

# **TUBERCULOSIS EXPOSURE CONTROL PLAN**



**THE UNIVERSITY OF TEXAS HEALTH  
SCIENCE CENTER AT SAN ANTONIO**

Provided by:

Environmental Health & Safety Department

June 2016

## EXECUTIVE SUMMARY

The University of Texas Health Science Center San Antonio is committed to providing a workplace free of recognized hazards that is conducive to education, patient care, and research. In the pursuit of these endeavors, occupational exposure to potentially infectious agents may be required by some employees. This TB Exposure Control Plan (ECP) contains guidelines and procedures that should be used in conjunction with standard healthcare or research techniques to minimize exposure to *Mycobacterium tuberculosis*.

This plan should not be construed as a limitation on the use of infectious materials in the course of University of Texas Health Science Center San Antonio education, patient care, or research goals. However, this plan should be used by supervisors to develop patient and employee procedures to minimize the exposure to *Mycobacterium tuberculosis*. This manual is intended to assist all levels of management in implementing effective policies for providing safe patient care in the clinical environment and safe laboratory practices during the course of employment at University of Texas Health Science Center San Antonio.

The ECP is not intended to be an exhaustive or fully comprehensive reference on this subject, but rather a guide for use by technically qualified healthcare workers and researchers. Further advice concerning hazards associated with specific biological agents, recombinant DNA, and the development of new or unfamiliar activities should be obtained through consultation with the Institutional Biosafety Committee, the Infection Policy and Education Committee or the Environmental Health and Safety Department.

The ECP was reviewed and approved by the Infection Policy and Education Committee and Executives of the UT Health Science Center at San Antonio.

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## ANNUAL REVIEW & SUMMARY OF CHANGES

This plan is reviewed on an annual basis by the Infection Policy and Education Committee and Environmental Health and Safety.

### June 2016: Summary of Document Changes

The major changes to the Exposure Control Plan for this year are:

1. Updated background/epidemiology section with the 2014 data - Pg. 6

All document changes have been highlighted for easy reference.

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# TUBERCULOSIS EXPOSURE/INJURY RESPONSE PROTOCOL

<b>Organism or Agent:</b>	<b>Mycobacterium tuberculosis (MTB)</b>
<b>Exposure Risk:</b>	<b>Tuberculosis</b>
<b>Employee Health and Wellness Clinic:</b>	<b>210-567-2788</b> (Available during work hours)
<b>Student Health Clinic:</b>	<b>210-567-WELL (9355)</b> (Available during work hours)
<b>Environmental Health &amp; Safety:</b>	<b>210-567-2955</b> (Available during work hours)
<b>UT Police:</b>	<b>911 from any campus telephone</b> <b>567-8911 from cell phone</b>

## PROTOCOL SUMMARY

**In the event of an accidental exposure or injury, the protocol is as follows:**

### **1. Modes of Transmission:**

- a. Skin puncture or injection
- b. Ingestion
- c. Contact with mucous membranes (eyes, nose, mouth)
- d. Exposure to aerosols containing MTB; Airborne exposure to droplet nuclei
- e. Exposure to patient confirmed positive for infectious MTB

### **2. First Aid:**

- a. **Skin Exposure**, immediately go to the sink and thoroughly wash the skin with soap and water. Decontaminate any exposed skin surfaces with an antiseptic scrub solution.
- b. **Skin Wound**, immediately go to the sink and thoroughly wash the wound with soap and water and pat dry.
- c. **Splash to Eye(s), Nose or Mouth**, immediately flush the area with running water for at least 5-10 minutes.
- d. **Splash Affecting Garments**, remove garments that may have become soiled or contaminated and place them in a red plastic biohazard bag.

### **3. Notification of Supervisor**

- a. After first aid has been administered, immediately inform your supervisor of the exposure.
- b. Employees: Complete the *Notification of On the Job Injury* form and present it to the medical provider. <http://research.uthscsa.edu/safety/WCINotificationofOJI.pdf>
- c. Students: Complete the incident report form available at the Student Health Clinic.

### **4. Medical Care and Follow-up Care:**

- a. In the event of an acute injury resulting from a laboratory incident which requires immediate medical care, the injured employee/student should report to the emergency department for acute medical treatment.
- b. After first aid is complete, contact Employee Health and Wellness Clinic (employees) or Student Health Clinic (students), for a follow-up care.

### **5. Completion of Forms:**

- a. Employee completes the *First Report of Injury or Illness* form and submit to Workers' Compensation Coordinator, FAX 210-567-2965. Form can be found at the following link: <http://research.uthscsa.edu/safety/FirstReport.pdf>
- b. Students: Complete the incident report form available at the Student Health Clinic.

### **For Laboratory Spills:**

- a. **Secure the laboratory:** Identify the equipment involved in the exposure and the mechanism of exposure. Make sure that the laboratory area has been secured and that notification of contamination has been posted to prevent other individuals from entering the area.
- b. In the event of a large spill, contact Environmental Health and Safety for assistance in cleanup.

## TUBERCULOSIS EXPOSURE CONTROL PLAN

### I. Background:

TB is a global threat, infecting one-third of the world's population and killing 2 million people per year. In the United States, TB incidence rates are not evenly distributed throughout all segments of the population. In 2014, a total of 9,421 new tuberculosis (TB) cases were reported in the United States, an incidence of 2.96 cases per 100,000 population, which represents a decrease of 1.5% from the incidence reported in 2013. In 2014, Texas continued to be one of the five leading US states by number of TB cases. While Texas continues to exceed the national case rate, a steady decline in Texas incidence rates has occurred over the years. However, the case rate for 2014 increased slightly from a 4.6 case rate reported for 2013 to 4.7 case rate in 2014 per 100,000 population. The five year average (2009-2013) for Texas is 5.5 cases per 100,000 persons. The case rates for the San Antonio-New Braunfels metropolitan area has increased from a 2013 case rate of 3.5 to a 2014 case rate of 3.9.

### II. PURPOSE

The UT Health Science Center at San Antonio realizes that the risk of tuberculosis transmission in our facilities exists and seeks to reduce this risk for all health science center workers at the main campus, research park, north campus including the CTCRC, MARC, Center for Oral Health Care and Research, satellite clinics, Laredo clinic, all patients and visitors in our clinics, and others in the health science center facilities. The research mission of the UT Health Science Center also includes working with non-human primates who are susceptible to TB infection. The UT Health Science Center at San Antonio will follow the current CDC guidelines for TB Exposure Control in the Health Care Setting. The current CDC guidelines are available at [www.cdc.gov/tb/pubs/mmwr/Maj\\_guide/infectioncontrol.htm](http://www.cdc.gov/tb/pubs/mmwr/Maj_guide/infectioncontrol.htm)

### III. Regulatory Authority:

Centers for Disease Control and Prevention "Guidelines for Preventing Transmission of Mycobacterium tuberculosis in Health-Care Settings, 2005." MMWR2005;54(No.RR-17), OSHA Respiratory Protection Standard, 20CFR 1910.134, July 2, 2004, CDC's Goals for Working Safely with Mycobacterium tuberculosis Complex Species, Public Health and Research Laboratory, April 1997, Biosafety in Microbiological and Biomedical Laboratories, 5<sup>th</sup>, ed., and NIH Guide for Care and Use of Laboratory Animals.

### IV. HIERARCHY OF CONTROL MEASURES:

- A. The use of Administrative Controls to reduce the risk of exposure to persons with suspected or confirmed infectious TB.
- B. Use of engineering controls to prevent the spread and reduce the concentration of infectious droplet nuclei
- C. Use of personal protective equipment.

**V. SCOPE:**

The plan covers all patients, classified employees, staff, faculty, students, Fellows, Residents, visiting students, volunteers, and educational appointees.

**VI. RISK ASSESSMENT FOR WORKERS:**

- A. An initial risk assessment to evaluate the risk of TB transmission in the workplace **was performed** by Environmental Health and Safety with assistance by the Infection Policy Education Committee (IPEC). **This risk assessment covers** all parts of the health science center, including clinics where TB patients may receive care or cough-producing procedures may be performed, and individual groups of health care workers who work throughout the facility, as well as individuals working with non-human primates who are susceptible to TB infection. See Appendix A, Determination of Risk Assessment Categories and Frequency of TB Screening.(Francis J. Curry National Tuberculosis Center)
- B. Each specific area of the health science center will be classified as high, intermediate, or low risk based on the number of active or infectious TB patients admitted to the area and other risk factors. If data is not available, all areas and occupational groups likely to encounter active TB patients will be considered high risk. If areas have not shown an increase in skin test conversion rates for those with occupational exposure compared to those without occupational exposure, this area will be categorized a low risk area.
- C. The frequency of risk assessment and skin testing will be determined on the basis of the most recent risk assessment. Low risk groups will be assessed every 12 months, intermediate groups every 6 months, and high risk groups every 3 months.
- D. **The Infection Policy and Education Committee acting as the health science center's TB Committee** will review data and make recommendations

regarding changes in the TB Exposure Control Plan at least annually or as necessary to update the plan in response to documented nosocomial transmission of TB.

- E. Following each risk assessment, the IPEC, in conjunction with other appropriate health care workers will review all TB Control policies to assure that they are effective and meet current needs.

**VII. ANALYSIS OF HEALTH CARE WORKERS TUBERCULIN SKIN TEST (TST) SCREENING DATA:**

A. Results of worker's Tuberculin Skin Test will be kept in retrievable aggregate database through the Employee Health and Wellness Clinic or at the Student Health Center.

B. Tuberculin Skin Test conversion rates will be calculated as follows:

A= # health care workers with new positive skin tests in each area or group.

B= # health care workers with negative skin tests in each area or group

$$\% \text{ Conversion} = \frac{A}{A+B} \times 100$$

C. To identify area where the risk of occupational Tuberculin Skin Test conversion may be increasing, Tuberculin Skin Test conversion rates for each area will be compared to rates in areas without occupational exposure to active TB and to previous rates in the same area.

D. Anytime a cluster of Tuberculin Skin Test conversions is noted, further evaluation is indicated.

E. The frequency of Tuberculin Skin Testing is determined by risk assessment.

F. Areas in which cough-inducing procedures are performed on patients who may have active TB will, at the minimum be considered intermediate risk.

**VIII. REVIEW OF PATIENT MEDICAL RECORDS:**

The medical records of patients diagnosed with active TB will be reviewed by the occupational health nurse for the risk assessment and to determine whether any employee exposures occurred.

**IX. CASE SURVEILLANCE:**



Data on the number of active TB cases among patients and health care workers will be collected, reviewed, and used to:

- A. Identify the number of isolation rooms required
- B. Recognize clusters of nosocomial transmission
- C. Assess the level of potential occupational risk.
- D. Monitor drug susceptibility characteristics of *M. tuberculosis* isolates.

**X. OBSERVATION OF INFECTION CONTROL PRACTICES:**

- A. Compliance is considered to be a standard of performance and will be included in the annual performance evaluation for all employees with potential for exposure.
- B. Recommended practices are stated in this plan, copies of which are located in each department safety manual and the Environmental Health & Safety website address: <http://research.uthscsa.edu/safety>
- C. Strategies for monitoring compliance:
  - 1) Follow-up on the report of an employee's failure to comply with the required protective measures will be the responsibility of the employee's supervisory staff.
  - 2) Follow-up of problems identified through informal reports, complaints from staff, quality assurance or safety reports, minutes from committees, evaluation of education and training programs will be the responsibility of the affected department's supervisory staff. Significant issues will be forwarded to the IPEC or the Institutional Biosafety Committee.
  - 3) Non-compliance will be reported to an employee's immediate supervisor for evaluation and follow up.

**XI. ENGINEERING EVALUATION:**

The TB Engineering Evaluation documentation will be reviewed as a part of the risk assessment at intervals.

**XII. ADMINISTRATIVE CONTROLS:**

- A. Initial assessment: Patients will be assessed for possible infectious TB at the site of initial presentation (dental clinics, CTRC/MARC clinics, Student Health Clinic, Employee Health and Wellness Clinic, observations areas, etc.)

following the procedure for handling suspected TB patients. Health care workers who are the first points of contact should ask the following questions which will help recognize and detect patients with signs and symptoms of TB:

- 1) Have you had a cough of 2 or more weeks of duration?
- 2) Has this cough been productive sputum? Is it blood stained?
- 3) Have you had fever, night sweats, unintentional weight loss, lethargy or weakness?
- 4) Do you or any of your family have TB now, or a history of TB?  
At this time, it should be determined if a patient is a member of a high risk group.  
For those patients whose assessments indicate suspected infectious TB, follow established TB protocol for proper actions.

B. Physician Referral: Referring physicians or facilities should be questioned as to the patient's possible TB status, in order to facilitate the patient's admission into appropriate isolation and care.

C. Radiology and Bacteriologic Screening

- 1) The microbiology laboratory (UHS, Quest and other labs) will be responsible for notifying the attending physician and the Employee Health and Wellness clinic at 210-567-2788 of all positive AFB direct smear and culture results.
- 2) The UHS Infection Control Department will notify Bexar County TB Control, (San Antonio Metropolitan Health Department) of all positive AFB direct smears and cultures.

D. Laboratories: Laboratories in which specimens for mycobacteriologic studies are processed should be designed to conform to criteria specified by CDC and NIH.

E. Operating Room Recommendations for TB Control:

- 1) Elective procedures on patients with TB should be delayed until the patient is no longer infectious.
- 2) If procedure must be done, operating rooms with an anteroom are preferred. The anteroom doors should be closed and traffic kept to a minimum. For operating rooms without anterooms, the doors to the OR must be kept closed, and traffic in and out of the room kept to a minimum. Procedures should be done when few other patients are present in the operating suite (e.g., end of day) and when minimum numbers of personnel are present. This applies to pulmonary and non-pulmonary sites. (Tuberculosis bacilli in extra pulmonary lesions may become airborne during irrigation and drainage procedures).
- 3) Personnel present when operative procedures are performed on patients with infectious TB should wear medically approved respiratory protection, rather than standard surgical masks. Positive-pressure

respirators are not appropriate for use during procedures requiring surgical masks due to the exhalation valve.

- 4) A bacterial filter placed on the patient's endotracheal tube or at the expiratory side of the breathing circuit of the anesthesia machine may be useful in reducing the risk of contamination of anesthesia equipment or discharge of tubercle bacilli into the ambient air.

F. Management of Patients with Suspected Tuberculosis in Ambulatory Care Settings, UT medicine, CTRC, Dental clinics, Student Health clinic and Employee Health and Wellness clinic and Emergency Centers:

- 1) Refer to Administrative controls initial assessment section.
- 2) Place patient with suspected infectious TB in Airborne Precautions in separate negative pressure room or demistifier tent, if available. If separate waiting/exam room is unavailable or if patient requires transportation to ancillary departments, patient should wear a mask.
- 3) Schedule patient to minimize exposure to other patients.
- 4) Patients should be instructed to cover their mouth with tissues if it is necessary for them to clear respiratory secretions, and to then reapply the mask. Patients should also be told how to dispose of the tissues.
- 5) If patients are known to be non-compliant with TB medications, institute Airborne Precautions until they are documented to be non-infectious.
- 6) Patients with previously diagnosed TB infections should be considered to be infectious until the physician determines otherwise.

G. Tuberculin Skin Test (TST) or BAMT (Blood Assay Mycobacterium tuberculosis). It is recommended that immune-compromised individuals be administered the BAMT.

- 1) Administration of Tuberculin Skin Test (Mantoux);
  - a) 0.1ml of tuberculin will be injected into the forearm (palm side up), 2 to 4 inches below elbow, and just beneath the surface of the skin.
  - b) Discrete, pale elevation of the skin 6-10mm should be produced.
- 2) Reading of the Tuberculin Skin Test (TST)
  - a) Trained personnel should read the test between 48-72 hours and record results on the appropriate form which will then be placed in patient's chart.
  - b) Presence or absence of induration is to be assessed (not redness or erythema) and should be recorded in millimeters.

- H. Treatment Guidelines: Patients who have confirmed active TB or are considered highly likely to have active TB should be started on appropriate treatment promptly, according to current guidelines.

While the patient is in the hospital, anti-tuberculosis drugs will be administered by directly observed therapy, in which a health care worker observes the patient ingesting the medications. All patients should be discharged on outpatient directly observed therapy. Arrangements for this will be made in collaboration with the San Antonio Metropolitan Health Department, TB clinic at 210-207-2870.

I. Cough-Inducing Procedures

- 1) Cough-inducing procedures should not be performed on patients who may have infectious TB unless absolutely necessary. These cough inducing procedures include endotracheal intubation and suctioning, diagnostic sputum induction, aerosol treatments (including pentamidine therapy) and bronchoscopy. Other procedures that may generate aerosols, e.g. irrigation of TB abscesses, homogenizing or lyophilizing tissue, are also included in these recommendations.
- 2) All cough inducing procedures performed on patients who may have infectious TB should be performed using local exhaust ventilation devices, e.g. booths, or if that is not feasible, in a negative air flow room that meets TB ventilation requirements (i.e. isolation rooms).
- 3) Health care workers should wear a hospital-approved respirator or mask when present in rooms where cough inducing procedures are being performed on patients who have, or are at high risk of having infectious TB.
- 4) After completion of cough-producing procedures, patients with known or suspected TB should remain in isolation room or enclosure and not return to common waiting areas until coughing subsides. They should be given tissues and instructed to cover their mouth and nose when coughing. If they must recover from their sedatives or anesthesia following procedures such as bronchoscopy, they should be monitored in a separate isolation room and not in recovery rooms with other patients.
- 5) Before the booth, enclosure, or room is used for another patient, adequate time should be allowed to pass so that any droplet nuclei that have been expelled into the air can be removed. The time will vary according to the efficiency of the ventilation or filtration used, but is generally 20 minutes.
- 6) If performing bronchoscopy in positive pressure rooms, such as operating rooms, is unavoidable, TB infection should be ruled out before the procedure. If bronchoscopy is being performed for diagnosis of pulmonary disease on patients that may have infectious TB, it should be performed in a room that meets TB isolation ventilation requirements.

- 7) Before prophylactic aerosolized pentamidine (AP) therapy is initiated, all patients should be screened for active TB. Screening should include medical history, Tuberculin Skin Test, and chest X-ray.
- 8) Before each subsequent AP treatment, patients should be screened for symptoms suggestive of TB. If such symptoms are elicited, a diagnostic evaluation for TB should be initiated.
- 9) For patients with suspected or confirmed active TB, it is preferable to use oral prophylaxis for pneumocystic pneumonia (PCP), if clinically applicable.
- 10) San Antonio Metropolitan Health Department should be notified 210-207-2870 for contact investigation prior to discharge.

J. Other Infection Control Measures: Any required infection control measures must be followed to ensure compliance with OSHA standards and/or current guidelines for preventing the transmission of *M. tuberculosis*.

### **XIII. Engineering Controls:**

- A. Prevention of nosocomial transmission: Patient rooms and areas where patients with suspected or confirmed TB are treated should be at negative pressure to adjacent areas, have at least 6 air changes/hour, be directly exhausted to the outside or have air re-circulated through a HEPA filtration system with 99.7% filtration. UHS is equipped with isolation rooms for treatment of patients with TB. CTIC has two negative pressure rooms that can be used to isolate patients presenting with symptoms of TB.
- B. Monitoring of isolation rooms for negative pressure when used for TB isolation should be done routinely, per current guidelines or standards.
- C. HEPA filters should be monitored and changed routinely, per current guidelines or standards.
- D. The need for supplemental ventilation or air cleaning will be periodically reassessed as part of the risk assessment.

### **XIV. Respiratory Protection:**

- A. In the following circumstances, health care workers should wear a NIOSH approved high efficiency particulate air (HEPA) respirator or an approved N-95 respirator.
  - 1) When entering rooms housing patients with suspected or confirmed infectious TB
  - 2) When performing high risk procedures on patients who have suspected or confirmed infectious TB. Examples of these include

administration of aerosolized medications, bronchoscopy, sputum induction, endotracheal intubation, and suctioning procedures, and autopsies.

- 3) Emergency medical response personnel or others who must transport, in a closed vehicle, an individual with suspected or confirmed TB
- B. Qualitative or quantitative fit testing must be performed for each respirator wearer. The results of such fit testing will be maintained in a retrievable aggregate database. Fit testing will be arranged through the Environmental Health and Safety Department.
  - C. Medical surveillance will be performed on all potential HEPA respirator wearers.
  - D. Disposable HEPA respirators should be discarded per facility policy or current guidelines.
  - E. Multi-user reusable HEPA respirators should be cleaned and filters checked and/or changed per facility policy or current guidelines.
  - F. Designated user reusable HEPA respirators should be cleaned and filters checked and/or changed per hospital policy or current guidelines.
  - G. HEPA respiratory wearers should perform check to insure proper fit prior to each use.
  - H. Facial hair that interferes with the seal of the mask should be removed. Department directors will be responsible for monitoring compliance and, if necessary, will initiate counseling or appropriate disciplinary action.

## **XV. TUBERCULOSIS SCREENING PROGRAM:**

### **A. Pre-employment Immunizations, HOP Policy 8.5.8:**

A pre-employment [Adult Immunization and Testing](#) form (Appendix B of this ECP) must be completed for any applicant, internal or external, who is under final consideration, following the normal screening and selection processes. Procedures listed in HOP 8.5.8 are applicable to staff, faculty, fellows and post-docs.

Refer to HOP 8.5.8 for procedure for Visiting Scientists or Clinicians.

### **Tuberculosis (TB) Screening:**

1. A Tuberculin Skin Test with negative results, by using the Mantoux technique (with PPD intradermally applied) within the past 12 months; or

2. A whole blood interferon gamma release assay (IGRA) from a documented Quantiferon TB Gold In-Tube test or T-Spot TB test within the past 12 months; or
3. Provide written documentation of a negative TB skin test, Negative IGRA or a report from a physician indicating that a chest x-ray was taken within the previous 12 months and was negative for TB.
4. A candidate who has never received a Tuberculin Skin Test must undergo 2-step testing.

Any applicants with a positive Tuberculin Skin Test will be scheduled for a TB evaluation. Any follow-up, treatment, or referral to the San Antonio Metropolitan Health District will be coordinated and documented by the Employee Health and Wellness Center. The Employee Health and Wellness Center will communicate to Human Resources at [hr-employment@uthsca.edu](mailto:hr-employment@uthsca.edu) for staff, Dr. Blankmeyer at [Blankmeyer@uthsca.edu](mailto:Blankmeyer@uthsca.edu) for faculty, and the Office of Postdoctoral Affairs at [opa@uthsca.edu](mailto:opa@uthsca.edu) for fellows and post docs whether these individuals may be cleared to begin employment or training.

**B. Tuberculosis Screening for Students: Tuberculin skin test (TST) or BAMT – blood test (Q-gold or T spot):**

**Immunization requirements and information is available through the Student Health Center at 567-WELL (9355) and the Student Health Center website at [http://shc.uthsca.edu/immunization\\_info.asp](http://shc.uthsca.edu/immunization_info.asp)**

- C.** Annual Tuberculin Skin Test or screening questionnaire will be completed for all individuals identified in the risk assessment. Annual Tuberculin Skin Test is required for individuals who work in but not limited to the CTRC, MARC, UHS, Dental Clinics, Student Health Center, Employee Health and Wellness Clinic, and other clinic areas where patient care is provided. Annual Tuberculin Skin Test is provided by an individual who has taken the CDC online training.

The whole-blood interferon gamma release assay (IGRA) QuantiFERON-TB Gold test (QFT-G) may be used instead of a Tuberculin Skin Test in TB screening programs for health care workers. The decision to use this test in lieu of the Tuberculin Skin Test will be made by the individual's department.

- D.** Individuals with a previous history of a positive TB skin test should not continue to undergo skin testing. However, a baseline chest x-ray should be on file in the employee's health record as well as documentation of the previous positive skin test. These individuals must complete an annual TB screening questionnaire designed for persons with a history of positive tuberculin skin test.

- E. Individuals with a history of positive skin test should either have a chest x-ray on employment or when they initially convert to a positive skin test. If conversion occurs at the time of hire or at annual screening, a chest x-ray and TB evaluation will be required.
- F. Tuberculin Skin Test is not contraindicated for pregnant or breast feeding employees.
- G. Health care workers who previously received BCG vaccine as a child should receive a baseline TB skin test. If positive, the employee should have a chest x-ray.
- H. Health care workers with immunosuppression should follow guidelines employed by the UT student health services/Employee Health policy. Because these individuals may be at higher risk for acquisition of TB and rapid progression to active disease, voluntary reassignment to lower risk areas may be advisable.

## **XVI. WORKERS WITH TB INFECTION OR ACTIVE DISEASE**

- A. Workers with a positive Tuberculin Skin Test and/or BAMT – blood test (as a result of a conversion and negative chest X-ray on file) and no symptoms of active disease should continue work as usual and be counseled to notify the Employee Health and Wellness Clinic at 567-2788 if symptoms develop and to seek medical evaluation.
- B. Workers with infectious TB should notify the Employee Health and Wellness Clinic and be excluded from work until documented to be non-infectious (three consecutive daily negative AFB smears that are negative and substantial improvement in symptoms.) Clearance from the Employee Health and Wellness Clinic, the SAMHD, or PCP is required for HCW to return to work. The Employee Health and Wellness clinic will request documentation from SAMHD or PCP of completed medication regimen. Noncompliant health-care workers should be excluded from work until therapy is re-instituted and the individual assessed to be noninfectious. Students with infectious TB should notify the student health clinic.
- C. Workers with TB at sites other than the lung or larynx usually do not need to be excluded (except exuding skin lesions).
- D. All information provided by health care workers regarding their health status will be treated confidentially.

## **XVII. EDUCATION AND TRAINING**



All health care workers and individuals identified in the initial risk assessment should receive training and education at initial employment and periodic education about TB that is appropriate to their job category. The following is an outline of the materials to be covered.

- A. The basic concepts of TB transmission, pathogenesis, and diagnosis, including the difference between latent TB infection and active TB disease, the signs and symptoms of TB, and possibility of secondary inoculation in the person with a positive Tuberculin Skin Test. Collection of specimens for AFB cultures should be included.
- B. The potential for occupational exposure to patients with infectious TB, including the prevalence of TB in the community and nationwide, situations with increased risk of exposure to TB (bronchoscopy, autopsy, etc) and working with people reported to have high risk for TB.
- C. Appropriate isolation measures (negative pressure rooms etc.)
- D. The principles and practices of infection control that reduce the risk of transmission of TB, including the hierarchy of TB infection control measures, and exposure control plan. Include Respiratory/Airborne Precautions, Transportation of TB patients, and required PPE.
- E. The purpose of Tuberculin Skin Test, the significance of a positive result and the importance of participation in the skin test program.
- F. The principles of preventive therapy of latent TB infection, indications, use and effectiveness, including the potential adverse effects of the drugs.
- G. The responsibility of the employee to seek medical evaluation promptly if symptoms develop that may be due to TB or if Tuberculin Skin Test conversion occurs in order to receive appropriate evaluation and therapy and to prevent transmission of TB to patients and other employees.
- H. The principles of drug therapy for active TB. This should include the practice of direct observed therapy in the hospital and community.
- I. The importance of notifying the appropriate group (Student or Employee health) if diagnosed with active TB so appropriate contact investigation can be instituted.

- J. The responsibilities of the institution to maintain the confidentiality of the employee while assuring that the employee with TB receives appropriate therapy and is non-infectious before returning to duty.
- K. The higher risk posed by TB with individuals with HIV infection or other causes of severely impaired cell-mediated immunity including:
- 1) The more frequent and rapid development of clinical TB after infection with *Mycobacterium tuberculosis*.
  - 2) The differences in the clinical presentation of the disease.
  - 3) The high mortality rate associated with MDR-TB (*M. tuberculosis* organisms that are resistant to more than one anti-Tb drug) disease in such individuals.
- L. The potential development of cutaneous anergy as immune function declines (measured by CD4 and T-lymphocyte counts)
- M. The institution's policy on voluntary work reassignment options for immunocompromised employees.
- N. Information regarding the efficiency and safety of BCG vaccination and the principles of Tuberculin Skin Test screening among BCG recipients
- O. Annual Respiratory Protection Training to include:
- 1) Define HEPA respirator use and why OSHA requires its use.
  - 2) When to use a respirator (in room care of TB patient, bronchoscopy etc).
  - 3) Recognize the respirators used for TB
  - 4) Describe how to clean and inspect the respirator.
  - 5) Describe how long to use the respirator
  - 6) Describe how to fit the respirator
  - 7) Demonstrate a respirator fit-check
  - 8) Medical surveillance requirement of respirator program
  - 9) Describe the OSHA requirements for the program. (Respiratory protection against *M. tuberculosis* will follow OSHA's 29CFR 1910.134 Refer to the Respiratory Protection plan for additional information at the Environmental Health & Safety website).
- P. The worker has the responsibility to participate in post exposure follow-up screenings when notified by UHS Employee Health or UTHSCSA Employee Health and Wellness Clinic (EHW) regarding a potential TB exposure. UTHSCSA faculty/staff should contact the EHW Clinic (210-567-2788). The screenings will be done at time of notification and 10 weeks post exposure. The employee will complete an Employer's First Report of Injury/Accident

Report related to the exposure and submit to the Environmental Health & Safety Department. Students have the responsibility to participate in post exposure follow-up screenings when notified by UHS Employee Health or UTHSCSA regarding a potential TB exposure. Students will be followed-up at the Student Health Center (210-567-9355).

## Appendix A

### ***Determination of Risk Assessment Categories and Frequency of TB Screening***

I. Risk Assessment Categories:

- A. Classification of risk for a facility, area, occupational group, or job title will be based on the following:
1. Profile of TB in the community, **and**
  2. Number of infectious TB patients admitted to an area, or the estimated number of infectious TB patients with whom health-care workers (HCWs) may be in contact, **and**
  3. Results of analysis of HCW Tuberculin Skin Test (TST) conversions (when appropriate), **and**
  4. Possible person-to-person transmission of *Mycobacterium tuberculosis* (*M. tb*).
- B. The five risk assessment categories outlined by the CDC will be utilized to evaluate the potential risk of *M. tb* exposure to HCWs in the facility, area, occupational group, or job title and to assist in determining the appropriate risk category of the HCWs. The CDC's recommended screening frequency associated with each risk category will be used.
1. Minimal-risk
    - a. Applies only to an entire facility in which:
      - 1) Patients with TB disease are not admitted to in-patient or out-patient areas, **and**
      - 2) Facility is located in a community with no reported TB cases in prior year.
    - b. Screening frequency: HCWs will be screened at hire to determine baseline only.
  2. Very low-risk

- a. Generally applies only to an entire facility in which:
    - 1) Patients with TB disease are not admitted to in-patient areas, but may receive assessment, diagnostic evaluation, or out-patient management in clinic areas, **and**
    - 2) Patients with suspected TB disease who need in-patient care are promptly referred to another facility.
  - b. Although the facility as a whole is very low-risk, out-patient areas in which patients with TB disease receive care should be periodically reassessed and assigned to the appropriate low-, intermediate-, or high-risk category.
  - c. Screening frequency: HCWs will be screened at least annually, according to their individual risk.
3. Low-risk
- a. Applies to areas, occupational groups, or job titles in which:
    - 1) Tuberculin Skin Test conversion rate is not:
      - a) Significantly greater than that for areas, occupational groups, or job titles in which *M. tb* exposure is unlikely, **or**
      - b) Significantly greater than previous conversion rates for the same area, occupational group, or job title, **and**
    - 2) No clusters of Tuberculin Skin Test conversions have occurred, **and**
    - 3) Person-to-person transmission of *M. tb* has not been found, **and**
    - 4) Fewer than six TB patients are seen each year.
  - b. Screening frequency: HCWs will be screened at least annually.
4. Intermediate-risk
- a. Applies to areas, occupational groups, or job titles in which:
    - 1) Tuberculin Skin Test conversion rate is not:
      - a) Significantly greater than that for areas, occupational groups, or job titles in which *M. tb* exposure is unlikely, **or**
      - b) Significantly greater than previous conversion rates for the same area, occupational group, or job title, **and**
    - 2) No clusters of Tuberculin Skin Test conversions have occurred, **and**

- 3) Person-to-person transmission of *M. tb* has not been found, **and**
  - 4) Six or more TB patients are seen each year. (Examination or treatment of 6 or more TB cases per year increases the risk of occupational exposure.)
- b. Screening frequency: HCWs will be screened every six months.
5. High-risk
- a. Applies to areas, occupational groups, or job titles in which:
    - 1) Tuberculin Skin Test conversion rate is:
      - a) Significantly greater than for areas, occupational groups, or job titles in which *M. tb* exposure is unlikely, **or**
      - b) Significantly greater than previous conversion rates for the same area, occupational group, or job title and nosocomial transmission is suspected, **or**
    - 2) Cluster of Tuberculin Skin Test conversions has occurred and occupational (nosocomial) transmission is suspected, **or**
    - 3) Possible person-to-person transmission of *M. tb* has been detected.
  - b. Screening frequency: HCWs will be screened every three months.
- C. The risk of exposure to *M. tb* may change for a facility, area, occupational group, or job title. Therefore, reassessment of risk should to be performed periodically.

***[Determine the risk level and screening frequency for HCWs by area, occupational group, or job title and insert in the table on the following page.]***



## APPENDIX B

### Adult Immunization and Testing Form Consent for Vaccine Administration

*Please read and complete the following information to receive immunizations*

Form and any substantiating immunization documentation must be submitted to the UTHSCSA Employee Health & Wellness Center.

Email to: [EHWC@uthscsa.edu](mailto:EHWC@uthscsa.edu) or fax to: 210-567-2779 (incoming emails may not be encrypted.)

Applicant, complete and sign this section.

**Name:** \_\_\_\_\_ **Date of Birth:** \_\_\_\_\_  
**Address:** \_\_\_\_\_ **City:** \_\_\_\_\_ **State:** \_\_\_\_\_ **Zip:** \_\_\_\_\_  
**Phone #:** (Hm) \_\_\_\_\_ (cell) \_\_\_\_\_ **School/Location:** \_\_\_\_\_  
**Allergies to medications or foods:** \_\_\_\_\_

I have read and understand the information given to me regarding the vaccines I will be given today. I believe and understand the benefits and risks of the vaccination(s). I request the identified vaccine(s) to be given to me. I have no conditions, which are contraindications for vaccination. I certify that the information I have provided is true and accurate.

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Contact the UTHSCSA Employee Health & Wellness Center to schedule your immunizations at 210-567-2788. If you have written documentation of a negative TB skin test or a report from a physician indicating that a chest x-ray was taken within the previous 12 months and/or documentation of completion of the Hepatitis vaccination series you may submit the written and legible documentation to the Employee Health & Wellness Center, along with this form.

- HEPATITIS B (0, 1-2, 4-6)     HEPATITIS A & B COMBO ( 0, 1-2, 4-6 <OR> 0, 7 days, 21-30 days, 12 mo)

To receive vaccinations the client must meet the following requirements:

Is NOT pregnant or breastfeeding, NOT allergic to yeast, not sensitive to Mercury (Thimerosal), NOT moderately or severely ill, NOT had an allergic reaction to a previous dose of Hepatitis B.

MUC Lot#: _____ Dosage: 1.0 ml    Route: IM Site: <input type="checkbox"/> RA <input type="checkbox"/> LA <input type="checkbox"/> 1 <sup>st</sup> Dose: Given by: _____    Date: _____	
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VIS version date: \_\_\_\_\_

MUC Lot#: _____ Dosage: 1.0 ml    Route: IM Site: <input type="checkbox"/> RA <input type="checkbox"/> LA <input type="checkbox"/> 2 <sup>nd</sup> Dose > 1 mo Given by: _____    Date: _____	
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VIS version date: \_\_\_\_\_

MUC Lot#: _____ Dosage: 1.0 ml    Route: IM Site: <input type="checkbox"/> RA <input type="checkbox"/> LA <input type="checkbox"/> 3rd Dose >5mo after 2 <sup>nd</sup> Given by: _____    Date: _____	
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VIS version date: \_\_\_\_\_

- TB SKIN TEST – MUST BE READ 48-72 HOURS AFTER ADMINISTRATION

(PLEASE INITIAL \_\_\_\_\_)

Do you currently have any of the following symptoms?	YES	NO	UNKN
Unusual fatigue for more than 2 weeks?			
Weight loss (unrelated to dieting)?			
Loss of appetite for more than 2 weeks?			
Persistent cough for longer than 2 weeks?			
Blood streaked sputum?			
Fever associated with cough for more than 1 week?			
Night sweats?			
Other unusual symptoms?			
Is there a history of TB in your family?			
Have you ever taken Anti-Tuberculin medications?			
Have you ever had "BCG" vaccination?			
Have you had an MMIX vaccine in the past 3 months?			
Do you currently have an immune compromised illness?			
Have you ever had a positive TB skin test?			
If YES, WHEN & WHERE?:			

Admin Date: _____	By: _____	Time: _____
MUC		
Lot#: _____		
0.1ml's TU/PPD		
Forearm Site:    R    L		
Must be read between 48-72 hours after admin.		
Date Read: _____		
By: _____		
<b>Interpretation of results</b>		
Read only area of induration (raised area) not redness		
<span style="color: red; font-weight: bold;">mm induration</span> <span style="color: red; font-weight: bold;">Neg</span> <span style="color: red; font-weight: bold;">Pos</span>		
Below for positive results only		
CXR referral: AMI    UFT    Other:		
Entered in People Sort by: _____		
Date: _____		

Internal Use Only:

This candidate has complied with required immunizations.

Signature of Employee Health & Wellness Center Provider/reviewer \_\_\_\_\_

Date \_\_\_\_\_

Refer to HOP policy 8.5.8 "Pre-Employment Immunizations" for policy and procedures.



