

SOUTHERN CALIFORNIA REGIONAL COMMUNITY OF PRACTICE TO END TB

Wednesday, August 20, 2025
12:00PM - 1:30PM PDT

Pharmacy-led Initiatives: Innovative Models for LTBI Care Delivery

12:00 – 12:05	Welcome and introductions	Melissa Zhang TB Control Program Analyst Los Angeles County Department of Public Health	Parveen Kaur, MD Clinical Lead Southern CA CoP to End TB
12:05 – 12:15	Pharmacist-led Interventions in Clinical Medicine	Parveen Kaur, MD Clinical Lead Southern CA CoP to End TB	
12:15 – 12:40	Medication Therapy Management (MTM) Pharmacy Program for Latent Tuberculosis	Amy Shen Tang, MD Director of Immigrant Health North East Medical Services	
12:40 – 1:05	East Los Angeles Health Center Group Clinical Pharmacy-led LTBI Clinic	Brian Buckley, MD MPH Physician Specialist Los Angeles County Department of Health Services Los Angeles County Department of Public Health	
1:05 – 1:30	Discussion session and meeting closure	Melissa Zhang TB Control Program Analyst Los Angeles County Department of Public Health	Parveen Kaur, MD Clinical Lead Southern CA CoP to End TB



Pharmacist-Led Treatment Interventions

Parveen Kaur MD

Clinical Lead, Southern California Regional Community of Practice to End TB

TB Control Program

Los Angeles County Department of Public Health

TB Controller and Acting Health Officer

City of Pasadena Public Health Department



- Our post-pandemic health care system continues to have many flaws—a shortage of family physicians, difficulties accessing timely primary care, a lack of chronic disease screening and management and a lack of health care resources in rural areas.
- Pharmacists are primary care providers and always have been. The COVID-19 pandemic made pharmacists more visible and demonstrated their role as a trusted resource for health care.
- Pharmacists and pharmacy teams served their communities by adapting their roles and using their autonomy to provide a haven for ongoing health care.

Is the next step in the primary care evolution of pharmacy practice: the pharmacist-led clinic?

- Pharmacist-led clinics are healthcare facilities where pharmacists provide direct patient care services independently, expanding their traditional role beyond medication dispensing.
- These clinics aim to improve patient access to care:
Particularly for chronic disease management, medication reviews & optimization, minor ailment treatment, immunizations and preventative health screenings.
- They leverage pharmacists' expertise in medication management and their accessibility within the community.
- Growing trend: Pharmacist-led clinics are becoming increasingly common, with corporate and independent pharmacies opening these types of facilities.

- **Improved Patient Outcomes**

By providing comprehensive medication management and preventative care, these clinics can lead to better health outcomes for patients.

- **Increased Patient Engagement**

Pharmacists can build strong relationships with patients, fostering trust and promoting active participation in their healthcare.

- **Reduced Healthcare Costs**

By preventing medication errors and hospital readmissions, these clinics can contribute to cost savings within the healthcare system.

- **Enhanced Efficiency**

Pharmacist-led clinics can address minor health concerns and medication-related issues promptly, freeing up other healthcare professionals to focus on more complex cases.

- **Increased Access to Care**

They provide a convenient and accessible option for patients, particularly those in underserved areas or those who face barriers to accessing traditional healthcare settings.

- **Scope of Practice Limitations**

While pharmacists are expanding their roles, there may be limitations to what they can do in certain jurisdictions.

- **Integration with Existing Healthcare System**

Integrating pharmacist-led clinics into the existing healthcare infrastructure requires collaboration and coordination among different healthcare providers.

- **Public Awareness and Acceptance**

Increasing public awareness and acceptance of pharmacist-led clinics as a viable option for primary care is crucial for their success.

(Journal of the American Pharmacists Association)

- Group A strep test and treatment
- Management of Diabetes Mellitus
- Asthma and Chronic obstructive pulmonary disease
- Cardiovascular disease
- Chronic disease management
- Prescription renewals
- Vaccinations

- Pregnant women's health
- Tobacco and smoking cessation
- Addiction treatment
- Hepatitis C

These interventions have been shown to improve adherence and disease control, clinical outcomes in many chronic diseases, disease identification through screening, and health-related quality of life of the patients through good education, counseling, and knowledge dissemination.

- The Food and Drug Administration (FDA) authorized pharmacists to prescribe Paxlovid to eligible patients who tested positive for COVID-19.
- Patients would connect the pharmacist to a provider who knew their medical history or able to provide recent kidney and liver function tests. (Walgreens)
- CVS Pharmacy announced that pharmacists at more than 9,000 CVS Pharmacy locations could clinically assess COVID-19 positive patients and, if eligible, prescribe Paxlovid, an oral antiviral treatment (2022)

- Pharmacist-led clinics have emerged as a promising approach to improve access to and management of hepatitis C (HCV) care, particularly for individuals who may face barriers to traditional healthcare settings.
- These clinics leverage the expertise of pharmacists to provide a range of services, including screening, treatment, and ongoing management, often in community-based settings like pharmacies or outreach programs.
- Continued collaboration between pharmacists, physicians, and other healthcare professionals is essential for providing comprehensive HCV care

- One study conducted in a FQHC Primary care setting demonstrated SVR (sustained virologic response) rates were comparable with other pharmacist-directed HCV treatment services in the United States despite the impact of the COVID-19 pandemic and having a higher proportion of individuals with HCV/HIV co-infection.
- Walgreens now offers **more than 100 hepatitis C-specialized pharmacies** with new hepatitis C virus (HCV) medications available and specially trained pharmacists.
- **Pharmacist-led DAA management** is an effective intervention to improve the treatment of patients with HCV and pharmacists are key players who can help to eliminate the hepatitis C virus (HCV) epidemic in the United States.

Pharmacy-led clinics in Tuberculosis



- **Medication Management**

Pharmacists can ensure patients receive the correct TB medications, dosages, and regimens, helping to prevent treatment failures and drug resistance.

- **Patient Education**

Pharmacists can counsel patients on how to take their medications properly, manage side effects, and understand the importance of completing the full course of treatment.

- **Directly Observed Therapy (DOT)**

Pharmacists can participate in DOT programs, where they directly observe patients taking their medication, improving adherence and treatment success.

- **Public Health Reporting**

Pharmacists can report confirmed TB cases to public health authorities, contributing to disease surveillance and outbreak management

- **Health Promotion**

Pharmacists can educate the public about TB prevention, including symptoms, risk factors, and the importance of early diagnosis and treatment.

- **Coordination and Support:**

Public health departments provide leadership, resources, and support to pharmacies involved in TB care.

- **Surveillance and Monitoring:**

Public health agencies track TB cases, identify trends, and evaluate the effectiveness of interventions, including those involving pharmacists

- **Training and Education:**

Public health departments can provide training and resources to pharmacists on TB management, medication safety, and patient education.

- **Community Outreach:**

Public health agencies can partner with pharmacies to conduct outreach and education campaigns in the community, increasing awareness about TB

- **Increased access to care:**

Pharmacies are often more accessible and convenient for patients than traditional clinics.

- **Improved treatment adherence:**

Pharmacists can play a key role in helping patients stay on their medication regimens.

- **Reduced stigma:**

Community pharmacies can provide a less stigmatizing environment for TB care compared to some specialized clinics.

- **Lack of standardized guidance**

Clear guidelines and training for pharmacists on TB management are needed
(BMJ Global Health)

- **Strengthening collaboration**

Fostering closer relationships between pharmacists, physicians, and public health agencies is essential.

- **Addressing barriers to implementation**

Further research is needed to understand and overcome barriers to integrating pharmacies into TB care.

- Pharmacy-led clinics can play a significant role in tuberculosis (TB) care, particularly in improving treatment adherence and patient outcomes.
(National Institutes of Health (NIH.gov))
- While not typically offering full diagnostic or treatment services, pharmacies can be valuable partners in TB management, especially in Directly Observed Treatment (DOT) and other areas of medical management, education and health promotion and preventative TB treatment.

References

- <https://pmc.ncbi.nlm.nih.gov/articles/PMC10198268/>
- <https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/ijpp.12462>

Questions?



Medication Therapy Management (MTM) Pharmacy Program for Latent Tuberculosis

Amy S. Tang, MD

Director of Immigrant Health



NORTH EAST
MEDICAL SERVICES

東 北 醫 療 中 心

About North East Medical Services (NEMS)

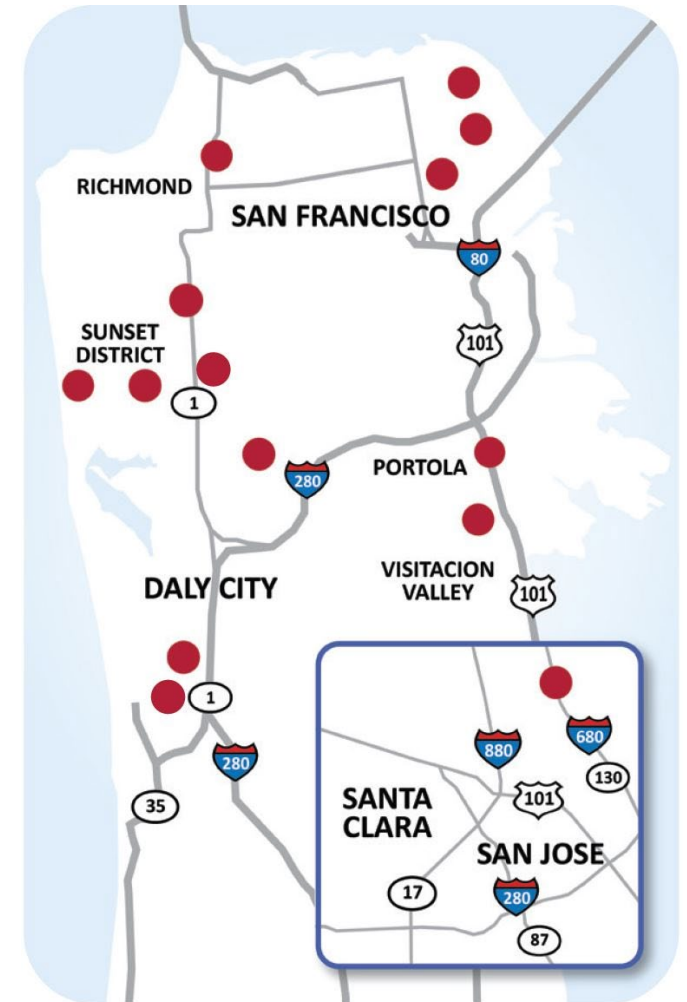


NORTH EAST
MEDICAL SERVICES
東北醫療中心

- Non-profit community health center/FQHC serving the medically underserved since 1971
- Serves ~82,000 patients annually across 18 clinic locations in San Francisco, San Mateo, and Santa Clara counties

Patient Demographics

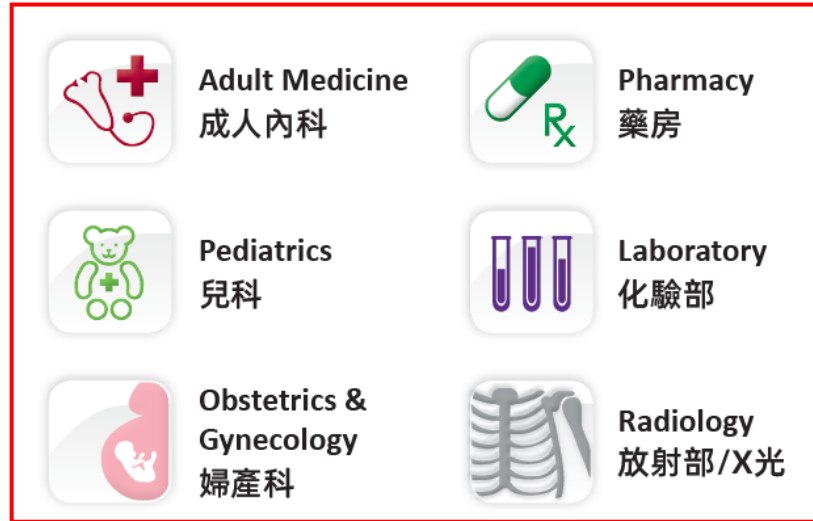
- **79%** Asian
- **72%** Better served in a language other than English
- **74%** Medicaid (includes 17% Medi-Medi dual eligible)
- **7%** Uninsured
- **26%** 65 years and older



NEMS Clinical Services



NORTH EAST
MEDICAL SERVICES
東北醫療中心



Dental
牙科



Optometry
驗眼/配鏡科



Behavioral
Health Services
心理健康服務部



Social Services
社會服務部



Health Education
健康教育部



Member Services
會員服務部



Chiropractic
脊椎神經科



Acupuncture
針灸科



Physical Therapy
物理治療中心

Medical Specialties 醫療專科

- Cardiology 心臟科
- Endocrinology 內分泌科
- Gastroenterology 腸胃科
- Hand Surgery Consultation 手外科
- Hepatology 肝臟科
- Neurology 神經內科
- Ophthalmology 眼科
- Otolaryngology 耳鼻喉科
- Podiatry 足科
- Psychiatry 精神科
- Surgery 外科

NEMS offers comprehensive, culturally sensitive, and language concordant primary care and specialty services, including onsite lab, radiology, and pharmacy services to facilitate easy access to TB testing, evaluation, and treatment.

Prevalence of Most Common Chronic Conditions among NEMS Patients

Diabetes **14%** (NEMS UDS 2024) vs. **16%** US average (NHANES 2021-2023)

Hypertension **27%** (NEMS UDS 2024) vs. **47%** US average (NHANES 2021-2023)

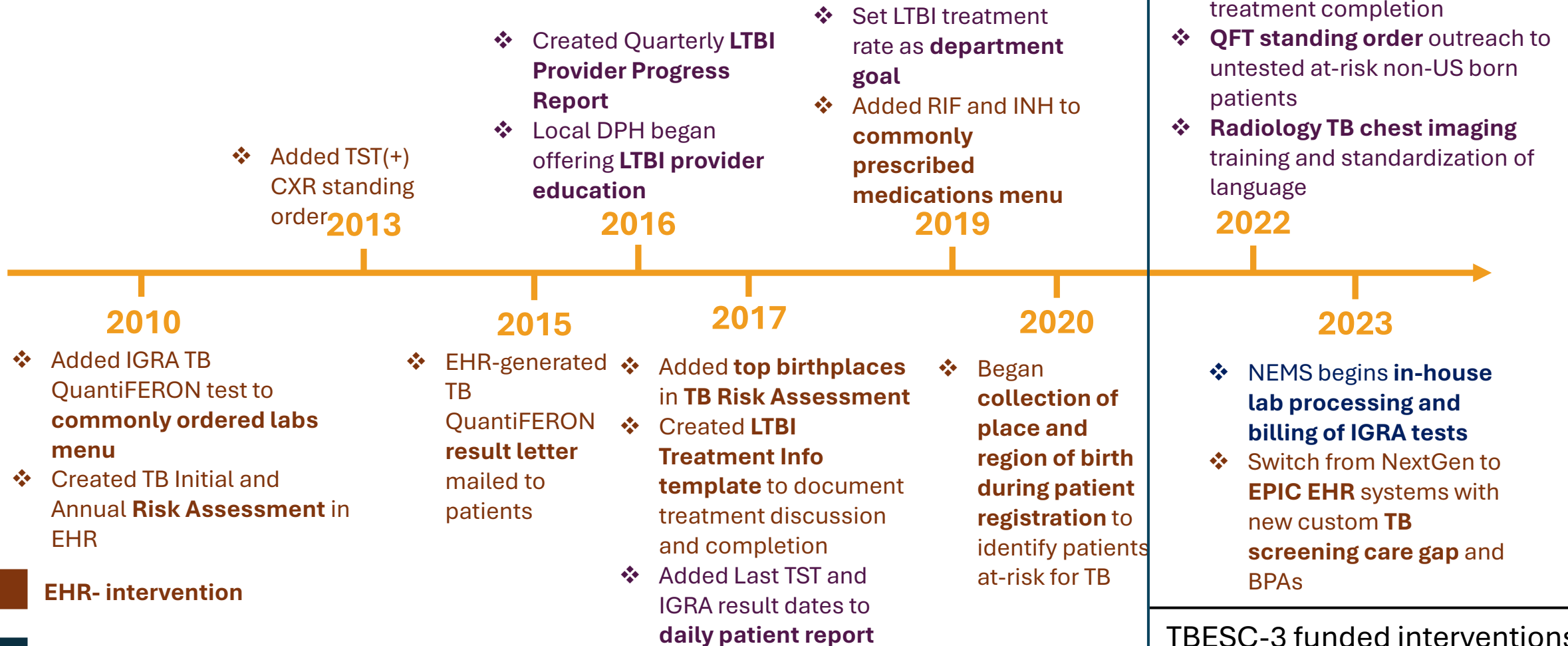
Latent tuberculosis infection **20%** vs. **5%** US average (NHANES 2011-2012)

Chronic Hepatitis B infection **6%** vs. **0.3%** US average (NHANES 2011-2012)

- 38% of persons infected with hepatitis B (HBsAg-positive) were also infected with tuberculosis (TST- or IGRA-positive)

Timeline of NEMS' LTBI Program QI Interventions

Unfunded QI interventions



TBESC-3 funded interventions

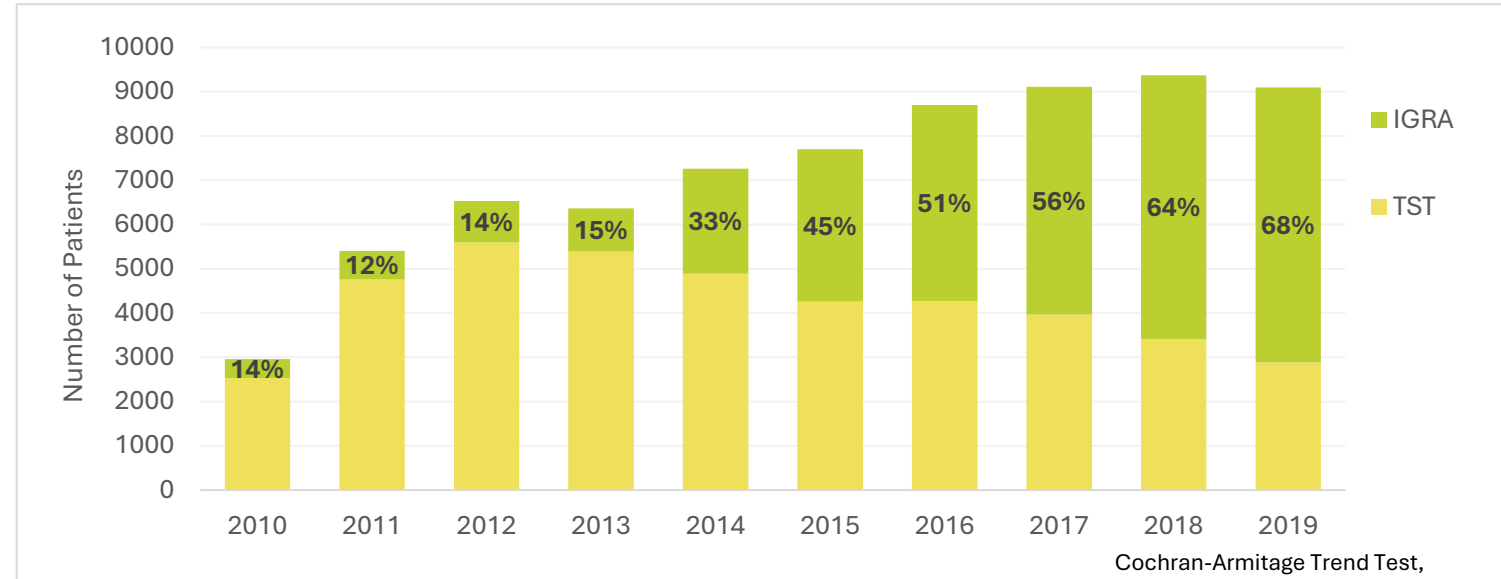


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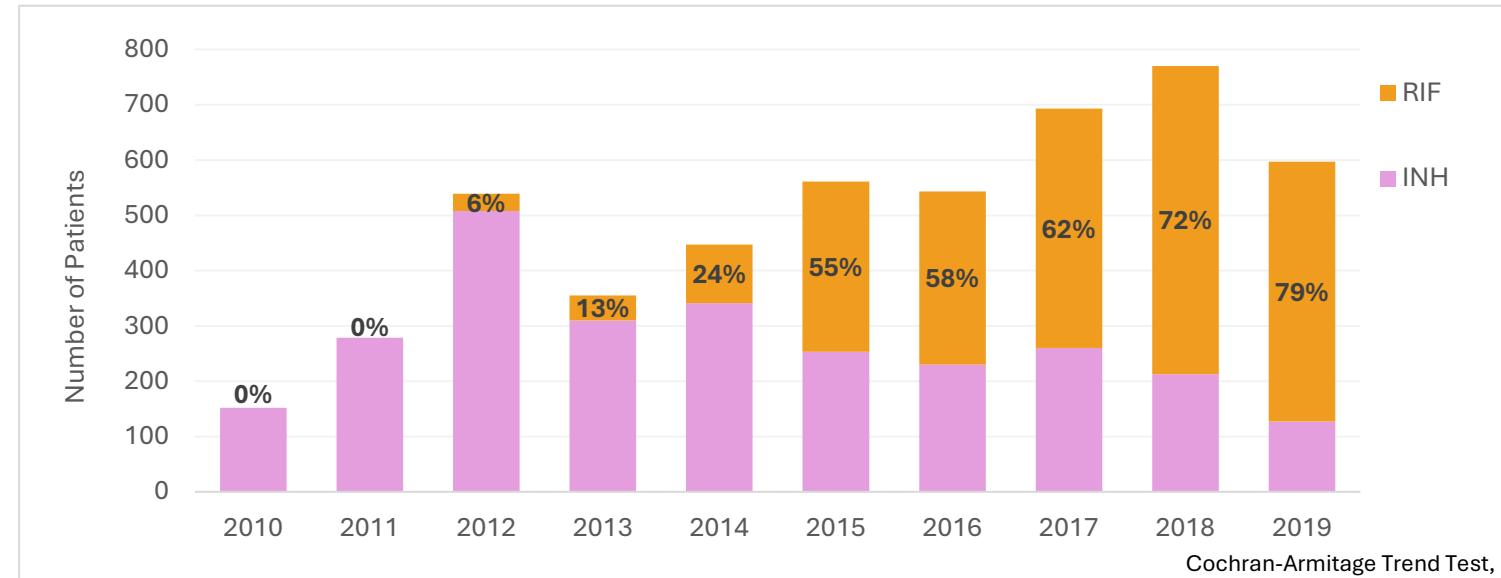
NEMS' latent tuberculosis testing and treatment practices over time, 2010-2019

Tang AS, Mochizuki T, Dong Z, Flood J, Katrak SS. Can Primary Care Drive Tuberculosis Elimination? Increasing Latent Tuberculosis Infection Testing and Treatment Initiation at a Community Health Center with a Large Non-U.S.-born Population. J Immigr Minor Health. 2023 Aug;25(4):803-815.

A. Patients with interferon-gamma release assay (IGRA) or tuberculin skin test (TST) performed



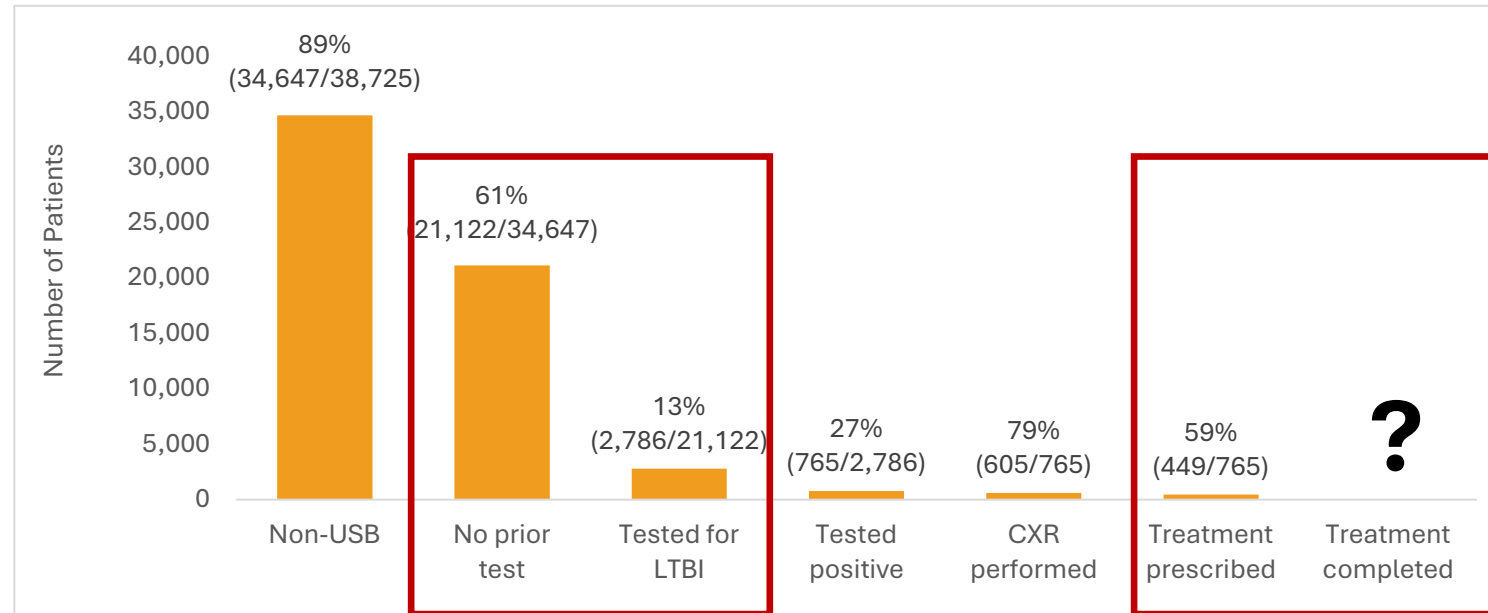
B. Patients with LTBI treatment by prescribed regiment



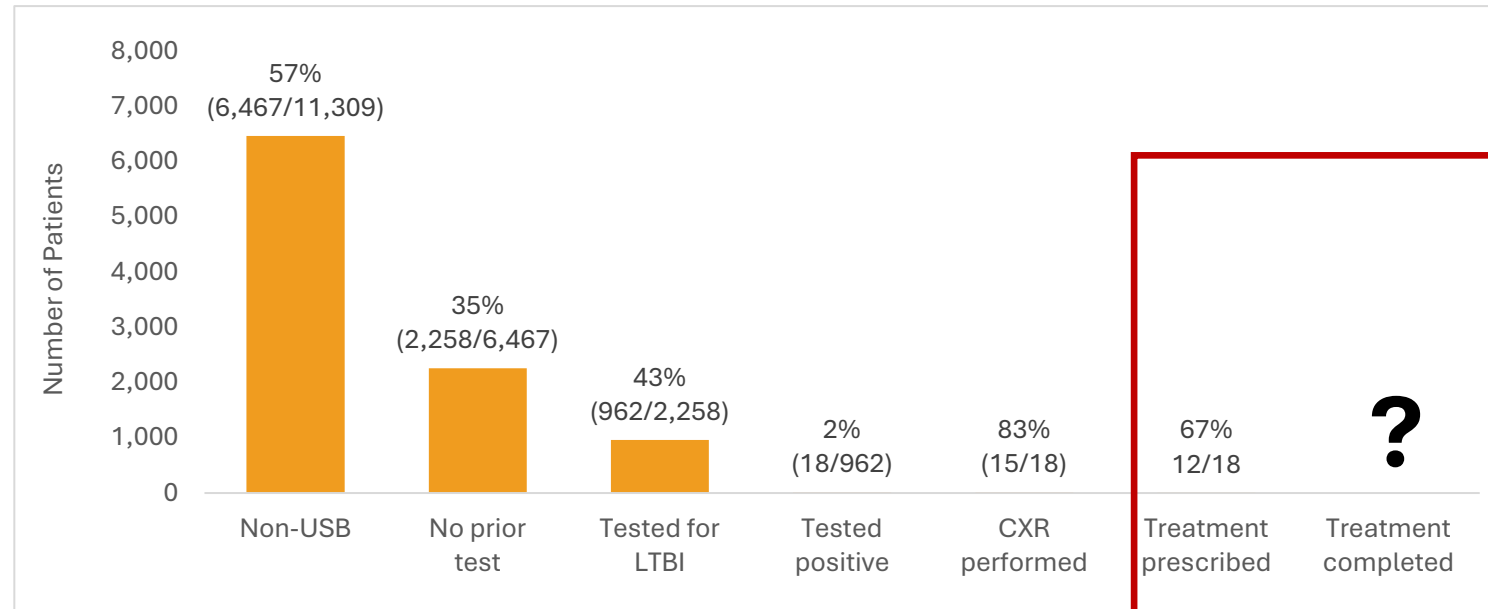
Latent tuberculosis infection cascade of care for adult and pediatric patients seen for primary care visits, 2019

Tang AS, Mochizuki T, Dong Z, Flood J, Katrak SS. Can Primary Care Drive Tuberculosis Elimination? Increasing Latent Tuberculosis Infection Testing and Treatment Initiation at a Community Health Center with a Large Non-U.S.-born Population. J Immigr Minor Health. 2023 Aug;25(4):803-815.

A. Adult Patients



B. Pediatric Patients



CDC TB Epidemiological Studies Consortium III (2021-present)

- NEMS collaboration with UCSF implementation scientists, health economist, preference survey experts and state (CDPH) and local (SFDPH) TB control/health departments
- TB preventative treatment intervention
 - Medication and treatment management (MTM) pharmacists
- TB screening and testing interventions
 - Community health worker facilitated IGRA orders for non-US born
 - EHR-based decision support: TB screening risk assessments, care gaps, and BPAs



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Medication Therapy Management (MTM) Pharmacy Program

WHAT

A program where pharmacists provide support (e.g. counseling and adherence monitoring) for patients prescribed therapies for which treatment adherence and/or completion flagged as a priority, e.g. patients prescribed HCV or LTBI tx, or referred by provider for polypharmacy issues.

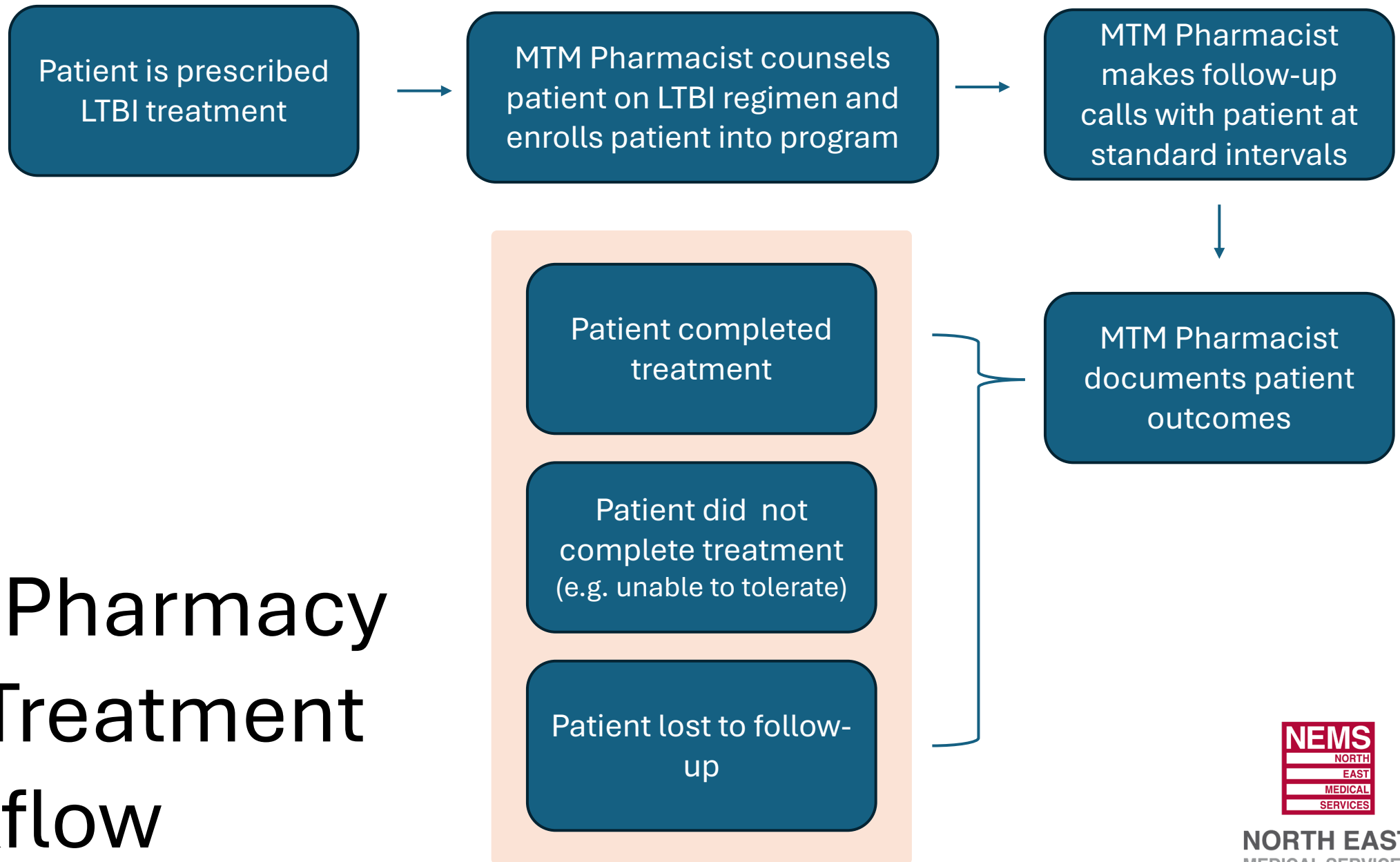
WHEN

NEMS began offering MTM Pharmacy for LTBI in Fall 2022

WHY

This program provides patients with more standardized treatment follow-up and task shifts treatment monitoring from medical providers to pharmacists.

MTM Pharmacy LTBI Treatment Workflow



Outreach

INITIATION

Outreach Reason

Contacts

GENERAL DOCUMENTATION

Allergies

Medication Review

Immunizations

Accreditation

LTBI Diagnosis

LTBI Drug Regim...

ASSESSMENTS

Outreach Assess

LTBI Drug Thera...

Social Determina...

PROMIS Global-10

PHQ-9

Adherence

Refill Questions

Delivery

CARE COORDINATION

MTP

Goals

Verify Rx Benefits

Reason for Outreach

Select All

Outreach	Due Date	Responsibility	Program
<input checked="" type="checkbox"/> LTBI Initial Contact/Consultation Outreach	10/16/2023	Rxamb Pharmacists	Medication Therapy Management (MTM)- LTBI
<input type="checkbox"/> LTBI New Therapy Check-in (10 Day)	10/26/2023	Rxamb Pharmacists	Medication Therapy Management (MTM)- LTBI
<input type="checkbox"/> LTBI 1-month follow-up Outreach	11/15/2023	Rxamb Pharmacists	Medication Therapy Management (MTM)- LTBI
<input type="checkbox"/> LTBI 2-month follow-up Outreach	12/15/2023	Rxamb Pharmacists	Medication Therapy Management (MTM)- LTBI
<input type="checkbox"/> LTBI 4-month follow-up Outreach	2/13/2024	Rxamb Pharmacists	Medication Therapy Management (MTM)- LTBI

Close

Previous

Next

Contacts

+ Incoming Call + Outgoing Call + Other

No contacts

You can use the button to the upper left to add an item to the list.

Allergies/Contraindications

No Known Allergies

Last Updated by Interface, Allergy Conversion on 9/15/2023 8:49 PM

History

Add a new agent

Add

Full Search

View Procedure-Allergy Interactions

View Drug-Allergy Interactions

No Known Allergies

Outreach

INITIATION

Outreach Reason

Contacts

GENERAL DOCUMENTATION

Allergies

Medication Review

Immunizations

Accreditation

LTBI Diagnosis

LTBI Drug Regim...

ASSESSMENTS

Outreach Assess

LTBI Drug Thera...

Social Determina...

PROMIS Global-10

PHQ-9

Adherence

Refill Questions

Delivery

CARE COORDINATION

MTP

Goals

Verify Rx Benefits

LTBI Drug Therapy Assessment

Time taken: 10/16/2023 1441

Responsible

Create Note

Macro Manager

Show Row Info

Show Last Filed Value

Show Details

Show All Choices

LTBI Drug Therapy Assessments

Orange discoloration of body fluids

Y=Yes N=No

Alcohol Drinks/Day

Decreased Appetite

Y=Yes N=No

Chest Pain

Y=Yes N=No

Abdominal Pain

Y=Yes N=No

Jaundice or Dark Urine

Y=Yes N=No

Nausea or Vomiting

Y=Yes N=No

Diarrhea

Y=Yes N=No

headache or fatigue

Y=Yes N=No

Fever or chills

Y=Yes N=No

Numbness or tingling

Y=Yes N=No

Rash or hives

+ ADD ORDER

+ ADD DX (0)

PRINT AVS

SIGN ENCOUNTER

Outreach

INITIATION

Outreach Reason

Contacts

GENERAL DOCUMENTATION

Allergies

Medication Review

Immunizations

Accreditation

LTBI Diagnosis

LTBI Drug Regim...

ASSESSMENTS

Outreach Assess

LTBI Drug Thera...

Social Determina...

PROMIS Global-10

PHQ-9

Adherence

Refill Questions

Delivery

CARE COORDINATION

MTP

Goals

Verify Rx Benefits

Adherence

What Concerns Do You Have in Regards to Your Medications

?

abc

↶

↷

?

?

+

Insert SmartText

↶

↷

↶

↷

100%

Patient Reported X Missed Doses in the Last 7 Days

0

1

2

3

4

5

6

7

8

9

10

1-2

3-4

>5

all

Gaps in Refill History Greater than 2 Weeks in the Last 3 Months

yes

no

Demonstrates Understanding of Importance of Adherence

yes

no

Informant

caregiver

child/children

father

friend

mother

patient

significant other

spouse

other relative

pharmacy

Reliability of Informant

unreliable

fairly reliable

reliable

Estimated Medication Adherence Level

0-25%

26-50%

51-75%

76-89%

90-100%

poor

variable

good

Adherence Estimation Source

claims history

provider

Reasons for Non-Adherence

☐ no problems identified

☒ adverse effects

☐ financial

☐ instructed by provider to hold or take differently

☐ knowledge deficit

☐ lack of perceived benefit

☐ language barrier

☐ low health literacy

☐ no transportation

☐ patient forgets

☐ patient refuses

☐ psychosocial

Other Non-Adherence Reasons

+ ADD ORDER

+ ADD DX (0)

PRINT AVS

SIGN ENCOUNTER

NEMS
 NORTH
 EAST
 MEDICAL
 SERVICES

NORTH EAST
 MEDICAL SERVICES
 東北醫療中心

MTM pharmacist can document any patient adherence concerns they may have

Problem List

Care Coordination Note

Search for problem

+

Add

DxReference

Show: ☐ Past Problems

View Drug-Disease Interactions

Diagnosis	Notes	Priority	Change Dx	Resolved	Updated
<div> <div></div> </div>	Create Overview	Unprioritized	Δ	X	-1 mo Interface, Proble...
	Create Overview	Unprioritized	Δ	X	-1 mo Interface, Proble...
	Create Overview	Unprioritized	Δ	X	-1 mo Interface, Proble...
	Create Overview	Unprioritized	Δ	X	-1 mo Interface, Proble...
	Create Overview	Unprioritized	Δ	X	-1 mo Interface, Proble...
	Create Overview	Unprioritized	Δ	X	-1 mo Interface, Proble...
	Create Overview	Unprioritized	Δ	X	-1 mo Interface, Proble...
	Create Overview	Unprioritized	Δ	X	-1 mo Interface, Proble...
Other					
(QFT) QuantiFERON-TB test reaction without active tuberculosis	Edit Overview	Unprioritized	Δ	X	-1 mo Interface, Proble...
	Create Overview	Unprioritized	Δ	X	-1 mo Interface, Proble...

Details

Chronic: ☐

Code: Z98.51

Noted: 6/21/2018

Overview

☆

B

Insert SmartText

Patient completed 4 months rifampin daily from 09/12/23 to 10/26/23.

✓ Accept

✗ Cancel

✓ Mark as Reviewed

Never Reviewed

MTM pharmacist can document LTBI treatment information in patient's Problem List Overview

For patients who disenroll from the program, MTM Pharmacists will document reason from drop-down menu

Program Details

PROGRAM DETAILS | **Programs** | Outreach Details | Checklist | Targets

Programs

+ New Program

Linked	Program	Status	Responsible Staff
	Medication Therapy Management (MTM)- LTBI		

Start Date: 9/12/2023 | Enrollment Reason: Identified from a specialty prescription | Responsible Staff: RXAMB PHARMACISTS | Department: 1400 NOR PHARMACY | Current Support & Services Provided: LTBI - Rifampin (x4 Mon) MTM Outreach

Status: | | | |

Enrollment Date: 9/12/2023 | End Date: 10/19/2023 | Closed Reason:

The selected status marks the end of the program. All active case team relations will be terminated.

[Edit Pause Details](#)

Overview

Linked Medications: [Add](#)
rifampin (Discontinued)

Linked Problems: [Add](#)
(QFT) QuantiFERON-TB test result active tuberculosis (Active)

Title	Number
Diagnosed with active TB	1023
Failure to Pay	1013
Lost to follow up	1021
Patient deceased	1004
Patient declined to fill	1010
Patient unable to tolerate adverse side effect(s) of medication	1020
Pregnancy	1024
Prescription never picked up	1022
Relocation out of service area	1014
Therapy Changed	1007
Therapy completed	1000
Therapy discontinued	1008

+ ADD ORDER | + ADD DX (0)

Disenrollment Reasons

- Diagnosed with active TB
- Failure to pay
- Lost to follow-up
- Patient deceased
- Patient declined to fill
- Patient unable to tolerate adverse side effect(s) of medication
- Pregnancy
- Prescription never picked up
- Relocation out of service area
- Therapy changed
- Therapy completed
- Therapy discontinued

Overview

Insert SmartText

Patient took **LTBI Treatment Regimen** from *** to ***. Treatment was discontinued due to **LTBI Reason Not Completed**.

☐ 4 months rifampin daily
☐ 6 months isoniazid daily
☐ 9 months isoniazid daily
☐ 3 months rifampin/isoniazid daily
☐ 12 weeks rifapentine/isoniazid weekly

Linked Medications Add

isoniazid (Discontinued)

Linked Problems Add

Latent tuberculosis (Active)

722.7

Linked Applications and Notifications Add

Overview

Insert SmartText

Patient took **LTBI Treatment Regimen** from *** to ***. Treatment was discontinued due to **LTBI Reason Not Completed**.

☐ Patient unable to tolerate adverse effect(s) of medication
☐ Lost to follow-up
☐ Patient refused
☐ Patient moved
☐ Diagnosed with active TB
☐ Pregnancy
☐ Patient expired

Linked Medications Add

rifampin (Active)

Linked Problems Add

Latent tuberculosis (Active)

722.7

Linked Applications and Notifications Add

Add External
 View k

23 - Specialty Pharmacy with Kevin Huang, PharmD
 3 - Medication Therapy Management (MTM)- LTI
 MTM PHARMACISTS

We also created Smart Phrases for LTBI treatment regimen

MTM Pharmacy Limitations & Challenges

- **Tolerance**

- After failing the initial treatment regimen, some patients are reluctant to take a different regimen for fear of similar side effects

- **Outside Pharmacy**

- When patients fill their medications outside of NEMS, we need to contact outside pharmacies to retrieve patients' refill history to confirm progress. This can sometimes lead to some miscommunication as there are other messengers → Some patients thought they completed their treatment when they had not picked up all their refills

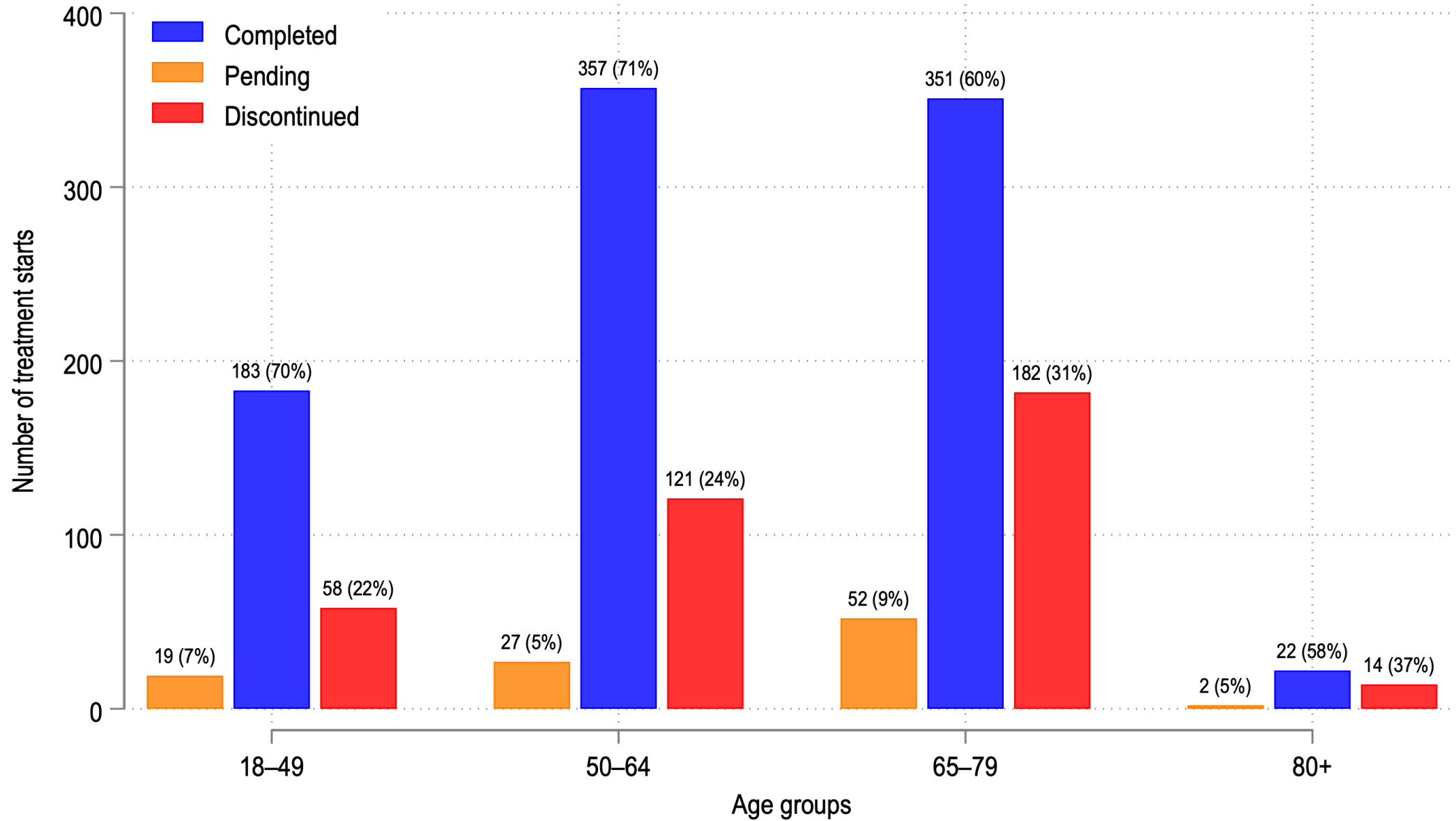
- **Contact**

- Some patients have their adult children as primary contacts which makes gather information during work hours difficult as the adult children are also working
- Language barriers

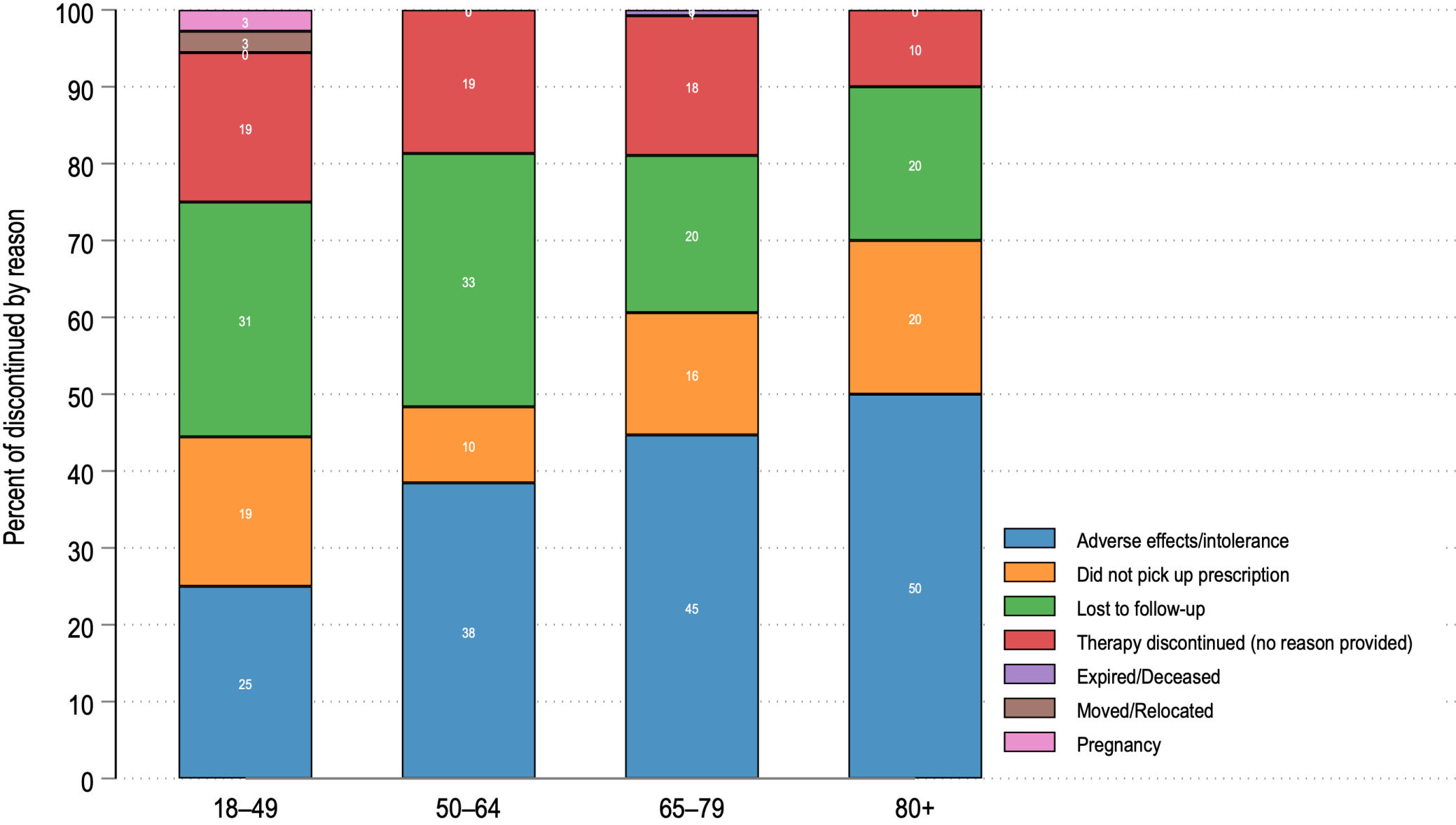
- **Patient Travel**

- Difficult to keep track of patients' progress when they are traveling
- Some patient choose to start treatment after travels
- Many calls need to be rescheduled to get patients' treatment results

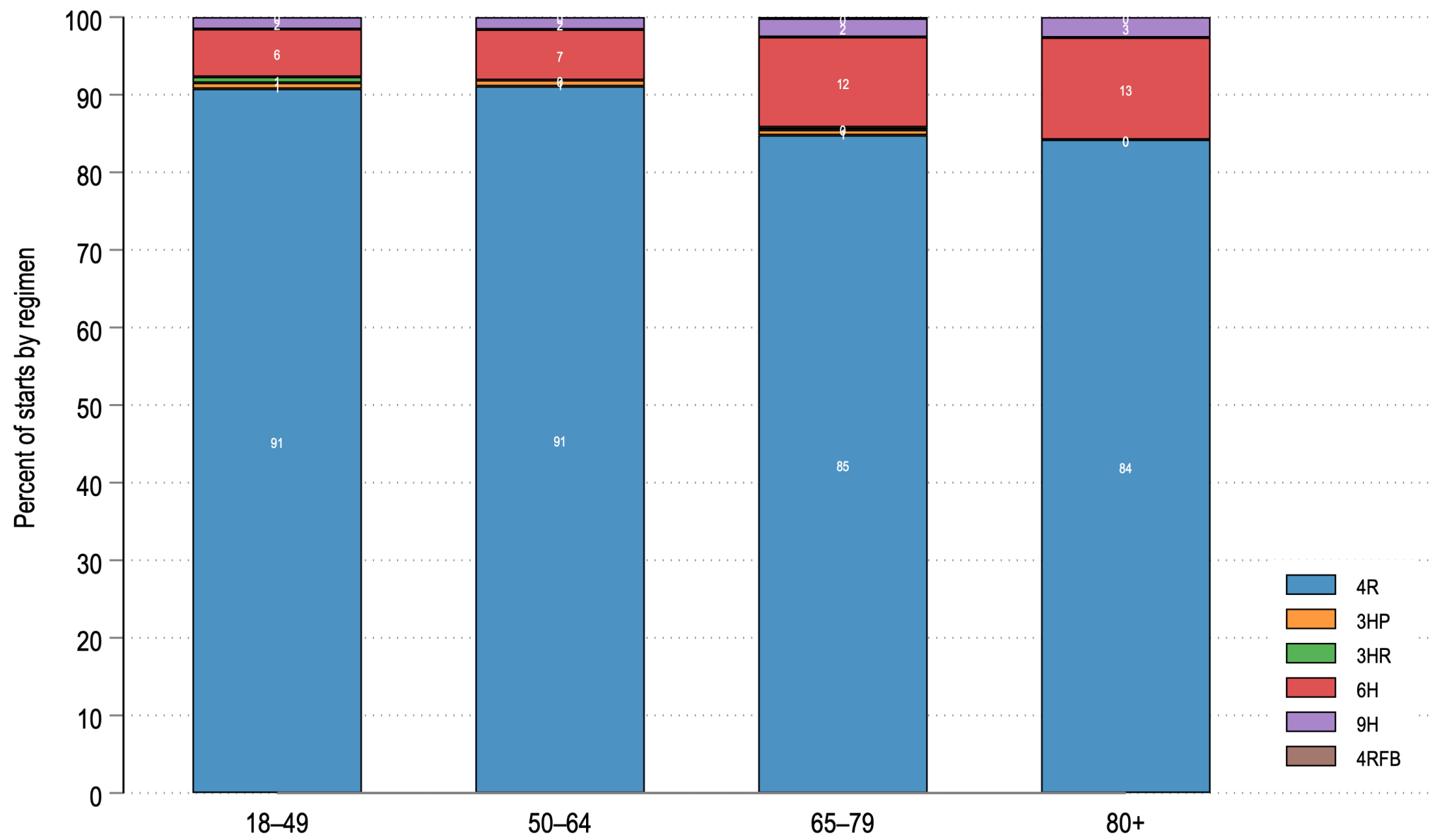
Treatment Starts by Age Group and Outcome



Reasons for Treatment Discontinuation by Age Group (%)



Regimen Distribution by Age Group (%)



Key Takeaways

- There is risk for attrition with LTBI treatment due to duration of treatment and potential for side effects during treatment.
- Older adults are less likely to complete LTBI treatment due to intolerance of medication side effects.
- Pharmacists can play an important role in providing counseling and monitoring to patients prescribed LTBI treatment.
- Pharmacists can provide standardized documentation of treatment outcomes for health systems using an LTBI care cascade to surveil TB prevention outcomes.

TB Prevention in Primary Care: Clinical Pharmacy-Led LTBI Clinic

Brian Buckley, MD MPH

Physician Specialist

Los Angeles County Department of Health Services

Los Angeles County Department of Public Health

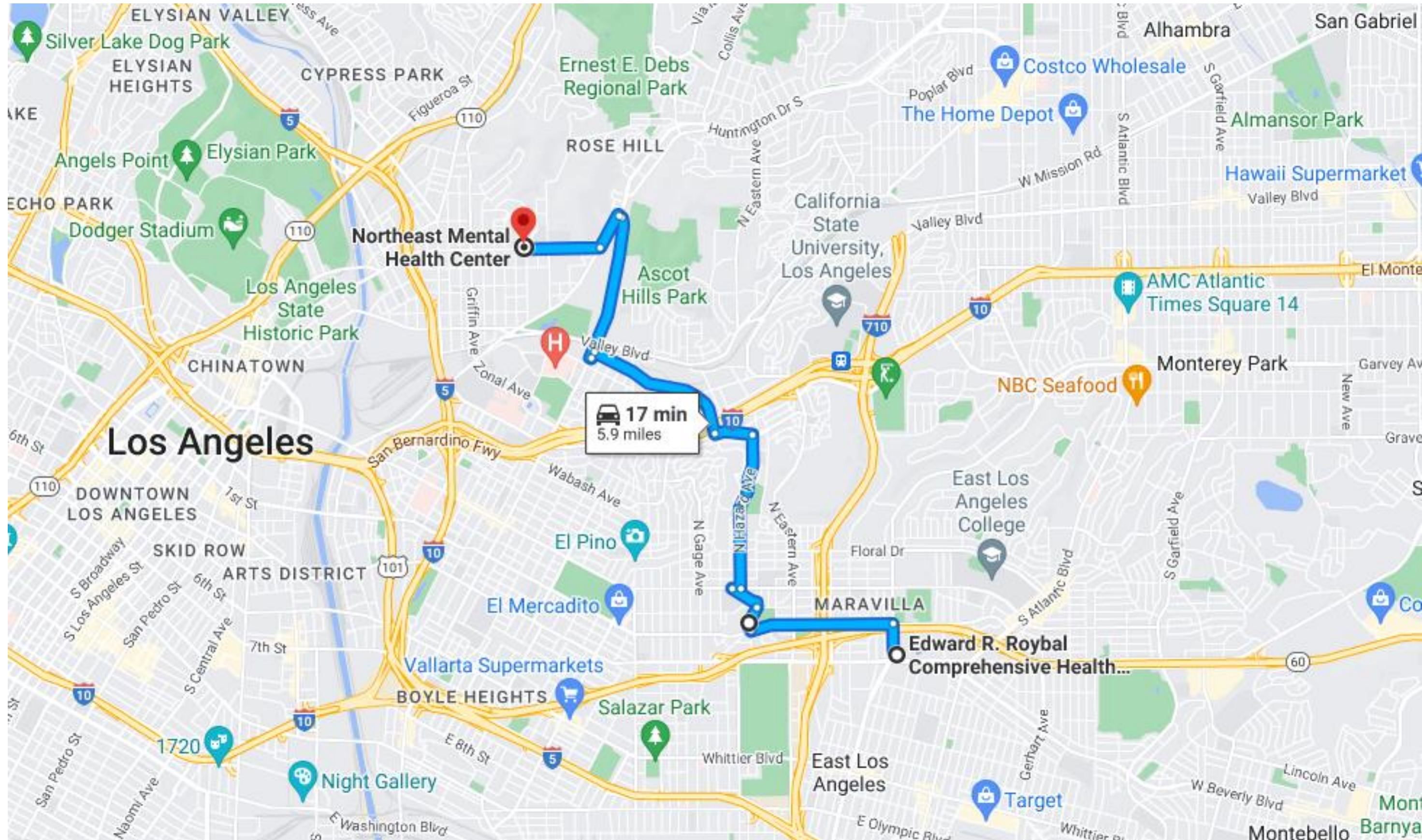


Agenda

- Who We Are
- LTBI Care Cascade Review
- Pharmacy-Led LTBI Clinic Referral Flow and Operations
- Pharmacy-Led LTBI Clinic Performance
- Accomplishments and Opportunities

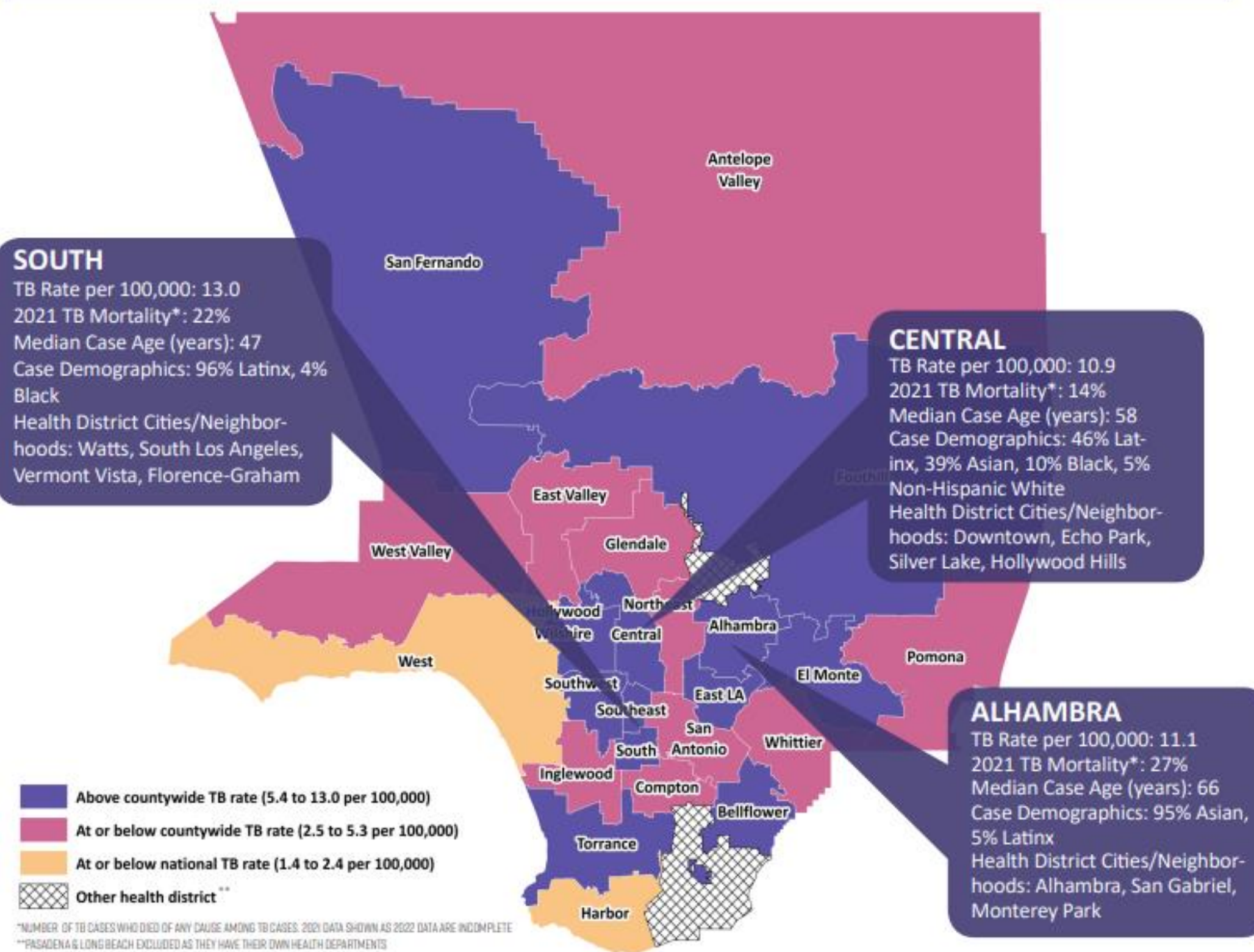
East Los Angeles Health Center Group





in Los Angeles County 2022

TB CASE RATES BY HEALTH DISTRICT, 2022 (TOP 3 DISTRICTS WITH HIGHEST RATES HIGHLIGHTED)



East Los Angeles Health Center Group

Medical Services

- Adult Primary Care (14)
- Pediatric Primary care (3)
- Women's Health (3)
- MAT Clinic (1)
- Adult Urgent Care (2-5 rotating)
- Specialty Care
 - Cardiology
 - DM Endo
 - Podiatry
 - Optometry
- **Clinical Pharmacy Service**

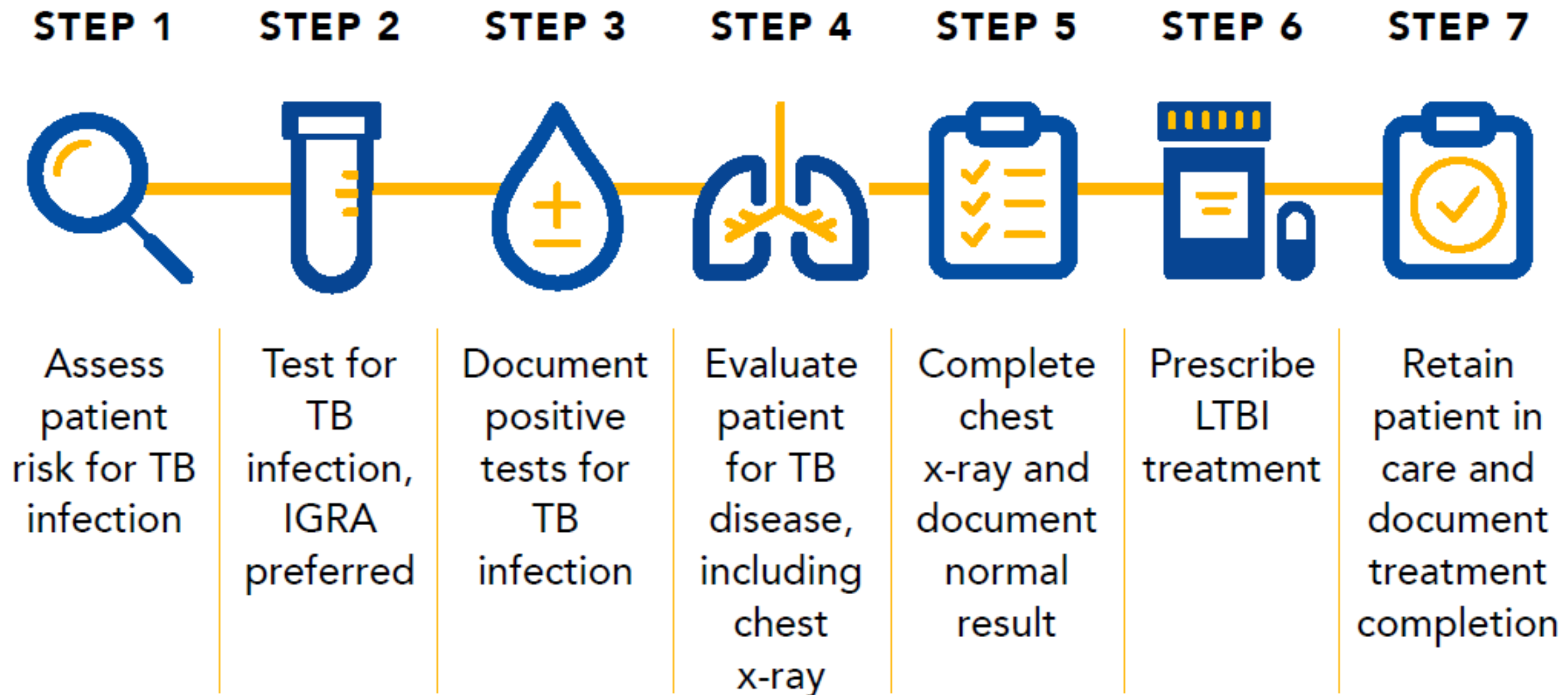
Ancillary Services

- Pharmacy
- Lab
- Radiology
- Behavioral Health

Clinical Pharmacy Service

- Staffed by 6 PharmD's
- Goal = support for primary care
 - Medication titration
 - DM (insulin, GLP-1 agonist, oral rx)
 - HTN
 - Hypothyroidism
 - Obesity (GLP-1 agonist)
 - Nicotine Replacement Therapy
 - Anticoagulation
 - H. pylori treatment
 - Medication Assisted Treatment (collaboration with MD for AUD/OD)
 - **Latent TB infection treatment**

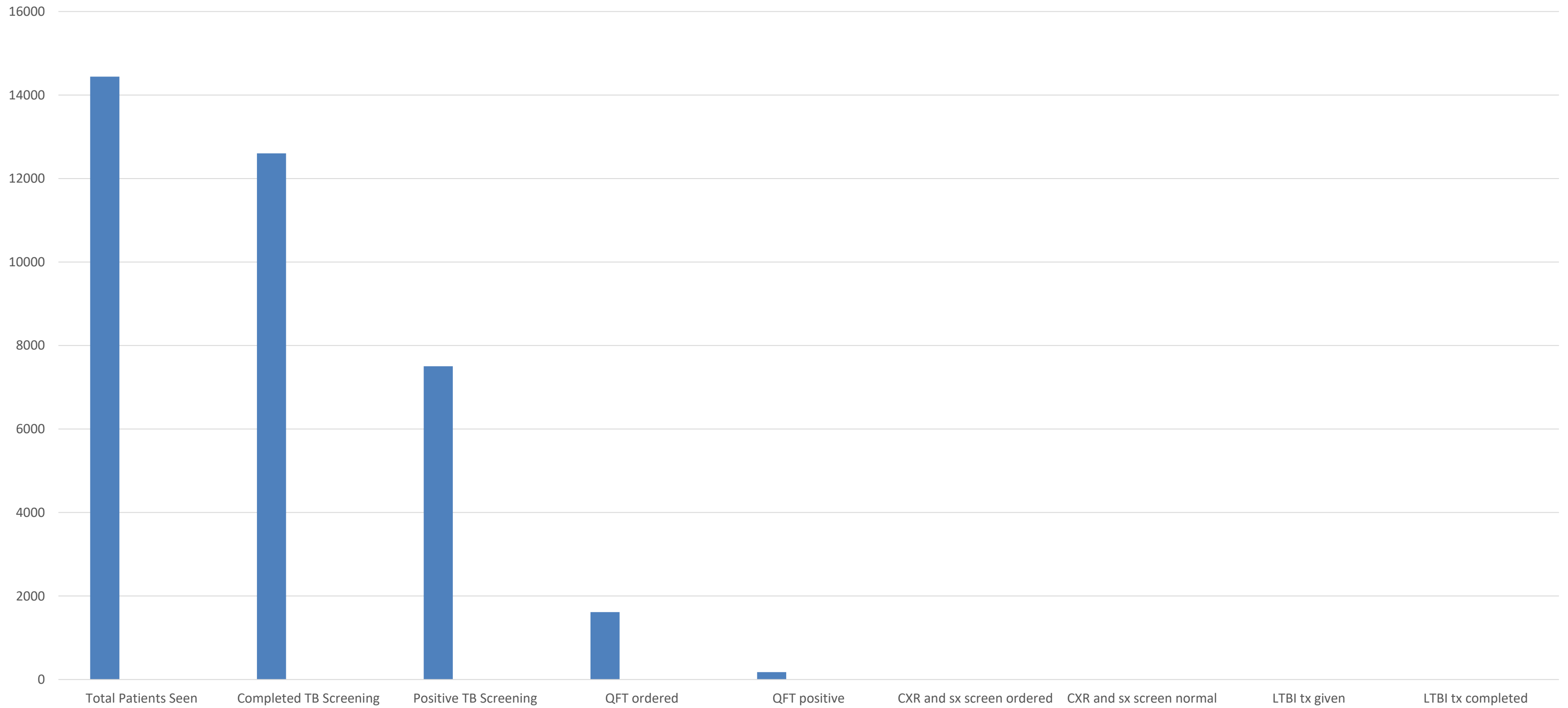
The LTBI Care Cascade



ELAHCG LTBI Care Cascade Data

- Study period = July 1, 2023 to June 30, 2024
- 14,440 unique adult and pediatric patients seen
- 12,604 completed TB screening (87.29%)
- 7,504 with positive TB screen (51.97%)
- **1,614 QFT ordered during study period (21.5%)***
 - Total # ordered during study period
 - Unclear if matched to above 7,504 patients or not
- 177 with positive QFT (11%)

ELAHCG LTBI Care Cascade



Pharmacy-Led LTBI Clinic Referral Procedure

- MD evaluates patient
 - TB Risk Assessment
 - TB disease Sx screen
 - IGRA
 - CXR
- If c/f TB Dz, provider starts eval
- If c/w LTBI, provider discusses r/b Tx with patient
- If pt agrees to Tx → referred to LTBI Pharmacy Clinic
 - Approx 1-3 wks to visit

- ☐ **Birth, travel, or residence** for at least 1 month or frequent border crossing in a country with an elevated TB rate
 - Includes countries other than the United States, Canada, Australia, New Zealand, or Western and Northern European countries
 - If resources require prioritization within this group, **prioritize** patients with at least one medical risk for progression (see Fact Sheet for list)
 - Interferon Gamma Release Assay is preferred over Tuberculin Skin Test for non-U.S.-born persons ≥ 2 years old
- ☐ **Immunosuppression**, current or planned
 - HIV infection, organ transplant recipient, treated with TNF-alpha antagonist (e.g., infliximab, etanercept, others), steroids equivalent of prednisone ≥15 mg/day for ≥1 month) or other immunosuppressive medication
- ☐ **Close contact** to someone with infectious TB disease at any time
 - The Centers for Disease Control and Prevention indicates that the evaluation of contacts and treatment of infected contacts is an important component of the U.S. strategy for TB elimination
- ☐ **History of homelessness or incarceration**, current or past
 - The U.S. Preventive Service Task Force (USPSTF) recommends screening populations at increased risk for TB infection based on increased risk of exposure including persons who have lived in high-risk congregate settings (e.g. homeless shelters and correctional facilities)
- ☐ None; no TB testing is indicated at this time.

Pharmacy-Led LTBI Clinic Operations

- Confirms MD evaluation complete
 - IGRA done
 - Sx screen done and neg for TB Dz
 - CXR done
 - Baseline LFT's and CBC done
- PharmD discusses Dx and Tx options
 - 4R and 3HP favored
 - Can consult with MD re: regimen choice
- PharmD prescribes Tx independently
- Monitors labs
- Monitors for side effects
 - Hepatotoxicity especially
- Confirms adherence
 - Pill counts
 - Calls pharmacy to confirm picked up Rx
- Documents Tx completion

Pharmacy-Led LTBI Clinic Volumes

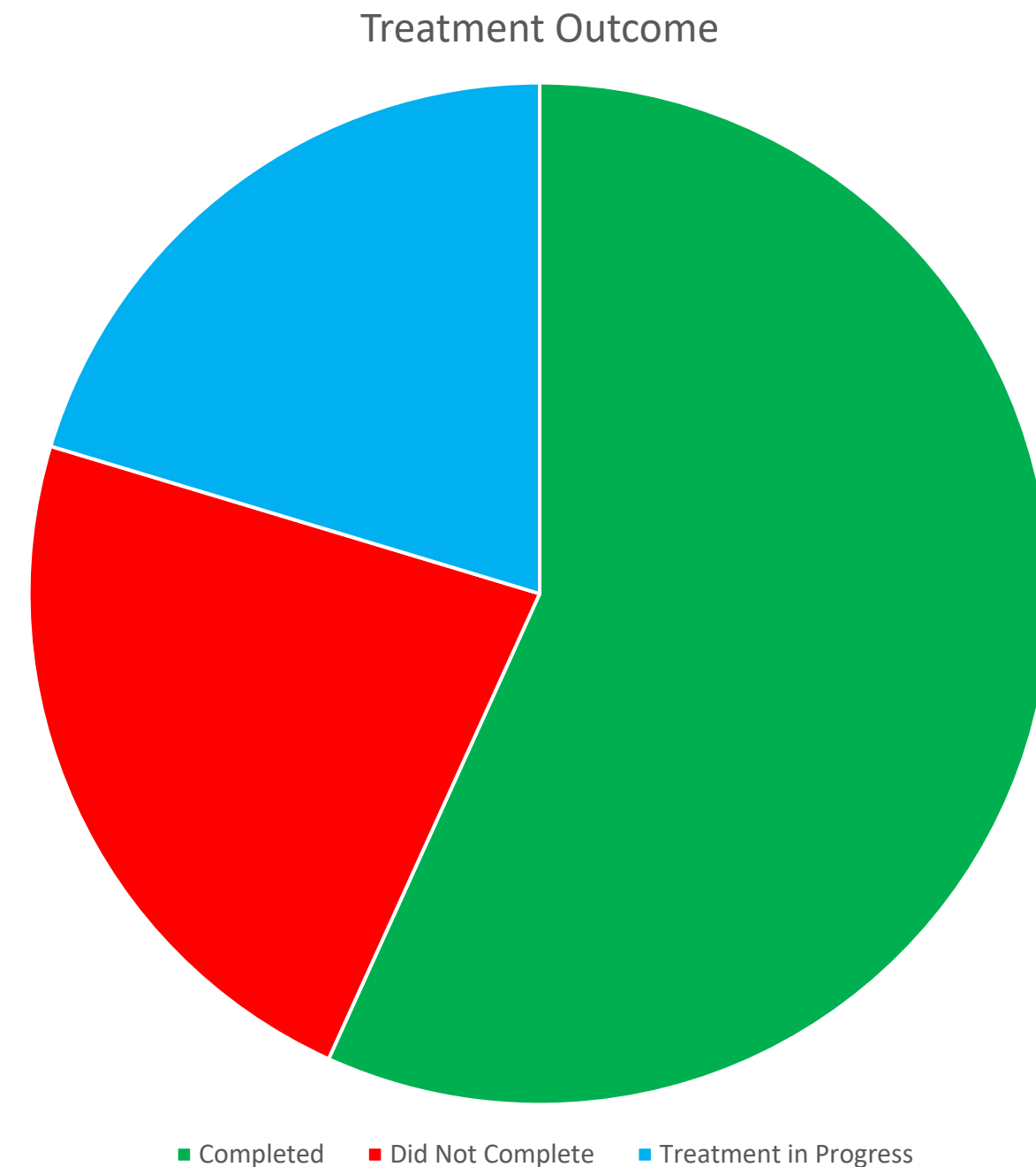
Month	LTBI New Referral	Total LTBI Visits
June 2025	8	35
May 2025	9	36
April 2025	10	33
March 2025	11	39
February 2025	5	38
January 2025	8	37
AVG/WEEK	2	9

Pharmacy-Led LTBI Clinic Performance Review

- 1st referral = 9/20/2023
- Review date = 8/8/2024
- Pharmacist Supports
 - DHS Infectious Disease LTBI Expected Practice
 - Local primary care MD consultation available prn
 - DPH TBCEP and LAG ID consultation available prn
- Treatment Window Definitions
 - 3HP = 12 doses within 16 wks
 - 4R = 120 doses within 6 months
 - 6H = 180 doses within 9 months
 - 9H = 270 doses within 12 months

Pharmacy-Led LTBI Clinic Treatment Outcome

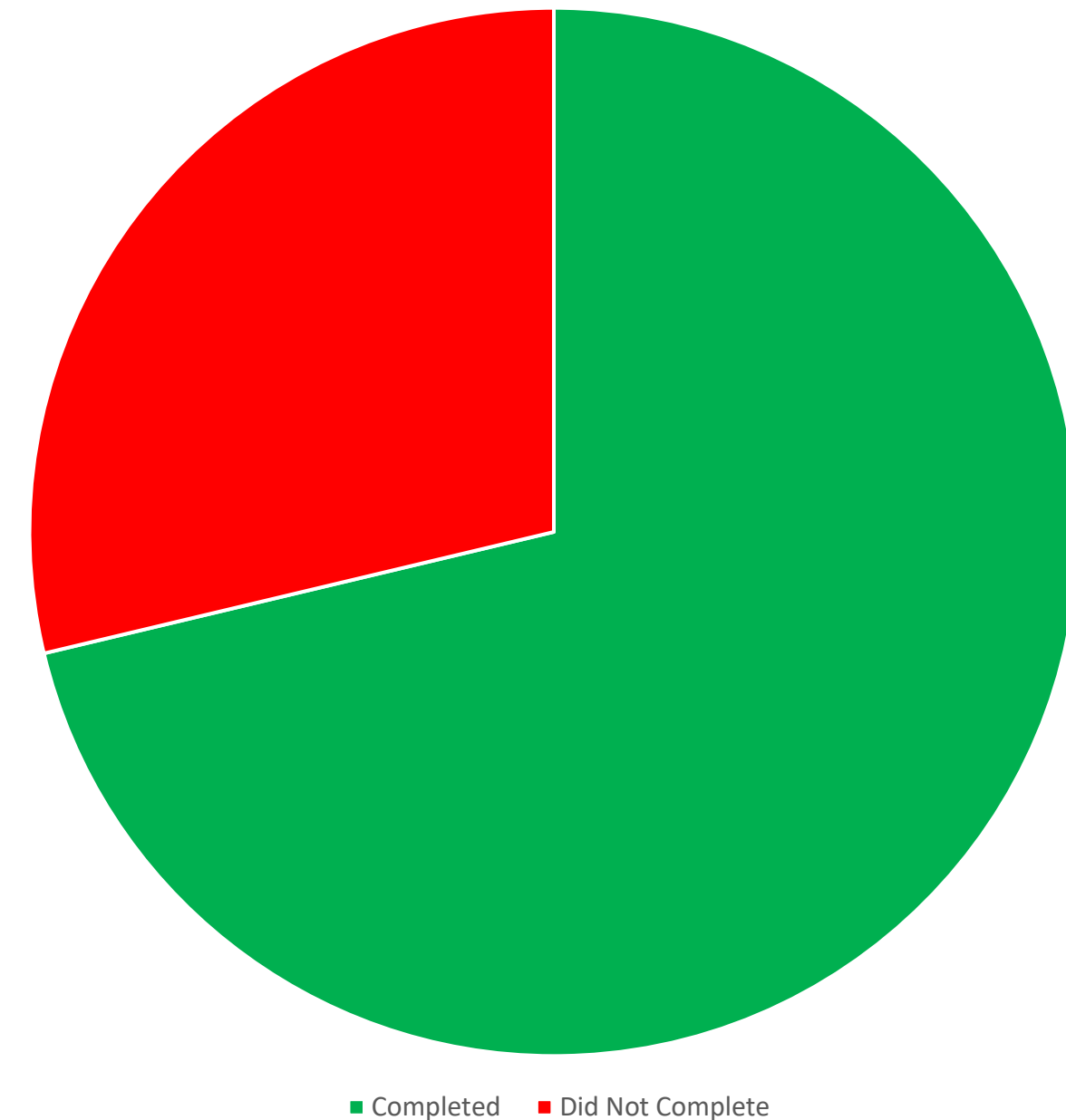
- Total referrals = 118
- 67 completed Tx
 - **67/118 = 57% raw completion rate**
- 27 started Tx but didn't complete in window
 - **27/118 = 23% raw non-completion rate**
- 24 still on Tx within window



Pharmacy-Led LTBI Clinic Treatment Outcome Excluding Treatment in Progress

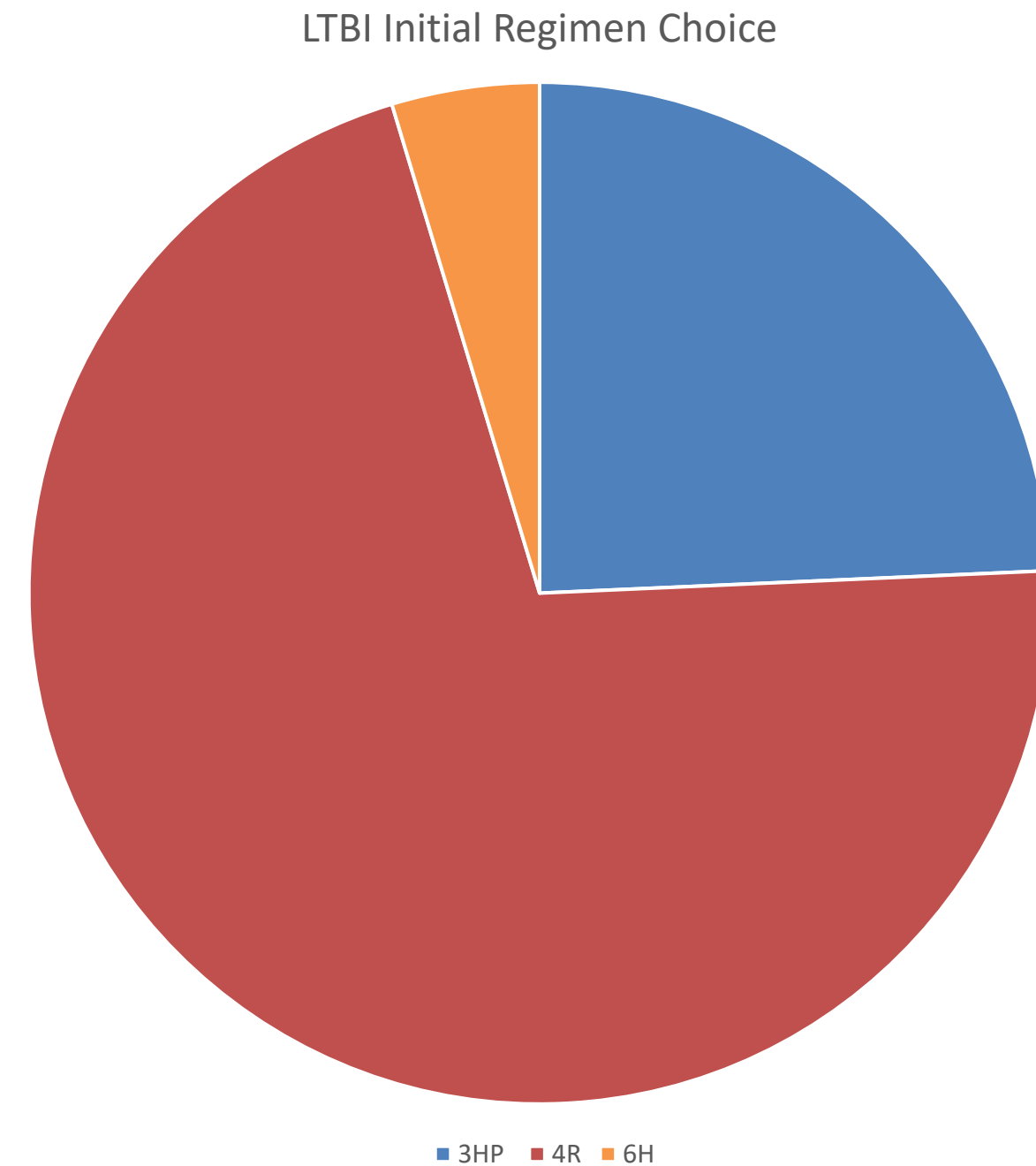
- Total referrals = 118
- 67 completed Tx
 - 118 total – 24 in window still = 94
 - **67/94 = 71% adjusted completion rate**
- 27 started Tx but didn't complete in window
 - 118 total – 24 in window still = 94
 - **27/94 = 29% adjusted non-completion rate**
- 24 still on Tx within window

Treatment Outcome Excluding Treatment in Progress



Pharmacy-Led LTBI Clinic Initial Regimen Choice

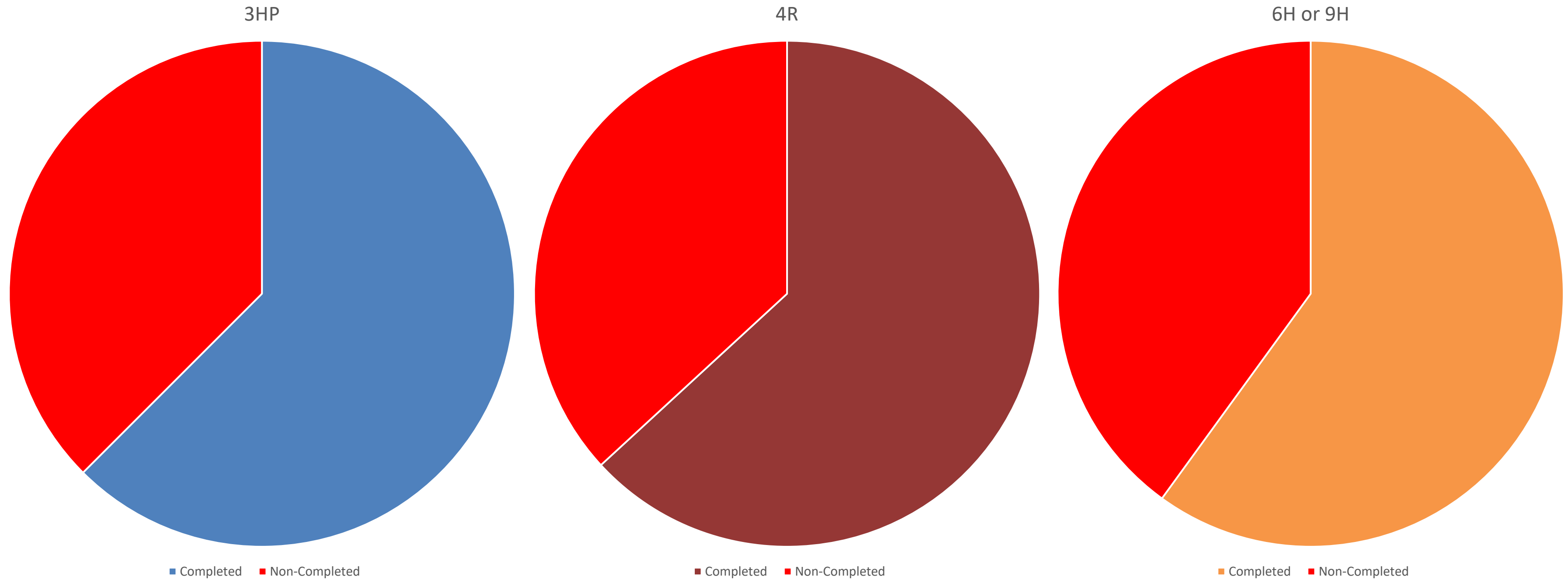
- 3HP given = $26/118 = 22\%$
- 4R given = $76/118 = 64\%$
 - 4Rfb monotherapy (2) per DDI
- 6H or 9H given = $5/118 = 4\%$



Pharmacy-Led LTBI Clinic Treatment Completion by Regimen

- 3HP completed = $15/26 = 58\%$
- 4R completed = $48/76 = 63\%$
 - Includes 4Rfb (2) per DDI
- 6H or 9H completed = $3/5 = 60\%$

Pharmacy-Led LTBI Clinic Treatment Completion by Regimen



Treatment Failure Themes

- Seen and declined Tx
- Seen and given Rx but never started
- Started Tx then lost to follow up
 - **w/ both good and poor adherence**
- Side effect intolerance
 - N/V/rash/?dizzy with 4R
 - N/V/fever/chills/?dizzy/?sore throat with 3HP
- Rechallenge issues
 - Pt declines rechallenge
 - Pt declines substitution
 - Side effects persist despite either/both
- Adherence issues
 - Would stop Tx during acute illnesses
 - Inconsistent use → didn't complete in window
 - Took Rif 300 mg bid instead of 600 mg qday
- 3HP Supply interruption

Reasons for INH monotherapy

- Rifamycin side effect intolerance
 - N/V on 4R → PMD switched to 6H
 - N/V on 4R → Pharm switched to 6H
 - ALT > 5x ULN on 4R. No Sx. Resolved off 4R. Liver eval nl → PMD switched to 9H
 - Throat swelling on 4R → Pharm switched to 6H
 - Skin rash/psoriasis flare (?related) with 4R and 3HP → 6H trial
 - Dizzy on 4R → Pulm switched to 9H
- Unfavorable DDI
 - Risperidone for schizophrenia
 - Tacrolimus for renal transplant
 - Topical estradiol for perimenopause

Reasons for Rifabutin monotherapy

- Unfavorable DDI
 - Apixaban
 - Hydroxychloroquine

Accomplishments

- **Rifamycin-based regimens predominate (86%)**
- Advantages over traditional care
 - Better access
 - Easier to increase f/u frequency per side effects, adherence issues
 - Easier navigating complex DDI's (ie. co-administration with statins, etc)
 - Easier Tx adherence verification
- Independently document Tx closure in Orchid
 - Key to data tracking
- Collect and review LTBI Clinic data
- 2024 CTCA TB Elimination Heroes



Areas of Opportunity (AB 2132)

- Side Effect Troubleshooting
 - USCF Curry Center Nursing Guide for Managing Side Effects
 - Help keep as many pts on rifamycin-based tx and in care as possible
 - Cont to offer 3HP if difficulty tolerating 4R
 - Consider 4Rfb if intolerant to 4R prior to switch to INH
- Adherence
 - More proactive outreach to non-adherent pts?
 - Incentives/enablers?
- More sophisticated data review
 - Predictors for Tx non-completion?
 - Frequency of comorbidities? (DM, CKD, cirrhosis, SUD, etc)
- Cross-ACN collaboration for LTBI best practice development
- Cross-ACN LTBI care cascade review

Special Thanks

- Drs. Roybal and Shu (DHS Roybal CHC)
- Dr. Belani (DHS ACN)
- Drs. Higashi and Kaur (DPH SoCal COP, TBCP)
- Dr. Hwang (DPH TBCP consultant for Roybal CHC)
- **Roybal Clinical Pharmacy Team**
 - Rana Entabi
 - Jennifer Dinh
 - Daniel Lim
 - Curtis Yu
 - Mary Ngo
 - Patricia Lin
 - Chantal Gardel
 - Sandy Chung

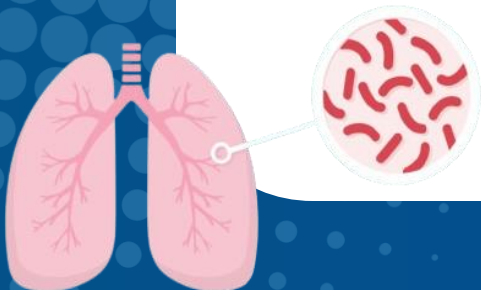
Feel Free to Contact with Questions

- [Brian Buckley](#)
- bbuckley@dhs.lacounty.gov
- (213) 757-0605

Discussion

- 1. Are there aspects of LTBI care where you feel very confident?
- 2. At what stage of the LTBI care cascade does your clinic or program experience the greatest patient attrition or challenge?
- 3. What strategies or approaches have you found effective — or would you like to explore — to improve retention or reduce attrition at that stage?
- 4. What tools, templates, or approaches has your clinic developed that could help others in this group?
- 5. Has your clinic or health system worked with pharmacists in LTBI care — either for treatment initiation, monitoring, or adherence support? What worked well or what barriers came up?

Risk		LTBI Diagnosis			Treatment	
STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6	STEP 7
Assess patient risk for TB infection	Test for TB infection, IGRA preferred	Document positive tests for TB infection	Evaluate patient for TB disease, including chest x-ray	Complete chest x-ray and document normal result	Prescribe LTBI treatment	Retain patient in care and document treatment completion



SOUTHERN CALIFORNIA REGIONAL COMMUNITY OF PRACTICE TO END TB



Announcements

Medical Leadership Forum for Public Health and Preventative Medicine



Date: Tuesday, September 9, 2025



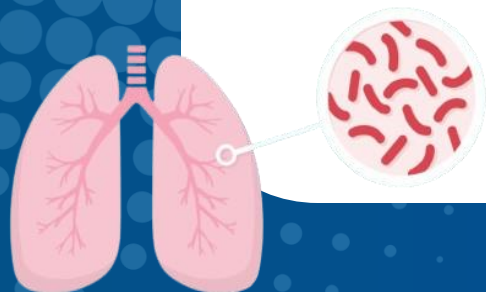
Time: 8:00AM – 9:30AM PST



Link: [Zoom](#)

The Medical Leadership Forum for Public Health and Preventive Medicine is holding a Zoom meeting in which the special topics will be on:

- International and California tuberculosis, including effects of the cancellation of US international aid
- The new California bill AB 2132 requiring screening of high-risk patients.



California Medical Leadership Forum for Public Health/Preventive Medicine
48th Meeting (21st using Video)
Tuesday, September 9, 2025, 8:00-9:30 am PST

AGENDA (draft 7/27/25)

LINK TO ZOOM MEETING (YOU MAY JOIN EARLY, NO WAITING ROOM)

<https://us02web.zoom.us/j/6562202920?pwd=VWNTMm1hdFpGczFla05lQnpmd0xLdz09>

If problems using this link, an alternative way to join the meeting is from your browser: Go to www.zoom.us, select "Join a meeting," and enter as meeting ID 656 220 2920 when prompted. If further prompted for a passcode, enter 872032.

Phone access: If not near a computer or mobile device with a screen, you can phone in and participate only by audio. Dial one of the numbers [below](#) and add the meeting number when prompted.
669 900 9128 US (San Jose), 253 215 8782 US (Tacoma), or 408-638-0968 (suggested for land line phones)

"Handouts" are attached to the email meeting notice. All attendees except those participating by phone may "Share Screen" or enter information in "Chat."

1. **Welcome Greeting, Explanation of Today's Agenda:** Ron Hattis, Chair ("handout," 3 min.)
2. **Minutes of June 17, 2025 Meeting:** Traci Stevenson ("handout," 3 min.)
3. **Remembering September 11, 2001 as a Public Health Catastrophe, and the Impact of Terrorism:** Ron Hattis (4 min.)
4. **SPECIAL TOPIC: Tuberculosis: the Leading Global Cause of Infectious Disease Deaths, and New California Requirements**

PART A.: GLOBAL IMPACTS OF TB, AND OF US AID ROLLBACKS: Peter Kerndt, MD, MPH (15 min.)

1) Global Status and Impact of Tuberculosis:

Global TB mortality was 25 million in 2023. US efforts (through Global Fund, bilateral aid, and some PEPFAR services) helped save more than [58 million](#) since 2000 and contributing to a 9% decline in TB-related mortality between 2019 and 2023 in 24 USAID TB priority countries. "The administration's FY 2026 budget request included \$178 million for TB, a decrease of \$228 million (KFF Global Health Policy Report, July 23, 2025). "After three years of the COVID-19 pandemic with SARS-CoV-2 dominating as the leading cause of death from infectious disease, TB reclaimed this position in 2023,

Announcements

Hispanic Heritage Month, September 15 – October 15

Social Media Tools:

- Celebrating Heritage, Protecting Health: Let's Talk Tuberculosis
- What is Silicosis?
- What is *Mycobacterium bovis*?

WHAT IS SILICOSIS?

Silicosis is an irreversible, but preventable lung disease caused by inhaling silica dust found in engineered stone, quartz, sand, cement, or brick. It can cause lung inflammation, stiffening, and scarring. There is **no cure** for silicosis.

In Los Angeles County, people who work with engineered stone countertops or are exposed to silica dust are at risk for developing silicosis.



Did you know?

Consuming raw dairy products can cause tuberculosis disease.

What is mycobacterium bovis (*M. bovis*)?

M. bovis is a bacterium that is commonly found in cows and other animals such as deer, elk, and bison.

Risk factors for *M. bovis* infection include consuming unpasteurized (raw) dairy products and working closely with cattle.

In some cases, *M. bovis* can cause tuberculosis (TB).

Queso Fresco

Made with pasteurized milk



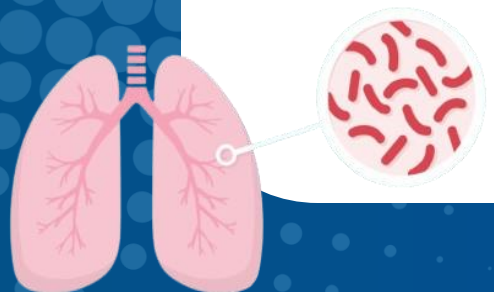
Do you eat queso fresco?

Queso fresco made from unpasteurized milk is the most common source of *M. bovis* contamination.

Be sure to only eat queso fresco that is refrigerated, packaged, and made with pasteurized milk.

Some people who are infected with *M. bovis* may never have symptoms. Others may experience night sweats, fatigue, coughing and weight loss.

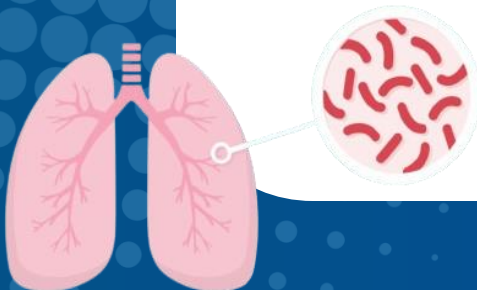
If you consume raw dairy products, contact your health care provider to get a TB test, even if you do not have any symptoms.

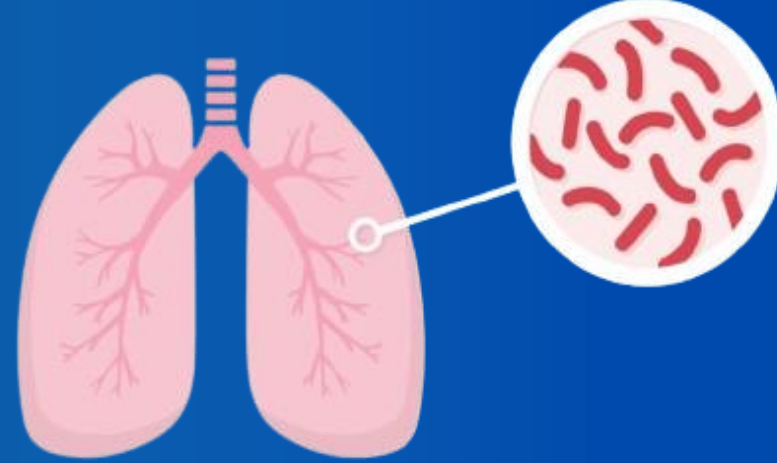


Future meetings

October (date TBD)	Topic TBD
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Topics and presenters subject to change





SOUTHERN CALIFORNIA REGIONAL COMMUNITY OF PRACTICE TO END TB

Thank you!