Below the Surface: Collaboration Between Public Health & Community Providers to Treat Latent TB Infection

Rachel Munoz, RN

February 28, 2024

Screening & Treating Tuberculosis Infection
February 28, 2024
San Antonio, Texas

Rachel Munoz, RN has the following disclosures to make:

- No conflict of interests
- No relevant financial relationships with any commercial companies pertaining to this educational activity

TEXAS
Health and Human Services

Texas Department of State Health Services

Below the Surface:
Collaboration Between Public Health & Community Providers to Treat Latent TB Infection

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Objectives

By the end of this presentation, you should be able to:

- Identify Texas priorities for TB prevention and care
- Identify the impact of latent TB infection (LTBI) in Texas
- Discuss opportunities for collaboration with public health programs, private providers and correctional facilities to identify and treat LTBI
- Develop resources to share with providers to screen, diagnose, and treat those with LTBI

Health

Deadly tuberculosis outbreaks in US linked to tainted bone grafts

U.S. regulators said at least 36 people had procedures done that used the recalled product manufactured by Aziyo Biologics.

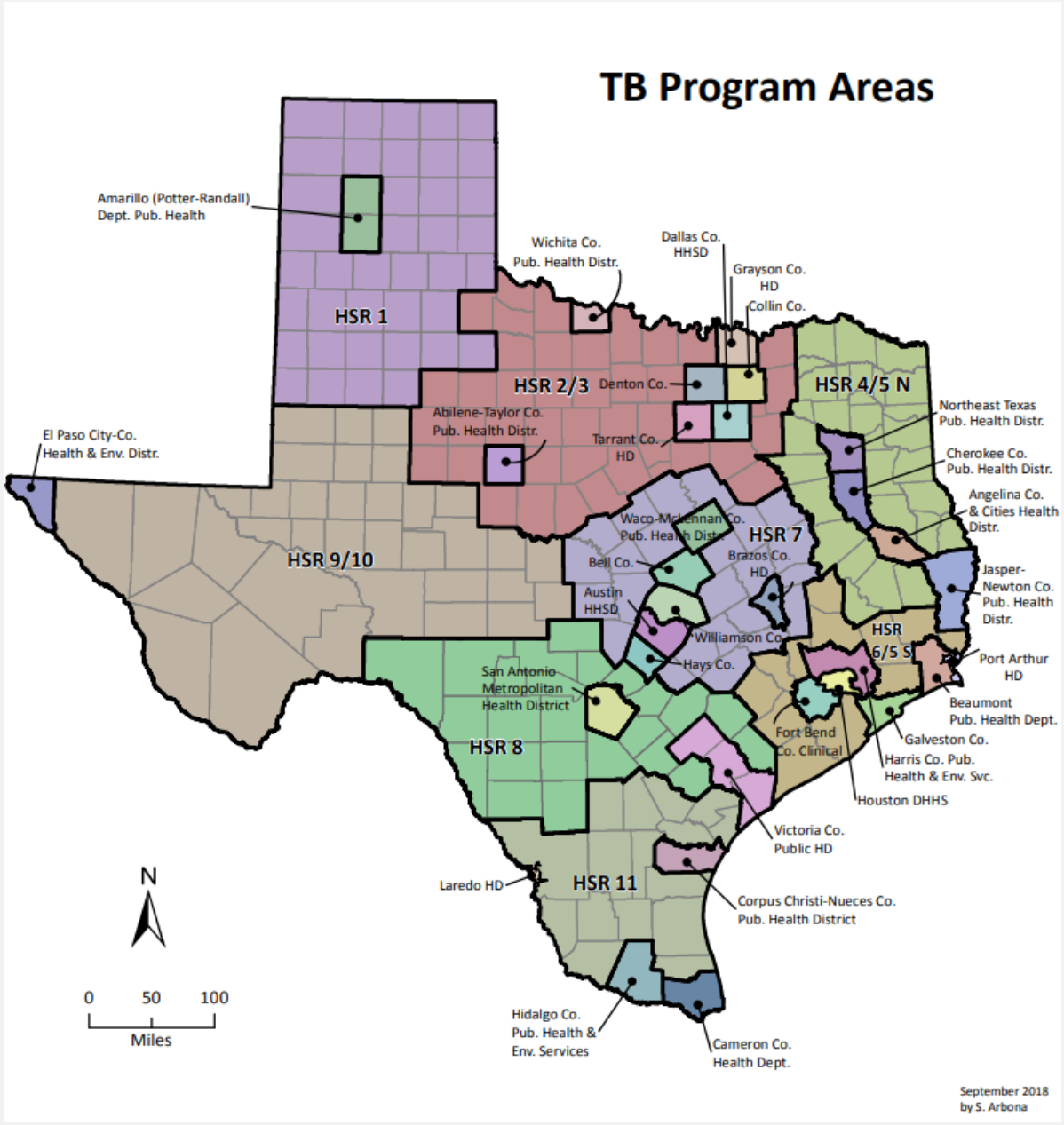
By Mad

TEXAS Health and Human Services

Texas Department of State Health Services

Impact of TB in Texas, 2022

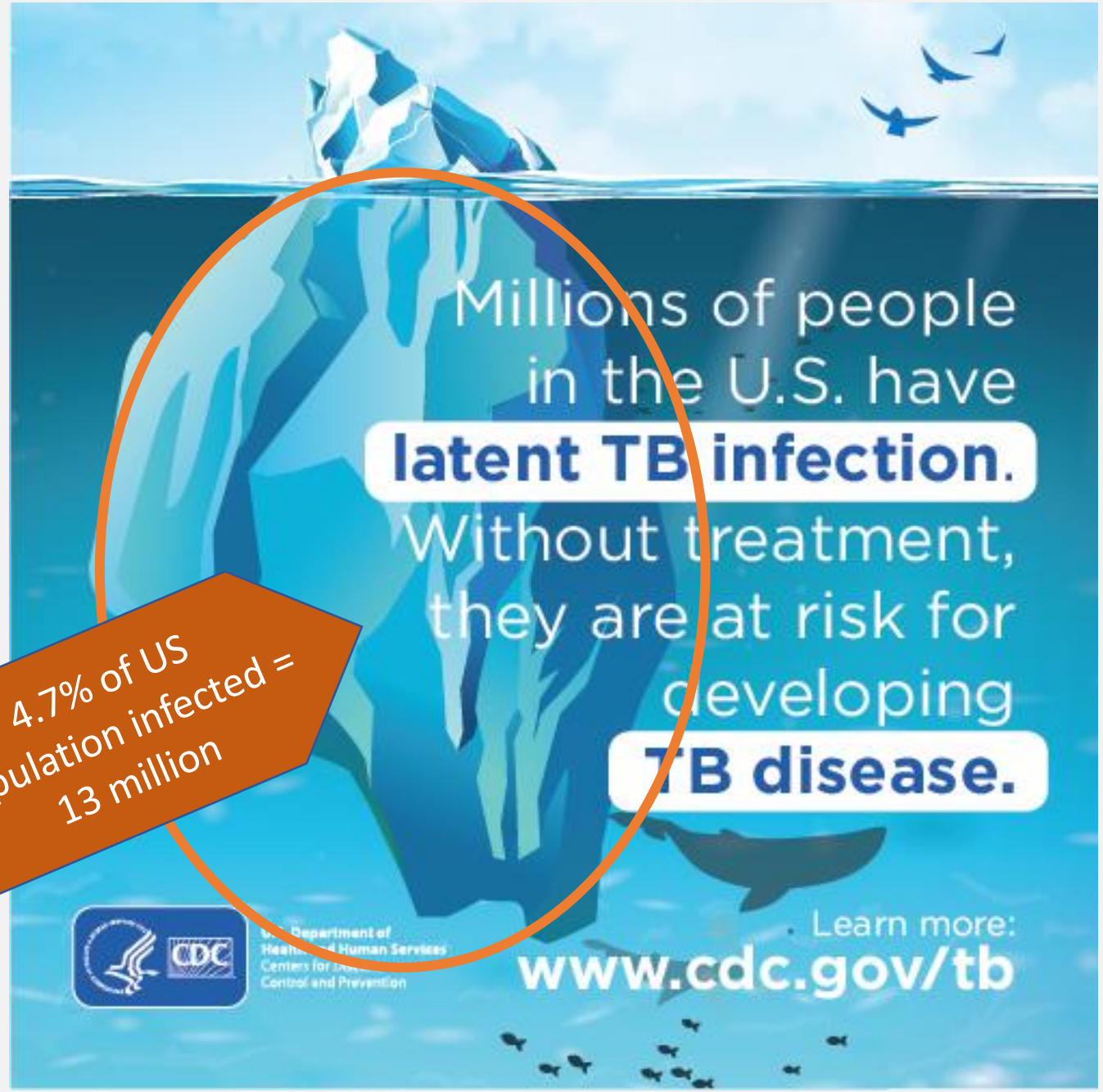
- 1,097 people diagnosed with TB
  - Ranks #2 among U.S. states with the highest incidence of TB
  - Increase of 9.9 percent from 2021
- 2,900 people with latent TB infection were treated in local or regional health departments (L/RHD)
- 60 people (5.5 percent) diagnosed in congregate setting
  - 2.1 percent (23 people) in a city or county jail
  - 7.7 percent (84 people) in other correctional facilities



Texas Priorities

Perform active TB surveillance to:

- Find and treat people with TB disease
- Find and treat people exposed to TB
- Find and treat people at high-risk for TB
  - Foreign-born individuals referred from the Electronic Disease Notification (EDN) System
  - Targeted populations based on local epidemiology



https://www.cdc.gov/tb/statistics/ltbi.htm

TEXAS Health and Human Services

Texas Department of State Health Services

Latent TB Infection Tool Kit

Radiology Referrals

Reporting/ Referral

Testing with TST or IGRA

Medications and Case Management

Who to screen

Provider and Patient Education

Who to Screen

Reason for Screening

Identify those likely to be infected

Identify those likely to progress to disease

TB Risk Factors

2022: 1,097

Those likely to be infected:

- Contacts 7,715
- People from country where TB disease is common, or frequent travelers to these areas
- Employees or residents of high-risk congregate settings (e.g., correctional facilities, long-term care facilities or nursing homes, and shelters for persons experiencing homelessness)
- Health care workers exposed to patients with TB disease
- Infants, children, and adolescents exposed to individuals with increased risk for TB disease

TB Risk Factors

2022
1,097

Those with increased risk for progression to disease after infected:

- People with HIV infection
- People infected with TB bacteria in the last 2 years
- Children younger than 5 years of age — 29% with TB meningitis
- People recently infected with *M. tuberculosis* (within last 2 years)
- People who inject illegal drugs (such as injection drug use)
- People with weakened immune systems (e.g., diabetes) — 24.2%
- People receiving immunosuppressive therapy
- People with low body weight
- People who smoke (current or former)

Provider Collaboration

US Preventative Services Task Force (USPSTF)

USPSTF Recommendations, May 2023:

- Screen at risk populations for LTBI
- Benefit is moderate to substantial

Collaboration efforts:

- When to notify L/RHD
- Who to test and treat
- Reporting and referring
- Treatment completion
- Working together on shared patients

Final Recommendation Statement

Latent Tuberculosis Infection in Adults: Screening

May 02, 2023

Recommendations made by the USPSTF are independent of the U.S. government. They should not be construed as an official position of the Agency for Healthcare Research and Quality or the U.S. Department of Health and Human Services.

Recommendation Summary

Population	Recommendation	Grade
Asymptomatic adults at increased risk of latent tuberculosis infection (LTBI)	The USPSTF recommends screening for LTBI in populations at increased risk. See the "Assessment of Risk" section for additional information on adults at increased risk.	B

https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/latent-tuberculosis-infection-screening

Advisory Council for the Elimination of TB (ACET)

Identify and Engage Persons at risk and their providers

- Raise awareness, i.e., community outreach, provider outreach
  - Know your community
  - Encourage TB screening
  - Deliver community specific and culturally competent messages

Increase testing of at-risk persons and increase treatment compliance

- L/RHD should assist in the following:
  - Educate and disseminate effective tools
  - Disseminate adherence strategies, e.g., electronic directly observed therapy (eDOT)
  - Educate on roles and responsibilities
- Incentives/enablers
- Consultative capacity

Measure outcomes of LTBI testing and treatment

- Report to L/RHD
- L/RHD report to DSHS surveillance reporting system

How to Report Tuberculosis | Texas DSHS

Secure funding for TB prevention activities

- Establish partnerships
  - Create a common vision
  - Consistently share information
  - Create a partnership culture
- Create budget and secure funding
  - eDOT
  - Telehealth

https://www.cdc.gov/tb/publications/ltbi/pdf/Roadmap-for-Advancing-TB-Elmination.pdf

Priority Populations Managed in L/RHDs

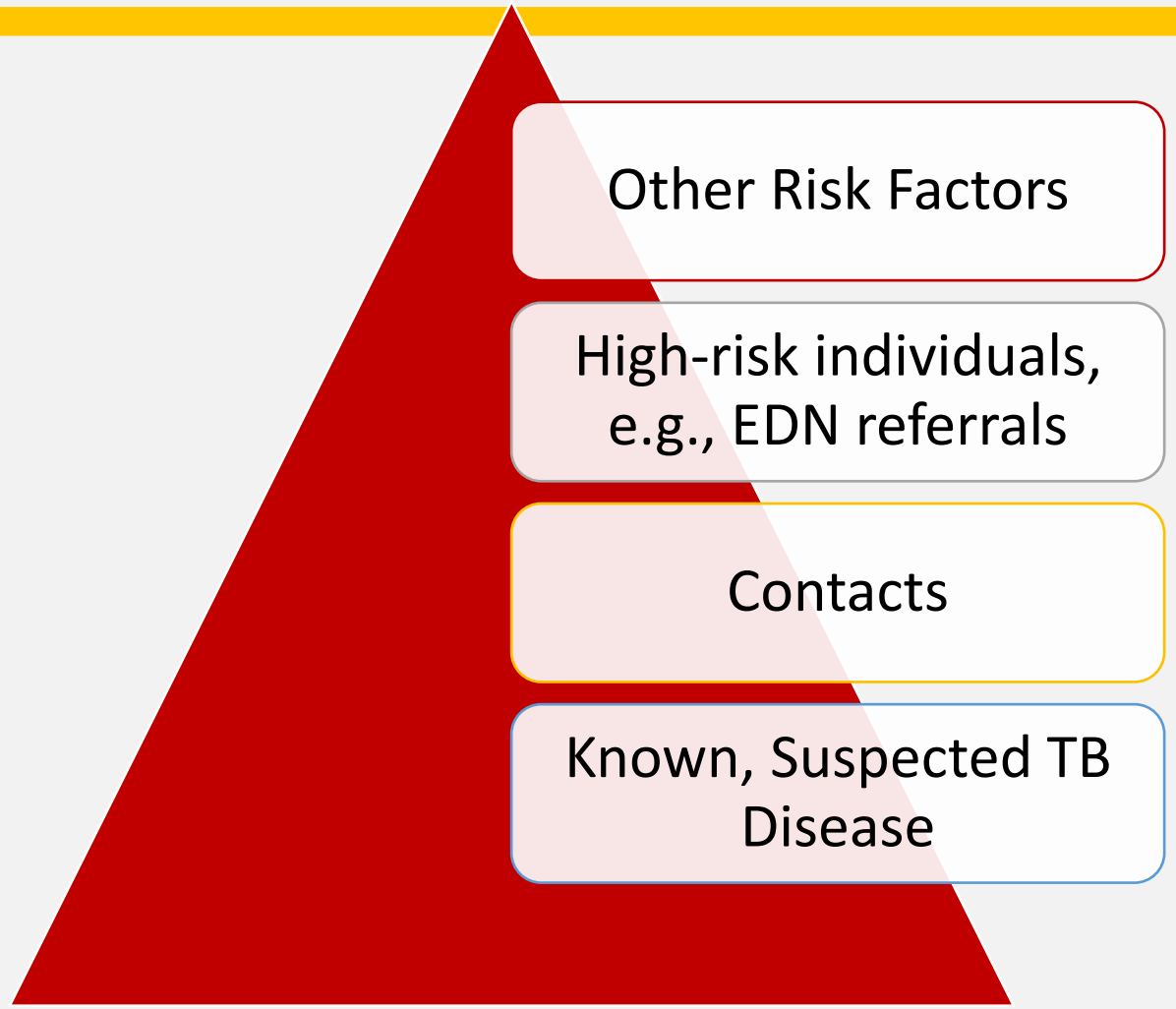


Table 1: Prioritizing Evaluation for TB Services

A	B	C
Program-Eligible Patients Who Should be Evaluated Routinely	**Program-Eligible Patients Who May Be Evaluated As Resources Allow**	**Non-Eligible Patients**
• Anyone in whom there is known, or a suspicion of, active TB disease. • Contacts to a person with known or suspected TB disease. • Anyone reported from the EDN, and immigrants from areas of the world with high rates of TB who are seeking permanent residence, after full evaluation from a Civil Surgeon* or who have entered the United States through a government-sponsored program. • Children aged 4 and younger with a positive TB test. • Children aged 5 and older with risk factors for TB exposure as identified on the *Tuberculosis Questionnaire for Children* (dshs.texas.gov/idcu/disease/tb/faqs/#students) ***and*** who have a positive TB screening test, when treatment for TB infection is requested of the L/RHD.	• Children aged 5 and older who were referred for a TST/IGRA based on risk factor(s) identified on the *Tuberculosis Questionnaire for Children* (dshs.texas.gov/idcu/disease/tb/faqs/#students) and who do not have resources for medical care** outside the TB program. • Anyone with a positive TB screening test and medical risk factors for developing TB disease, who do not have resources for medical care** outside the L/RHD. This most commonly includes people with HIV, people on immunosuppressant medications, or people taking tumor necrosis factor (TNF) alpha inhibitors. • People who work or reside with other people at high risk for TB in facilities or institutions such as hospitals, homeless shelters, correctional facilities, nursing homes and residential homes for those with HIV, as determined by epidemiological data to support testing and treatment†. • Other non-U.S.-born individuals not referred from EDN or a Civil Surgeon* seeking service for TB infection and who do not have resources for medical care** outside the TB program.	• People with no known risk factors for TB infection or progression to TB disease.

*Refer to XI. Manage Electronic Disease Notification System and Other Foreign-Born Referrals.

**Resources for medical care include Medicare providers, Texas Health Steps providers, community sliding scale clinics, and Federally Qualified Health Centers (FQHCs) who provide TB screening and treatment for TB infection. The L/RHD may choose to evaluate and treat patients if it is determined that these entities are unable to adequately address the patient's TB needs.

†Refer to XII. Conduct Targeted Testing.

https://www.dshs.texas.gov/sites/default/files/LIDS-TB/policies/TexasTBManual.pdf

Priority Populations for Community Providers

Populations to consider for screening and treating:

- Those who test positive for LTBI who have medical risk factors for developing disease but have medical care resources
- Students or employees who test positive
- Those found through incidental screenings, for administrative purposes*

*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

A decision to screen is a decision to treat and a decision to treat is to complete!

Screening Considerations

Screening at-risk populations should be epidemiologically driven	• *Unfocused population-based testing is not cost-effective and drains resources*
TB screening is not recommended for administrative reasons alone	• *Low risk individuals, or those with no known risk factors for tuberculosis*
Screening may be needed for those in low-risk settings as a baseline test	• *May 2019 updated recommendations for TB screening, testing, and treatment of health care personnel*

Before TB Infection is Diagnosed

Maintain a high index of suspicion for TB disease in high-risk populations.

Never start treatment for LTBI in a patient with signs or symptoms of TB.

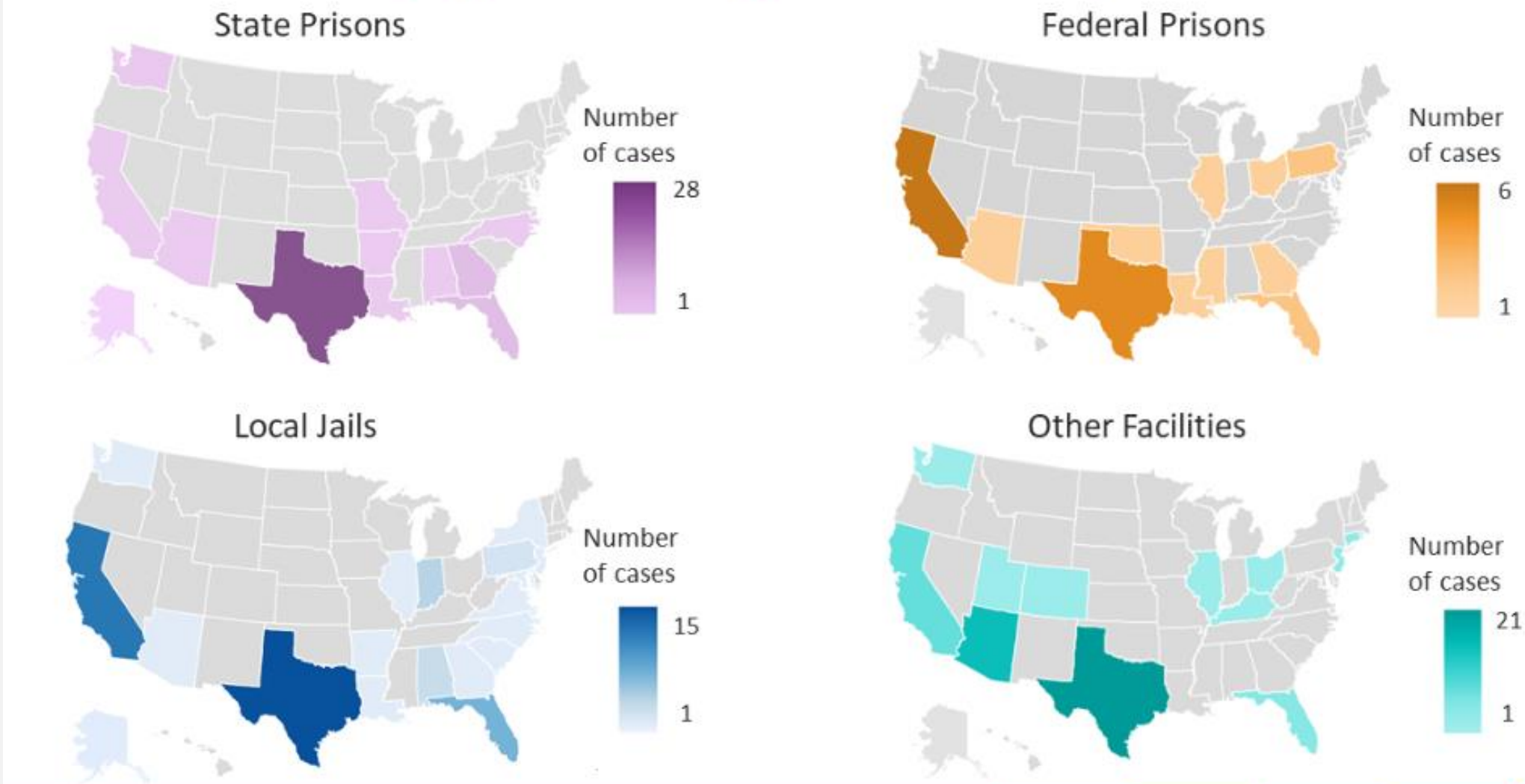
- ✓When in doubt, refer to L/RHD
- ✓Patient would need further work up before treatment is started

TB Screening in Correctional Facilities

Early Identification	Successful Treatment of TB Disease and LTBI	Efficient Contact Tracing	Reporting	Collaborative Discharge Planning
• Most effective way to prevent disease transmission	• Texas Administrative Code Part 1, Chapter 97, subchapter H Tuberculosis, Rule §97.176 Screening for Jails and Other Correctional Facilities	• L/RHD guide facilities in planning, implementing and evaluating an investigation	• Follow reporting requirements to L/RHD How to Report Tuberculosis | Texas DSHS	• Standards for Texas Correctional and Detention Facilities ○ Identify educational, medical or psychological needs ○ Develop plan to meet treatment completion ○ Coordinate between agencies to ensure continuity of care

Texas TB Manual, *Table 2: Coordination of Care for TB Managed in Facilities* https://www.dshs.texas.gov/tuberculosis-tb/tb-funded-programs
Texas Health and Safety Code - https://statutes.capitol.texas.gov/Docs/HS/htm/HS.89.htm
Standards for Texas Correctional and Detention Facilities- https://www.dshs.texas.gov/tuberculosis-tb/tb-education-training-resources/tb-prevention-care-correctional

TB Cases Among Correctional Facility Residents Aged ≥15 Years by Type of Facility, United States, 2021



https://www.cdc.gov/tb/statistics/surv/surv2021/images/Slide55.PNG?_=75551?noicon

Texas Statutory TB Reporting Requirements

Statutory Requirements

- **Purpose of TB control programs:**
  - Texas Health and Safety Code, Chapter 13, Subchapter B
- **Reporting communicable diseases:**
  - Texas Administrative Code, Title 25, Part 1, Chapter 97, Subchapter A
- **Duty to protect the public health to prevent and control communicable diseases (including quarantine):**
  - Texas Health and Safety Code Chapter 81
- **Screen and treat inmates for TB in jails:**
  - Texas Health and Safety Code Chapter 89

Reporting

TB Disease or Suspicion of TB – One Working Day

- Pending final laboratory results
- Positive nucleic acid amplification test (NAA)
- Clinically or lab confirmed disease
- Includes all *M.tb* complex, M. tuberculosis, M.bovis, M. africanum, M. canettii, M. microti, M. caprae, and M. pinnipedii

Latent TB Infection – Within One Week

- Positive result from an IGRA or skin test, and a normal chest x-ray with no presenting symptoms of TB disease.

https://www.dshs.texas.gov/notifiable-conditions

TEXAS Health and Human Services

Texas Department of State Health Services

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Access List Online

Contact Information

Texas Notifiable Conditions - 2023

Report all Confirmed and Suspected cases

24/7 Number for Immediately Reportable – 1-800-705-8868

Unless noted by*, report to your local or regional health department using number above or find contact information at *http://www.dshs.texas.gov/idcu/investigation/conditions/contacts/*

A – L	When to Report	L – Y	When to Report
*Acquired immune deficiency syndrome (AIDS) [1]	Within 1 week	Legionellosis [2]	Within 1 week
Amebic meningitis and encephalitis [2]	Within 1 week	Leishmaniasis [2]	Within 1 week
Anaplasmosis [2]	Within 1 week	Listeriosis [2, 3]	Within 1 week
Anthrax [2, 3, 25]	Call Immediately	Lyme disease [2]	Within 1 week
Arboviral infections [2, 4, 5]	Within 1 week	Malaria [2]	Within 1 week
*Asbestosis [6]	Within 1 week	Measles (rubeola) [2]	Call Immediately
Ascariasis [2]	Within 1 week	Meningococcal infection, invasive (*Neisseria meningitidis*) [2, 3]	Call Immediately
Babesiosis [2,5]	Within 1 week	Mumps [2]	Within 1 work day
Botulism (adult and infant) [2, 3, 7, 25]	Call Immediately [7]	Paragonimiasis [2]	Within 1 week
Brucellosis [2, 3, 25]	Within 1 work day	Pertussis [2]	Within 1 work day
Campylobacteriosis [2]	Within 1 week	*Pesticide poisoning, acute occupational [8]	Within 1 week
*Cancer [9]	See rules [9]	Plague (*Yersinia pestis*) [2, 3, 25]	Call Immediately
Candida auris [2, 3, 10]	Within 1 work day	Poliomyelitis, acute paralytic [2]	Call Immediately
Carbapenem-resistant *Enterobacteriaceae* (CRE) [2, 11]	Within 1 work day	Poliovirus infection, non-paralytic [2]	Within 1 work day
Chagas disease [2, 5]	Within 1 week	Prion disease such as Creutzfeldt-Jakob disease (CJD) [2, 12]	Within 1 week
*Chancroid [1]	Within 1 week	Q fever [2]	Within 1 work day
*Chickenpox (varicella) [13]	Within 1 week	Rabies, human [2]	Call Immediately
**Chlamydia trachomatis* infection [1]	Within 1 week	Rubella (including congenital) [2]	Within 1 work day
*Contaminated sharps injury [14]	Within 1 month	Salmonellosis, including typhoid fever [2, 3]	Within 1 week
*Controlled substance overdose [15]	Report Immediately	Shiga toxin-producing *Escherichia coli* [2, 3]	Within 1 week
Coronavirus, novel [2, 16]	Call Immediately	Shigellosis [2]	Within 1 week
Coronavirus Disease 2019 (COVID-19) [2]	Within 1 week	*Silicosis [17]	Within 1 week
Cryptosporidiosis [2]	Within 1 week	Smallpox [2, 25]	Call Immediately
Cyclosporiasis [2]	Within 1 week	*Spinal cord injury [18]	Within 10 work days
Cysticercosis [2]	Within 1 week	Spotted fever rickettsiosis [2]	Within 1 week
Diphtheria [2, 3]	Call Immediately	Streptococcal disease (*S. pneumo.* [2, 3]), invasive	Within 1 week
*Drowning/near drowning [18]	Within 10 work days	*Syphilis – primary and secondary stages [1, 19]	Within 1 work day
Echinococcosis [2]	Within 1 week	*Syphilis – all other stages including congenital syphilis [1,19]	Within 1 week
Ehrlichiosis [2]	Within 1 week	*Taenia solium* and undifferentiated *Taenia* infection [2]	Within 1 week
Fascioliasis [2]	Within 1 week	Tetanus [2]	Within 1 week
*Gonorrhea [1]	Within 1 week	Tick-borne relapsing fever (TBRF) [2]	Within 1 week
Haemophilus influenzae, invasive [2, 3]	Within 1 week	*Traumatic brain injury [18]	Within 10 work days
Hansen's disease (leprosy) [20]	Within 1 week	Trichinosis [2]	Within 1 week
Hantavirus infection [2]	Within 1 week	Tularemia [2]	Within 1 week
Hemolytic uremic syndrome (HUS) [2]	Within 1 week	Tuberculosis (*Mycobacterium tuberculosis complex*) [3, 21]	Within 1 work day
Hepatitis A [2]	Within 1 work day	Tuberculosis infection [22]	Within 1 week
Hepatitis B, C, and E (acute) [2]	Within 1 week	Tularemia [2, 3, 25]	Call Immediately
Hepatitis B infection identified prenatally or at delivery (mother) [2]	Within 1 week	Typhus [2]	Within 1 week
Hepatitis B, perinatal (HBsAg+ < 24 months old) (child) [2]	Within 1 work day	Vancomycin-intermediate *Staph aureus* (VISA) [2, 3]	Call Immediately
Hookworm (ancylostomiasis) [2]	Within 1 week	Vancomycin-resistant *Staph aureus* (VRSA) [2, 3]	Call Immediately
*Human immunodeficiency virus (HIV), acute infection [1, 23]	Within 1 work day	*Vibrio* infection, including cholera [2, 3]	Within 1 work day
*Human immunodeficiency virus (HIV), non-acute infection [1, 23]	Within 1 week	Viral hemorrhagic fever (including Ebola) [2, 25]	Call Immediately
Influenza-associated pediatric mortality [2]	Within 1 work day	Yellow fever [2]	Call Immediately
Influenza, novel [2]	Call Immediately	Yersiniosis [2]	Within 1 week
*Lead, child blood, any level & adult blood, any level [24]	Call/Fax Immediately		

In addition to specified reportable conditions, **any outbreak, exotic disease, or unusual group expression of disease that may be of public health concern should be reported by the most expeditious means available. This includes any case of a select agent** [25]
See select agent list at *https://www.selectagents.gov/selectagentsandtoxinslist.html*

***See condition-specific footnotes for reporting contact information**

E59-11364 (Rev. 1/08/23) Expires 12/31/23 – Go to http://www.dshs.texas.gov/idcu/investigation/conditions/ or call your local or regional health department for updates.

Coordination of Care

Coordination of Care

Reporting

Notifiable Conditions Reporting forms:
https://www.dshs.state.tx.us/idcu/investigation/forms/

- Reportable to the local health department
- Contact DSHS after hours/weekends: 1-800-705-8868

Referring

- Further diagnostics needed
- Provider has educated the patient and determined that treatment is accepted and falls within the prioritization of the L/RHD
- Patient needs public health follow-up

TB and Chronic Disease

FOOD/DRUG INTERACTIONS

INH: Take 1 hour before or 2 hours after meals. May take with small snack if needed. Take 1 hour before or 2 hours after antacids. Avoid alcohol. Supplement Vitamin B6 as needed (25-50 mg).

Rifampin: Take 1 hour before or 2 hours after meal. May take with small snack if needed. Take 1 hour before antacids. Avoid alcohol.

Ethambutol: May be taken with food.

Moxifloxacin/Levofloxacin: Take 2 hours before or after aluminum magnesium or calcium containing antacids, iron, vitamins, sucralfate, milk containing products and food supplements.

PZA: May be taken with food

Ethionamide: Take with or after meals. Avoid alcohol. Supplement vitamin B6 50-100 mg daily.

Amikacin: Increase fluid intake. May be taken on a full or empty stomach.

Streptomycin: May affect the taste of food. Increase fluid intake.

Capreomycin: May need to increase intake of foods high in potassium, but assure normal renal function first. Increase fluid intake. May be taken on a full or empty stomach.

Para-Aminosalicylic Acid (PAS): Take with or immediately following meals. Increase fluid intake. Cycloserine: supplement vitamin B6 as directed. Avoid alcohol.

Linezolid: May be taken with food. Supplement vitamin B6 100 mg daily. Avoid food and drinks that contain tyramine. Do not use with drugs that promote release of serotonin or block its uptake (serotonin syndrome).

HEARTLAND NATIONAL TB CENTER
A PARTNERSHIP OF UT HEALTH NORTHEAST AND TCID

TUBERCULOSIS MEDICATION DRUG AND FOOD INTERACTIONS

Multiple significant interactions occur between TB medications and other medications. The absorption of many TB drugs is adversely affected by food and some medications.

Consultation to healthcare providers at **1-800-TEX-LUNG**
2303 S.E. Military Drive, San Antonio ,TX 78223
www.HeartlandNTBC.org

Revised 12-2010

INH DRUG INTERACTIONS

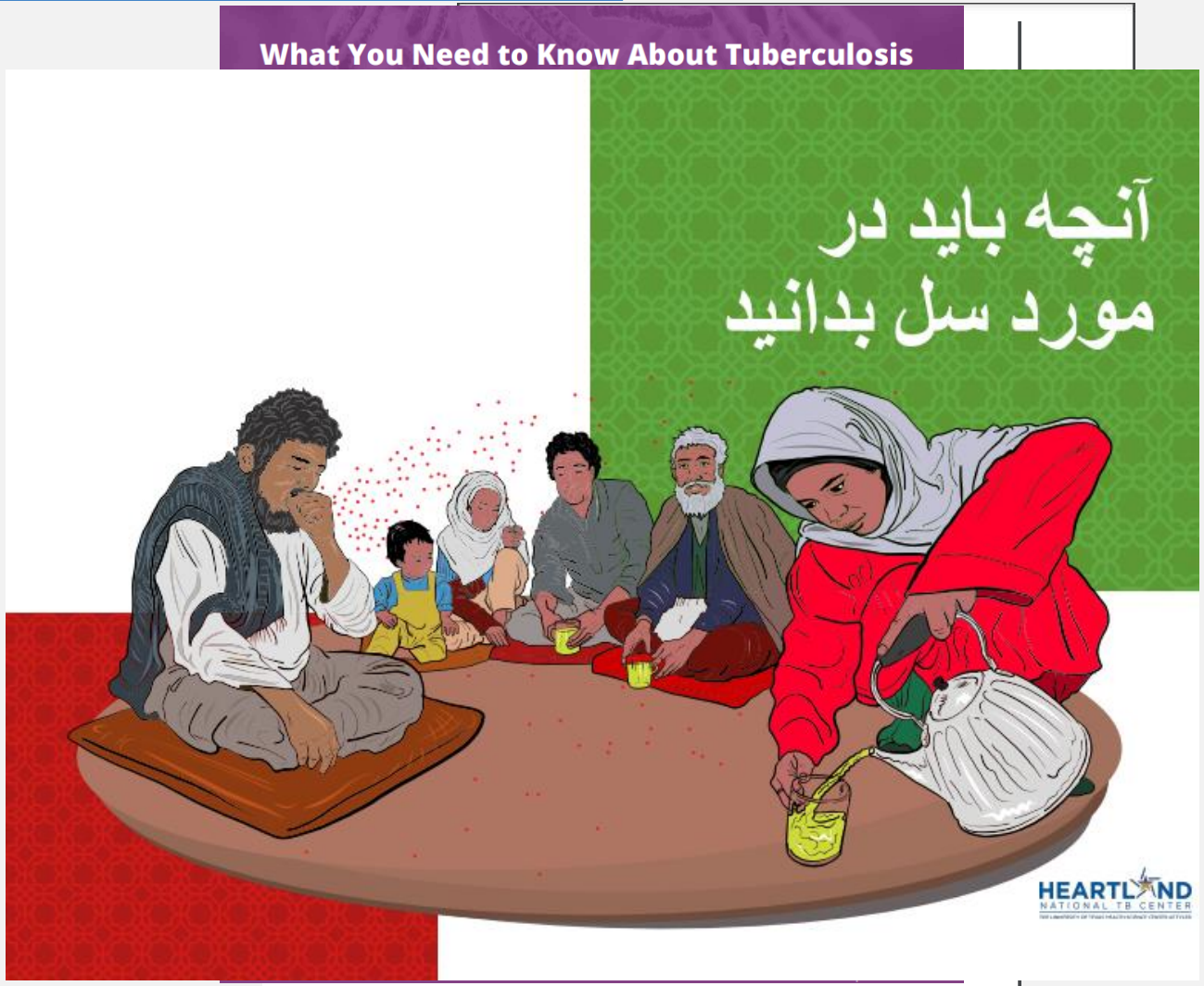
Hypoglycemics	Monitor glucose, may cause hyerglycemia
Tylenol	↑hepatotoxicity
Anticoagulants	↑anticoagulant effect
Valium (&others)	↑valium toxicity
Carbamazepines	↑toxicity of both
Disulfiram (Antabuse)	Psychotic episodes
Haldol	↑haldol toxicity
Ketoconazole	↓ketoconazole effect
Dilantin	↑dilantin toxicity
Theophyllin	↑theophyllin toxicity
Valproate	↑hepatic and CNS toxicity

RIFAMPIN DRUG INTERACTIONS

Anticoagulants	↓anticoagulants	Diltiazem	↓ diltiazem effect
Antidepressants	↓effect	Fluconazle	↓ fluconazole effect
Beta-Blockers	↓beta blockade	Itraconazole	↓ itraconazole effect
Contraceptives	↓contraceptive effect	Haloperidol	↓ haloperidal effect
Corticosteroids	Marked ↓ steroid effect	Methadone	↓ methadone effect
Cyclosporine	↓cyclosporine effect, ↑Rifampin	Dilantin	↓dilantin effect
Protease Inhibitors	Marked ↓ activity of PI, ↑Rifampin	Verapamil	↓ verapamil effect
Delavirdine	Marked ↓ delavirdine effect	Tetracyclines	↓ tetracycline effect
Efavirenz	Slight ↓ efavirenz effect, ↓ Rifampin	Trimethoprim-sulfamethoxazole	Possible Rifampin toxicity
Digoxin	↓ digoxin effect	Chloramphenicol	↓ chloramphenicol effect

http://www.heartlandntbc.org/products/
Drug Interaction Checker: Quickly Check Your Meds (drugs.com)
Rifamycin_2022.pdf (ucsf.edu)

Patient Education



https://www.cdc.gov/tb/education/patient_edmaterials.htm
https://www.heartlandntbc.org/products/

Provider Education

Heartland

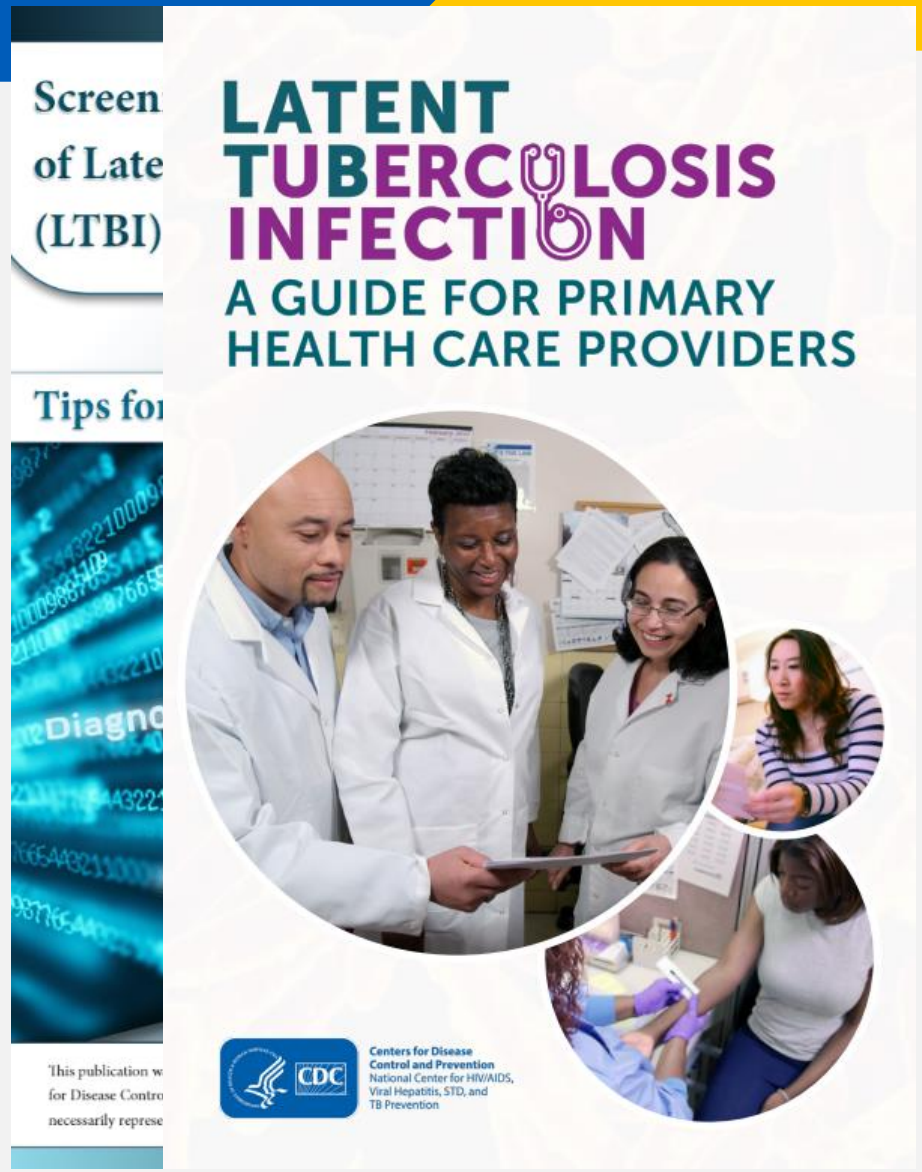
- https://www.heartlandntbc.org/products/

CDC

- https://www.cdc.gov/tb/education/FAQforProviders.htm
- https://www.cdc.gov/tb/publications/ltbi/default.htm
- https://www.cdc.gov/tb/publications/slidesets/ltbi/default.htm
- https://www.cdc.gov/mmwr/volumes/69/rr/pdfs/rr6901a1-H.pdf - Guidelines for the Treatment of Latent Tuberculosis Infection: Recommendations from the National Tuberculosis Controllers Association and CDC, 2020
- https://www.cdc.gov/tb/publications/guidelines/pdf/clin-infect-dis.-2016- nahid-cid_ciw376.pdf - Official American Thoracic Society/Centers for Disease Control and Prevention/Infectious Diseases Society of America Clinical Practice Guidelines: Treatment of Drug-Susceptible Tuberculosis. Clinical Infectious Diseases (2016), 63 (7): e147-e195.

DSHS – TB Unit

- https://www.dshs.texas.gov/tuberculosis-tb
  - Resources for Healthcare Professionals - Frequently Asked Questions

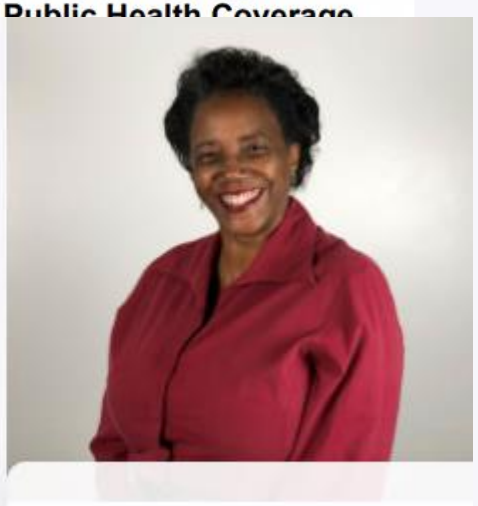


Consultation Services

HEARTLAND NATIONAL TB CENTER
THE UNIVERSITY OF TEXAS AT TYLER HEALTH SCIENCE CENTER

TEXAS Health and Human Services

Local Health Department and DSHS Regional Public Health Coverage



Barbara Seaworth, MD, FIDSA

Lisa Armitige, MD, PhD

Local Health Department provides public health services

DSHS Regional Headquarters provides public health services

Source: Texas Department of State Health Services, RLHO, October 2022

Salma Lerma

Catalina Navarro

https://www.heartlandntbc.org/consultation/

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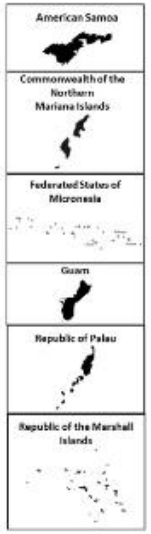

D.C.

PR

USVI

ional TB Center

Center Location

CURRY INTERNATIONAL TUBERCULOSIS CENTER

Southeastern National Tuberculosis Center
SHARE • LEARN • CURE

Expert Medical Consultation

https://centerfortuberculosis.mayo.edu/

Take Home Points for Private Providers

- Think TB in patients with risk factors
- Develop a *TB Infection Tool Kit*
- Consider screening *and* the ability to treat to completion
- Become familiar with state laws on disease reporting
- Understand and know your community
- Know your resources
- Develop strong partnerships with your local health department and other stakeholders

References and links

Texas Department of State Health Services:
https://www.dshs.state.tx.us/idcu/disease/tb/policies/
TB Prevention and Care for Correctional Facilities | Texas DSHS

Heartland National TB Center:
http://www.heartlandntbc.org/training/

CDC's Morbidity and Mortality Weekly Report: http://www.cdc.gov/tb/publications/reportsarticles/mmwr/default.htm

CDC website on TB Infection:
https://www.cdc.gov/tb/topic/basics/tbinfectiondisease.htm

CDC website on TB in Specific Populations
https://www.cdc.gov/tb/topic/populations/correctional/default.htm

Update of Recommendations for Use of Once-Weekly Isoniazid-Rifapentine Regimen to Treat Latent *Mycobacterium tuberculosis* Infection
Weekly / June 29, 2018 / 67(25);723–726
https://www.cdc.gov/mmwr/volumes/67/wr/mm6725a5.htm?s_cid=mm6725a5_w

Thank you!