Tuberculosis Screening for Adults in Various Settings

Purpose

The purpose of this document is to outline tuberculosis (TB) screening of adults in various settings. Tuberculosis (TB, or *M. tuberculosis*) is an airborne disease. The risk of exposure and infection is generally low, though there are factors that increase the likelihood of developing TB infection or disease. This document describes the factors and settings that place adults at risk for TB and outlines when and how to screen them for TB.

General TB Screening Recommendations

The Texas Department of State Health Services (DSHS) Tuberculosis and Hansen's Disease Unit (TB Unit) recommends that only adults with risk factors for TB receive TB screening. Providers should base screening on:

- The risk of encountering someone with infectious TB; and
- The risk factors that make someone more likely to develop TB disease once infected.

Screening people with no risk factors for TB based on administrative requirements is costly and may not yield accurate results. Facilities, schools and other settings that want to provide TB screening should focus efforts on people with TB risk factors, as part of a comprehensive infection prevention plan. The TB Unit does not recommend screening low-risk adults for TB.

Who is at Risk for Tuberculosis?

People who live or work in settings where TB exposures are more likely to occur are at risk for TB. People at risk for developing TB disease were recently infected with the TB bacteria and/or have medical conditions that weaken the immune system. This makes them more likely to progress to TB disease if infected.

Adults with risk factors for TB exposure include:

- People who have close contact with anyone who has infectious TB disease
- People who immigrated from areas of the world with high rates of TB (most countries in Latin America, the Caribbean, Africa, Asia, Eastern Europe, and Russia. See World Health Organization Global Tuberculosis Report for country-specific details).
- People in groups with high rates of TB transmission, such as people experiencing homelessness, injection drug users and people with HIV
- People who work or live with anyone at high risk for TB, in places such as hospitals, homeless shelters, correctional facilities, nursing homes and

residential homes for people with HIV

Adults at risk for progression to TB disease, if infected, include people with the following medical conditions:

- HIV (the virus that causes AIDS)
- Substance abuse
- Silicosis
- Diabetes mellitus
- Severe kidney disease
- Low body weight
- Organ transplants
- Head and neck cancer
- Drugs that lower the body's ability to fight infection, such as long-term corticosteroids or drugs for organ transplant, rheumatoid arthritis, Crohn's disease, or other auto-immune diseases

Elements of a TB Screening

TB screening steps are:

1. Ask about TB risk factors and symptoms of active TB disease (i.e. cough, fever, chills, night sweats, and/or unexplained weight loss) using a TB Signs and Symptoms Screening Questionnaire. *
2. Perform an Interferon Gamma Release Assay (IGRA) or place a Tuberculin Skin Test (TST).
3. Interpret the TST or IGRA based on individual risk factors. Refer for further diagnostics when appropriate, as outlined in *Interpreting TB Screening Tests*.

**The Targeted Tuberculin/IGRA Testing Screening Form (DSHS Form TB-207) is a sample screening form that you may use to assess and document TB screening results.*

The TB Unit recommends IGRA as the preferred screening test. If you can't use the IGRA, use the TST and interpret the results as outlined in *Interpreting TB Screening Tests*.

Performing an IGRA Test

The IGRA is a blood test performed by a professional trained in phlebotomy. The specimen is processed in a laboratory. Two Food and Drug Administration (FDA)-approved IGRAs are available for TB screening:

- QuantiFERON-TB Gold Plus
- T-SPOT.*TB*

The TB Unit does not recommend one IGRA over the other. Advantages of the IGRA are that it requires one appointment, produces results in 24 hours and removes subjectivity in results interpretation.

Administering a TST

Health care workers trained in TST administration must place the TST following the Mantoux method. Read the results by touching and measuring the indurated (hard) area within 48–72 hours of placement. Do not administer a TST if there is a history of a severe, immediate reaction to the test.

Interpreting TB Screening Tests

When interpreting the TST or IGRA, consider the person's medical and social risk factors. TST interpretation guidelines are on the Centers for Disease Control and Prevention (CDC) Tuberculin Skin Testing Fact Sheet. Write test results in millimeters of induration rather than "positive" or "negative." For the IGRA, do not use indeterminate or invalid results to make clinical decisions. Only a licensed health care provider can determine if repeat screening is necessary.

If the TST or IGRA result is *positive* in people with risk factors for TB:

- Refer for a chest radiograph (x-ray) and further evaluation by a licensed healthcare provider to diagnose TB infection or TB disease.
- Discuss options for treatment of TB infection if the provider rules out active TB.

If the TST or IGRA result is *positive* in people with NO risk factors for TB:

- The TB Unit does not recommend testing people with no identified TB risk factors. But, if an adult with *no* TB risk factors and no symptoms of active TB receives a test, provide a second confirmatory test.
- If the second test is positive, refer for a chest x-ray and further evaluation by a licensed healthcare provider to diagnose TB infection or TB disease. Discuss options for treatment of TB infection if identified.
- If the second test is negative and there are no symptoms of active TB, TB infection is unlikely.

If the TST or IGRA result is negative:

- Adults with a negative test and no symptoms or known exposure to TB are unlikely to have TB.

Refer adults with signs or symptoms of active TB for medical evaluation regardless of IGRA or TST results.

Evaluating Adults with a Previously Positive IGRA or TST, a History of Completed Therapy for TB Infection or Disease, or Both

Do not repeat a TST or IGRA in adults with a *documented* history of either or both:

- Previously positive IGRA or TST result (written in millimeters)
- Previously *completed* therapy for TB infection or disease

In these instances, perform a TB signs and symptoms review and a baseline chest x-ray to rule out active TB disease when a client needs TB screening. The TB Unit recommends using a TB symptom screening when adults with previously positive test results or those with documented treatment completion records need annual screening.

The TB Unit does not recommend annual or follow-up chest x-rays for people with no symptoms or TB exposure.

Tests of TB Infection and Vaccines

In many parts of the world where TB is common, providers use the Bacille Calmette-Guérin, (BCG) vaccine to protect infants and young children from serious, life-threatening diseases. The vaccine protects against miliary TB and TB meningitis. But it does not completely prevent TB. **Providers can test and treat a person with a history of BCG vaccination for TB infection.**

The TB Unit recommends an IGRA test in BCG-vaccinated people to avoid false-positive TST results due to the vaccine. If you cannot use an IGRA, place and interpret a TST as outlined in *Administering a TST* and *Interpreting TB Screening Tests*. The effect of the BCG vaccine diminishes over time and may have little to no effect on TST results among adults who received the vaccine as a child. Interpret TST reactions based on risk stratification regardless of BCG vaccination history.

Testing for TB should not be delayed because of timing of a COVID-19 vaccine. Both the TST and the IGRA can be administered before, after, or during the same encounter as the COVID-19 vaccination. Visit the CDC website for any updates to TB screening practices in people vaccinated against COVID-19.

Other vaccines may impact TST or IGRA results due to temporary immune suppression, causing false-negative reactions. These are usually live virus vaccines, such as measles-mumps-rubella (MMR). Providers should consult the local or regional health department (L/RHD) TB program or a DSHS-recognized TB medical consultant before deciding to delay a TST or IGRA or repeat a confirmatory test after vaccination.

Frequency of TB Screening

Providers in congregate settings may perform a risk assessment to guide TB screening efforts. The TB Unit recommends that providers work with the L/RHD to determine adequate risk and screening recommendations. Use the Congregate Settings Risk Assessment (DSHS TB-500) for this assessment.

Reporting TB

Healthcare providers must report to the L/RHD TB Program when they suspect or identify TB infection or disease. Healthcare providers should also make referrals to the L/RHD when electing to treat the person in a public health setting. See How to Report Tuberculosis in Texas.

Other Considerations for Developing a TB Screening Program

Following the principle that "a decision to test is a decision to think," TB screening providers should consider these questions:

1. Are staff trained to administer and interpret TB screening tests? For example, TST readings are positive only when certain factors are present.
2. Do people with positive TB screening tests have access to x-ray services?
3. Is there a policy for people who test positive for TB? For example, can staff with a positive TB test return to work while awaiting diagnostics?
4. Will staff offer treatment to people diagnosed with TB infection after screening?
5. Will staff collaborate with the L/RHD TB program to develop screening, testing and treatment plans? See Texas Public Health Regions.

Special Settings, Populations and Situations where TB Screening is Recommended

Academic Institutions

Faculty and staff of academic institutions (AIs) are at no greater risk than the public, so limit TB screening to people with risk factors for TB. When AIs require TB screening for foreign-born students or other students who live in campus-owned dormitories, the AI must report TB infection or disease to the L/RHD, as required by Texas Administrative Code, Title 25, Part 1, Chapter 97, Subchapter A.

AIs that train future health care workers should screen students according to guidelines for screening health care personnel.

Health Care Personnel

Settings such as hospitals, clinics, laboratories, emergency medical services, medical settings in correctional facilities, home-based health care and outreach settings, long-term care facilities, and clinics in homeless shelters should have TB screening policies that align with current state and national recommendations.

The TB Unit follows CDC recommendations in Tuberculosis Screening, Testing, and Treatment of U.S. Health Care Personnel: Recommendations from the National Tuberculosis Controllers Association and CDC, 2019:

- Screen health care personnel (HCP) for TB upon hire with a single IGRA or two-step TST, a TB symptoms screening questionnaire, and an individual risk assessment to interpret test results. The TB Unit developed the Baseline TB Assessment for Health Care Personnel (DSHS Form TB-600) to guide screening activities.

- Provide annual screening to HCP with a history of untreated TB infection using a TB symptoms screening questionnaire and not a TST or IGRA. The TB Unit developed the After Hire TB Assessment for Health Care Personnel (DSHS Form TB-601) to guide this screening. Educate HCS on the benefits of treating TB infection to prevent TB disease.

- Make the frequency for testing other HCP after hire with a TST or IGRA on an individual basis depending on occupational exposure risk. In the absence of TB exposure and symptoms, the TB Unit does not recommend annual testing.

- Provide annual training on risk factors and symptoms of TB to HCP. The TB Unit developed the TB Screening Results and Work Clearance for Health Care Personnel (DSHS Form TB-602) to document screenings, provide education and determine if HCP may return to work (if applicable).

- Health care settings should have a TB infection prevention plan to ensure prompt detection and treatment of infectious TB. The plan should outline administrative and environmental controls, including how to use respiratory protective equipment. Complete an annual TB risk assessment as outlined in Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Health-Care Settings, 2005 to ensure an effective plan.

Staff in Facilities that Provide Care to Children

Facilities with a permit or license from Texas Health and Human Services (Texas HHS) to provide care to children will abide by the Texas Administrative Code (TAC) Title 26, Part 1 and the chapters that apply to the type of facility.

Residents and Staff in Facilities that Provide Adult Care Services such as Day Care, Day Activity and Assisted Living

Facilities with a permit or license from Texas HHS to provide care to adults in certain facilities will abide by the TAC Title 26, Part 1 and the chapters applicable to the facility.

Foreign-Born Adults

L/RHDs will provide TB screening and treatment for immigrants and refugees reported by the CDC Electronic Disease Notification (EDN) system with Class A, B1, and B2 TB notification status, as needed. L/RHDs will also accept referrals for treatment of TB infection or disease from civil surgeons, based on CDC TB Technical Instructions for Civil Surgeons. Adults from areas of the world with high rates of TB with no options for primary care may receive TB evaluation at an L/RHD.

Correctional Facilities

Correctional facilities will provide TB screening to inmates, staff and people who visit regularly based on the recommendations in the CDC publication, "Prevention and Control of Tuberculosis in Correctional and Detention Facilities," MMWR, Vol. 55, RR-09." Correctional facilities subject to Texas Health and Safety Code, Chapter 89 will also abide by TB screening requirements for inmates, staff and volunteers in TAC Title 25, Part 1, Chapter 97, Subchapter H.

Facilities that Provide Services to Homeless People

In cooperation with the L/RHD, facilities that provide services to homeless people will perform a risk assessment at the facility to identify the potential for exposure to people with infectious TB disease. The L/RHD will use assessment results to determine if a targeted screening and testing program is appropriate. The L/RHD will check screening outcomes (at least yearly) to determine if the program should continue.

Facilities that Provide Services to High-Risk Clientele

Workplaces that provide services not related to health care, especially residential services to clients whose risk for progression to TB disease (if infected) is very high, may choose to provide or require TB screenings for staff, volunteers or clients.

Settings, Populations and Situations where TB Screening is Not Routinely Recommended

Settings, populations and occupations in Texas not outlined in *Special Settings, Populations and Situations where TB Screening is Recommended* generally have a low risk for encounters with people with infectious TB. These should not require routine TB screening for staff at low risk for TB exposure, infection or disease.

The TB Unit does not recommend routine TB screening for adults working in:

- Food service
- Barbershops, beauty salons
- Elementary, middle or high schools
- Other places where the risk for encountering a person with infectious TB disease is no greater than for the public

People Affected

These recommendations are relevant to staff responsible for TB screenings, such as:

- Administrators, directors and managers of academic institutions, correctional facilities, homeless shelters, health-care settings, residential facilities for adults and children in institutional settings, and other sites where people at high risk for TB work or spend time

- Staff responsible for infection control or occupational health
- Supervisors of paid and unpaid people working in settings with people who may have infectious TB disease
- L/PHRs

Responsibilities

- Administrators, directors and managers responsible for day-to-day operations of settings that serve people at risk for exposure to infectious TB should implement procedures to prevent the transmission of TB.
- Staff responsible for infection control or occupational health should perform a TB risk assessment for their facility and recommend appropriate TB screening for people served in their facility.
- Supervisors should look at individual and occupational risk factors to determine if their staff are at risk for exposure to people with infectious TB disease. They should ensure that at-risk staff receives appropriate TB screening.
- L/RHDs will check local TB surveillance data to determine appropriate settings for targeted testing programs.

References

1. Clinical Infectious Diseases. (2016). *Official American Thoracic Society/Infectious Diseases Society of America/Centers for Disease Control and Prevention Clinical Practice Guidelines: Diagnosis of Tuberculosis in Adults and Children*. cdc.gov/tb/publications/guidelines/pdf/cid_ciw694_full.pdf
2. Heartland National Tuberculosis Center and Mayo Clinic. (2020). *The Spectrum of Tuberculosis from Infection to Disease, TB at a Glance, 3rd Ed.* heartlandntbc.org/assets/products/The_Spectrum_of_TB.pdf.
3. Centers for Disease Control and Prevention. *Tuberculosis Screening, Testing, and Treatment of U.S. Health Care Personnel: Recommendations from the National Tuberculosis Controllers Association and CDC, 2019*. MMWR 2019; 68(No. RR-19):439–443. cdc.gov/mmwr/volumes/68/wr/mm6819a3.htm?s_cid=mm6819a3_w
4. Centers for Diseases Control and Prevention. *Prevention and Control of Tuberculosis in Correctional and Detention Facilities: Recommendations from CDC. Endorsed by the Advisory Council for the Elimination of Tuberculosis, the National Commission on Correctional Health Care, and the American Correctional Association*. MMWR 2006; 55(No. RR-09): 1-44. cdc.gov/mmwr/preview/mmwrhtml/rr5509a1.htm

Definitions

Congregate Setting — Setting in which a group of people live, meet or gather in close

physical proximity, either for a short or long time. Examples include prisons, dormitories and homeless shelters.

Health Care Personnel (HCP) — Paid and unpaid staff working in health care settings. HCP have the potential for direct or indirect exposure to patients or infectious materials, including body substances (e.g., blood, tissue, and specific body fluids); contaminated medical supplies, devices, and equipment; contaminated environmental surfaces; or contaminated air. HCP include, but are not limited to, emergency medical service staff, nurses, nursing assistants, home health staff, physicians, technicians, therapists, phlebotomists, pharmacists, students and trainees, contractual staff not employed by the healthcare facility, and people not directly involved in patient care, but who could be exposed to infectious materials that can be transmitted in the health care setting (e.g., clerical, dietary, environmental services, laundry, security, engineering and facilities management, administrative, billing, and volunteer staff). Clinical laboratory staff are not HCS. See Infection Control in Healthcare Personnel: Infrastructure and Routine Practices for Occupational Infection Prevention and Control Services (2019).

Health Care Settings — Settings where providers deliver health care, including acute care facilities, long-term acute care facilities, inpatient rehabilitation facilities, nursing homes and assisted living facilities, home health care, vehicles (e.g., mobile clinics), and outpatient facilities such as dialysis centers, physician offices and others. See Infection Control in Health Care Personnel: Infrastructure and Routine Practices for Occupational Infection Prevention and Control Services (2019).

IGRA — Interferon Gamma Release Assay; a TB blood test

TB Disease — Condition characterized by a combination of symptoms such as cough with or without blood, fever, night sweats, or swelling of lymph nodes; and/or chest x-ray findings suggestive of active TB disease. Results of the TST or IGRA can be positive or negative. People with TB disease can infect others.

TB Infection — Condition characterized by a positive IGRA or TST, the absence of any symptoms of TB disease and a chest x-ray not suggestive of TB disease. Their TB is dormant, is not presently causing illness, and they cannot infect others.

TB Screening — Comprehensive process that includes questions about TB symptoms and may include other diagnostic procedures, such as an IGRA or TST, a chest x-ray, physical examination, or collection of specimens for laboratory analysis

Tests of TB Infection – The TST or IGRA

TST — Tuberculin Skin Test; a TB skin test

Two-Step TST — Procedure for baseline skin testing of people who receive serial TSTs. If an initial TST is negative, administer a second TST 1–3 weeks after the first TST result. If the second TST is positive, assume the change is due to the immune system's boosted ability to recognize the test solution and the first negative result was a false negative.