Medscape EDUCATION

The TB Talk-Show: Revitalizing Testing Strategies for Healthcare Workers

INTRODUCTION

Tuberculosis (TB) rates have declined substantially during the past three decades, including those among healthcare personnel (HCP). Updated recommendations from the Centers for Disease Control and Prevention (CDC) for screening and testing HCPs have been issued and include identifying and treating individuals with latent TB infection (LTBI).[1] This might further decrease TB transmission in healthcare settings.

Table 1. 2019 CDC Update to Guidelines for TB Screening and Testing[1]

Healthcare Personnel Testing by IGRA (preferred) or Skin Test	Updates
▪ Upon hire (baseline) ▪ If there is known exposure or ongoing transmission in a healthcare facility ▪ Repeat positive tests (2010) ▪ Annual assessment for persons with LTBI	▪ No routine TB testing is required at any interval after baseline in the absence of a known exposure or ongoing transmission ▪ Treatment for LTBI strongly recommended

IGRA, interferon gamma release assay.

TYPES OF TESTING

There are currently only 2 types of tests available for LTBI. One is the Mantoux tuberculin skin test (TST) and the other is the IGRA. The IGRA test is now generally recommended over TST in all settings, although both tests have limitations.[3]

Table 2. Comparison of TB Tests

TST[2]	IGRA[4]

▪ Intradermal injection
▪ Read at 48 - 72h; sometimes again in a week
▪ Limitations
  • Relies on subjective interpretation
  • No control is placed
  • Must be interpreted with consideration of a person's risk
  • Can cause false-positive reaction
  • (eg, BCG)
  • May have no reaction in certain people (eg, HIV positive)[5]
  • Recorded only as text in most medical records
	▪ Laboratory-based blood test measuring the release of IFN-γ in response to TB-specific antigens
	▪ IFN-γ measured by ELISA or ELISpot
	▪ BCG vaccination does not cause a
	▪ false-positive result
	▪ Limitations
	  • Not recommended for children < 5 years
	  • Blood must be tested within 8 to 30 h after collection
	  • Negative result highly reliable; positive result needs repeating in low-risk persons

BCG, Bacille Calmette-Guérin; ELISA, enzyme-linked immunosorbent assay; ELISpot, enzyme-linked immunospot; IFN-γ, interferon gamma.

ADVANTAGES OF PERFORMING IGRA

IGRAs can be used in place of TST in all situations in which CDC recommends TST to aid in diagnosing TB, including pregnancy, screening HCPs, and others undergoing serial evaluation. Advantages over TST include:[6]

- Laboratory-based testing (use of positive and negative controls, objective results, defined interpretive criteria -- quality assurance, opportunity to automate)
- Can detect LTBI as well as active TB disease
- Requires only a single patient visit for testing and results are available within 24 hours
- Unaffected by BCG vaccination
- No cross-reaction with majority of non-tuberculous mycobacteria (NTM)
- More cost-effective than TST:[7,8]
    - A study conducted in the healthcare setting found that a TST testing program costs $73.20 per person screened, $90.80 per new hire, and $63.42 per annual screen
    - Use of an IGRA for employee health testing cost of $54.83 or less per test and resulted in higher completion rates as it eliminated the need for a second visit to interpret the TST

WHEN IS TST PREFERRED?

TST is preferred over IGRAs for testing children less than 5 years of age.[6] It may also be more useful in cases of pediatric exposure (school, sports event) where a nurse can do quick skin tests. There may also be operational challenges for IGRA, as in certain areas of the country where lab access is problematic.

Routine testing with both TST and IGRA is not recommended. However, results from both tests might be useful in the following situations:[6]

- When the initial test is negative and the risk for infection, the risk for progression to disease, and the risk for a poor outcome are high
    - There is clinical suspicion for TB disease
    - Taking a positive result from a second test as evidence of infection increases detection sensitivity
- When the initial test is positive and additional evidence of infection is required to encourage acceptance and adherence
    - The person has a low risk of both infection and progression from infection to TB disease
- In addition, repeating an IGRA or performing a TST might be useful when the initial IGRA result is indeterminate, borderline, or invalid and a reason for testing persists

RECOMMENDATIONS FOR TREATMENT

HCWs with LTBI and no prior treatment should be offered, and strongly encouraged to complete, treatment with a recommended regimen, including short-course treatments, unless a contraindication exists.[1] Treatment recommendations have changed as there are now shorter regimens with better adherence and lower toxicity. (Table 3)

Table 3. LTBI Treatment Regimens[9,10]

Drug	Duration	Frequency	Total Doses
Isoniazid and Rifapentine (3HP)	3 months	Once weekly	12
Rifampin (4R)	4 months	Daily	120
Isoniazid and Rifampin (3HR)	3 months	Daily	90
Isoniazid* (6H/9H)	6 months	Daily or twice weekly	180 or 52
	9 months	Daily or twice weekly	270 or 76

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