

TB & RESPIRATORY ETIQUETTE TRAINING

COURSE OBJECTIVES

- Describe the epidemiology of TB in the US, Texas and the South Texas Veterans Health Care System.
- Identify the route of TB transmission.
- State signs and symptoms of possible TB infection.
- Name at least 3 conditions that increase the risk of getting TB.
- Describe when Respiratory Etiquette is used in the STVHCS
- According to the TB Care Pathway, state 4 things that should be done to ensure a person with suspected TB receives a proper evaluation in a safe environment.
- State the type of respiratory protection required for employees who care for TB or suspect TB patients.
- Identify at least 3 components of Airborne Precautions which are used when a person is admitted to a health care facility with a diagnosis of suspected or confirmed infectious tuberculosis.

TB & Respiratory Etiquette Training

FY05

1) INTRODUCTION

- a) TB is a communicable disease that can affect anyone. The South Texas Veterans Health Care System (STVHCS) administration believes it is essential that all hospital employees have basic knowledge about tuberculosis (TB) and how to protect themselves. It is mandatory that all employees receive TB training updates annually. Specific questions regarding STVHCS TB policy can be found in these policies:
 - i) Guidelines for the Prevention and Control of Transmission of Tuberculosis, 111-04-02.
 - ii) Management of Patients on Airborne Precautions to Rule-Out (R/O) Tuberculosis, 111-04-04.
 - iii) Notification and Evaluation of Health Care Facility Personnel After Unprotected Exposure to Tuberculosis, 111-04-03.
 - iv) Isolation Room Maintenance, Engineering Service SOP 04-42 (January 2, 2004)
- b) Each employee is responsible for complying with the above policies.

2) TB: THE DISEASE AND TRANSMISSION

- a) TB is a disease caused by a bacteria called *Mycobacterium tuberculosis*. When a person who has infectious TB coughs, sneezes, laughs, sings or talks, the bacteria in tiny airborne particles are expelled into the air.

Because the particles are so small and light (1-5 microns in diameter) they remain suspended in the air for a period of time.



If another person inhales air containing these tiny particles, TB transmission can occur.

b) Not everyone who is exposed to TB becomes infected. The probability that TB will be transmitted depends on how infectious the person with active disease is, the place where the exposure occurred (small closed space vs. large open area) and the length of time the individual was exposed. People at highest risk for becoming infected with TB are close contacts (persons who often spend time with the person who has active TB disease). This may be a family member, friend, co-worker, roommate or someone who is unknown to you.

b) When a person inhales droplets expelled by an infectious person, most of them become lodged in the upper airway but some of them may reach the small airways in the lung and begin to multiply. If the bacteria reach the small airways in the lungs, they may spread through the lymph system and then bloodstream to other areas of the body such as the kidneys, bone or brain. Eighty-five percent (85%) of all TB infections are found in

the lungs. Within several weeks, the body's immune system usually intervenes and stops the production of more bacteria. **However, when the person who was exposed to TB has a tuberculin skin test applied, there is a positive reaction indicating that the person has been infected with the TB bacteria.**



- i) **THIS DOES NOT MEAN THAT THE PERSON HAS ACTIVE TB DISEASE AND CAN PASS IT ON TO ANOTHER PERSON.**
- ii) TB infection becomes active TB disease only when the bacteria overcome the defenses of the immune system and continue to multiply destroying lung or other tissue.
- iii) In the United States approximately 10% of all persons infected with TB will develop active at some point in their lives. Five percent (5%) of all people who are recently infected with TB will develop disease within the first several years after infection. Another 5% will develop disease later in life. The other 90% will remain infected, but free of the disease for the rest of their lives. Treatment with medications such as isoniazid (INH) may reduce the chance that infection will become disease from 10% for infected individuals to about 6%.

3) CONDITIONS THAT INCREASE THE RISK OF INFECTION BECOMING DISEASE

- a. Some medical conditions increase the risk that TB infection will progress to disease. Some of these conditions include the following:
 - i. HIV infection
 - ii. Substance abuse (especially IV drug injection)
 - iii. Diabetes
 - iv. Silicosis (lung disease caused by frequent exposure to silica used in glassmaking)
 - v. Patients taking long courses of steroids (inhaled or by mouth)
 - vi. Immune suppressive therapy
 - vii. End-stage renal disease
 - viii. Patients with hematologic diseases (e.g. leukemia and Hodgkin's Disease)
 - ix. Gastric and intestinal bypass surgery patients
 - x. Malnourished states (e.g. low body weight from poor intake or malabsorption)
- b. Compared with people whose immune system works well, immune suppressed persons are at considerably greater risk for developing TB disease. Some studies suggest that the risk for developing disease is 7-10% each year for persons infected with both TB and HIV compared with 10% over the lifetime of persons infected only with TB.

3) EPIDEMIOLOGY OF TB IN THE US, TEXAS and the STVHCS

- a. After decades of decrease in the number of cases from 1953 to 1985, there was about a 14% increase in the number of cases from 1985-1993. This was in part due to the association of TB with the

HIV epidemic, an increase in the number of immigrants from areas of the world where the rates of TB are high, an increase in the number of group settings where TB could be easily spread (nursing homes, homeless shelters and prisons) and reduced ability for many to seek health care services because of cost.

- b. There are certain groups of people who are more likely to be infected with or exposed to active cases of TB. These higher prevalence groups include but are not limited to the following:
 - i. Close contacts of person with active TB disease
 - ii. Foreign-born persons from areas where TB is common (e.g. Asia, Africa, Latin America, Eastern Europe and the Russia
 - iii. Certain ethnic and racial groups (Asians, blacks, Hispanics, Native Americans, Pacific Islanders)
 - iv. Elderly
 - v. Residents of long-term care facilities (nursing homes, correctional facilities)
 - vi. IV drug users
 - vii. Homeless
 - viii. Migrant workers
 - ix. Persons who are occupationally exposed to TB (HOSPITAL & HEALTH CARE WORKERS)
 - x. Immune suppressed patients including those with HIV+ diagnosis.
- c. The overall number of U.S. TB cases has decreased from over 25,000 in 1992 to 14,874 in 2003. Although the number of cases in Texas slightly increased 2001, Texas has generally followed the downward trend 2,103 (11.1/100,000 population) in 1996 to 1,594 in 2003 (7.3/100,000 population). BEXAR county has decreased from 128 cases (9.9/100,000) in 1995 to 55 cases (3.8/100,000) in 2003.

- d. SOUTH TEXAS VETERANS HEALTH CARE SYSTEM has generally followed the trend of the U.S. and Texas. There were 10 veterans in the STVHCS diagnosed with TB in FY 02. IN FY 04 the number of cases decreased to 8. None of the cases in FY 04 were multi-drug resistant (MDR-TB). This means they were not resistant to one or more of the drugs used to treat the active disease.

4) PREVENTING TB INFECTION AND DISEASE

- a. The best way to prevent TB infection or the spread of other contagious respiratory infections is to identify active disease as early as possible. TB cases and other respiratory illnesses are being diagnosed in the outpatient settings with the primary symptom of cough. The STVHCS has implemented the CDC endorsed concept of respiratory etiquette to prevent transmission of all respiratory illnesses including TB. **Respiratory Etiquette includes the following concepts:**
 - i. Offering a barrier mask (yellow) to all patients with a cough who seek care at a STVHCS facility at the first point of entry into the health care system
 - ii. Instruct the patient not to remove the mask while waiting for the health care provider to examine them
 - iii. Stressing good hygiene practices with these patients including the following:
 - 1. Offering disposable tissues to patients and instructing them on one time use and disposal in appropriate waste containers
 - 2. Encouraging use of metered dose alcohol-based hand sanitizer for anyone who uses a tissue while coughing

- iv. Ensuring staff examine these patients as soon as possible using a minimum of Droplet Protection (private room and employee PPE barrier mask)
 - v. Immediately placing patients with respiratory diseases that require Airborne Precautions into a negative pressure room (i.e. TB, Severe Acute Respiratory Syndrome [SARS]) and notifying the health care provider of their location so appropriate PPE (N95 respirators) can be used when examining the patient
 - vi. Placing family members who accompany the patient in the negative pressure room if they are also symptomatic.
- b. When TB is the suspected respiratory illnesses based on interview and clinical exam, the TB CARE PATHWAY describes the procedures that should be used by STVHCS health care providers. The most important concepts are that the patient is offered a mask to protect others at the first point of entry into the health care system, that patients are seen quickly as possible and inpatient evaluation is completed in a timely manner. Other important components of the TB Care Pathway include the following:
- i. When TB is a consideration, patients will remain in Airborne Precautions (must remain in the negative airflow room) until they are removed from isolation by the medical team or the infection control staff
 - ii. Until they are removed from isolation, patients will remain in their room unless they are scheduled for a test that is essential to the outcome of their care which cannot be done in the patient's negative airflow room.
 - iii. Patients will be escorted to authorized appointments and will wear a light yellow ear loop fluid shield mask while outside of the negative airflow room.



- iv. Previously scheduled non-emergent appointments will be rescheduled

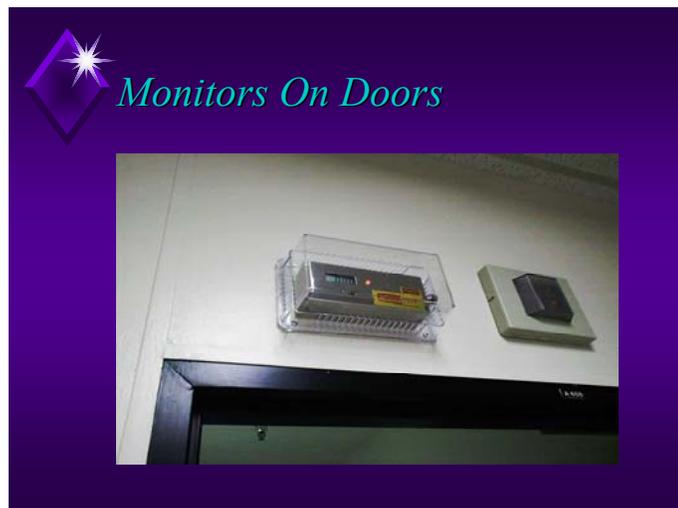
5) RECOGNIZING PATIENTS WITH POSSIBLE CASES OF TB

- a. Because Texas has a high prevalence of TB compared with other US states, Health Care Providers should have a higher suspicion for TB especially with patients who fall into one of the high risk categories for infection/exposure as described in the previous section.
- b. Patients who describe any of the symptoms of active diseases and have identified risk factors should receive further screening (skin test for persons who are not already positive or who cannot remember when they last received a skin test or the results. Further work up may include a CHEST X-RAY and/or obtaining sputum specimens. Symptoms of active disease include but are not limited to the following:
 - i. Persistent cough (longer than a week)
 - ii. Fever
 - iii. Weakness
 - iv. Loss of Appetite
 - v. Weight loss (without dieting)

- vi. Coughing up blood (patient may describe secretions as "rust-colored", brown)
- vii. Sweating at night

6) SPECIAL PRECAUTIONS FOR HOSPITALIZED TB OR SUSPECT TB PATIENTS.

- a. AIRBORNE PRECAUTIONS should be started for any patient who has known untreated/incompletely treated tuberculosis or is suspected of having the disease. Airborne Precautions should also be used for other respiratory diseases such as SARS, chickenpox, measles and disseminated Varicella zoster in an immune compromised patient.
- b. Other important aspects of Airborne Precautions include the following:
 - i. Ensuring that health care staff check the status of airflow before placing a patient requiring airborne precautions in a room. When the door(s) to the negative airflow room is closed, a green light appears indicating that the room is under negative pressure (pulling air from the corridor into



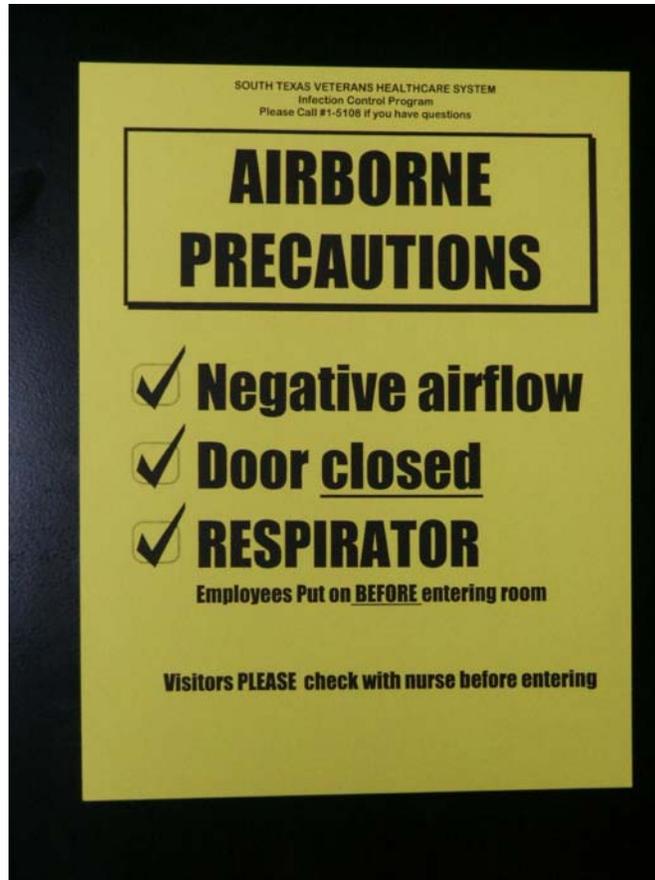
the room).

If there is any question about the airflow in the room, engineering should be contacted immediately to evaluate and correct the problem. Some negative pressure rooms have another room called an anteroom between the corridor and the patient room. It is important that both doors remain closed when entering or upon leaving a patient's room and when checking airflow direction. It is very important for health care workers to check the direction of airflow throughout the patient's hospital stay to ensure it continues to function properly.

- ii. Negative-pressure isolation rooms can be identified by the yellow "Negative Pressure Room" sign affixed to the door.



An additional yellow "AIRBORNE PRECAUTION" signs is posted in the provided holders by nursing personnel when the room is occupied by a patient for whom precautions should be initiated.



- iii. The yellow AIRBORNE PRECAUTION sign tells staff and visitors what precautions must be taken before entering the room. **Staff must wear specially fitted OSHA TB respirators (N-95).**



These come in different sizes and shapes to allow the best fit for the employee. The respirator can be used for up to 8 hours of continuous wear unless its integrity has been compromised or the patient has also been placed in contact precautions. If the respirator is to be re-used, they should be folded and placed in the uniform pocket. They will not be left in any other location. Males with facial hair also have the option of using a hooded power-pack unit which is assigned to the individual.

- iv. Respiratory Fit-testing Program is performed annually by the Safety Office. A health survey is completed each year by employees. Any time you lose or gain a significant amount of weight (more than 20#), have dental implants, facial surgery or grow facial hair(males) fit testing must be again performed.
- v. Visitors entering the patient rooms should be provided with the yellow fluid shield mask to wear while in the room.
Only patients will wear the yellow mask outside of negative pressure room.



7) TB AND EMPLOYEE HEALTH RESPONSIBILITIES

- a. Employees are required to complete the annual TB update and put the into information practice including changes in practice or policies. This is accomplished through training of core concepts using information with computer assisted instruction (CAI) and IC trainer follow-up in the clinical areas.
- b. Employees who wear an N-95 respirator will complete an annual OSHA fit-testing conducted through the Safety Office.
- c. Employees must have an initial tuberculosis screening with 2-Step Mantoux skin test in Employee Health upon employment and a routine PPD test annually thereafter. Employees with previously positive skin tests will not have additional skin tests applied.
- d. If a skin test positive employee experiences symptoms which indicate they might have TB, at any time between the annual screenings, they should contact Employee Health Program for additional evaluation
- e. If an employee is named as a part of an unprotected exposure cohort to a patient with active tuberculosis, they must follow-up with Employee Health Service.
 - i. They will be required to have a screening PPD placed unless they have received a PPD test within the previous 30 days; they will be instructed to return for a follow up PPD test in 90 days.
 - ii. Cohort follow-up is mandatory to ensure nosocomial TB transmission does not occur and a safe patient environment is maintained

TB & RESPIRATORY ETIQUETTE TRAINING
Mastery Exam

1. If a person is exposed to TB WITHOUT using an N-95 respiratory they
 - a. always become infected with TB.
 - b. must report to Employee Health for follow-up screening and PPD testing where appropriate.
 - c. always have a positive PPD skin test.
 - d. report to Employee Health for a CXR.
 - e. both b and d
2. A person with ONLY A POSITIVE PPD SKIN TEST
 - a. has active TB disease.
 - b. has been exposed to someone with active TB.
 - c. cannot pass on TB to another person.
 - d. can have additional PPD tests.
 - e. both b and c.
3. Which of the following individuals have an increased risk for TB infection?
 - a. An AIDS patient
 - b. A renal dialysis patient
 - c. A patient taking large doses of steroids for chronic lung disease
 - d. only a and b
 - e. a, b and c
4. During FY 2004 in the STVHCS
 - a. there have been 8 veterans diagnosed with active TB
 - b. the number of active TB cases are less than in FY 2002
 - c. there were no cases of multi-drug resistant TB
 - d. TB cases were following the U.S. and Texas trend of decreasing
 - e. All of the statements (a, b, c and d) are correct
5. Which of the concepts apply to Respiratory Etiquette in the STVHCS?
 - a. A yellow barrier mask is given to any patient who seeks care with a cough.
 - b. Patients are encouraged to use alcohol-based hand hygiene in clinic emergency waiting areas.

- c. Requires staff to use a minimum of Droplet Precautions PPE when assessing patients with a cough.
 - d. Immediate placement in negative pressure of patients with a cough & symptoms suggestive of TB.
 - e. Statements a through d are all correct and apply to Respiratory Etiquette.
6. Airborne Precautions
- a. are used only for patients with suspected TB.
 - b. requires staff check negative pressure room airflow before placing a TB patient there.
 - c. requires an N-95 respirator entering a negative pressure room of a suspect TB patient.
 - d. requires that negative pressure room doors remain closed with an active TB case
 - e. statements b through d are all correct.
7. Hospitalized patients in Airborne Precautions
- a. must remain in their room until cleared by the medical team or infection control staff.
 - b. can go outside unescorted to smoke.
 - c. can go to previously scheduled outpatient appointments so they will not have to be rescheduled.
 - d. require an escort to authorized inpatient appointments only if they are not ambulatory.
 - e. are required to wear a white N-95 respirator if they leave their rooms.
8. Symptoms of active TB include but are not limited to
- a. cough present for greater than 1 week
 - b. weight loss without dieting
 - c. sweating at night
 - d. coughing up blood or "rust-colored" secretions
 - e. all statements a through d.
9. Who posts the Airborne Precaution sign indicating a negative pressure room contains a patient with active or suspected TB?
- a. Nursing

- b. MAS
- c. Escort Personnel
- d. Team physician
- e. Environmental Management

10. Tuberculosis is a communicable disease

- a. that is transmitted by large airborne particles.
- b. that is transmitted ONLY when a person with infectious TB coughs.
- c. that will always infect another if they are exposed to it.
- d. caused by a virus called Mycobacterium tuberculosis.
- e. that may be transmitted when a person with infectious TB coughs, sneezes, laughs, sings or talks.