 <p><b>Anergy Testing</b></p>	Policy Number	<b>TB-1004</b>
	Effective Date ( <i>original issue</i> )	May 16, 1995
	Revision Date ( <i>most recent</i> )	June 26, 2008
	Subject Matter Expert ( <i>title</i> )	Manager, Infectious Disease Intervention and Control Branch
	Approval Authority ( <i>title</i> )	Manager, Infectious Disease Control Unit
	Signed by ( <i>signature for hard copy; name for online</i> )	Susan C. Penfield, M.D.

**1.0 Purpose**

Persons with HIV (Human Immunodeficiency Virus) infection or other immune compromising conditions may not be able to react to the purified protein derivative (PPD) used in the tuberculin skin test (TST). In the past, other antigens were applied in a modified TST procedure in an attempt to assess whether a negative result of the TST was a false negative. This process was called anergy testing, which is no longer recommended by the Centers for Disease Control and Prevention (Anergy Skin Testing and Preventive Therapy for HIV-Infected Persons: Revised Recommendations, MMWR, September 5, 1997, Vol. 46. No. RR-15).

**2.0 Policy**

2.1 DSHS does not recommend anergy testing or supply the materials to perform this test.

**3.0 Definitions**

- 3.1 Anergy testing – a diagnostic procedure used to obtain information regarding the competence of the cellular immune system.
- 3.2 PPD – purified protein derivative is the antigen used in the tuberculin skin test for infection with *Mycobacterium tuberculosis*.
- 3.3 TST – the tuberculin skin test is a diagnostic procedure used to identify persons with infection with *Mycobacterium tuberculosis*.

**4.0 Persons Affected**


Employees of DSHS and local health departments  
 Local and regional health department managers  
 Physicians and nurses involved in the delivery of TB services

**5.0 Responsibilities**

**6.0 Procedures**

**7.0 Revision History**

Date	Action	Section
5/15/1995	New	
10/23/1996	Revised	
6/26/2008	Revised	

 <p><b>Directly Observed Therapy for Active TB Disease and Latent TB Infection</b></p>	Policy Number	<b>TB-5001</b>
	Effective Date ( <i>original issue</i> )	September 6, 1995
	Revision Date ( <i>most recent</i> )	June 26, 2008
	Subject Matter Expert ( <i>title</i> )	Manager, Infectious Disease Intervention and Control Branch
	Approval Authority ( <i>title</i> )	Manager, Infectious Disease Control Unit
	Signed by ( <i>signature for hard copy; name for online</i> )	Susan C. Penfield, M.D.

**1.0 Purpose**

The purpose of this policy is to assure that all patients in Texas with tuberculosis (TB) or patients with latent TB infection (LTBI) that meet specific criteria receive the recommended doses of anti-tuberculosis medication prescribed by the physician for the successful completion of treatment. This policy also assures that children who are less than 5 years of age and a contact to a known TB case receive medications as prescribed by the physician.

**2.0 Policy**

It is the standard of care in Texas that all persons with suspected or confirmed active TB disease receive their medications by directly observed therapy (DOT) unless their physician documents in the medical record extremely unusual circumstances that prevent the use of DOT. Scientific literature supports this policy and the Texas Department of State Health Services (DSHS) reaffirms its commitment to the use of DOT by providing the necessary resources to implement it in unusually difficult and costly situations. Without exception, patients with confirmed or suspected resistance to isoniazid and/or rifampin, must be on DOT.

If treatment is prescribed for latent TB infection (LTBI) for a contact to a TB case with resistance to isoniazid and rifampin, treatment must be by DOT. Household contacts of cases and other contacts with LTBI and a high risk of progression to TB disease are to be treated by DOT as resources permit. Preference for treatment of LTBI by DOT for contacts to cases should be given in the following order: 1) contacts aged <5 years, 2) contacts with HIV infection or other conditions that limit immune response to TB, 3) contacts with a documented change in tuberculin sensitivity from a negative to a positive result, and 4) contacts who might not complete treatment because of social or behavioral impediments (e.g., alcohol addiction, chronic mental illness, injection-drug use, unstable housing or unemployment). Other recent contacts and persons with LTBI of unknown origin may receive treatment by self-administered medication.

**3.0 Definitions**

DOT – directly observed therapy is the act of providing the anti-tuberculosis medication directly to the patient and observing him or her ingest the medication(s) as prescribed for the treatment of TB or LTBI

TB – tuberculosis is a disease caused by *Mycobacterium tuberculosis* complex that can affect any part of the body, but usually affects the lungs. The general symptoms are fever, night sweats, weight loss, and fatigue. Pulmonary TB symptoms may include productive cough and/or coughing up blood. Extrapulmonary TB may include pain or other symptoms related to the site of the disease.

LTBI – latent TB infection is characterized by a positive reaction to a tuberculin skin test, the absence of symptoms of active TB disease, and a chest x-ray that is not suggestive of active TB disease.

**4.0 Persons Affected**

Employees of DSHS and local health departments that are responsible for the management of persons with active TB disease and LTBI  
Employees of DSHS and local health departments that are responsible for dispensing medications used to treat TB disease and LTBI  
Contractors or employees of DSHS and local health departments that are responsible for providing directly observed therapy to persons with active TB disease or LTBI  
Patients on treatment for TB disease or LTBI  
Prescribing physicians

## **5.0 Responsibilities**

- 5.1 The prescribing physician is responsible for determining if the patient is to receive medications by DOT. If a patient with suspected or confirmed TB disease will not receive medications by DOT, the physician must document for the patient's medical record the extremely unusual circumstances that led to this decision.
- 5.2 The nurse case manager is responsible for explaining DOT to the patient, coordinating with the assigned DOT provider, informing the DOT provider of any changes in medication orders, and implementing the individual treatment goals as outlined by the physician.
- 5.3 It is the responsibility of the nurse in charge of medications to process them for use for DOT and keep a log of medications distributed to the DOT provider.
- 5.4 It is the responsibility of the DOT provider to coordinate with the nurse case manager and with the patient so that the physician's orders for DOT are implemented and appropriately documented.
- 5.5 It is the responsibility of the patient to meet the DOT provider at the agreed time and place for each dose of medication or to notify the DOT provider so that alternate arrangements can be made.
- 5.6 It is the responsibility of the TB program manager or the nurse case manager to assure that their DOT providers are trained prior to providing DOT.

## **6.0 Procedures**

- 6.1 Who can provide DOT
  - A. Trained licensed or non-licensed employees of local and regional health departments
  - B. Trained contractors to local or regional health departments
  - C. Employees of institutions responsible for the TB care of their residents
- 6.2 Who cannot provide DOT
  - A. Family members
  - B. Individuals who are not able to demonstrate their knowledge of TB as specified in 6.3
- 6.3 Training
  - A. Providers of DOT should demonstrate to their supervisor or the nurse responsible for management of the TB patient at least the following knowledge:
    - 1. Ability to list at least 5 symptoms of active TB disease.
    - 2. Ability to name the medications most commonly prescribed for the initial and continuation phases of TB treatment.
    - 3. Ability to identify each medicine they will deliver after visual inspection of the pill.
    - 4. Demonstrate understanding or otherwise describe each potential adverse drug reaction listed on the TB-206 Tuberculosis Directly Observed Therapy Log.
    - 5. Demonstrate understanding of local or regional health department procedures related to DOT.
    - 6. Ability to describe when they must wear an N-95 respirator during a visit for DOT.
    - 7. Demonstrate the correct procedure for donning an N-95 respirator and performing a fit-check.
- 6.4 Verification of Correct Patient and Correct Medication  
(To be done each time DOT is provided.)

- A. The nurse is responsible for preparing medications for delivery. The nurse should verify that the medications indicated on the dose packet or bottle are identical to the medications listed on the medication orders.
- B. The nurse should verify that the medication(s) in the dose packet match what is listed on the dose packet label (visual check for correct pills or capsules and correct number of pills or capsules in packet), or correct bottle of medication is being taken to the patient.
- C. The DOT provider must be sure that the patient is the correct patient listed on the medication orders. If this is the DOT provider's first visit to the patient, ask the patient to state his name, for a child, have the parent or guardian identify the child.
- D. The DOT provider must verify that the dose packet or bottle of medication indicates the patient's correct name. (Is this the right dose packet for this patient?)

#### 6.5 Adverse Drug Reaction Screening Questions

- A. The DOT provider must ask the patient at each visit all the screening questions on the TB-206 **before** the patient ingests medication to determine if the patient is having possible side effects to the TB medications. Document answers on the TB-206.
- B. If the patient reports any conditions noted with a double asterisk on the TB-206, do not give the medication. The DOT provider shall call the nurse case manager immediately for instructions. When a dose of medication is withheld because of symptoms of adverse drug reaction, do not restart medication without a physician order.
- C. If a patient on treatment for LTBI reports symptoms of active TB disease, call the nurse for instructions before giving the DOT dose. When a dose of medication for LTBI is withheld because of symptoms of active TB disease, do not restart medication without a physician order.
- D. If a patient on treatment for active TB disease reports a resumption or worsening of symptoms, advise the nurse upon return to the clinic or by phone if the provider will not return to the clinic that day.

#### 6.6 General Information for Providing DOT

- A. The patient should be observed continuously from the time the packet of medication is given to the patient until the medication is actually ingested. (Have the patient get a glass of water before giving them the packet of medication.) The DOT provider should observe the patient ingesting the medication in every DOT dose pack and should never leave a DOT pack to be taken later. (Some health departments deliver extra packets of medication for weekends and holidays, but these are not considered DOT doses and are counted as self administered therapy.)
- B. It is important that the patient is able to ingest all medications in a single day's dose packet during one DOT provider home visit to assure appropriate response to therapy. Medications must be taken on the schedule prescribed for maximum efficacy. If a patient is unable to ingest the entire dose (because of the number of pills, etc.), notify the nurse immediately.
- C. All dose packets must be labeled (including the patient's name) by the nurse or authorized pharmacy staff. If the packet is not properly labeled, the DOT provider should return the dose pack to the nurse or pharmacy for proper labeling.
- D. Hand each patient the appropriate dose packet or medication bottle for the patient to open.
- E. Personnel without a nursing license are not allowed to provide DOT from bottles, nor pour pills out of packets, nor crush pills, nor mix pills with food or liquids unless a supervising physician has delegated to them those acts under the provisions of the Texas Occupations Code, Chapter 157, §157.001.
- F. Licensed nurses who are providing DOT through a contractual arrangement with a health department may administer the medication according to the terms of their license.
- G. Medications must be stored in a safe place (not accessible to children) and protected from prolonged exposure to light or temperature extremes (either hot or cold). Do not leave medications in a car for prolonged periods of time. Return undeliverable medications to the clinic for storage.

- H. Some liquid TB medications may need to be refrigerated. INH liquid should not be refrigerated. Every time liquid medication is given, the patient or responsible adult should invert and shake the liquid medication several times for proper mixing. The nurse should consult the drug insert or Physicians' Desk Reference for proper storage instructions and relay these instructions to the DOT provider. If a child is on liquid medication, the DOT provider must observe the parent or responsible adult pour the appropriate amount of the liquid medication needed and observe the parent or responsible adult give it to the child.
- I. Unsafe conditions or threats made to the DOT provider should be reported to the supervisor or nurse as soon as possible so that steps may be taken to protect the safety of the DOT provider or other arrangements may be made to provide TB care for the patient.
- J. The use of incentives is recommended and should be used as available to reward patient adherence to treatment.

#### 6.7 Documentation of DOT

- A. Use the TB-206 Tuberculosis Directly Observed Therapy Log to document doses of medication provided by DOT. Local health departments may develop and use a similar form as long as it provides at least as much information as the TB-206.
- B. When the DOT provider signs or initials the Directly Observed Therapy Log, it means that the provider asked all the questions on the toxicity screen on the TB-206, delivered the medication to the patient, and observed the patient taking the medications.
- C. When the patient initials the Directly Observed Therapy Log, it means that the patient ingested the medication on the date indicated and that the dose was properly identified as DOT or Self Administered.
- D. As completion of therapy approaches, the DOT provider will coordinate the exact date of closure with the nurse case manager. The drug stop date documented on the TB-400 is the actual day the last dose is taken.

#### 6.8 Doses of DOT not Delivered as Scheduled


- A. The DOT provider will notify the clinic nurse if the patient is not found at the agreed time and place and will document the missed appointment on the TB-206. Follow-up instructions to DOT providers are to be documented by the clinic nursing staff in the patient's medical record progress notes.
- B. The nurse must notify the physician if the patient misses the equivalent of one week of medication. Hospitalization or court-order management may be needed to complete therapy.

#### 6.9 What is not DOT?

- A. Allowing a family member or friend to supervise and observe a patient taking the prescribed medication without the DOT provider being present.
- B. Allowing a parent or guardian to administer medication to a child or adolescent without the DOT provider being present.
- C. Allowing an inmate in a correctional institution to swallow a dose of medication without observation.
- D. Leaving medications at the patient's home when the patient is not present.
- E. Leaving the medication at the patient's bedside in a hospital, nursing home or other medical facility without observing ingestion.
- F. Dispensing medication and "verifying" ingestion by performing a weekly pill count.
- G. Permitting medical professionals (e.g., physicians and nurses) to self-administer their medications.

### 7.0 Revision History

<b>Date</b>	<b>Action</b>	<b>Section</b>
9/6/1995	New	
8/28/1997	Revised	
6/26/2008	Revised	

 <p><b>Drug Resistance</b></p>	Policy Number	<b>TB-4002</b>
	Effective Date ( <i>original issue</i> )	6/26/2008
	Revision Date ( <i>most recent</i> )	
	Subject Matter Expert ( <i>title</i> )	Manager, Infectious Disease Intervention and Control Branch
	Approval Authority ( <i>title</i> )	Manager, Infectious Disease Control Unit
	Signed by ( <i>signature for hard copy; name for online</i> )	Susan C. Penfield, M.D. Denise Dunbar Susan Neill, Ph.D., M.B.A.

**1.0 Purpose**

The purpose of this policy is to define drug resistance for *Mycobacterium tuberculosis* complex and to specify the concentrations of first- and second-line antituberculous drugs tested at DSHS laboratories.

**2.0 Policy**

The DSHS laboratory will perform antimycobacterial susceptibility testing for *Mycobacterium tuberculosis* complex as specified by national standards (7.1, 7.2, 7.3). These standards specify that antituberculous drugs be tested at a single critical concentration of the drug. The result of testing at the critical concentration defines whether the organism is considered resistant or susceptible. For isoniazid, an additional higher concentration of that drug will also be tested. However, isoniazid resistance is defined as resistance at the critical concentration.

**3.0 Definitions**

- 3.1 Resistance is defined as diminished susceptibility of a strain that differs from wild-type strains from patients who have not been treated with the drug, so that the strain is unlikely to show clinical responsiveness to the drug.
- 3.2 Critical Concentration: The lowest concentration that inhibits 95% of “wild strains” of *Mycobacterium tuberculosis* that have never been exposed to the drug, while at the same time does not inhibit strains of *Mycobacterium tuberculosis* considered resistant that are isolated from patients who are not responding to therapy.
- 3.3 Critical concentrations of three first-line antituberculous drugs tested by the Middlebrook 7H10 agar method of proportion are as follows:
  - 3.3.1 Isoniazid: 0.2 micrograms per milliliter
  - 3.3.2 Rifampin: 1.0 micrograms per milliliter
  - 3.3.3 Ethambutol: 5.0 micrograms per milliliter
- 3.4 First-line antituberculous drugs may also be tested by an U.S. FDA-cleared commercial rapid broth system at critical concentrations that are equivalent to those established for the Middlebrook 7H10 agar method of proportion.
- 3.5 For isoniazid, an additional higher concentration of 1.0 micrograms per milliliter for the Middlebrook 7H10 agar method of proportion, or equivalent concentration with an U.S. FDA-cleared commercial rapid broth system, will be tested.
- 3.6 Pyrazinamide, another first-line antituberculous drug, cannot be accurately tested by the Middlebrook 7H10 agar method of proportion. Pyrazinamide is tested by the BACTEC 460TB system at a critical concentration of 100 micrograms per milliliter. Pyrazinamide may also be tested by an U.S. FDA-cleared commercial rapid broth system at a critical concentration that is equivalent to that established for the BACTEC 460TB system.
- 3.7 Critical concentrations of second-line antituberculous drugs tested by the Middlebrook 7H10 agar method of proportion are as follows:
  - 3.7.1 Capreomycin: 10.0 micrograms per milliliter
  - 3.7.2 Ethionamide: 5.0 micrograms per milliliter
  - 3.7.3 Kanamycin: 5.0 micrograms per milliliter

- 3.7.4 Rifabutin: 0.5 micrograms per milliliter
- 3.7.5 Ofoxacin: 2.0 micrograms per milliliter
- 3.7.6 Streptomycin: 2.0 micrograms per milliliter
- 3.8 Second-line antituberculous drugs may also be tested by an U.S. FDA-cleared commercial rapid broth system at critical concentrations that are equivalent to those established for the Middlebrook 7H10 agar method of proportion.
- 3.9 Multidrug resistant tuberculosis (MDR-TB) is defined as the occurrence of tuberculosis in persons whose isolates are resistant to isoniazid and rifampin.
- 3.10 Extensively drug-resistant tuberculosis (XDR-TB) is defined as the occurrence of TB in persons whose *Mycobacterium tuberculosis* isolates are resistant to isoniazid and rifampin plus resistant to any fluoroquinolone and at least one of three injectable second-line drugs (i.e., amikacin, kanamycin, or capreomycin).

**4.0 Persons Affected**

- Employees of DSHS Laboratories
- Employees of DSHS Infectious Disease Control and Prevention
- Employees of other laboratories in Texas performing drug susceptibility testing on isolates of *Mycobacterium tuberculosis* complex.
- Employees of DSHS and local health departments
- Local and regional health department managers
- Physicians and nurses involved in the delivery of TB services
- Employees of U.S. Centers for Disease Control and Prevention

**5.0 Responsibilities**

- Employees of laboratories will report resistance according to the critical concentrations noted under definitions.
- Employees of DSHS and local health departments and physicians and nurses involved in the delivery of TB services will follow national guidelines in providing care for persons with TB disease that is resistant to antituberculous drugs including obtaining expert consultation as described in DSHS policy TB-4001.

**6.0 Procedures**

**7.0 References**

- 7.1 Susceptibility Testing of Mycobacteria, Nocardiae, and Other Aerobic Actinomycetes; Approved Standard. 2003. Clinical and Laboratory Standards Institute (CLSI) document M24-A.
- 7.2 Treatment of Tuberculosis. American Thoracic Society/Centers for Disease Control and Prevention/Infectious Diseases Society of America. Am J Respir Crit Care Med Vol 167. pp 603–662, 2003.
- 7.3 Diagnostic Standards and Classification of Tuberculosis in Adults and Children. American Thoracic Society/Centers for Disease Control and Prevention/Infectious Diseases Society of America. Am J Respir Crit Care Med Vol 161. pp 1376–1395, 2000.

**8.0 Revision History**

Date	Action	Section
6/26/2008	New	

### ***Mycobacterium tuberculosis* complex Drug Susceptibility Testing (DST) Methods and Critical Concentrations**

(Critical Concentration values from Susceptibility Testing of Mycobacteria, Nocardiae, and Other Aerobic Actinomycetes; Approved Standard. 2003. Clinical and Laboratory Standards Institute, document M24-A, unless otherwise noted.)

Drug Group	Drug	DST method available	DST Critical concentrations (µg/ml)				
			Middlebrook 7H10 agar	Middlebrook 7H11 agar	BACTEC460 liquid system <sup>1</sup>	BACTEC MGIT 960 liquid system <sup>1</sup>	VersaTREK liquid system <sup>1</sup>
First-line oral anti-TB drugs	Isoniazid Rifampin Ethambutol Pyrazinamide	Agar, Liquid Agar, Liquid Agar, Liquid Liquid	0.2 1.0 5.0 -	0.2 1.0 7.5 -	0.1 2.0 2.5 100.0	0.1 1.0 5.0 100.0	0.1 1.0 5.0 300.0
Injectable second-line anti-TB drugs	Streptomycin Kanamycin <sup>2</sup> Amikacin <sup>3</sup> Capreomycin	Agar, Liquid Agar, Liquid Agar, Liquid Agar, Liquid	2.0 5.0 4.0 10.0	2.0 6.0 - 10.0	2.0 5.0 1.0 1.25	1.0 - 1.0 2.5	- - - -
Fluoroquinolones	Ciprofloxacin <sup>4</sup> Ofloxacin <sup>5</sup> Levofloxacin <sup>3</sup> Moxifloxacin <sup>4</sup>	Solid, Liquid Solid, Liquid Solid, Liquid Liquid	2.0 2.0 2.0 -	2.0 2.0 - -	2.0 2.0 2.0 0.5	1.0 2.0 2.0 0.25	- - - -
Oral second-line anti-TB drugs	Ethionamide <i>P</i> -aminosalicylic acid	Agar, Liquid Agar, Liquid	5.0 2.0	10.0 8.0	1.25 -	5.0 -	- -
Rifamycin alternative	Rifabutin	Agar, Liquid	0.5	-	0.5	-	-

- not available or not recommended

<sup>1</sup> Rapid commercial liquid systems that have been U.S. FDA-cleared as of June 2, 2008 for testing first-line oral anti-TB drugs.

<sup>2</sup> Kanamycin is the class representative for Amikacin; critical concentration value for BACTEC 460 system from multi-center studies

<sup>3</sup> Values from proposed Clinical Laboratory Standards Institute M24-A2 standard (December 2007 draft)

<sup>4</sup> Values from proposed World Health Organization Policy Guidance on Drug Susceptibility Testing (DST) of Second-line Anti-Tuberculosis Drugs (December 2007 draft)

<sup>5</sup> Ofloxacin is the class representative for fluoroquinolones

**From:** [Vassell, Barbara](#)  
**To:** [John Floyd](#)  
**Cc:** [cgarcia@midlandtexas.gov](mailto:cgarcia@midlandtexas.gov)  
**Subject:** RE: Shelter, Mass Care, Congregate Setting TB Protocols  
**Date:** Friday, June 03, 2011 2:01:24 PM

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Hi John,

Here is the response from my colleague who assists in writing the policies:

During hurricane evacuations to shelters, the TB program tries to get lists of potentially infectious TB patients before the evacuation from the local health department in the affected area. Patients are given 2 weeks of medication packets for self-administration before evacuation and asked to fill out a form to let the local health department know potential contact numbers and addresses for where they plan to go if evacuated.

Shelter locations screen for cough, fever etc. and isolate persons with respiratory symptoms. I am not sure if a standard form was developed for symptom screening in emergency shelters.

Below is the hyperlink to the TB policies available on our website, they should provide assistance with language etc. As an example the TB skin test is now referred to as the tuberculin skin test (TST) and no longer as PPD.

<http://www.dshs.state.tx.us/idcu/disease/tb/policies/default.asp>

Hope this helps and please don't hesitate to contact me if you have any questions.

Best regards,

*Barbara*

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**From:** John Floyd [mailto:jfloyd@texashan.org]  
**Sent:** Friday, June 03, 2011 8:50 AM  
**To:** Vassell, Barbara

**Cc:** cgarcia@midlandtexas.gov

**Subject:** Shelter, Mass Care, Congregate Setting TB Protocols

Hello ma'am. The following bullet points are from the toolkit referenced during our earlier phone conversation. Thank you for your help.

### **TB Screening & Testing**

- Public Health recommends different TB screening practices for homeless agency staff than it does for their clients. These recommendations are based on well-researched models of TB control and efficient use of resources.
- All homeless agency staff should be screened for TB every 6-12 months, depending on the incidence of active TB cases at your facility.
- Staff that have not had documented TB screening with a skin test within the last 12 months will be required to undergo two step baseline TB skin testing (1-3 weeks apart).
- The first TB skin testing should be done prior to or on the first day of employment.
- Homeless agency staff who have positive PPD test results should be identified and evaluated to rule out a diagnosis of active TB.
- Staff who are symptomatic (show signs of disease) or suspected of having active TB should be immediately excluded from the workplace until confirmed non-infectious. They should also be required to have an immediate medical evaluation through a TB Clinic / Medical Center, a Public Health Clinic site, or their private medical provider. The medical evaluation will include a PPD and/or chest x-ray within 48 hours.
- Immunocompromised staff/volunteers need TB screening by symptom review and chest x-ray since TB skin testing may be falsely negative for these people. They also need informed counseling of potential risk of acquiring TB on the job due to their medical condition.

Respectfully,

John Floyd

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 <p><b>Frequency of Tuberculin Skin Testing for Tuberculosis Infection for Adults in Various Settings</b></p>	Policy Number	<b>TB-1002</b>
	Effective Date ( <i>original issue</i> )	August 12, 1997
	Revision Date ( <i>most recent</i> )	June 26, 2008
	Subject Matter Expert ( <i>title</i> )	Manager, Infectious Disease Intervention and Control Branch
	Approval Authority ( <i>title</i> )	Manager, Infectious Disease Control Unit
	Signed by ( <i>signature for hard copy; name for online</i> )	Susan C. Penfield, M.D.

### 1.0 Purpose

Since tuberculosis is an airborne disease, occupational exposure and transmission of infection can occur. Adults in some occupations and congregate settings are more at risk for exposure to persons with a high-risk of tuberculosis. This policy describes the settings and conditions that should prompt a tuberculin skin test (TST) as a part of screening for TB disease.

### 2.0 Policy

Screening of adults for symptoms of tuberculosis disease and by testing for latent TB infection in workplaces and congregate settings should be based on the risk of encountering someone with infectious TB disease and should consider both the count of persons with TB disease in the facility and the incidence of TB in the community.

### 3.0 Definitions

Health care workers (HCWs) – All paid and unpaid persons working in health-care settings who have the potential for exposure to *Mycobacterium tuberculosis* through air space shared with persons with infectious TB disease. Part time, temporary, contract, and full-time HCWs should be included in TB screening programs. All HCWs who have duties that involve face-to-face contact with patients with suspected or confirmed TB disease (including transport staff) should be included in a TB screening program.

Latent tuberculosis infection (LTBI) – A person with LTBI has the bacteria *Mycobacterium tuberculosis* present in their body as evidenced by a significant reaction to the TST, but is currently not exhibiting symptoms of active TB disease and does not have a chest radiograph suggestive of TB disease. A person with LTBI cannot transmit the infection.

TB Screening – A process that includes questions about TB symptoms and may include other diagnostic procedures, such as the tuberculin skin test, radiography, physical examination, or collection of specimens for laboratory analysis.

Tuberculin skin test (TST) – A diagnostic test that involves placing a measured amount of purified protein derivative between the layers of the skin (usually of the forearm) and measuring any resulting induration or swelling 48 to 72 hours after the placement of the test material.

Two-step TST – Procedure used for the baseline skin testing of persons who will receive serial TSTs. If an initial TST result is classified as negative, a second TST is administered 1-3 weeks after the first TST result was read. If the second result is positive, it is assumed that the change was due to boosting of the immune system's ability to recognize the test solution and that the first negative result was a false negative.

### 4.0 Persons Affected

- Administrators, directors or managers of academic institutions, correctional facilities, homeless shelters, health-care settings, residential facilities for children in institutional or foster care, and other sites where persons at high risk for TB work or spend time
- Persons responsible for infection control or occupational health
- All paid and unpaid persons working in settings where persons with infectious TB disease are expected to be found
- Local and regional health departments

## 5.0 Responsibilities

- Administrators, directors, or managers responsible for day-to-day operations of settings that serve persons at risk for exposure to infectious TB shall assure that their facilities have procedures in place to prevent the transmission of *Mycobacterium tuberculosis*.
- Persons responsible for infection control or occupational health will perform a TB risk assessment for their setting and recommend appropriate TB screening for employees and persons served in the facility.
- Based on the facility risk assessment, supervisors will determine if employees under their supervision are at risk for exposure to persons with infectious TB disease and will assure that at-risk employees receive appropriate TB screening.
- Local and regional health departments shall monitor TB surveillance data for their area to determine if there are settings where targeted testing programs are appropriate.

## 6.0 Procedures

*For procedures on administering, reading, and interpreting a tuberculin skin test by the Mantoux method, see Procedures for Testing for Tuberculosis Infection at <http://www.dshs.state.tx.us/idcu/disease/tb/publications/default.asp>.*

### 6.1 Academic Institutions

6.1.1 Faculty and staff of academic institutions are at no greater risk than the general public, so TB screening should be limited to known exposures to persons with infectious TB disease.

6.1.2 When academic institutions choose to require TB screening for foreign-born students or other students that will live in dormitories of the institution, they are responsible for reporting occurrences of LTBI or TB disease as described in the Texas Administrative Code, Title 25, Part 1, Chapter 97, Subchapter A.

6.1.2 Academic institutions that train future health care workers should screen students at entry and according to the risk of the health care setting where practical experience is gained. When training is provided in multiple settings, use the higher of the risk ratings to determine the frequency of TB screening for the students.

### 6.2 Community Health Settings

6.2.1 Health care workers (HCW) should be screened for tuberculosis based on risk as described in the recommendations of the Centers for Disease Control and Prevention publication "Guidelines for Preventing of Transmission of *Mycobacterium tuberculosis* in Health-Care Settings, 2005," MMWR, Vol. 54, RR-17, which is available at [http://www.cdc.gov/nchstp/tb/pubs/mmwrhtml/Maj\\_guide/infectioncontrol.htm](http://www.cdc.gov/nchstp/tb/pubs/mmwrhtml/Maj_guide/infectioncontrol.htm).


6.2.1 Local health departments that report 3 or more TB cases per year to DSHS should provide TB screening at hire and at least annually according to the CDC guidelines cited above for those employees that work in areas where patients with TB disease are expected to be found.

- 6.2.2 Local health departments that provide TB services in counties which report 2 or fewer TB cases per year should consider providing TB screening at the same level as for medium risk facilities for those employees who provide TB services even in those years when 2 or fewer TB cases are reported.
- 6.2.3 Employees of the Texas Department of State Health Services should receive TB screening according to TB-1001 DSHS Employee Tuberculin Skin Testing and Management.
- 6.2.4 Immigrants and refugees with Class A, B1, and B2 TB notification status should be screened for TB by the local or regional health department and receive treatment as appropriate.
- 6.2.5 Residents of long term care facilities should be screened for TB at entry and thereafter they should be screened at a frequency according to the risk assessment of the facility as described in the "Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Settings, 2005" cited above.
- 6.3 Correctional Facilities
- 6.3.1 Inmates and employees of correctional facilities and others who visit correctional facilities on a regular basis should be screened for tuberculosis based on the recommendations of the Centers for Disease Control and Prevention publication "Prevention and Control of Tuberculosis in Correctional and Detention Facilities," MMWR, Vol. 55, RR-09, which is available at [http://www.cdc.gov/tb/pubs/mmwr/Maj\\_guide/Correctional.htm](http://www.cdc.gov/tb/pubs/mmwr/Maj_guide/Correctional.htm).
- 6.3.2 Certain correctional facilities that are subject to the provisions of the Texas Health and Safety Code, Chapter 89, should also follow the TB screening procedures for inmates, employees and volunteers described in the Texas Administrative Code, Title 25, Part 1, Chapter 97, Subchapter H, available at [http://info.sos.state.tx.us/pls/pub/readtac\\$ext.ViewTAC?tac\\_view=5&ti=25&pt=1&ch=97&sc\\_h=H&rl=Y](http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=5&ti=25&pt=1&ch=97&sc_h=H&rl=Y).
- 6.4 Facilities Providing Services to Homeless Persons
- 6.4.1 In cooperation with the local or regional health department, a risk assessment should be performed for the setting to identify the potential for exposure to persons with infectious TB disease. Based on the risk assessment, the local or regional health department shall determine whether to partner with the facility to implement a targeted screening and testing program at the facility. Outcomes of the targeted screening and testing program should be monitored periodically to determine if the program should be continued.
- 6.4.2 After a known exposure to someone with infectious TB disease, staff and clients should be screened based on the duration and frequency of their exposure.
- 6.5 Other Workplaces
- 6.5.1 Employees in other workplaces where persons with infectious TB disease may be expected to be found should be screened for tuberculosis based on risk. Local data about the incidence of TB cases in a workplace will enable the local or regional health department to determine if a targeted TB screening and testing program would be beneficial to the community. When a local or regional health department institutes a targeted testing and screening program for a workplace, the health department is responsible for monitoring the number of persons found to have TB disease or latent TB infection compared to the number of tuberculin skin tests placed and read.
- 6.5.2 Most workplaces and occupations in Texas have only a low risk for encounters with persons with infectious TB disease and should not require routine TB screening for employees at low risk for TB exposure, infection or disease.

- 6.5.3 There are no DSHS recommendations for routine screening using a TB symptom questionnaire or TST for workers in food service; barber shops; beauty salons; elementary, middle or high schools; or other workplaces where the risk for encountering a person with infectious TB disease is no greater than for the general public.
- 6.5.4 Workplaces that provide non-healthcare related services, especially residential services, to clients whose risk for progression to TB disease, if infected, is very high may choose to provide or require TB screening for employees to protect the health of their clients.
- 6.5.5 For facilities that provide care to children under a permit or license from the Texas Department of Family and Protective Services in general residential operations and residential treatment centers, child placing agencies, and individual foster homes, there are rules available at [http://info.sos.state.tx.us/pls/pub/readtac\\$ext.ViewTAC?tac\\_view=3&ti=40&pt=19](http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=3&ti=40&pt=19) in the Texas Administrative Code, Title 40, Part 19, Chapters 746, 747, 748, 749 and 750 that describe the required actions for screening for tuberculosis.
- 6.5.6 For facilities that provide care to adults under a permit or license from the Texas Department of Aging and Disability Services for adult day care and day activity and health service requirements, rules related to TB screening are contained in Texas Administrative Code, Title 40, Part 1, Chapter 98, Subchapter D, Rule §98.61-§98.62 available at [http://info.sos.state.tx.us/pls/pub/readtac\\$ext.ViewTAC?tac\\_view=5&ti=40&pt=1&ch=98&sc h=D&rl=Y](http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=5&ti=40&pt=1&ch=98&sc h=D&rl=Y)
- 6.5.7 For facilities that provide care to adults in assisted living facilities under a permit or license from the Texas Department of Aging and Disability Services, rules related to TB screening are contained in Texas Administrative Code, Title 40, Part 1, Chapter 92, Subchapter C, Rule §98.41 available at [http://info.sos.state.tx.us/pls/pub/readtac\\$ext.ViewTAC?tac\\_view=5&ti=40&pt=1&ch=92&sc h=C&rl=Y](http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=5&ti=40&pt=1&ch=92&sc h=C&rl=Y)

## 7.0 Revision History

Date	Action	Section
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August 3, 2000	Revised	
June 26, 2008	Revised	

 <p><b>Tuberculin Skin Testing Guidelines for Children in Various Settings</b></p>	Policy Number	<b>TB-1003</b>
	Effective Date ( <i>original issue</i> )	October 29, 1996
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	Subject Matter Expert ( <i>title</i> )	Manager, Infectious Disease Intervention and Control Branch
	Approval Authority ( <i>title</i> )	Manager, Infectious Disease Control Unit
	Signed by ( <i>signature for hard copy; name for online</i> )	Susan C. Penfield, M.D.

**1.0 Purpose**

Although very young children are at high risk of developing tuberculosis (TB) disease if infected, not all children face equal risks of infection. This policy outlines the settings and conditions that should prompt a tuberculin skin test (TST).

**2.0 Policy**

The policy of the Department of State Health Services is to ensure that only children with risk factors for exposure to a person with infectious tuberculosis disease shall be screened for latent TB infection (LTBI) and/or TB disease. All children with signs or symptoms of active TB disease should receive a full medical evaluation.

The Texas Department of State Health Services (DSHS) concurs with the recommendations of the Pediatric Tuberculosis Collaborative Group of the American Academy of Pediatrics published in PEDIATRICS Vol. 114, No. 4, October 2004. It does not recommend a routine TST for school entry, day care attendance, Special Supplemental Nutrition Program for Women, Infants, and Children eligibility, or camp attendance for a child or adolescent at low risk for latent tuberculosis infection (LTBI).

Primary care providers should screen children and adolescents for LTBI risk factors by using a risk-assessment questionnaire (TB Questionnaire, EF12-11494 available at <http://www.dshs.state.tx.us/idcu/disease/tb/forms/>). A decision to place a TST should be based on identification of a risk factor on the questionnaire or a new risk factor that has been acquired since the last assessment. This decision is also a commitment to evaluate the patient completely and if indicated to provide treatment for LTBI or refer to the local or regional health department TB Program for treatment.

A trained health care worker must place the TST by the Mantoux method and must measure and interpret the TST by touching and measuring the indurated area. Providers shall not rely on a parent or other individual to call the provider with a description and or measurement of the reaction to the test. A TST may be repeated immediately at least 2 inches away from the original site, if the first test is administered incorrectly. If the patient does not return for reading within 48-72 hours, the TST may be repeated as soon as practical. If a child or adolescent has a history of a previously positive TST without written documentation of the millimeters of induration, the TST should be repeated. Repeat testing should be avoided if there is a history of a severe, immediate reaction to TST and such an individual should be screened for symptoms of TB disease if risk factors for LTBI or TB disease are present.

Children with a documented history of a previously positive TST should not be given a repeat TST; but should be screened for symptoms of TB disease and receive diagnostic chest radiography, if they have a subsequent significant exposure to someone with TB disease.

Asymptomatic children should not be excluded from school or other group activities pending the evaluation of a positive TST, which would include diagnostic chest radiography and might include others tests depending on the radiography results.

## **2.1 Special Situations:**

**2.1.1 TB Disease** – Children and adolescents with symptoms of TB disease should receive a full medical evaluation including TST, chest radiograph, and collection of sputum specimens or early morning gastric aspirates. Children and adolescents with prolonged or frequent contact with persons with confirmed or suspected infectious tuberculosis disease should receive a TST and if less than 5 years of age, they should also receive diagnostic chest radiography. Children or adolescents with radiographic or clinical findings suggesting tuberculosis disease should receive a TST within 72 hours.

**2.1.2 HIV/AIDS** - Children and adolescents with HIV/AIDS should receive an annual TST beginning at age 3-12 months. A medical evaluation for treatment should follow a positive skin test result. However, a negative skin test result does not exclude the possibility of TB disease in the presence of information from the child's medical history, clinical or radiographic findings suggestive of TB.

**2.1.3 Correctional Facilities** – Children and adolescents should be screened for symptoms of TB disease and receive a TST on admission or readmission to a correctional or detention facility. They should receive a TST annually thereafter if their first test result is negative.

**2.1.4 Foster Care** – Because of the difficulty of obtaining valid information for a TB risk assessment questionnaire, children entering foster care should receive a TST at their first medical appointment after placement in foster care. However, children entering foster care who have symptoms of TB disease or known exposure to a person with TB disease should receive medical evaluation including a TST within 72 hours.

**2.1.5 Internationally Adopted Children** – Children being adopted from a foreign country who have symptoms of TB disease should receive a full medical evaluation including a TST within 72 hours of arrival in the United States. Because of the difficulty of obtaining valid information for a TB risk assessment questionnaire, children adopted from a foreign country should receive a TST at their first medical appointment after coming to the United States. In addition, because of the risk for a false-negative TST after recent exposure to someone with TB disease or secondary to malnutrition, a repeat TST should be administered 3 to 6 months after internationally adopted children arrive in the United States.

**2.1.6 Immunosuppressive Medications** – A TST should be administered to children and adolescents before or at the same time as starting immunosuppressive medications that could increase their risk of progressing from LTBI to TB disease (e.g., steroids, chemotherapy, tumor necrosis factor  $\alpha$  antagonists).

**2.1.7 Medical Conditions** – Children at increased risk of progression from LTBI to TB disease due to medical condition (e.g., diabetes, chronic renal failure, malnutrition, congenital or acquired immunodeficiencies) should receive a TST at time of diagnosis or circumstance.

**2.1.8 Live Virus Vaccines** - A TST can be administered at the same time as live virus vaccines (e.g., measles, varicella). If not administered at the same time, wait 6 weeks to administer the test.

**2.1.9 Texas Health Steps Participants** – In most of Texas, each child should be evaluated annually for risk of TB exposure or infection using the Texas Health Steps TB Screening and Education Tool (TB Questionnaire EF12-11494). The first time the questionnaire is answered, children with one or more risk factors should receive a TST. At subsequent visits, a new occurrence of risk should result in a TST.

Children enrolled in the Texas Health Steps Program who have no known risk factors, but who reside or have resided in counties with greater than 1.5 times the TB rate for Texas (a list of counties is available at <http://www.dshs.state.tx.us/idcu/disease/tb/statistics/hiprev/>) should receive a TST at 1 year of age and once between the ages of 4 to 6 years, and then again between the ages of 11 to 16 years. Such a decision should be based on the local epidemiology of tuberculosis. The TB screening and education tool (TB questionnaire) should be administered at all other annual visits.

**2.2.0 BCG** (Bacillus of Calmette and Guérin) – A history of BCG immunization is not a contraindication to administering a TST and should not change the interpretation of the results.

**3.0 Definitions**

**BCG (Bacillus of Calmette and Guérin) vaccine** – a vaccine given in many countries with a high burden of tuberculosis that may lessen the development of serious forms of tuberculosis but does not prevent latent TB infection.

**Children and adolescents** – persons from birth to 18 years of age

**LTBI** – latent tuberculosis infection is characterized by a positive reaction to a TST, the absence of any symptoms of active TB, and a chest x-ray that is not suggestive of active TB disease.

**TST** – a tuberculin skin test

**4.0 Persons Affected**

Health care providers, organizations that serve children, local and regional health department TB programs

**5.0 Responsibilities**

- Administrators, directors, or managers responsible for day-to-day operations of settings that serve children at risk for exposure to infectious TB shall insure that their facility has procedures in place to prevent the transmission of *Mycobacterium tuberculosis*. They shall be responsible for designating someone in their organization to report all occurrences of LTBI or TB disease to the local or regional health department.
- Local and regional health departments shall educate health care providers and administrators of organizations that serve children about basic TB facts and appropriate measures for screening children for LTBI or TB disease. They shall be the primary organization responsible for implementation of this policy. Where a known exposure has occurred, the local or regional health department shall be the lead agency to manage the contact investigation.

**6.0 Procedures**

*For procedures on administering, reading, and interpreting a tuberculin skin test by the Mantoux method, see Procedures for Testing for Tuberculosis Infection at <http://www.dshs.state.tx.us/idcu/disease/tb/publications/default.asp>.*

**7.0 Revision History**

Date	Action	Section
October 29, 1996	New	
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