

Screening Children for Tuberculosis: Information for School Nurses

School nurses should be familiar with the risk-based approach to screening for tuberculosis (TB) and methods of testing for latent TB infection.

TB Risk Assessment and Testing

Summary

- Each school-aged child in a Massachusetts public or private school should have a [TB Risk Assessment](#) completed and documented on the school health form.
- The TB Risk Assessment should be performed by private providers, clinics, local public health, or school-based health centers.
- Children who are at risk of exposure to TB should be tested for latent TB infection using either the Mantoux tuberculin skin test (TST) or interferon-gamma release assay (IGRA).
 - Children under 5 years of age should **only** be tested using TST.
- Children with positive TST or IGRA results should be evaluated for active TB.
- Asymptomatic children with positive TST or IGRA and pending chest x-ray results should **not** be excluded from school but should complete a medical evaluation within 90 days.

Process

1: Conduct TB Risk Assessment to determine need for further testing

The TB Risk Assessment identifies:

- Birth, travel to or residency in a high-risk world region including Africa, Asia (except Japan), Pacific Islands, Middle East, Eastern Europe, Mexico, Central or South America, the Caribbean
- Exposure to an individual with diagnosed or suspected TB disease
- Household contact to individual with positive TB test (TST or IGRA)
- Parent and/or guardian or household member from a high-risk world region
- History of immunosuppressive disease or medications that might cause immunosuppression

If any risk is identified, a TB test is recommended. Children with no risk factors should **not** be tested.

2: Test for TB Infection: Tuberculin Skin Test (TST) or Interferon-Gamma Release Assay (IGRA)

TST: Appropriate for all ages

- Delayed hypersensitivity test
- Uses the Mantoux method: Intradermal injection of 5TU of purified protein derivative (PPD)
- Response (reaction) to antigen contained in the PPD is measured in millimeters of induration (not redness)
- Induration must be measured by a trained health care worker 48-72 hours after placement
- Positive TST results should be [reported](#) to the Massachusetts Department of Public Health

Interpreting TST results: Definition of positive TST in infants, children and adolescents

Induration ≥ 5 mm	Induration ≥ 10 mm	Induration ≥ 15 mm
<ul style="list-style-type: none"> - Close contact with known or suspected case of TB - Child suspected to have active TB - Child receiving immunosuppressive therapy or with immunosuppressive conditions including HIV 	<ul style="list-style-type: none"> - Child at risk for disseminated disease due to young age (<4 years) or other co-morbid conditions including diabetes, malnutrition, lymphoma, chronic renal failure - Child with increased risk of exposure (per risk assessment) 	<ul style="list-style-type: none"> - Child 4 years of age or older without any risk factors

IGRA: Appropriate for children aged 5 years and older

- Blood test; whole blood is mixed with antigens and analyzed in a laboratory
- Results based on amount of interferon-gamma released by white blood cells
- Approved products include QuantiFERON®-TB Gold, QuantiFERON®-TB Gold In-Tube, and T-Spot®-TB
- Test results are not affected by prior BCG vaccination
- Positive IGRA tests should be [reported](#) to the Massachusetts Department of Public Health

Interpreting IGRA results:

Results may be reported from the laboratory as positive, negative, or indeterminate/borderline. Indeterminate or borderline results are *not* negative and *should be repeated*.

Children who should have annual TST (IGRA is not recommended for serial testing)

- Children infected with HIV
- Incarcerated adolescents

3: Evaluation of children and adolescents with a Positive TST or IGRA

Diagnosis of latent TB infection can only be made after active TB disease has been excluded by clinical evaluation that includes:

- Detailed health history and physical examination
- Chest radiograph
- Evaluation of symptoms

Asymptomatic children are candidates for treatment of latent TB infection. Completion of treatment for latent TB infection should be given a high priority. School-based directly observed preventive therapy (DOPT) programs can be highly effective in achieving treatment completion in children.

Special Considerations

- **Immunizations:** Measles vaccine can temporarily suppress tuberculin reactivity. Therefore, the TST should be administered simultaneously with measles, mumps, rubella vaccine (MMR) or at least - it says 6-8 weeks in Standing orders weeks afterwards, or the vaccine may be given when the patient returns for the TST reading. Although the effect of other live virus vaccines on tuberculin reactivity is not known, the same spacing recommendations apply.
- **BCG Vaccine:** A history of bacille Calmette-Guerin (BCG) vaccine is not a contra-indication for testing for TB. BCG vaccine is not part of the vaccine schedule in the U.S., but is used extensively throughout the world. BCG does not provide lifelong immunity and its effectiveness wanes over time. If a child is at risk for TB, a TB test should be performed *regardless* of BCG vaccine history. IGRAs can distinguish between TB infection and BCG and are recommended in children 5 years of age or older who have a history of BCG vaccination.
- A child who has a positive TST should not receive another TST.
- A child with TB symptoms should be evaluated as soon as possible.

Resources:

Division of Global Populations Infectious Disease Prevention, Bureau of Infectious Disease, DPH
Telephone: 617-983-6970 www.mass.gov/dph/cdc/tb ; [Report TB](#): 617-983-6801

Pediatric TB Risk Assessment Form

<http://www.mass.gov/eohhs/docs/dph/cdc/tb/tb-pediatric-risk-assessment-form.pdf>

Recommendations for Screening Infants and Children for Tuberculosis in Massachusetts

<http://www.mass.gov/eohhs/docs/dph/cdc/tb/recommendations-screening-children-tb.pdf>

Tuberculosis Handbook for School Nurses

<http://globaltb.njms.rutgers.edu/products/schoolnursehandbook.htm>