Public Health/Primary Care Collaboration: Success Strategies in Denver

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Denver Public Health Department

Expanding Latent TB Treatment to Denver Health Primary Care Providers

- Denver health and hospital mission—provide care to 560,000 city residents regardless of ability to pay
- 8 Community health services (CHS) clinics (FQHC): serve > 140,000 persons, 25% born outside the U.S
- 13 School based health centers (SBHC): serve many foreign-born children or children of foreign-born parents
- Denver Public Health Dept. traditional TB provider
  - Primary care administrators reluctant to Dx & Tx LTBI
  - Funding/co-payment issues to be addressed
  - No Medicaid TB option in CO

Primary Care Patient: Medical History

- 1997 first seen in CHS as 62 y.o. Mexican-born woman (in US 10 yrs) with prior CVA, hypertension & lung fibrosis
- Followed at a primary care, pulmonary, endocrine & rheum. clinics (RA) through 2010

March 2006, earliest image
Progressive fibrosis in f/u, ? due to RA

March 2006

May 2008

POLL QUESTION
LTBI evaluation for a 73 y.o. Mx-born woman (2008) in U.S. 12 yrs with lung fibrosis:

1) None
2) CT scan
3) TST or QFT
4) TST or QFT and sputum collection for AFB

LTBI Evaluation for a 73 y.o. Mx-born Woman (2008) in U.S. 12 yrs with Lung Fibrosis

1) None – Reasonable in a 73 y.o. woman with a normal x-ray & no risk factors for progression from LTBI (if diagnosed) to TB. She has fibrotic lung lesions, consistent with active or inactive TB
2) CT scan – this was eventually done, not helpful
3) TST or QFT – Either since discordance low in higher risk patients. However, active TB is not excluded
4) TST or QFT and sputum collection for AFB – next slide
LTBI Evaluation for a 73 y.o. Mex-born Woman (2008) in U.S. 12 yrs with Lung Fibrosis (2)

4) (cont.) Patient at increased risk for current or future active TB because . . .
   ▫ Asymptomatic patients with such lesions may have positive sputum cultures for \textit{M. \textit{tb}}
   ▫ TST+ individuals with fibrotic upper lung lesions are at increased risk for active TB and benefit from LTBI tx

\textbf{Note:} overseas applicants for permanent U.S. residency with such CXRs are required to submit sputum for culture before being allowed to enter the U.S.; most entrants are not screened for TB

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**Further Progression**

\begin{itemize}
  \item Admit 12/10 wt loss 35 lb, 1 mo. cough: TST (-), AFB sm (-)
  \item Discharged to home hospice: 10 da. before death
\end{itemize}

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**Final Follow-Up**

\begin{itemize}
  \item Call to Public Health TB Control from Denver Health physician: AFB growth in sputum collected 17 days earlier during 8-da. admission for progressive pulmonary fibrosis
  \item Patient now in home hospice – spoke to hospice & found patient had expired that morning
  \item \textit{M. \textit{tuberculosis}}, susceptible to 1st-line drugs, smear-neg. sputum & tracheal aspirate
  \item Contact investigation: 4 of 8 adults with LTBI, 6 children not infected
\end{itemize}
Potentially Preventable Case & Death

- Birth in Mexico & parenchymal fibrotic lesions – candidate for evaluation for inactive TB & treatment
- TB excluded due to negative TST and negative smear (-) < 50% of pulmonary TB smear + so empirical treatment may have been life-saving
- Pt. too ill for TST response, but if previously tested would knowledge of LTBI on admission have altered treatment?

POLL QUESTION
What are the Challenges to TB Prevention in Primary Care?

1) Short primary care visits with focus on acute, current issues, active TB is rare
2) Not familiar with routine TB risk assessment
3) Lack of standardized documentation of TB risk-factors – do it every visit?
4) Lack of standardized documentation of testing & evaluation for LTBI & TB
5) All of the above

IOM Recommendation for U.S. TB Elimination Remain Valid, Not Fully Implemented
(Ending Neglect, IOM 2000)

<table>
<thead>
<tr>
<th>Institute of Medicine Goal</th>
<th>Success Comments</th>
<th>Comments</th>
</tr>
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<tbody>
<tr>
<td>1. Maintain control despite decline</td>
<td>Yes</td>
<td>Continuing decline in TB since 1993</td>
</tr>
<tr>
<td>2. Accelerate decline by increasing targeted testing, Tx of LTBI</td>
<td>No</td>
<td>Decline decelerating. LTBI limited to PH, not expanded as required</td>
</tr>
<tr>
<td>3. Develop new Dx, Tx, &amp; prevention tools</td>
<td>Yes/No</td>
<td>Research expanded, implementation limited</td>
</tr>
<tr>
<td>4. Increase US involvement in global TB control</td>
<td>Yes</td>
<td>USAID TB $ 872 to $162 M in 6 yr; TB-HIV is 4% of PEPFAR</td>
</tr>
<tr>
<td>5. Mobilize &amp; sustain public support</td>
<td>Yes/No</td>
<td>Success in mobilization modest</td>
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Limited Use of Targeted Testing & Treatment for Latent TB in the U.S.

- TB Epidemiologic Studies Consortium (TBESC) survey estimates for 2002*:
  - 291,000 - 433,000 started LTBI treatment
  - 95% in public health, corrections, refugee clinics, shelters – very few in pediatrics or primary care
  - 17% with LTBI declined to start treatment
  - 53% who started treatment failed to complete

*Sterling AJRCCM 2006, Hansburg Chest 2010

Will it be possible to engage all U.S. medical care providers, professional organizations, community organizations in TB prevention?

- IGRAs recommended for BCG vaccinated patients – cost & logistics being addressed
- Shorter regimens for LTBI in use:
  - Rifampin for 4 months
  - INH + rifapentine Q-wk for 3 mos (MMWR 12/9/2011)
- Developing guidelines & record systems for risk assessment, testing & treatment


EMS Alerts May Increase Primary Care Provider TB Prevention

Using Computerized Clinical Decision Support for Latent Tuberculosis Infection Screening


Purpose: Among IDP patients screening using the previous screening phase, 75% had at least one CAR-based risk factor, and 64% were the same criteria (based on a high-risk LTBI screen and again with tests for potential screening for LTBI. Administration of the CAR screening guidelines improved significantly from 8.7% as compared to 15% during the study phase (MMWR March 1998, p. 040).

Conclusion: This study demonstrates that computerized, clinical decision support using, alerts and prompts of previously development algorithm screening of high-risk factors for LTBI. This may be an approach to lead to an improvement in current LTBI screening for U.S. patients.
Using Computerized Clinical Decision Support for Latent Tuberculosis Infection Screening

Andy W. Steele, MD, MPH, Sheri Eisert, PhD, Art Davidson, MD, MPH, Taylor Sandison, MD, Pat Lyons, Nedra Garrett, Patricia Gabow, MD, Eduardo Ortiz, MD, MPH

Results: Among 4135 patients registering during the post-intervention phase, 73% had at least one CDC-defined risk factor, and 610 met the alert criteria (birth in a high-risk TB country and aged <40 years) for potential screening for LTBI. Adherence with the LTBI screening guideline improved significantly from 8.9% at baseline to 25.2% during the study phase (183% increase, \( p < 0.001 \)).

Conclusions: This study demonstrated that computerized, clinical decision support using alerts and guided web-based documentation increased screening of high-risk patients for LTBI. This type of technology could lead to an improvement in LTBI screening in the United States and also holds promise for improved care for other preventive and chronic conditions. (Am J Prev Med 2005;28(3):281–284) © 2005 American Journal of Preventive Medicine
Expanding TB Prevention to Denver Health’s Primary Care Clinics

- Tools needed to enhance activities
  - Risk assessment
  - Test results: TST or IGRA
- Treatment documentation
  - Dispensing medications
  - Monitoring adherence/adverse drug effects
- Support & consultation

Medical Record Forms Developed (everything scanned to EMR):

1. Tuberculosis Risk Assessment and TST Report Form: double-sided in English/Spanish

2. Isoniazid (INH) Latent TB Treatment Plan: double-sided English/Spanish – teaching form to review medication and send home with patient

3. Latent TB Infection (LTBI) Treatment Outpatient Encounter Form: new form completed at each visit

Risk Assessment & TST/QFT Documentation
Risk Assessment & TST/QFT Documentation

## DENVER HEALTH MEDICAL CENTER
### TUBERCULOSIS RISK ASSESSMENT AND TESTING REPORT

1. **Where was the patient born?**
   - USA
   - Western Europe
   - Africa
   - Eastern Europe
   - Asia
   - SE Asia
   - Mexico/South/Central America
   - Middle East

2. **If not born in the USA, when did they arrive in the USA?**
   - Within 2 years
   - 2.5 years ago
   - More than 5 years ago

3. **If born in the USA, has the patient had lengthy travel/lived (3 mos) outside the USA?**
   - Where?

4. **Has the patient ever had TB or been treated for active or latent TB?**
   - Yes
   - No
   - Not Sure

5. **Has the patient ever had a TST or blood test for TB?**
   - Yes
   - No
   - Not Sure

   **Result:**
   - Positive
   - Negative
   - Not Sure

6. **Has the patient ever had a chest x-ray?**
   - Yes
   - No
   - Not Sure

   **Result:**
   - Positive
   - Negative
   - Not Sure

7. **Tuberculosis may cause one or more of the following symptoms. Does the patient have any of these?**
   - Cough for longer than 3 weeks
   - Fevers
   - Night sweats
   - Fatigue
   - Loss of appetite
   - Other
   - Loss of weight
   - None

8. **Check all that apply: Has the patient:**
   - Ever been homeless or lived/worked in a shelter
   - Lived/worked in a nursing home
   - Ever been an inmate or worked in a jail/prison
   - Ever been a health care worker
   - Has the patient had an HIV vaccine within the last 6 weeks? (e.g., MMR, varicella, oral polio, yellow fever, oral typhoid, zoster, rabies)
   - Ever used drugs not prescribed by a healthcare provider?
   - IVT
   - Any other drugs?
   - What?
   - Does the patient use alcohol? How many drinks/week?
   - Does the patient smoke?
     - None
     - 1-14
     - 15-30
     - More than 30
   - NONE of the above

9. **Has the patient had contact with people who:**
   - Are infected with HIV / AIDS virus
   - Are sick with tuberculosis
   - That were born or traveled frequently outside of the USA?
   - That use drugs or drink alcohol?
   - NONE of the above

10. **Does the patient have or have they ever had any of these conditions?**
    - Diabetes
    - Immune system disorder (e.g., lupus, lymphoma)
    - Steroid treatment for more than 2 weeks
    - Cancer chemotherapy, infusion (Remicade), etanercept (Enbrel) or other tumor necrosis factor blockers
    - Silicosis or lung disease from mining / sand blasting
    - Kidney failure that requires dialysis
    - Organ transplant or blood transfusion
    - Weight loss without trying, poor appetite and weight loss greater than 10% below ideal
    - Ever had a positive test for HIV infection or AIDS
    - NONE of the above

## TB Test Not Recommended?**
- Low risk, active TB not suspected
- Documented prior positive TB test or prior TB diagnosis

### Type of Test

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Date</th>
<th>Test Placed</th>
<th>Staff</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPD Skin Test</td>
<td></td>
<td>RFA, LFA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Based on the information and above history the TST is:**
- Negative
- Positive

**IGRA Blood Test drawn:**
- Quantiferon
- Other
- Yes (check lab results)
- No

**CXR recommended?**
- If active TB is suspected do a CXR – don’t wait for TB test result
- CAREGIVER
- ATTENDING

**Positive TST or IGRA blood test without active TB**
LTBI Treatment Plan for Consent or Refusal and Patient Education
### Outpatient Encounter Form

**DENVER HEALTH MEDICAL CENTER**  
**LATENT TUBERCULOSIS INFECTION (LTBI) TREATMENT**  
**OUTPATIENT ENCOUNTER RECORD**

- **Site:**  
- **Primary Language:** ☐ Eng. ☐ Spa., Other: ____________
- **T:** ____________  
- **P:** ____________  
- **RR:** ____________  
- **BP:** ____________  
- **O2Sat:** ____________
- **Age:** ____________  
- **WT:** ____________  
- **HT:** ____________  
- **BMI:** ____________  
- **LMP:** ____________
- **Medications:** ☐ Yes ☐ No  
- **Herbs/Supplements:** ☐ Yes ☐ No
- **Med Profile:** ☐ Yes ☐ No  
- **Pharm Problem List:** ☐ Yes ☐ No  
- **Teetotaler:** ☐ Yes ☐ No
- **Current:** ____________
- **Med Allergies:** ☐ Yes ☐ No  
- ** phấn Allergy:** ☐ Yes ☐ No

**Assisted by:**  
**Signature:** ____________

**Reason for App:**  
- LATENT TB INFECTION TREATMENT – MONTH #__________
- ☐ Positive tuberculin skin test without active TB (ICD - 799.5)

**SUBJECTIVE/OBJECTIVE**

<table>
<thead>
<tr>
<th>LTBI MEDICATIONS</th>
<th>START DATE</th>
<th>DC DATE</th>
<th>COMPLETE THIS SECTION AT FIRST LTBI MEDICATION VISIT ONLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isoniazid</td>
<td>mg</td>
<td></td>
<td>Education/Forms Completed Date/Staff Initials</td>
</tr>
<tr>
<td>Pyridoxine</td>
<td>mg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LAB WORK**

<table>
<thead>
<tr>
<th>LAST DATE TESTED</th>
<th>RESULT N/L</th>
<th>ABN</th>
<th>TB education / LTBI vs. active TB disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPD</td>
<td></td>
<td></td>
<td>Patient’s questions answered</td>
</tr>
<tr>
<td>CXR</td>
<td></td>
<td></td>
<td>Side effects (hepatic, allergic, paraneoplastic)</td>
</tr>
<tr>
<td>HEP PANEL</td>
<td></td>
<td></td>
<td>How to take: (missed dose, 2 hrs after food, same time every day)</td>
</tr>
<tr>
<td>OTHER</td>
<td></td>
<td></td>
<td>Discussed pregnancy precautions / B.C. method</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Other</td>
</tr>
</tbody>
</table>

**COMPLETE BELOW AT EACH VISIT**

<table>
<thead>
<tr>
<th>TOTAL TIME: min</th>
<th>CAREGIVER</th>
<th>ATTENDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>____________</td>
<td>___</td>
<td>___</td>
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**RETURN VISIT:**

- Any symptoms of active TB disease
- Any symptoms of active TB disease

- Yellow skin or eyes / dark urine / white stools
- Rash / itchy skin
- Tingling / numbness in hands, feet or mouth
- Weakness / fatigue / dizziness
- Chills / fever greater than 3 days / flu symptoms
- Any symptoms of active TB disease
LTBI Treatment Plan for Consent or Refusal and Patient Education

Outpatient Encounter Form

Other Materials Developed (2)
- Patient tracking/follow-up on a computerized Excel spreadsheet on a common DH drive
- Missed appointments letter (English/Spanish)
- Templates for completion cards: to be printed on the back of a clinic business and given to patients
  - Latent TB completion certificate
  - Positive TST/IGRA/CXR card
  - Negative TST/IGRA card
Binder of all Materials
Given to Clinic RNs

Includes:
1. Protocols for screening / LTBI treatment
2. All medical record, tracking forms and letter templates
3. Pediatric and Adult TB Screening Guidelines
4. Collection of Patient Education Handouts
5. TB Clinic staff contact information

Extensive Training Involved 2 Meetings with Staff at Each Clinic, Including:

1. A 1-hour overview with all clinic staff

2. A 3-hour intensive training with the RNs:
   (2 – 12 persons per group). Prior to the training they are also required to complete a 1-hour online TB Update and TST module

3. Ongoing: as new RNs are hired they receive individual training
Trainings Consisted of:

1. Why transitioning LTBI to CHS from PH
2. LTBI in CHS is for the “easy to treat LTBI patient”
3. Ideas for where to focus screening
4. Role of RNs in LTBI screening and treatment
5. Review of protocols, forms, patient education materials

Program Well Accepted

- RN managed program
  - Work under protocols developed by TB Clinic
  - CHS MD: “My clinic has minimal provider input, which I think is fine & appropriate.”
- RNs enjoy case management of LTBI
  - It is “back to the basics” nursing
  - Non-threatening way to engage patients in discussions about birth control, drugs, alcohol, nutrition & encourage HIV testing
- Clinic managers like the program
  - “For insured pts, refills are easy billable visits”
- Overall better communication between CHS & TB Clinic

Community Health (CHS) Continues to Refer to Public Health for LTBI TX

- “Easy to treat” LTBI patients seen in CHS
- Others treated at Denver Public Health TB Clinic
  - Complicated medical or social issues
  - Potential or real adverse medication effects
  - Inability to afford medication co-pays
- Ongoing training, oversight and support needed by a TB Clinic nurse to answer questions and address problems
- Readily available physician back-up
TB Clinic Nurses Receive Frequent Calls/Emails from CHS Nurses:

- My patient stopped medicine 4 months ago and now wants to restart, what do I do?
- After 5.5 months on INH our patient is now pregnant, should we finish out the last few weeks or restart after delivery?
- Could the stomachache and acne complaints of my 25 yr old patient be due to INH? What do I tell them?
- I have a gentleman whose ALT is 100, should we stop the INH?
- The TST was 15 mm and the patient says it is due to BCG, what do I tell him to convince him to take LTBI treatment?
- I have a child who weighs 40 lbs, how do I figure out the INH dose, parents are crushing the pills?

Providers and Clinics Outside of the Denver Health System

- Decision was made to first get clinics within our own system on board with LTBI screening and treatment
- 3 other FQHC groups (sev. clinics each) in the metro area, some have received training
- Materials, protocols etc., are shared with any who ask
- TB Clinic RNs and physicians are always available for consultation

Update on a 6-year Journey:

- Expansion of laboratory services to offer IGRAs (QuantiFERON) to replace most TB skin tests (TST)
- Additional LTBI option of 4 months of rifampin
- Protocols, forms etc. being rewritten and trainings will start soon
- TB prevention now a priority in primary care (CHS)