Updated Recommendations for Tuberculosis Screening and Testing of Healthcare Personnel, United States, 2018

Lynn Sosa, MD
Bob Belknap, MD
Healthcare Worker Screening Guidelines Working Group
Healthcare Infection Control Practices Advisory Committee
May 18, 2018
Overview

• CDC guidelines on preventing TB transmission in healthcare settings published in 2005

• Concerns about the efficacy of serial TB testing with declining TB incidence were amplified by the PPD shortage and IGRA performance in low risk persons

• Joint NSTC-NTNC session at 2015 NTCA conference to discuss issue

• Working group created in Summer 2015

• Systematic review commenced in January 2017
Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Settings, 2005
Review Focused on TB Screening and Testing of Healthcare Workers

CONTENTS

Introduction ........................................................................................................................................ 1
Overview ........................................................................................................................................ 1
HCWs Who Should Be Included in a TB Surveillance Program ............................................................ 3
Risk for Health-Care–Associated Transmission of *M. tuberculosis* .................................................... 6
Fundamentals of TB Infection Control ............................................................................................... 6
Relevance to Biologic Terrorism Preparedness .................................................................................. 8
Recommendations for Preventing Transmission of *M. tuberculosis* in Health-Care Settings ....... 8
TB Infection-Control Program .......................................................................................................... 8
TB Risk Assessment ......................................................................................................................... 9
Risk Classification Examples .......................................................................................................... 11
Systematic Review
Methodology

- Community Guide systematic review methods used to evaluate and summarize available evidence

- Two reviewers independently screened and abstracted data for each included study

- Disagreements were resolved by consensus

- Data analyzed using “metafor” and “meta” packages in R (v3.3.2)
Search for Evidence

• We conducted a search for studies that screened and/or tested healthcare personnel (HCP) for LTBI

• Electronic databases included:
  – MEDLINE, EMBASE, and Scopus

• Search period:
  – Original search: January 2006–February 2017
  – Update search: February 2017–November 2017 (MEDLINE only)

• Language restriction:
  – English only
Inclusion/Exclusion Criteria

• **Inclusion Criteria**
  – Study designs
    • Randomized controlled trial (RCT), quasi-experimental, observational studies, cross-sectional surveys, other designs with concurrent comparison groups
  – Target population
    • Paid or volunteer health care workers
  – Outcomes of interest
    • Prevalence, conversion, and reversion rates; TB transmission rates; TB disease
  – Setting
    • High-income, low TB-incidence countries

• **Exclusion Criteria**
  – Study designs: case reports, editorials, commentaries, descriptive articles on nosocomial outbreaks
Search Results

Original Search Period
Jan. 2006-Feb. 2017
(n = 1129)

Duplicates (n=2)
Not relevant (n=1047)

Ordered Full Text
(n=80)

Did not meet inclusion criteria (n=37)
Unable to retrieve full text (n=8)

Limited quality of execution (n=1)

LTBI Screening & Testing in HCW Articles
(n=35)

Included in Analysis
(n=34)

Total Included in Analysis
(n=36)

Update Search Period
Feb. 2017-Nov. 2017
(n = 18)

Not relevant (n=14)

Ordered Full Text
(n=4)

LTBI Screening & Testing in HCW Articles
(n=2)

Modelling study (n=1)
Type of QFT test used (n=1)

Limited quality of execution
(n=0)

Included in Analysis
(n=2)

Total Included in Analysis
(n=36)
Summary of Findings

- Approximately 3% of U.S. HCP test positive for *M. tuberculosis* at baseline when tested with TST; 5% test positive when tested with IGRA.

- <1% of U.S. HCP convert from a negative baseline test to positive when tested with TST during serial testing; 4% convert when tested with IGRA.

- Approximately 62% of U.S. HCP who tested positive at baseline revert to a negative test when tested with TST during serial testing; 48% revert when tested with IGRA.

- No HCP developed active TB in the included studies.

- Insufficient evidence to assess incidence and transmission of TB disease among U.S. HCP based on occupational and non-occupational risk.
Review Limitations

- Included studies were highly heterogeneous in population, study design, and type of test used.

- Most of the included studies were of moderate or least design suitability—only 7 were of good design suitability.

- Few studies used T-SPOT.TB for testing—most of the included evidence focused on TST and QFT.

- Few studies reported demographic data, making it difficult to know whether included studies are representative of U.S. healthcare worker population.

- Evidence is mostly limited to hospital setting.
Updated Recommendations
Definitions

- **Healthcare Personnel (HCP)**
  - Replaces Healthcare Worker (HCW) to be consistent with current HHS and CDC preferred language
  - Definition unchanged from 2005

- **TB screening**
  - Broad process that includes a risk assessment, symptom evaluation, a test for LTBI (either a TST or IGRA), and additional work-up for TB disease as needed

- **TB Testing**
  - TST or IGRA
Overview of Draft Guidelines

Baseline / Pre-employment Testing
- TST or IGRA on hire
- Risk assessment

Serial / Annual Testing
- Shift focus from facility risk to individual risk
- HCP risk assessment
  - Occupational risk
  - Non-occupational risk (e.g. travel)
- Emphasis on treatment for HCP with LTBI
## Summary of Updated Recommendations

<table>
<thead>
<tr>
<th>Category</th>
<th>2005 Recommendation</th>
<th>2018 Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline Screening and Testing</strong></td>
<td>On Hire testing of all HCP with IGRA or TST</td>
<td>On Hire testing of all HCP with IGRA or TST (unchanged); include TB risk assessment (new)</td>
</tr>
<tr>
<td><strong>Postexposure Screening and Testing</strong></td>
<td>In HCP with baseline negative test, IGRA or TST at time exposure is identified and 8-10 weeks after exposure; symptom assessment for HCP with baseline positive test</td>
<td>In HCP with baseline negative TB test, IGRA or TST at time exposure is identified and 8-10 weeks after exposure; symptom assessment for HCP with baseline positive test (unchanged)</td>
</tr>
<tr>
<td><strong>Serial Screening and Testing- Occupational Risk</strong></td>
<td>Based on facility risk assessment and the healthcare setting (inpatient vs outpatient)</td>
<td>Not recommended; can consider for select HCP groups (new)</td>
</tr>
<tr>
<td><strong>Serial Screening and Testing- Non-Occupational Risk</strong></td>
<td>Not addressed</td>
<td>Consider periodic (e.g., annual) risk assessment of all HCP (new); testing based on new risk identified (new)</td>
</tr>
<tr>
<td><strong>Follow-Up of Positive Test Results</strong></td>
<td>Consider referral for LTBI treatment of HCP diagnosed with LTBI at increased risk for TB progression</td>
<td>Strongly recommend treatment for all HCP diagnosed with LTBI unless contraindications exist (new)</td>
</tr>
</tbody>
</table>

Abbreviations: HCP, health care personnel; IGRA, interferon-gamma release assay; LTBI, latent tuberculosis infection; TB, tuberculosis; TST, tuberculin skin test
Baseline (Pre-Employment) Screening and Testing

- Baseline screening on hire should include:
  - TB risk assessment
  - Symptom evaluation
  - TST or IGRA (not both)

- Low risk HCP testing positive should have second test
  - Consistent with TB Diagnostic Guidelines (Lewinsohn CID 1/15/2017)
Postexposure Screening and Testing

- Known exposure without adequate personal protection
- No history of positive TB test
  - Symptom assessment and TB test
  - Retest 8–10 weeks after last exposure
- History of positive TB test regardless of treatment
  - Symptom assessment, no test
Serial Screening and Testing Based on Occupational Risk

- No routine testing of HCP at any interval in the absence of known exposure or ongoing transmission

- Healthcare facilities can choose to conduct routine testing of specific HCP (e.g. pulmonologists, respiratory therapists) or staff in specific settings based on historic risk (e.g. emergency departments)
  - This decision should be individualized to each facility and may be made in consultation with state/local health department
Serial Screening and Testing Based on Non-Occupational Risk

- Important to recognize non-occupational exposures to TB and risk factors for TB progression

- Facilities should consider periodic (e.g., annual) risk assessment of HCP for TB exposure or new risks for TB progression

- Decision to test HCP based on individual risk identified
Follow-Up of Positive Test Results

• HCP with positive TB test result:
  – Chest imaging
  – Symptom assessment
  – Further evaluation for TB disease if warranted

• All HCP with LTBI should be offered and encouraged to complete LTBI treatment unless a contraindication exists
Workgroup Members

CDC/DTBE Staff
- Gibril Njie
- Sapna Bamrah Morris
- Amera Khan
- Neela Goswani
- Jerry Mazurek

CDC Partners
- Megan Casey, NIOSH
- David Kuhar, DHQP

Partners
- Bob Belknap, Denver Public Health, NTCA
- Lynn Sosa, Connecticut DPH, NTCA
- Lorna Will, NTCA
- Bobbi Jo Hurst, AOHP
- MaryAnn Gruden, AOHP
- Lisa Paulos, Society of Epidemiology in TB Control, NTCA
- William Buchta, ACOEM
- Wendy Thanassi, U.S. Department of Veterans Affairs
- Mark Lobato, NTCA
- David Lewinsohn, Oregon Health Sciences University
- Trini Mathew, Beaumont Hospital
- Randall Reves, NSTC/Denver Public Health
- Annie Wiest, AOHP
- Silvia Quevedo, APIC
Thank you!