

# LTBI Program Implementation in a Substance Abuse Treatment Facility (A Case Study)



New Jersey  
Medical School  
**National  
Tuberculosis  
Center**

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# Background – TB and Substance Abuse

Substance abusers comprise a well-defined group who are at an increased risk of developing tuberculosis (TB), and in many poor urban communities contribute substantially to the annual incidence of disease. To accelerate the decline of TB, TB programs will need to strengthen targeted TB testing and treatment of latent TB infection (LTBI) efforts in these communities. The purpose of this case study is to document our experience in implementing a successful and client-centered approach to treating LTBI in an otherwise difficult-to-reach, high-risk population.

## Problem Identification

- A review of 357 TB cases reported in Essex County, New Jersey from 1999 to 2001 revealed that:
  - 26 % were HIV infected
  - 26 % had a history of substance abuse in past year
- Using the product [\*Identifying Missed Opportunities for Preventing TB\*](#), several TB patients in Essex County indicated that they had received services at substance abuse treatment facilities (SATFs) during the 5-year period prior to their TB diagnosis. Although most had been tested for TB and some had been started on treatment for LTBI, none reported that they had completed a full course of therapy for LTBI. Hence, many opportunities had been missed for preventing TB among these SATF clients.
- Using the product [\*Facility TB Profile for Targeted TB Testing and Treatment of Latent TB Infection\*](#), methadone SATFs in Essex County, NJ reported serving clients with high prevalence levels of LTBI (24%), HIV infection (18%), and injection drug use history (31%). All SATFs further reported:
  - Having a physician and nursing staff on site
  - Referring clients to the local health department for follow up
  - Being unaware of the follow-up TB evaluation results or whether treatment for LTBI had been initiatedIn addition, most sites routinely accepted a verbal history of a prior positive tuberculin skin test (TST) result

The New Jersey Medical School National Tuberculosis Center (NTBC) and NJ State TB Program staff held follow-up discussions with selected SATFs and local health departments to identify and address barriers to the initiation and completion of therapy for LTBI. It was commonly agreed that, ideally, SATF staff would directly observe treatment for LTBI at the same time clients received methadone. However, jurisdictional issues (each SATF served clients who resided in different health department jurisdictions) and the perception that on-site treatment of LTBI would be labor intensive, discouraged most SATFs from further considering this approach. Nevertheless, a more detailed needs assessment was conducted in one facility where the medical director was knowledgeable and eager to explore innovative approaches without additional funding. This person was also a member of the New Jersey TB Advisory Committee.

# Needs Assessment Findings

## Client Profile

About 200 active clients receive methadone at this SATF (included about 100 new admissions per year)

- About 45% are long-term (have been in the program more than one year)
- 70% are Black, 20% Hispanic, and 10% non-Hispanic white
- Nearly 60% are medically indigent, 25% are Medicaid eligible, and 15% are self pay
- 15% to 20% clients have LTBI, i.e., positive Mantoux tuberculin skin test (TST) result
- About 45% have a history of injection drug use (IDU)
- About 10% are HIV infected
- About 20-30% have hepatitis C (based on a one-time survey)

## Initial Medical Screening

Upon admission, each client receives:

- Physical examination
- Blood chemistry (including liver enzyme test, complete blood count, urine analysis, RPR, and drug screen)
- HIV counseling and voluntary testing
- Two-step Mantoux TST (testing materials provided by the State TB Program), unless written documentation\* of a:
  - Prior positive TST result
  - Prior negative TST in the past 6 months(\*Note: this was the only SATF surveyed which did not accept a verbal history of a prior positive TST result)

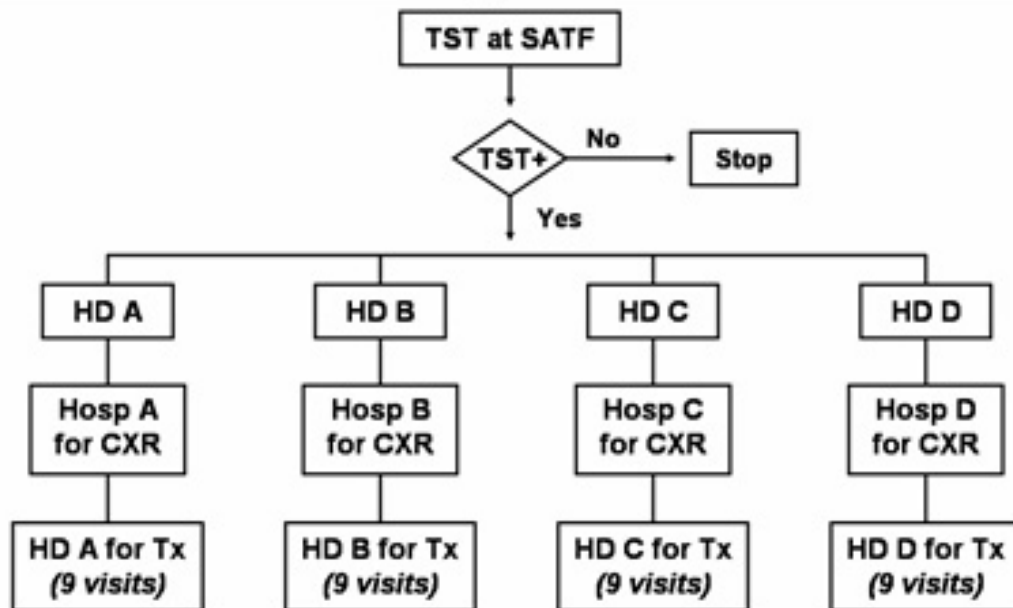
Clients who are TST negative on admission receive an annual TST (single step)

## Existing TB Follow Up Procedures

- Clients with a positive TST or TB symptoms (regardless of the TST result) were referred to one of 4 health departments, depending on their place of residence
- Health department referred client to a local radiologist or hospital for a chest x-ray
- Client returned to the health department to be evaluated for active TB and, if TB disease was ruled out, for treatment of LTBI
- If started on LTBI treatment, client returned monthly to the health department to pick up medication and to be monitored for toxicity. Medication was self-administered
- When client failed follow-up appointment, the health department made frequent calls to the SATF in an attempt to get client to return for LTBI treatment

These procedures can be viewed schematically in Figure 1.

**Figure 1. Existing TB Testing and Follow Up Procedure**



### Problems with Existing Procedures

1. Time-consuming and confusing for client to be referred to different health departments and hospital radiology facilities for follow-up chest x-ray and treatment
2. Clients often experienced delays in getting appointments for treatment in the health department after chest x-ray was done
3. Clients were often not started on treatment. Health departments were not consistent about starting treatment for LTBI in this high-risk population. As a result, there was confusion among clients who had been educated by SATF staff about the importance of treating LTBI
4. If treatment was started, many clients failed to keep monthly visits at the health department to pick up medication and to be monitored for toxicity
5. Clients were often not adherent with medication, since it was self-administered
6. SATF often unsuccessful in getting non-adherent clients to return to the health department for LTBI treatment

## Strategy for Implementation

NTBC staff and the state TB nurse consultant met with the medical director and nurse director from the SATF and with the health officer for the local health department to present the needs assessment findings and to discuss methods to overcome problems identified. To help focus the discussion, 3 specific **objectives** were developed:

- TST results will be known for 95% of high-risk clients
- 90% of high-risk clients with LTBI will be placed on treatment (with therapy being directly observed) unless medically contraindicated
- 90% of clients placed on treatment will complete recommended therapy

The primary key to the program's success was the medical director's leadership and commitment to developing procedures that would ensure the achievement of these objectives while providing more comprehensive, less disruptive care to clients. Also key was the health department's appreciation for developing an approach that would efficiently prevent TB disease among the clients of a facility within its community, even though some of the clients resided in a different health department jurisdiction. Finally, all parties began to see this program as building a model that could be adapted by and tailored to other SATFs and local health departments throughout the state.

# Implementation Plan

## Revised Procedures

- All clients with a positive TST result are given an x-ray voucher (provided by the local health department) and referred to a single nearby hospital for a chest x-ray
- The hospital radiologist reads the chest x-ray and faxes the results to the SATF
- The SATF physician reviews the x-ray reading and examines the client to rule out active TB and evaluate for treatment of LTBI
- If the chest x-ray is abnormal or if client has TB symptoms (regardless of the TST result), the SATF refers client to health department Chest Clinic for follow up
- If TB disease ruled out, the SATF physician initiates LTBI treatment with INH and B6 for 9 months
  - The SATF nurse gives INH and B6 (provided by the State TB program) to the client via directly observed therapy (DOT) at the same time methadone is given. To help ensure confidentiality, each client is called to the methadone/medication window individually, while other clients remain seated
  - The SATF nurse staff monitors client for adverse reactions to medication
- At the initiation of treatment, the SATF nurse educates the client and gives him/her a *white* wallet-sized [LTBI Card](#) which reflects the TST and chest x-ray results
- At the completion of LTBI therapy, the SATF nurse completes and provides the client with a *gold* wallet-sized [LTBI Card](#), which reflects the TST, chest x-ray, and treatment results (Figure 2)  
The client is encouraged to present the LTBI Card when seen by a new health care provider in order to prevent being tested or treated again




**Figure 2**

The image shows two overlapping yellow cards. The left card is a form for recording patient information and test results. It includes fields for Name, DOB, TST mm induration, Date Read, Chest X-Ray Date, Result (Normal/Abnormal), Treatment Completed (Yes/No), Name of Drug(s), Started/Stopped dates, # Mos., Provider Name, and Signature/Phone. The right card is titled 'YOUR SKIN TEST AND TREATMENT RECORD' and contains instructions to keep the card in a wallet and show it to a doctor. It lists symptoms of TB: Cough, Chest pain, Coughing up blood, Losing weight without trying, Feeling weak and tired, Fever and chills, and Night sweats. At the bottom, it asks 'Have you found this card useful?' and provides the phone number 1-800-482-3627.

LTBI Card developed by the NJMS National Tuberculosis Center (2004)

- Throughout the testing and treatment process, SATF staff record TB risk factor information, as well as TST, chest x-ray, and treatment results on a *Tuberculosis Testing, Follow Up, and Treatment of LTBI Form*. This form serves as a clinical record and as a source for preparing statistical reports (Figure 3).

**Figure 3**



**CONTROL #** 11256

Record # \_\_\_\_\_ S.S. # \_\_\_\_\_

NAME Last \_\_\_\_\_ First \_\_\_\_\_ MI \_\_\_\_\_

DOB \_\_\_\_/\_\_\_\_/\_\_\_\_ Sex  M  F Phone: (\_\_\_\_) \_\_\_\_\_

Street/Apt # \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

*USE PATIENT IMPRINT*

**TUBERCULOSIS TESTING, FOLLOW UP, AND TREATMENT OF LATENT TB INFECTION (LTBI) FORM**

**1 DEMOGRAPHIC / EMPLOYMENT DATA**

Race  White  Black  Asian/Pacific Is  American Indian

Ethnicity  Hispanic  Non-Hispanic

Country of Birth  U.S.  Other: \_\_\_\_\_ Date Arrived in U.S. \_\_\_\_/\_\_\_\_/\_\_\_\_

Primary Language \_\_\_\_\_  Interpreter Needed

Employment:  Unemployed  Retired  Employed At \_\_\_\_\_ Phone (\_\_\_\_) \_\_\_\_\_

Gender:  Male  Female

**2 REASON FOR TEST: (Check only one)**

Targeted Testing-Project  Targeted Testing-Individual  Contact Investigation  Administrative (No Risk)  Referral

Testing Site: Name: \_\_\_\_\_ County Code \_\_\_\_\_ Testing Site Code \_\_\_\_\_

If Referral, Source:  Employment  School  Immigration  Other \_\_\_\_\_

**3 TB MEDICAL / POPULATION RISK (Check all that apply)**

**Medical**

Contact: Date Last Exposure \_\_\_\_/\_\_\_\_/\_\_\_\_ RVCT # of Index Case \_\_\_\_\_

Immunosuppressed  Non-injecting drug use  Cancer (Site \_\_\_\_\_)  >10% below ideal weight

TST Converter (past 2 years)  Excessive alcohol use  Dialysis/renal failure  Other risk: \_\_\_\_\_

Abnormal CXR, consistent with old TB  Diabetes ( insulin/ drugs)  Gastrectomy/intestinal bypass  NO MEDICAL RISK NOTED

Injecting drug use  Steroid Therapy >1 mo.  Silicosis

**Population**

Prison/jail inmate  Health care employee  Foreign-born in U.S. < 5 years  Child exposed to high risk adult

Prison/jail employee  Homeless shelter resident  Travel to high risk country  Other risk: \_\_\_\_\_

Other long-term facility resident  Homeless shelter employee  Migrant worker  NO POPULATION RISK NOTED

Other long-term facility employee

**4 MANTOUX TUBERCULIN SKIN TEST (TST)**

Prior TST: Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Reading (mm) \_\_\_\_\_  Prior Positive (mm unknown)  Verbal HX Only

Current Tests: Date Given \_\_\_\_/\_\_\_\_/\_\_\_\_ By \_\_\_\_\_ Date Read \_\_\_\_/\_\_\_\_/\_\_\_\_ By \_\_\_\_\_ Reading (mm) \_\_\_\_\_

Date Given \_\_\_\_/\_\_\_\_/\_\_\_\_ By \_\_\_\_\_ Date Read \_\_\_\_/\_\_\_\_/\_\_\_\_ By \_\_\_\_\_ Reading (mm) \_\_\_\_\_

If TST Not Done - Reason:  Refused  Prior + TST, Not Treated  Prior + TST, Treated  Other: \_\_\_\_\_

Z Status:  Negative  Positive  Indeterminate  Refused  Not Offered  Test Done/Results Unk  Unk Test Date \_\_\_\_/\_\_\_\_/\_\_\_\_

**5 CURRENT TB SYMPTOMS (Check all that apply)**

Fever  Chills  Weight loss  Night sweat  Persistent fatigue/malaise  Loss of appetite

Cough (# of Weeks \_\_\_\_);  Productive  Non-productive  Hemoptysis  Chest pain  Hoarseness  Other \_\_\_\_\_

NO SYMPTOMS NOTED

Signature \_\_\_\_\_ Referred for Evaluation to \_\_\_\_\_ On \_\_\_\_/\_\_\_\_/\_\_\_\_

**6 CHEST X-RAY**

Previous CXR Done:  No  Yes (Where \_\_\_\_\_; When \_\_\_\_/\_\_\_\_/\_\_\_\_)

Current Chest X-Ray Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Results:  Normal  Cavitary  Abn/Non-Cavitary  Unknown

Findings \_\_\_\_\_

CXR Not Done - Reason  Refused  Died  Lost  Moved, Records Referred  Other: \_\_\_\_\_

**7 TB CLASSIFICATION**

(0) No TB exposure, not infected  (1) TB exposure, not infected  (2) TB infection, no disease

(3) Active TB disease, current  (4) Old TB disease, not current  (5) Suspected disease, DX pending

**8 TREATMENT FOR LTBI RECOMMENDED?**

No  Yes  Defer

If No:  Prior adequate therapy for TB disease  Prior adequate therapy for LTBI  TB Case/Suspect

Incomplete Evaluation  Not indicated/No risk  Other: \_\_\_\_\_

If Yes: Medical management to be provided by: \_\_\_\_\_ (Site Code: \_\_\_\_\_)

Medication:  INH  RIF  RIF/PZA  RBT/PZA  Other: \_\_\_\_\_

Length Prescribed:  9 months  6 months  4 months  3 months  2 months  Other: \_\_\_\_\_

Frequency:  Daily  Twice Weekly  3 Times/Week  Weekly  Other: \_\_\_\_\_

Directly Observed Therapy:  No  Yes DOT Site:  Clinic  Home  School  Other: \_\_\_\_\_

If Defer:  Pregnancy  Other Reason: \_\_\_\_\_ Recommended Start Date \_\_\_\_/\_\_\_\_/\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

**9 TREATMENT FOR LTBI STARTED?**

No  Yes If Yes: Date Started \_\_\_\_/\_\_\_\_/\_\_\_\_

If No:  Patient Refused  Died  Lost  Moved, Records Referred  Abnormal LFT  Other: \_\_\_\_\_

**10 TREATMENT CLOSURE**

Date Treatment Stopped \_\_\_\_/\_\_\_\_/\_\_\_\_ Number of Doses Taken \_\_\_\_\_

Reason Treatment Stopped:

Treatment Completed  Final TST Negative  Patient Stopped AMA  Adverse Reaction, MD-Advised  Died  Lost

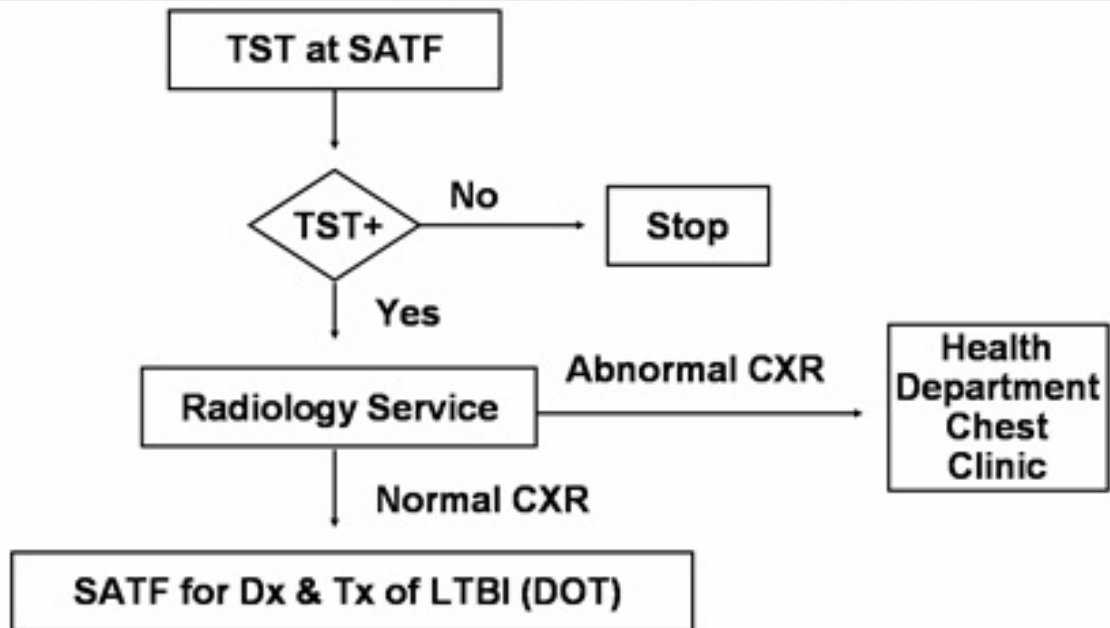
Moved (Records Referred)  DX Active TB  Other MD-Advised (Reason): \_\_\_\_\_

Health Worker \_\_\_\_\_

White - Original Canary - Copy 1 Pink - Copy 2

These simplified procedures can be viewed schematically in Figure 4.

## **Figure 4. LTBI Program Implementation Revised Follow Up Procedures**



### **Advantages of Proposed Procedures**

1. All clients go directly to a single facility for a chest x-ray which is in close proximity to the SATF (clients do not have to go to the health department before being referred to another facility for the x-ray)
2. No delay in getting an appointment to be evaluated for Treatment of LTBI after the chest x-ray is done
3. Unless medically contraindicated, all clients with LTBI are placed on treatment by the physician at the SATF
4. All LTBI treatment is given by the SATF staff on a directly observed basis (at the same time methadone is dispensed) to ensure adherence and minimize disruption in client flow
5. To help ensure confidentiality, each client advances to the methadone/medication window, while other clients remain seated
6. Clients are monitored for toxicity by SATF staff, eliminating need for monthly visits to the health department
7. All LTBI follow up evaluation and treatment procedures are uniform and convenient for the client
8. Liver enzyme tests are done initially on all clients admitted to the SATF, so these do not have to be repeated, as had been done when clients were referred to the health department
9. Saves the health department staff time (1 MD visit and 8 RN visits per patient placed on treatment)

10. The [\*LTBI Card\*](#) provides written documentation of TST, chest x-ray, and treatment results to prevent these procedures from being unnecessarily repeated by other health care providers
11. Effectively and efficiently prevents infectious TB cases in high-risk individuals who potentially could transmit TB to other clients, SATF staff, and members of the community

## Initial Results

From March through September 2004, 71 clients were admitted to the SATF. One client with a documented history of a prior positive TST result and adequate LTBI treatment was not tested or x-rayed. The 70 remaining clients all received a TST and 66 (94%) of these were read (4 clients left the SATF program prior to the TST reading). Of the 66 with TST readings, 12 (18%) were positive ( $\geq 10$  mm induration). Five of these were positive on the second of two-step testing. All 12 had a negative chest x-ray, with the results of 9 being available within one week. Including the client with a documented prior positive TST result, the overall prevalence of LTBI among those with a known TST result was 19% (13 of 67). Of these, 5 had written documentation of prior adequate treatment (2 for TB disease and 3 for LTBI) and in one pregnant client treatment was deferred until post partum. Of the remaining 7 clients eligible for treatment, one left the SATF prior to the initiation of LTBI treatment and the other 6 (86%) were started directly observed treatment for LTBI.

### **LTBI Implementation** *Preliminary Results*

- **71 clients tested Mar-Sept 2004**
- **1 documented prior positive TST result and Tx for LTBI**
- **70 tested and 66 (94%) read**
- **12 (18%) TST positive**
  - **5 of 12 positive on second of 2-step testing**
- **12 CXR normal (9 within 7 days)**
- **13 Total TST positive (19%)**
- **Treatment disposition**
  - **2 prior Tx TB disease**
  - **3 prior Tx LTBI**
  - **1 defer until post partum**
  - **7 eligible for Tx**
    - **1 Left program prior to Tx initiation**
    - **6 (86%) started Tx LTBI (DOT)**

## Keys to Success

- Facility serves clients with a high prevalence of LTBI and risk factors for developing active TB (e.g., HIV and IDU)
- Facility has medical staff to manage LTBI infected clients
- Facility medical director committed to success of the program
- Needs assessment conducted to identify barriers
- Plan developed by all parties involved with its implementation
- Written plan included objectives, procedures (with clear delineation of responsibilities), and evaluation
- Facility and health department each assign a lead individual to oversee project
- Two-step TSTing of all SATF admissions identified several clients with LTBI that would not have been identified with single-step testing
- Single nearby location at which all clients with LTBI are referred for a chest x-ray
- Local health department provides voucher for a chest x-ray based on SATF location within the community, rather than on the client's residential address
- State TB program provides TST materials and medication to the SATF at no charge
- Methods to ensure adherence with LTBI treatment (e.g., directly-observed)
- LTBI treatment integrated with dispensing of methadone to maintain smooth client flow while maintaining confidentiality
- Single form for collecting clinical and program evaluation data
- Provision of evaluation feedback to SATF staff to encourage maintenance of effort

## Conclusion

Persons with TB and their contacts remain the highest priority for health department TB programs. With limited resources, health department LTBI efforts should focus on building capacity in other health care facilities serving high-risk clients. We have demonstrated that with commitment, collaboration, and adequate planning, procedures can be efficiently implemented at a SATF to increase the number of high risk clients which are placed on and remain adherent with treatment for LTBI. More importantly, this was achieved without additional resources. As a result, clients are receiving more comprehensive, less disruptive care in a single setting. In addition, infectious TB cases are being prevented, thus protecting other clients, SATF staff, and the surrounding community. Methadone SATFs provide a unique setting in which to efficiently provide TB prevention services to an otherwise difficult to reach high risk population.