Disclaimer

I am no longer the TB Controller as of December 30, 2011

The views expressed are those from my personal experience and administrative team during my 15 years of directing the program and not the views of QIAGEN
Hallmarks of a good TB program

- Low default rate
- High cure rate
- Low relapse rate
- Low death rate
- No acquired drug resistance
- Low transmission rates
- Rare to no need for civil or criminal detention
- Good reputation in the community
SAN FRANCISCO TB CONTROL: Where the rubber meets the road
San Francisco TB Control: Core Values

*patient centered approach:* “Patients Come First”

*innovation:* “Push the Envelope”

*standards of excellence:* “Polish and Refine”
The patient centered approach

Like anywhere else in the world, TB is cured and controlled one patient at a time.... one relationship at a time.

There is no technology that can replace trust, human support and dedication.
Program Design

- Clinical Services: Centralized TB Clinic with referrals from over 16 community clinics and programs
- TB diagnostics: SF DPH Public Health laboratory
- Selective DOT model with team approach to case management
- Contact Investigation: DCI model
- Integrated/ongoing training program for medical residents and fellows
- Integrated UCSF research
What has worked

- State of the art TB care
- Interventions that are based on changing epidemiology and program evaluation
- Screening policies that target the highest risk
- Partnerships and ongoing education
- Targeted testing and treatment: finding and preventing cases
Essential community partnerships built over time through our staff

- Shelters and numerous homeless Programs
- Jail
- Methadone clinics and residential drug treatment programs
- Hospital infection control programs
- Health insurance Industry
- Refugee Health Program
- HIV and STD Clinics
- Community Clinics, especially in Chinatown

*Remember:* Almost a fourth of all SF TB cases are found through targeted testing and referral for the past 5 years!
Referral Source for Persons with LTBI and Active TB

<table>
<thead>
<tr>
<th></th>
<th>LTBI (8,128)</th>
<th>Active TB (326)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Investigation</td>
<td>11%</td>
<td>8%</td>
</tr>
<tr>
<td>Hospital/PMD</td>
<td>10%</td>
<td>63%</td>
</tr>
<tr>
<td>Immigration</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>Community Targeted Testing</td>
<td>72%</td>
<td>21%</td>
</tr>
</tbody>
</table>

San Francisco TB Clinic Data, 2007-2009
TB Cases in San Francisco 1961-2001

No of cases


TB Cases

TB with AIDS Cases

Graph showing TB cases and TB with AIDS cases from 1961 to 2001.
TB is local: “hot spots” in San Francisco

Tenderloin/SoMarket: Homeless hotspot

Chinatown: old and new immigrant hot spot
San Francisco TB Control

1990s: Era of HIV-TB coinfection, outbreaks, and transmission

TB Control “taken to the streets”:

Period of intensification

- Use of DNA fingerprinting
- New screening/treatment site opens near TB epicenter
- Demonstration Project: Housing for homeless patients with comprehensive social services
1990s: Era of HIV-TB coinfection, outbreaks, and transmission

- Community TB Task Force formed:
  - Focus on homeless TB transmission
  - Guidelines for shelters and low cost hotels developed

- Contact investigation:
  1. Focus on decreasing the number of cases with no contacts through training
  2. Aggressive screening and treatment of HIV infective contacts
San Francisco TB Control

1990s: Era of HIV-TB coinfection, outbreaks, and transmission

• Active case finding: Focus on HIV+ and HIV “at risk”
  - Strict HIV residential screening guidelines
  - Methadone clinics: Screening of IDUs
  - Collaboration with UCSF researchers in screening HIV+ homeless individuals

• Aggressive campaign to treat all HIV+ and TST+ until completion
  - DOPT (directly observed preventive therapy)
TB Case Counts: 2000-2010

- Refugee Screening Program
- HIV residential Screening policies
- TOPS and TB Intensification
- FB LTBI treatment expanded

Number of Cases

Year

TB Cases with AIDS

Year

TB Cases without AIDS
San Francisco TB Control

2000 and Beyond: Maintain infrastructure, control, retool and reduce the reservoir of infection

- Update surveillance and patient management through new database system and information technology

- Improve community targeted testing and treatment in high TB incidence areas and among high-risk populations - QFT

- Improve and update contact investigation with available tools - QFT

- Create and strengthen key community relationships through outreach and education
2010 Historic Benchmark

2010 TB Case Closeout Form

Please review the following information, and confirm that it is correct with your signature at the bottom of this page. Please contact the TB Registry (510-620-3026) if any of this information is incorrect.

Local Health Jurisdiction: San Francisco

Our records indicate that you have 98 counted TB case(s) for 2010.

Highest state case number for 2010: 2010-CA-090520098

MDR Cases in 2010: 090460082, 090510094

Other (Non-countable) TB Cases: N/A

Missing state case numbers (please indicate the reason for missing numbers if not already listed):

Number: N/A Reason: N/A

If in agreement, please sign and return this document. Thank you.

LHJ sign here: [Signature] Date: 1-27-11

TB Controller sign here: [Signature] Date: 1-27-11

***Please fax back to TB Registry: (510) 620-3035***

Thank you!!!
## Change in TB Cases by Place of Birth

<table>
<thead>
<tr>
<th>Place of Birth</th>
<th>CA (2001-2010)</th>
<th>% Change</th>
<th>SF (2001-2010)</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.-born</td>
<td>824 → 498</td>
<td>40 % ↓</td>
<td>46 → 15</td>
<td>67% ↓</td>
</tr>
<tr>
<td>Foreign-born</td>
<td>2482 → 1802</td>
<td>27 % ↓</td>
<td>100 → 83</td>
<td>17% ↓</td>
</tr>
</tbody>
</table>

- **U.S.-born:**
  - 33% API, 20% Black, 20% Hispanic, 27% White, 27% Homeless

- **Foreign-born:**
  - 84% API, 0% Black, 12% Hispanic, 4% White, 4% Homeless
## Change in TB Cases by Race/Ethnicity

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>CA (2001-2010)</th>
<th>% Change</th>
<th>SF (2001-2010)</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>365 → 187</td>
<td>49% ↓</td>
<td>16 → 7</td>
<td>56% ↓</td>
</tr>
<tr>
<td>Black</td>
<td>292 → 151</td>
<td>48% ↓</td>
<td>25 → 4</td>
<td>84% ↓</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1252 → 874</td>
<td>30% ↓</td>
<td>15 → 14</td>
<td>7% ↓</td>
</tr>
<tr>
<td>Asian</td>
<td>1399 → 1109</td>
<td>20% ↓</td>
<td>123 → 73</td>
<td>41% ↓</td>
</tr>
</tbody>
</table>
Case Clustering*: 2001-2010

*Based on RFLP/PGRS typing
Drug Resistance

- INH: 14.5% of Cx+ cases resistant to INH
  - 5 cases mono-INH resistance
  - 6 cases INH + non-RIF resistances

- MDR: 3 cases

- Acquired: None!
2010 SF TB CONTROL
“Report Card”
Case Management “Report Card”

- Initiate adequate and timely treatment regimens • A+ 100%
- Appropriately treat by DOT • A 98%
- Maintain a low rate of default • A+ 0%
- Timely culture conversion
  - dramatically improved (from 70% to 85%) • B 85%
- Acquired drug resistance – NONE! • A+ 0%
- Low death rate
  - 1/10
Contact Investigation “Report Card”

Made dramatic improvements in contact evaluation and treatment initiation

- Identifying contacts for all smear+ cases  \( \text{A+ 100\%} \)
- Completing evaluation for all contacts  \( \text{B+ 78-90\%} \)
- Initiating LTBI treatment  \( \text{B- 77-80 \%} \)
- Ensuring LTBI treatment completion  \( \text{B+ 85\%} \)
- Maintaining a low transmission rate  \( \text{A 2\%} \)
Immigrant Screening “Report Card”

Continue to meet or exceed CA and national objectives for evaluation and LTBI treatment

- Completing evaluation for all immigrants
  - A+  100%

- Initiating LTBI treatment
  - B+  88%

- Ensuring LTBI treatment completion
  - A  90%
Targeted Testing “Report Card”

*Needs improvement…*

- Completing evaluation for all referrals  
  *A* - 92%

- Ensuring LTBI treatment completion – US-born  
  *57%*

- Ensuring LTBI treatment completion – Foreign-born  
  *71%*
Innovation: Why switch to QFT?

- **Better test (more specific)**
  - TST performance highly variable
  - Reduce the number of false positives
  - No quality control of >10,000 TSTs/yr

- **Operational advantages**
  - Less staff time
  - Results for every patient (HIV and homeless TST reading rate 50%)
  - Improved documentation, surveillance & communication

- **Low confidence in the TST by providers caring foreign-born because of BCG vaccination**

- **2003: ‘Use it or lose it’**
Program Implications: Our Hopes...

New surveillance capabilities:
- Citywide laboratory-based surveillance for LTBI

More efficient:
- Eliminate unnecessary CXRs, evaluation and treatment
- More results means targeting efforts on “positives” instead of on retesting individuals who fail to show up for TST readings (homeless, jails, employee testing)

Behave as “expected”:
- Increase patient and provider confidence with more reliable and specific results
### QFT Results by Clinic and Test Type

**March 2005 – April 2010**

<table>
<thead>
<tr>
<th></th>
<th>Homeless</th>
<th>TB Clinic</th>
<th>Methadone</th>
<th>Immigrant</th>
<th>Refugee</th>
<th>HIV</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=13,869</td>
<td>n=9130</td>
<td>n=2359</td>
<td>n=4230</td>
<td>n=880</td>
<td>n=943</td>
<td>n=6353</td>
</tr>
<tr>
<td><strong>Positive</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QFT-G</td>
<td>734 (7)</td>
<td>942 (22)</td>
<td>51 (3)</td>
<td>392 (14)</td>
<td>111 (15)</td>
<td>24 (3)</td>
<td>349 (10)</td>
</tr>
<tr>
<td>QFT-IT</td>
<td>258 (6)</td>
<td>982 (20)</td>
<td>52 (7)</td>
<td>318 (16)</td>
<td>23 (17)</td>
<td>1 (1)</td>
<td>296 (10)</td>
</tr>
<tr>
<td><strong>Negative</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QFT-G</td>
<td>8646 (89)</td>
<td>3177 (73)</td>
<td>1514 (93)</td>
<td>2235 (80)</td>
<td>574 (77)</td>
<td>800 (93)</td>
<td>2957 (80)</td>
</tr>
<tr>
<td>QFT-IT</td>
<td>3810 (92)</td>
<td>3660 (76)</td>
<td>658 (90)</td>
<td>1115 (77)</td>
<td>113 (82)</td>
<td>75 (95)</td>
<td>2550 (88)</td>
</tr>
<tr>
<td><strong>Indeterm.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QFT-G</td>
<td>352 (4)</td>
<td>218 (5)</td>
<td>63 (4)</td>
<td>157 (6)</td>
<td>57 (8)</td>
<td>40 (5)</td>
<td>139 (4)</td>
</tr>
<tr>
<td>QFT-IT</td>
<td>69 (2)</td>
<td>151 (3)</td>
<td>21 (3)</td>
<td>13 (1)</td>
<td>2 (1)</td>
<td>3 (4)</td>
<td>62 (2)</td>
</tr>
</tbody>
</table>

*San Francisco TB Control Section*

Updated 05/04/10
# TB Infection Prevalence By Test Version and Clinic Type

<table>
<thead>
<tr>
<th></th>
<th>Homeless</th>
<th>TB Clinic</th>
<th>Methadone</th>
<th>Immigrant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TST (2001-2003)</strong></td>
<td>26%</td>
<td>&gt;50%</td>
<td>10%</td>
<td>37%</td>
</tr>
<tr>
<td><strong>QFT-1 (11/03-2/05)</strong></td>
<td>17%</td>
<td>48%</td>
<td>18%</td>
<td>37%</td>
</tr>
<tr>
<td><strong>QFT-gold (3/05-2/09)</strong></td>
<td>7%</td>
<td>22%</td>
<td>3%</td>
<td>14%</td>
</tr>
<tr>
<td><strong>QFT-gold IT (1/08-12/11)</strong></td>
<td>7%</td>
<td>23%</td>
<td>5%</td>
<td>23%</td>
</tr>
</tbody>
</table>

**Decline in positive rate from TST**

|                      | 73%      | >54%      | 50%       | 38%       |
Decade of experience using QFT: San Francisco 2003-2013

- Providers and patients found QFT highly acceptable. *Dewan et al. BMC Infectious Diseases 2006, 6:47*
- Excellent surveillance tool. *Dewan et al. BMC Infectious Diseases 2006, 6:47*
- QFT allowed for implementation of mandatory homeless shelter screening 2005 — shelter transmission eliminated
- Significant reduction in BCG vaccinated and homeless persons needing medical evaluation and LTBI treatment — waste from false +TST eliminated
SF Pediatric QFT Screening Outcomes
(In press Journal of the Pediatric Infectious Diseases Society)

• 1,095 children followed for 4-7 yrs (5587 person-years of follow-up)

• No one developed active TB
  - 965 untreated QFT-negative or indeterminate children
  - Includes:
    • 46 children <2 yrs
    • 211 children ages 2-4
    • 54 children <5 with TST+/QFT- results
Our Keys to QFT implementation...

- Targeted the patient and provider population who would most benefit from the test (e.g., Community clinics, refugees, shelter clients)
- Developed political will through education
- Partnerships with laboratory and providers
- Resource assessment and development
- Communication, communication, communication
Regarding QFT-G.....

This has been the single biggest advance in delivering healthcare to people who are homeless in my 20 years of doing healthcare.

Barry Zevin, MD
San Francisco homeless healthcare provider

May 5, 2008
What works....

- State of the art TB care
- Interventions that are based on changing epidemiology and program evaluation
- Screening policies and tools that target the highest risk
- Partnerships and ongoing education
- Targeted testing and treatment: finding and preventing cases
Summary

- Everything we do matters and we cannot let our guard down. What we accomplish today will be felt 10 years from now.

- Accelerating TB decline requires a comprehensive strategy of both active case finding and prevention by targeting communities and persons with the highest disease rates.

- We have the tools and strategies.
Acknowledgments

Jennifer Grinsdale
Program Manager/Epidemiologist
San Francisco TB Control Section

Resource: sftbc.org