TB NURSE NETWORK MEETING

Wednesday, July 19, 2017

10:00-11:15 AM

Conference call in number: 1-888-557-8511

Access Code: 254-487-3 #

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Agenda

Announcements

- Upcoming Webinars & In-Person Trainings
- Recently Archived Webinars
- New Self-Paced Online Trainings
- TB in the News & Interesting Publications

Presentation: 2017 ATS/IDSA/CDC Clinical Practice Guidelines: Diagnosis of Tuberculosis in Adults and Children
Peter Davidson & Helen McGuirk (MDHHS TB Control)

Open Forum

Close and Adjourn

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Announcements

Next meeting Wednesday, October 18th, 2017

- TB in the Lab; Angie Schooley, MDHHS BOL
- Other topics for future meetings? Contact: Mcguirkh@Michigan.gov

Upcoming Webinars

Southeastern National Tuberculosis Center

- TB and Tobacco: Pharmacotherapy for Tobacco Cessation
  - 8/22/17 1-2 PM Eastern
  - 1 CE/CME credit
  - Part 4 of 4, updates TB Healthcare providers with the latest information regarding the link between tobacco and tuberculosis as reported by the CDC and the WHO.
  - Archived Parts 1-3
    - Part 1: TB and Tobacco: What you Need to Know
    - Part 2: Help Them Quit: Tobacco Cessation Interventions for TB Patients
    - Part 3: TB and Tobacco: Assessment and Practical Counseling Skills

Upcoming In-Person Trainings

Mayo Clinic Center for Tuberculosis

- 2017 Tri-State TB Clinical Intensive
- Registration and agenda coming soon
- September 28-29th, Indianapolis Indiana
- Location and lodging TBD

Upcoming In-Person Trainings

Southeastern National Tuberculosis Center, Ellen Murray

- "Arresting TB: Contact Investigation and Release Planning"; 8/22-8/24/17, South Florida
  - This 3-day course focuses on key concepts for conducting contact investigation and release planning in a correctional setting to improve outcomes and halt further transmission of tuberculosis.
  - The training is designed to enhance communication and collaboration between local health departments and corrections custody and medical personnel to improve contact investigation outcomes.

- "Enhanced Skills for Public Health Corrections Liaisons"; 8/25/17, South Florida
  - This one-day course is designed for staff who fulfill the role of the "Public Health Corrections Liaison" or who work closely with public health and corrections facilities to control TB.
  - Attendees of this training learn from experts in the field about the key roles of the Corrections Liaison and acquire skills accessing and establishing strong collaborations between agencies. Homework, class activities, group exercises and a jail tour are included.

Recently Archived Webinars

Curry International TB Center

- Pediatric TB Radiology: It's Not Black and White (5/5/17)
- This webinar was created for physicians, nurses, and other health professionals who diagnose and treat patients with TB. The training focused on the diagnosis and follow-up of pediatric cases along with reading of the chest x-rays. This 60-minute presentation was followed by a 15-minute Q and A session.

Heartland National TB Center

1. Practical Aspects for the Interferon Gamma Release Assays (7/14/17)
   - Will be archived soon
   - Intended for prescribing physicians and healthcare staff who may be involved with the decision to utilize an IGRA test when screening individuals for TB

2. Access to Care Along the U.S. – Mexico Border (6/20/17)

New Self-Paced Online Trainings

Southeastern National Tuberculosis Center

- *Advanced Concepts in Pediatric TB* (8.0 CE/CME credits)
  - 8-part series
  - Content is intended for clinicians and nurses who work with children infected with TB.
  - Topics include: pathogenesis and epidemiology, latent TB infection, diagnostic tools, TB and HIV, MDR TB, pharmacotherapeutics of TB drugs, and infection control, source case, and contact investigations.
  - Participants who complete this training will be able to recognize, evaluate and manage *Mycobacterium tuberculosis* infections in children.

- *Treating LTBI in Special Situations* (4.0 CE/CME credits)
  - Topic areas include contact to drug-resistant case, hepatitis, HIV/AIDS, infants & children, pregnancy, renal failure, TNF-antagonists and transplantation.
  - The course also includes 5 reference books that provide additional information to participants.

TB in the News

Why state officials want hunters to help control bovine tuberculosis (Michigan Radio 6/29/17)

- Bovine TB found at a dairy farm in April 2015 in Alpena, MI
- MI is the only state in the nation where bovine TB is established in wild deer
- MDNR proposed antler point restrictions to decrease deer in the "TB zone"
- Antler point restrictions were denied at a Natural Resource Commission meeting in Lansing on 7/13/17 (mLIVE 7/13/17)

Interesting Publications

Repeat IGRA Testing in Canadian Health Workers: Conversions or Unexplained Variability?

- **Background:** Although North American hospitals are switching from tuberculin testing (TST) to interferon-gamma release assays (IGRAs), data are limited on the association between occupational exposure and serial QuantiFERON-TB Gold In-Tube (QFT) results in healthcare workers (HCWs).
- **Methods:** In a cohort of Canadian HCWs, TST and QFT were performed at study enrolment (TST1 and QFT1) and 1 year later (TST2 and QFT2). Conversion and reversion rates were estimated, and correlation with TB exposure was assessed.
- **Results:** Among 258 HCWs, median age was 36.8 years, 188/258 (73%) were female and 183/258 (71%) were Canadian-born. In 245 subjects with a negative QFT1 we found a QFT conversion rate of 5.3% (13/245, 95% CI 2.9–8.9%). Using more stringent definitions, QFT conversion rates ranged from 2.0 to 5.3%. No TST conversions were found among the 241 HCWs with negative TST1, and no measure of recent TB exposure was associated with QFT conversions. In the 13 HCWs with a positive QFT1, 62% reverted.
- **Conclusion:** Using the conventional QFT conversion definition, we found a higher than expected rate of conversion. Recent occupational exposures were not associated with QFT conversions, and no TST conversions occurred in this cohort, suggesting the 'conversions' may not reflect new TB infection.

Summary of 2017 Guidelines: Diagnosis of TB in Adults and Children

I. Testing for LTBI

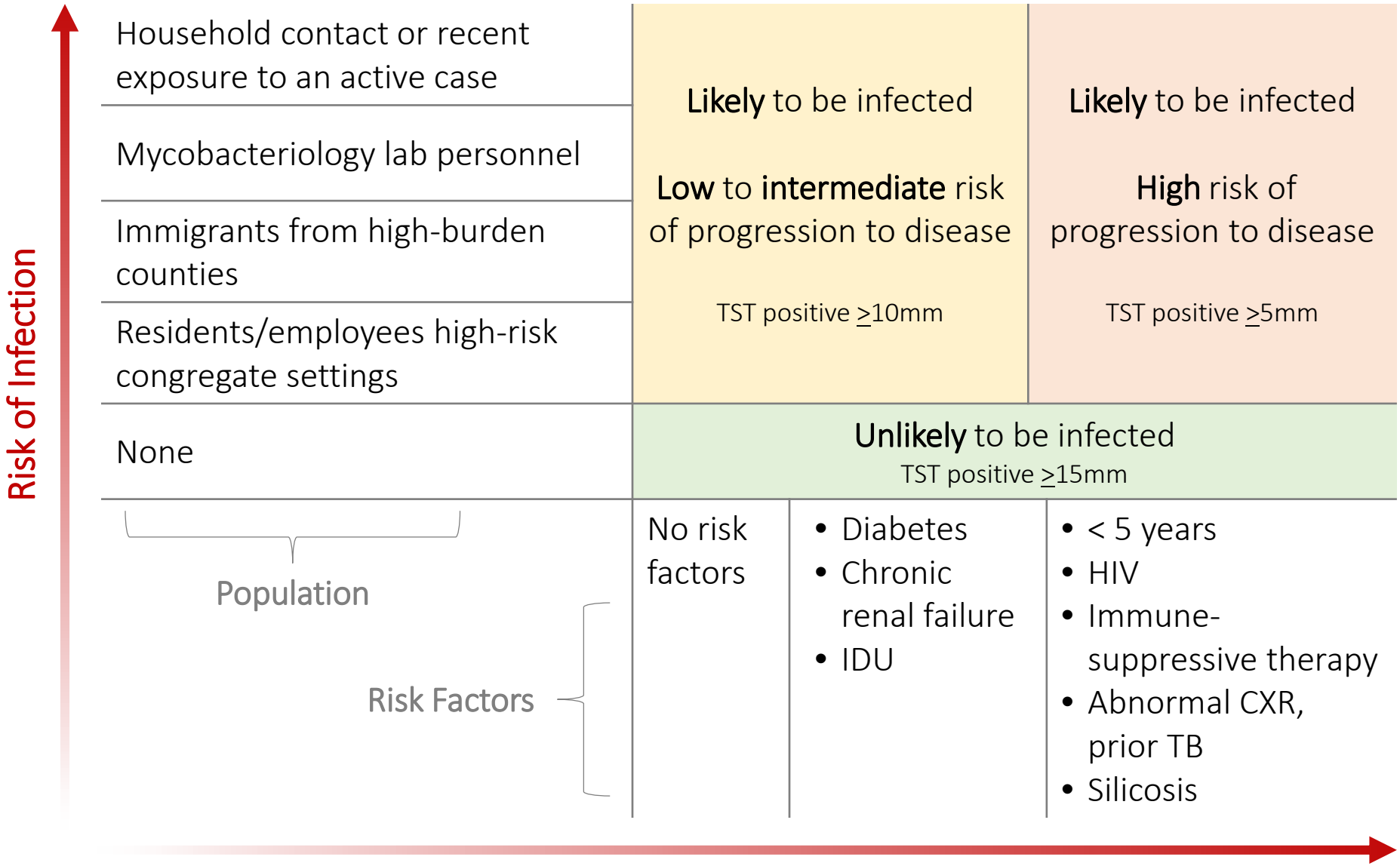
II. Testing for suspected pulmonary TB

III. Testing for suspected extrapulmonary TB

CID 2017:64 (15 January) Lewinsohn et al
https://www.thoracic.org/statements/resources/tb-opi/diagnosis-of-tuberculosis-in-adults-and-children.PDF

Testing for LTBI

Assess Risk



Adapted from Figure 1

Q1: Should an IGRA or a TST be performed in individuals 5 years or older who are likely to be infected with Mtb, who have a low or intermediate risk of disease progression, and in whom it has been decided that testing for LTBI is warranted?

Population:

- 5 years or older
- Persons likely to be infected
- low/intermediate risk of disease
- testing is warranted

Ask: IGRA or TST?

Answer:

- IGRA recommended if history of BCG or unlikely to return for TST reading
- IGRA suggested for all others
- TST is an acceptable alternative, especially if IGRA is not available, too costly, or too burdensome

Q2: Should an IGRA or a TST be performed in individuals 5 years or older who are likely to be infected with Mtb, who have a high risk of progression to disease, and in whom it has been decided that testing for LTBI is warranted?

Population:

- 5 years or older
- Persons likely to be infected
- high risk of disease
- testing is warranted

Ask: IGRA or TST?

Answer:

- Insufficient data to recommend preference
- Based on local availability of IGRA or TST

Q3: Should an IGRA or a TST be performed in individuals 5 years or older who are unlikely to be infected with Mtb, but in whom it has been decided that testing for LTBI is warranted?

Population:

- 5 years or older
- Persons unlikely to be infected, but testing performed anyway

Ask: IGRA or TST?

Answer:

- Testing with either method not recommended in this population
- If testing is obligated*, suggest IGRA
- If initial test positive, suggest second test (either IGRA or TST)
  - Consider infected with Mtb only if both tests are positive

*Obligated by law or credentialing bodies

Q4: Should an IGRA or a TST be performed in healthy children less than 5 years of age in whom it has been decided that testing for LTBI is warranted?

Population: Healthy children less than 5 years, where LTBI testing is warranted

Ask: IGRA or TST?

Answer:

- Suggest TST
  - TST might be more sensitive
  - IGRA might be more specific (especially w/ BCG)
  - Many other considerations elaborated in the guidelines

LTBI Testing Summary: Which Test to Use

Risk Group	Preferred Test	Acceptable Test
Likely to be Infected **High** Risk of Progression TST positive at ≥ 5mm	Children ≤ 5: TST	IGRA or TST
Likely to be Infected **Low** to **Intermediate** Risk of Progression TST positive at ≥ 10mm	IGRA	IGRA or TST
Unlikely to be Infected* TST positive at > 15mm	IGRA	IGRA or TST

*Testing for LTBI is not recommended in this group

Adapted from Figure 2

Testing for Suspected Pulmonary TB

Q5: Should AFB smear microscopy be performed in persons suspected of having pulmonary TB?

Population: Persons suspected of having pulmonary TB.

Ask: AFB smear microscopy?

Answer: Yes, Recommend.

- A negative AFB smear result does not exclude pulmonary TB
  - False-negatives are sufficiently common
- A positive AFB smear result does not confirm pulmonary TB
  - False-positives are sufficiently common
- CDC and NTCA recommend testing 3 specimens
  - Providers should get a sputum of at least 3 mL; optimal volume is 5-10 mL
  - Concentrated respiratory specimens and fluorescence microscopy are preferred

Q6: Should both liquid and solid mycobacterial cultures be performed in persons suspected of having pulmonary TB?

Population: Persons suspected of having pulmonary TB

Ask (diagnostic test): Both liquid and solid mycobacterial cultures?

Answer: Yes, Suggest both, rather than one or the other.

- Liquid cultures give a more rapid answer
- Solid cultures serve as safeguard against contamination
- Performing both liquid and solid cultures likely improves the sensitivity of the cultures

Q7: Should a nucleic acid amplification test (NAAT) be performed on the initial respiratory specimen in persons suspected of having pulmonary TB?

Population: Persons suspected of having pulmonary TB.

Condition: Initial respiratory specimen.

Ask (diagnostic test): NAAT?

Answer: Yes, Suggested.

- In AFB smear-positive patients, a negative NAAT makes TB disease unlikely.
- In AFB smear-negative patients with an intermediate to high level of suspicion for disease, a positive NAAT can be used as presumptive evidence of TB disease.
    - A negative NAAT should not be used to exclude pulmonary TB.
- Appropriate NAATs include the Hologic Amplified Mycobacteria Tuberculosis Direct (MTD) test and the Cepheid Xpert MTB/Rif test.

Q8: Should rapid molecular drug susceptibility testing for isoniazid and rifampin be performed as part of the initial diagnostic evaluation for all patients suspected of having pulmonary TB or only in selected subgroups?

Diagnostic Test: Rapid molecular DST for INH and RIF.

Condition: Part of initial diagnostic evaluation.

Ask (Population): Use in:

- all persons suspected of having pulmonary TB, **OR**
- only selected subgroups?

Answer: Recommended only in selected subgroups.

Rapid molecular DST for RIF with or without INH using respiratory specimens of persons who are either AFB smear positive or Hologic Amplified MTD positive and meet one of the following criteria:

1. Have been treated for TB in the past
2. Were born or have lived for at least 1 year in a foreign country with at least moderate TB incidence
3. Are contacts of patients with MDR-TB, or
4. Are HIV infected

Q9: Should respiratory specimens be collected from children with suspected pulmonary TB disease?

Population: Children with suspected pulmonary TB.

Ask: Collect respiratory specimens?

Answer: Yes, Suggested.

- In low-incidence settings like the US, it is unlikely that a child identified during a contact investigation was infected by a different individual with a strain with a different susceptibility pattern.
- Therefore, under some circumstances, microbiological confirmation may not be necessary for children with uncomplicated pulmonary TB identified through a recent contact investigation if the source case has drug-susceptible TB.

Q10: Should sputum induction or flexible bronchoscopic sampling be the initial respiratory sampling method for adults with suspected pulmonary TB who are either unable to expectorate sputum or whose expectorated sputum is AFB smear microscopy negative?

Population: Adults with suspected pulmonary TB who are either unable to expectorate sputum or whose expectorated sputum is AFB smear microscopy negative.

Condition: Initial respiratory sampling method.

Ask: Sampling with either:

- Sputum induction **OR**
- Flexible bronchoscopy?

Answer: **Suggest** sputum induction.

- Induced sputum has equal or greater diagnostic yield than bronchoscopic sampling, has few risks, and is less expensive.

Q11: Should flexible bronchoscopic sampling be performed in adults with suspected pulmonary TB from whom a respiratory sample cannot be obtained via induced sputum?

Population: Adults with suspected pulmonary TB.

Condition: A respiratory sample cannot be obtained via induced sputum.

Ask: If cannot obtain induced sputum, sample with flexible bronchoscopy?

Answer: Yes, Suggested.

- In the committee members' clinical practices, BAL plus brushings alone are preformed for most patients
- For patients who need a rapid diagnosis, transbronchial biopsy is also performed.

Q12: Should postbronchoscopy sputum specimens be collected from adults with suspected pulmonary TB?

Population: Adults with suspected pulmonary TB.

Ask: Collect postbronchoscopy sputum specimens?

Answer: Yes, Suggested.

- Postbronchoscopy sputum specimens are used to perform AFB smear microscopy and mycobacterial cultures.

Testing for Suspected Extrapulmonary TB

Q14: Should cell counts and chemistries be performed on amenable (i.e., liquid) specimens collected from sites of suspected extrapulmonary TB?

Specimens: Liquid specimens.

Ask: Perform cell counts and chemistries?

Answer: Yes, Suggested.

- Specimens amenable to cell counts and chemistries include pleural, cerebrospinal, ascitic, and joint fluids.

Q15: Should adenosine deaminase (ADA) and free IFN-γ levels be measured on specimens collected from sites suspected of extrapulmonary TB?

Specimens: From sites of suspected extrapulmonary TB.

Ask: Measure ADA and free INF-γ levels?

Answer: Yes, Suggest measuring both.

- Measure ADA levels on fluid collected from patients with suspected pleural TB, TB meningitis, peritoneal TB, or pericardial TB.
- Measure INF-γ levels on fluid collected from patients with suspected pleural TB or peritoneal TB.

Q16: Should AFB smear microscopy be performed on specimens collected from sites of suspected extrapulmonary TB?

Specimens: From sites of suspected extrapulmonary TB.

Ask (diagnostic test): Perform AFB smear microscopy?

Answer: Yes, Suggested.

- A positive AFB smear result can be used as evidence of extrapulmonary TB
  - False-positives are uncommon
- A negative AFB smear result should not be used to exclude TB
  - False-negatives are common

Q17: Should mycobacterial cultures be performed on specimens collected from sites of suspected extrapulmonary TB?

Specimens: From sites of suspected extrapulmonary TB.

Ask (diagnostic test): Perform mycobacterial cultures?

Answer: Yes, Recommended.

- A positive mycobacterial culture result can be used as evidence of extrapulmonary TB
  - False-positives are uncommon
- A negative mycobacterial culture result should not be used to exclude TB
  - False-negatives are common

Q18: Should NAAT be performed on specimens collected from sites of suspected extrapulmonary TB?

Specimens: From sites of suspected extrapulmonary TB.

Ask (diagnostic test): Perform NAAT?

Answer: Yes, Suggested.

- A positive NAAT result can be used as evidence of extrapulmonary TB
  - False-positives are uncommon
- A negative NAAT result should not be used to exclude TB
  - False-negatives are common
- At present, NAAT testing on specimens other than sputum is an off-label use of the test.

Q19: Should histological examination be performed on specimens collected from sites of suspected extrapulmonary TB?

Specimens: From sites of suspected extrapulmonary TB.

Ask (diagnostic test): Perform histological examination on specimens?

Answer: Yes, Suggested.

- Both positive and negative results should be interpreted in clinical context.
  - Both false-positive and false-negative results are common.

Q20: Should genotyping be performed on a culture isolate from culture-positive patients with TB?

Population: Culture-positive patients with TB.

Ask (diagnostic test): Perform genotyping on a culture isolate?

Answer: Yes, Recommended.

- Recommend one culture isolate from each culture-positive patient be submitted to a regional genotyping lab for genotyping.
- Public health benefits far outweigh the cost and burden of genotyping.

Open Forum

Page 9, Boosting of IGRAs – "…prior placement of a TST can boost an IGRA, particularly in those individuals who were already IGRA positive to begin with…. Additionally, it was found that this could be observed in as little as 3 days post-TST administration, and that the boosting effect may wane after several months. …suggest when dual testing is to be considered that the IGRA be collected either concurrently or prior to TST placement."

- van Zyl-Smit RN, Zwerling A, Dheda K, Pai M. Within-subject variability of interferon-g assay results for tuberculosis and boosting effect of tuberculin skin testing: a systematic review. PLoS One 2009; 4:e8517.
- van Zyl-Smit RN, Pai M, Peprah K, et al. Within-subject variability and boosting of T-cell interferon-gamma responses after tuberculin skin testing. Am J Respir Crit Care Med 2009; 180:49–58.

Thank you!

Meeting notes and presentations will be sent to everyone on the TB Nurse Network list and posted on our website:
www.michigan.gov/TB

Next TBNN meeting
Wednesday, October 18th, 2017
10-12 PM EST

Please contact Helen McGuirk with questions, comments, or suggestions for presentations and content:
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