</td>
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<td>- Declination</td>
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<tr>
<td>- X-Ray</td>
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<tr>
<td>Trash Cans</td>
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<td>PHP Case</td>
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Due to the potential risk of exposure to others, no one is allowed into the POD until they have either been cleared through initial screening or the Triage Station.
TRIAGE

• The Triage staff will ask questions and gather information from incoming clients to determine whether they have been exposed and could present a risk to others.
Texas Department of State Health Services
Symptom Screening

Facility Name: 

Name: ________________________________ Employee __________________

Person completing form: ________________________________ Title __________________ Date ____________

Print Name ________________________________ Date ____________

1. Productive cough for 2 weeks or more. No Yes Date ____________

2. Persistent weight loss without dieting. No Yes Date ____________

3. Persistent fever above 100 degrees F. No Yes Date ____________

4. Night sweats. No Yes Date ____________
TB Elimination
Tuberculosis: General Information

What is TB?
Tuberculosis (TB) is a disease caused by germs that are spread from person to person through the air. TB usually affects the lungs, but it can also affect other parts of the body, such as the brain, the kidneys, or the spine. A person who has TB can die if they do not get treatment.

What are the Symptoms of TB?
The general symptoms of TB disease include feelings of sickness or weakness, weight loss, fever, and night sweats. The symptoms of TB involve the lungs also include coughing, chest pain, and the coughing up of blood. Symptoms of TB disease in other parts of the body depend on the area affected.

How is TB Spread?
TB germs are put into the air when a person with TB disease of the lungs or throat coughs, sneezes, or sings. These germs can stay in the air for several hours, depending on the environment. Persons who breathe in the air containing these TB germs can become infected; this is called latent TB infection. People with TB disease are sick from TB germs that are active, meaning they are multiplying and destroying tissue in their body. They usually have symptoms of TB disease. People with TB disease of the lungs or throat are capable of spreading germs to others. They are prescribed drugs that can treat TB disease.

What Should I Do If I Have Spent Time with Someone with Latent TB Infection?
A person with latent TB infection cannot spread germs to other people. You do not need to be tested if you have spent time with someone with latent TB infection. However, if you have spent time with someone with TB disease or someone with symptoms of TB, you should be tested.

What Should I Do If I Have Been Exposed to Someone with TB Disease?
People with TB disease are most likely to spread the germs to people they spend time with every day, such as family members or coworkers. If you have been around someone who has TB disease, you should go to your doctor or your local health department for tests.

How Do You Get Tested for TB?
There are tests that can be used to help detect TB infection: a skin test or TB blood test. The Mantoux tuberculin skin test is performed by injecting a small amount of fluid (called tuberculin) into the skin in the lower part of the arm. A person given the tuberculin skin test must return within 48 to 72 hours to have a trained health care worker look for a reaction on the arm. The TB blood test measures how the patient’s immune system reacts to the germs that cause TB.

What Does a Positive Test for TB Infection Mean?
A positive test for TB infection tells you that a person has been infected with TB germs. It does not tell whether or not the person has progressed to TB disease. Other tests, such as a chest x-ray and a sample of sputum, are needed to see whether the person has TB disease.

What is Bacille Calmette–Guérin (BCG)?
BCG is a vaccine for TB disease. BCG is used in many countries, but it is not generally recommended in the United States. BCG vaccination does not completely prevent people from getting TB. It may also cause a false positive tuberculosis skin test. However, persons who have been vaccinated with BCG can be given a tuberculosis skin test or TB blood test.

Why is Latent TB Infection Treated?
If you have latent TB infection but not TB disease, your doctor may want you to take a drug to kill the TB germs and prevent you from developing TB disease. The decision about taking treatment for latent infection will be based on your chances of developing TB disease. Some people are more likely than others to develop TB disease once they have TB infection. This includes people with HIV infection, people who were recently exposed to someone with TB disease, and people with certain medical conditions.

How is TB Disease Treated?
TB disease can be treated by taking several drugs for 6 to 12 months. It is very important that people have TB disease finish the medicine, and take the drugs exactly as prescribed. If they stop taking the drugs too soon, they can become sick again, if they do not take the drugs correctly, the germs that are still alive may become resistant to those drugs. TB that is resistant to drugs is harder and more expensive to treat. In some situations, staff of the local health department may regularly with patients who have TB to watch them take their medications. This is called directly observed therapy (DOT). DOT helps the patient complete treatment in the least amount of time.

Additional Information

http://www.cdc.gov/tb
CLIENT EDUCATION

Tuberculosis Facts – TB Can Be Treated

What is TB?

“TB” is short for a disease called tuberculosis. TB is spread through the air from one person to another. TB germs are passed through the air when someone who is sick with TB disease of the lungs or throat coughs, speaks, laughs, sings, or sneezes. Anyone near the sick person can breathe TB germs into their lungs.

TB germs can live in your body without making you sick. This is called latent TB infection. This means you have only inactive (sleeping) TB germs in your body. The inactive germs cannot be passed on to anyone else. However, if these germs wake up and become active in your body and multiply, you will get sick with TB disease.

When TB germs are active (multiplying in your body), this is called TB disease. These germs usually attack the lungs. They can also attack other parts of the body, such as the kidneys, brain, or spine. TB disease will make you sick. People with TB disease may spread the germs to people they spend time with every day.

If the TB disease is in your lungs, you may:

- cough a lot
- cough up mucus or phlegm (“flem”)
- cough up blood
- have chest pain when you cough

You should always cover your mouth when you cough!

If you have TB disease, you may also:

- feel weak
- lose your appetite
- lose weight
- have a fever
- sweat a lot at night

These are symptoms of TB disease. These symptoms may last for several weeks. Without treatment, they usually get worse.

If you get TB disease in another part of the body, the symptoms will be different. Only a doctor can tell you if you have TB disease.

How do I know if I have latent TB infection or TB disease?

If you have been around someone who has TB disease, you should go to your doctor or your local health department for tests.

There are two tests that can be used to help detect latent TB infection: a skin test or a special TB blood test. The skin test is used most often. A small needle is used to put some testing material, called tuberculin, under the skin. In 2-3 days, you return to the health care worker who will check to see if there is a reaction to the test. In some cases, a special TB blood test is given to test for TB infection. This blood test measures how your person’s immune system reacts to the germs that cause TB.

Other tests are needed to show if you have TB disease. An x-ray of your chest can tell if there is damage to your lungs from TB. TB disease may be deep inside your lungs. Phlegm ("flem") you cough up will be tested in a laboratory to see if the TB germs are in your lungs.

If TB disease is in your lungs or throat, you can give TB germs to your family and friends. They can get sick with TB disease. You may have to be separated from other people until you can’t spread TB germs. This probably won’t be for very long, if you take your medicines as your health care provider instruct.

Can TB be treated?

If you have TB infection, you may need medicine to prevent getting TB disease later. This is called “preventive” treatment.

TB disease can also be treated by taking medicine. It is very important that people who have TB disease finish the medicine, and take the drugs exactly as they are told. If they stop taking the drugs too soon, they can become sick again. If they do not take the drugs correctly, the germs that are still alive may become difficult to treat with those drugs.

It is very important that you take your medicine as your doctor recommends. It takes at least six months to one year to kill all the TB germs.

Protect your family and friends from TB — take all your TB drugs!
SYMPTOMATIC

• If at any point the client is notably symptomatic, they are masked and are immediately escorted to the “acute” room.

• Further assessment/screening are completed along with a TST and Chest X-ray referral.

• HIV and STD testing is also offered
There are three (3) types of clients that could be present at a Clinic:

- Healthy
- Sick
- Pre-existing
Clients who have drug allergies, or pre-existing health conditions are directed to the Medical Screening Station for the assessment of the appropriate drug/dosage.
SCREENING/ASSESSMENT

• The client discusses a symptom review and medical history with health care provider.
TESTING/PLACEMENT

• Clients leave Forms Review or Medical Screening/Assessment (if appropriate) and are directed to Testing/Placement. The Testing/Placement Station is where the client receives their TST skin test.
EXIT EDUCATION

- Exit Education and Form Collection is where the client is provided additional information in regard to the vaccine or medication that they have just received. This will include directions on taking any medication and other relevant information.
HSR1 CLINIC RESULTS EXAMPLE

- 1491 SCREENED
- 1418 PLACED
- 2278 EXPECTED
- 61DECLINED
### HSR1 CLINIC EXAMPLES

#### Total TB Clinic Numbers

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READING RESULTS

- 48 to 72 hours after testing results need to be read. Ideally 48 hours
- If not read within the 48-72 hour window, their TST will need to be retested