Partnering with Public Health

Maricela Zambrano, RN

July 9, 2025

Screening & Treating Tuberculosis Infection • July 9, 2025 • Edinburg, Texas

Maricela Zambrano, RN

Has the following disclosures to make:

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

TEXAS
Health and Human Services

Texas Department of State Health Services

Partnering with Public Health

Maricela Zambrano RN, TB/Hansen's Nurse Consultant
Texas Department of State Health Services PHR 11
Tuberculosis and Hansen's Disease Elimination

Objectives

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

- Identify strategies for collaboration between health departments, corrections and community providers.
- Identify the impact of latent TB infection (LTBI) in Texas
- Identify the responsibilities and prioritization of LTBI and TB
- Request medical consultation via the referral process
- Identify additional training and education resources available

Tuberculosis: Disease of the Past or Present?

Global Increase: WHO reported 8.2 million people diagnosed with TB in 2023

World's leading infectious disease killer with an estimated 1.25 millions deaths globally in 2023.

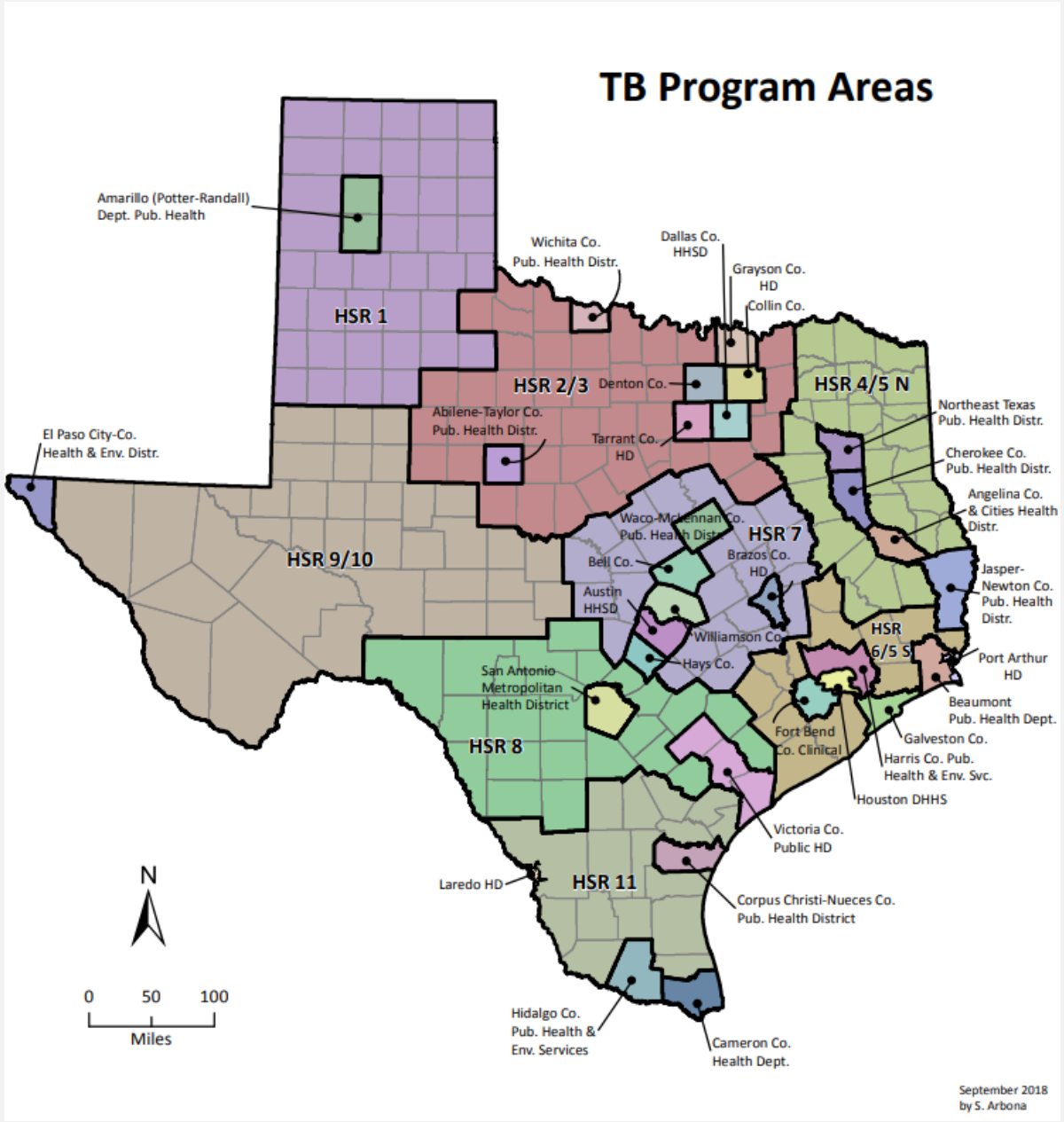
Nationally TB outbreaks continue to occur. In 2024 Kansas reported 67 active cases and two deaths as of January 2025.

TEXAS Health and Human Services

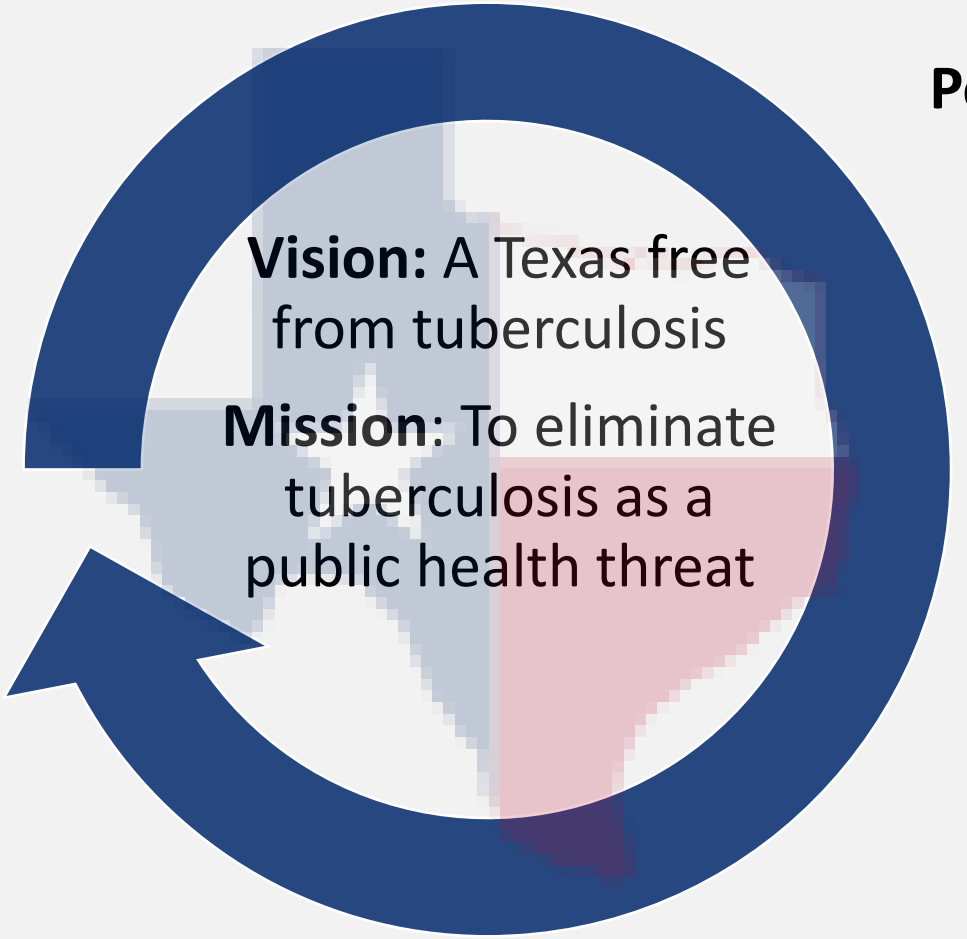
Texas Department of State Health Services

Impact of TB in Texas, 2022

- 1,097 people diagnosed with TB disease
  - Texas 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 (LTBI) were treated in local or regional health departments (L/RHD)
- 60 people (5.5%) diagnosed with TB disease in congregate setting
- 23 people (2.1%) diagnosed with TB disease in a city or county jail
- 84 people (7.7%) diagnosed with TB disease 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

Latent Tuberculosis Infection

Affects more than...

11 MILLION

people in the US[1]

LATENT TUBERCULOSIS (TB) BY-THE-NUMBERS

Without treatment, 5 to 10% of infected persons will develop TB. Among those 5 to 10%,

50%

of people with latent TB will develop TB within first 2 years of infection onset.[2]

WHO SHOULD GET TESTED FOR TUBERCULOSIS (TB)

The CDC recommends that certain people should be tested for TB bacteria because they are more likely to get TB disease, including:[3]

- People who live or work somewhere in the United States where TB disease is more common (homeless shelters, prison or jails, or some nursing homes)
- People from a country where TB disease is common (most countries in Latin America, the Caribbean, Africa, Asia, Eastern Europe, and Russia)
- People with HIV infection or another medical problem that weakens the immune system
- People who have symptoms of TB disease (fever, night sweats, cough, and weight loss)
- People who have spent time with someone who has TB disease
- People who use illegal drugs

TB tests are generally not needed for people with a low risk of infection with TB bacteria.[3]

1. Centers for Disease Control and Prevention. New regimen makes treating latent TB infection easier. Available at http://www.cdc.gov/Features/TuberculosisTreatment/. Accessed September 16, 2014.
2. Centers for Disease Control and Prevention (2012). Tuberculosis: The difference between latent TB infection and TB disease. Available at http://www.cdc.gov/tb/publications/factsheets/general/ltbiandactivetb.htm. Accessed September 12, 2014.
3. Centers for Disease Control and Prevention (2014). Tuberculosis: Testing and diagnosis. Available at http://www.cdc.gov/tb/topic/testing/default.htm#testing. Accessed September 12, 2014.

TEXAS Health and Human Services

Texas Department of State Health Services

Prioritizing Screening

TEXAS
Health and Human Services

Texas Department of State Health Services

TUBERCULOSIS

TB High Risk categories

People at higher risk of **being exposed** to TB:

- Were born in or frequently travel to countries where TB is common, including some countries in Asia, Africa, and Latin America
- Live or used to live in large group settings where TB is more common, such as homeless shelters, prisons, or jails
- Work in places where TB is more likely to spread, such as hospitals, homeless shelters, correctional facilities, and nursing homes

People at higher risk of **developing active TB disease** once infected:

- HIV infection
- Substance use (such as injection drug use)
- Specialized treatment for rheumatoid arthritis or Crohn's disease
- Organ transplants
- Severe kidney disease
- Head and neck cancer
- Diabetes
- Medical treatments such as corticosteroids
- Silicosis
- Low body weight
- Children, especially those under age five

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

- Know when to 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

Screening Considerations

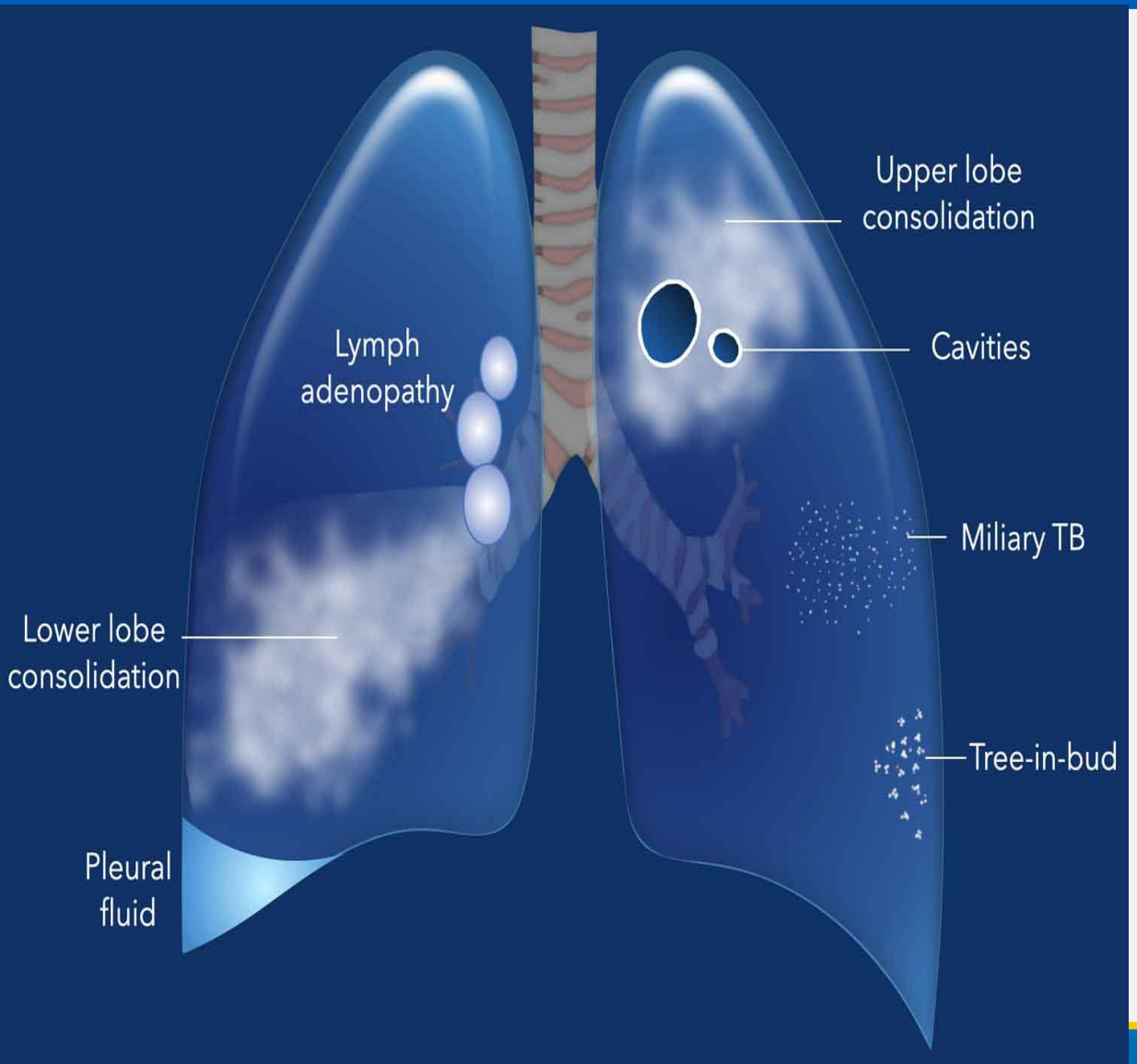
Screening at-risk populations should be epidemiologically driven

- *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, e.g., students, and routine employee screenings*

Rule Out Active TB prior to Prophylaxis



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

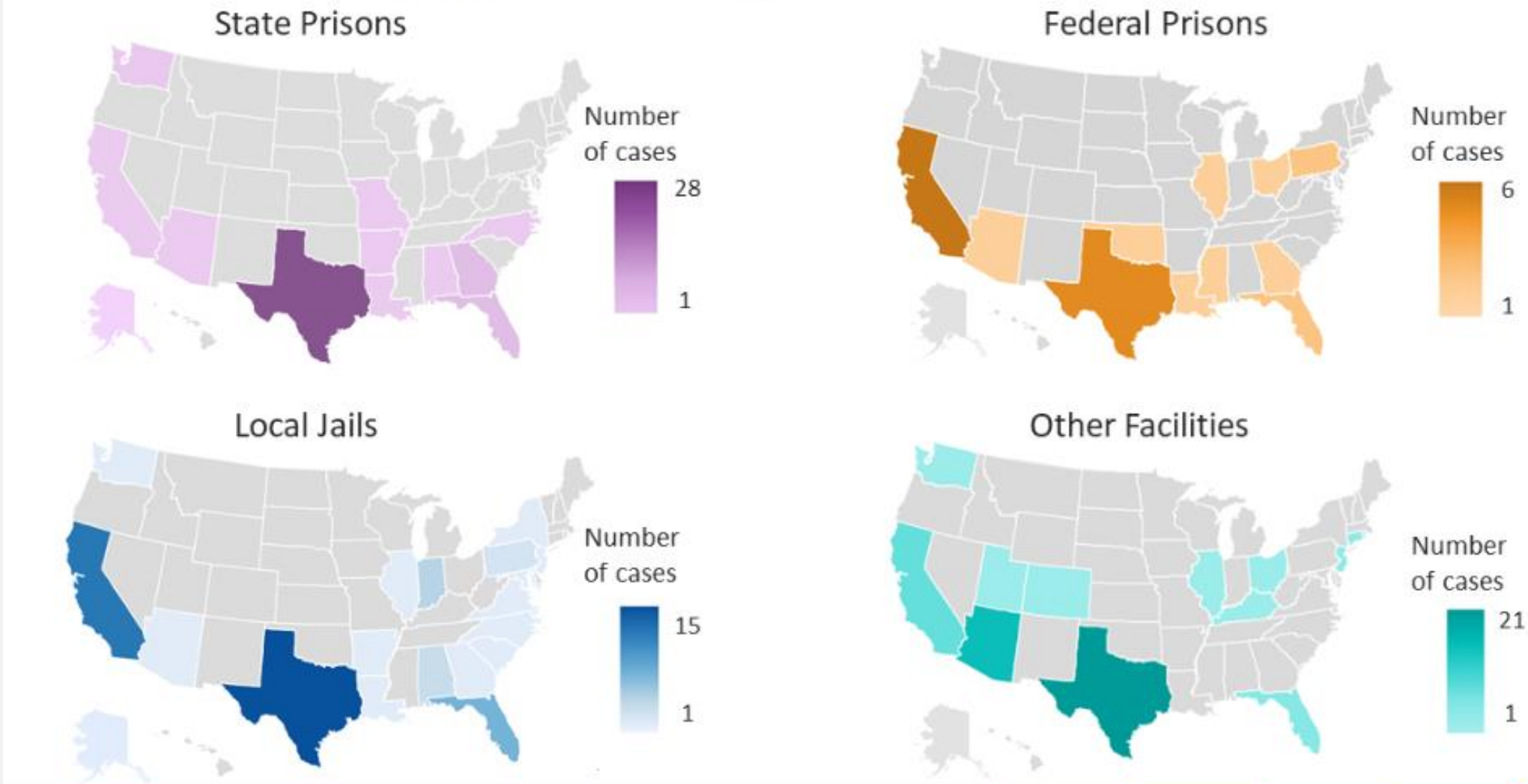
Never start treatment for LTBI in a patient with signs or symptoms of TB

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

Collaboration with Correctional Facilities

- Identify early to prevent transmission.
- LHD/PHR 11 may consult and give guidance to successfully treat and monitor patients.
- LHD/PHR 11 may facilitate and provide recommendations for contact investigations.
- Required reporting should be sent to PHR 11 jail liaison.
- Notification of transfer/DC with POC should be reported for continuity of care.

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 Regulatory TB Reporting Requirements

Regulatory 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

TEXAS Health and Human Services | Texas Department of State Health Services

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)

Provider Education

Heartland

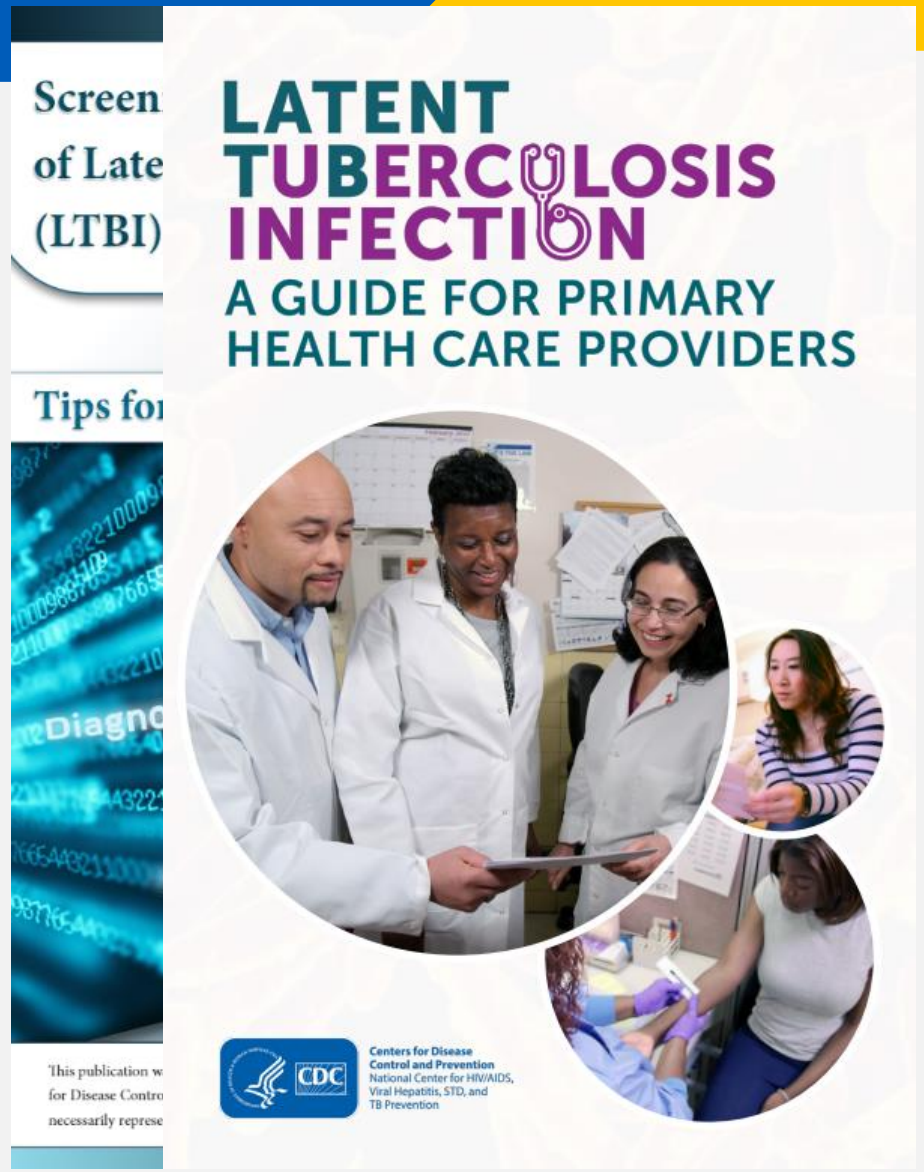
- https://www.heartlandntbc.org/products/

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

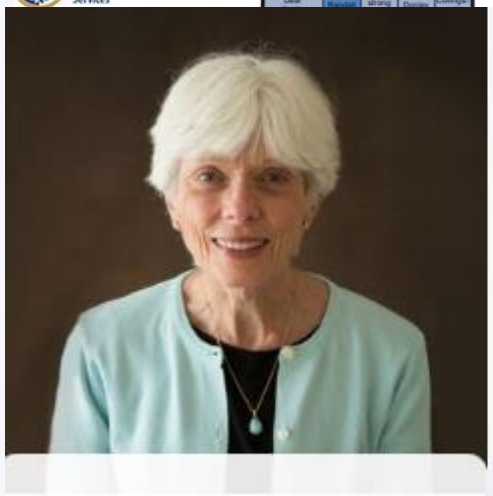


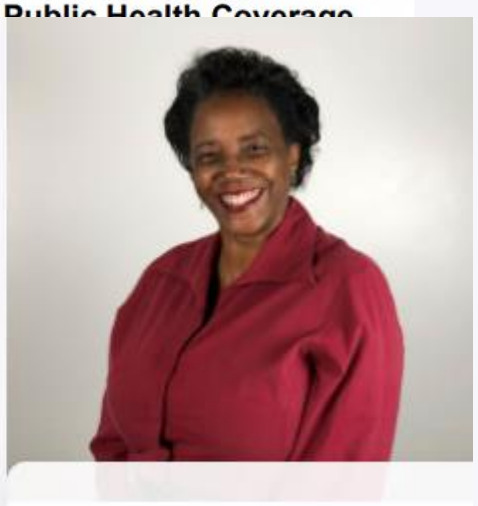
Consultation Services

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

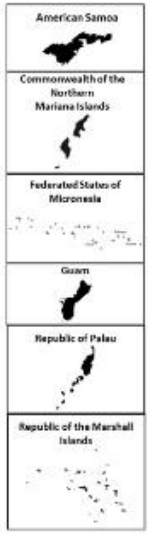
Source: Texas Department of State Health Services, RLHO, October 2022

Salma Lerma

Catalina Navarro

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

Areas of C



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/

DSHS PHR 11

- Dr. Lana Yamba – TB physician
- Lana.Yamba@dshs.texas.gov
- Melissa Davis, RN – program manager
- Melissaa.davis@dshs.texas.gov

TEXAS Health and Human Services

Texas Department of State Health Services

End notes

- Think TB in patients with risk factors
- Consider screening *and* the ability to treat to completion
- 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!