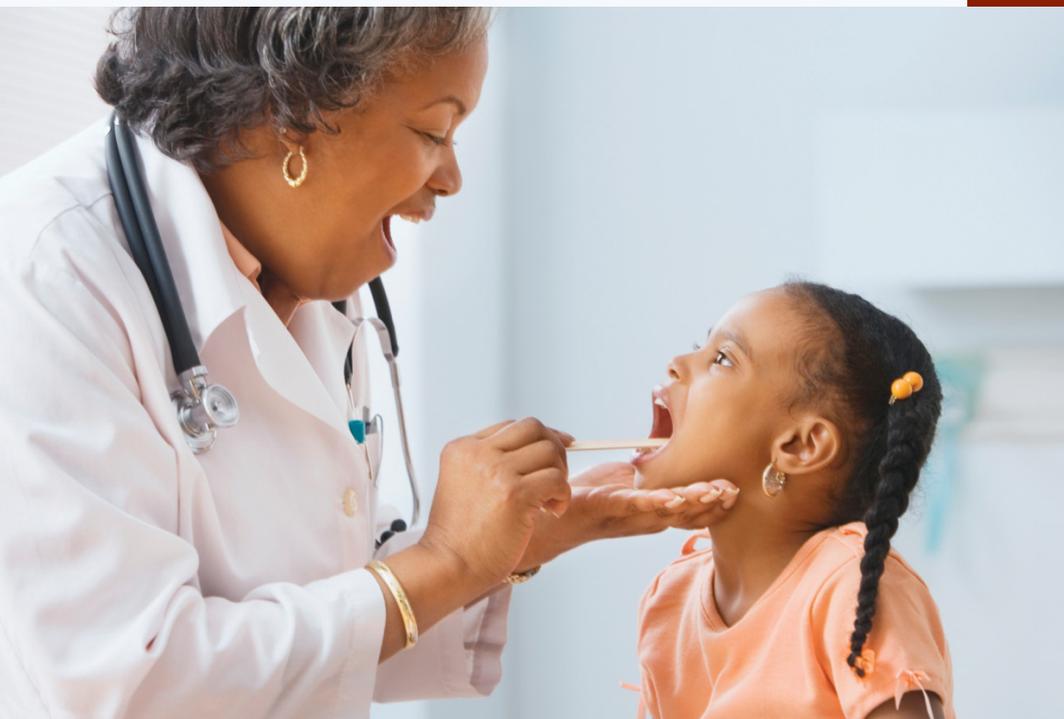


TUBERCULOSIS HANDBOOK FOR SCHOOL NURSES



NEW JERSEY
MEDICAL SCHOOL
GLOBAL
TUBERCULOSIS
INSTITUTE

TUBERCULOSIS HANDBOOK FOR SCHOOL NURSES

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INTRODUCTION

This handbook has been prepared for school nurses who may be responsible for implementing tuberculin testing programs in their schools or working in collaboration with community providers in both the public and private sectors to manage the care of a child with tuberculosis (TB) disease or latent TB infection (LTBI).

There have been many changes in recent years and mass screening for TB has fallen out of favor. Current recommendations focus on assigning risk, i.e., testing only those children identified as having risk factors for tuberculosis. “Targeted testing” for tuberculosis places priority on these high risk groups by identifying those at the greatest risk for infection as well as those at risk for developing TB disease if infected (American Thoracic Society [ATS] & Centers for Disease Control & Prevention [CDC], 2000).

This handbook is divided into three sections:

- **TB Fundamentals** with a particular focus on school-aged children
- **Applying TB Fundamentals in the School Setting** which covers issues related to medication administration, treatment adherence and directly observed therapy (DOT) in the school setting
- **Appendices** that include risk assessment guidelines, medication side effects, and templates for record keeping.

PART ONE
TB FUNDAMENTALS

TRANSMISSION & PATHOGENESIS

TB is an airborne infectious disease caused by *Mycobacterium tuberculosis*. Minute particles called droplet nuclei are expelled into the air when a person with TB disease coughs, sneezes, laughs, or sings. Transmission can occur because these particles remain suspended in the air and may be inhaled by other individuals. The host's immune system usually inhibits or destroys most of the TB bacilli, however, some bacilli may remain in the body and remain viable for years. This is referred to as latent TB infection or LTBI.

Persons with LTBI have no signs, symptoms or radiographic evidence of TB disease. In the United States, approximately 5% of those infected with *M. tuberculosis* will develop TB disease in the first 1-2 years after infection and another 5% will develop TB at some point during their lifetime.

Because we know that LTBI is the precursor to TB disease, the early identification of children infected with the *M. tuberculosis* bacillus is a critical factor in preventing morbidity and mortality in the pediatric population. Equally important is the treatment of these children and a plan to ensure treatment completion.

The Differences Between LTBI and TB Disease

| Latent TB Infection | TB Disease |
|--|--|
| Inactive tubercle bacilli in the body | Active tubercle bacilli in the body |
| Tuberculin skin test (TST) or interferon-gamma release assay (IGRA) usually positive | TST or IGRA usually positive |
| Chest radiograph usually normal | Chest radiograph usually abnormal |
| Sputum smear and culture negative | Sputum smear and culture positive |
| Lack of symptoms | Symptoms such as cough, fever, weight loss |
| Not infectious | Often infectious before treatment |

Adapted from the CDC, Self-Study Modules on Tuberculosis, 2008.

It is important to understand the differences between LTBI and pulmonary disease and the manner in which they present in adults and children. Children manifest TB differently than adults and are usually discovered and diagnosed during a contact investigation. They are often asymptomatic, have fewer tubercle bacilli in their lungs, and usually lack the force to produce airborne bacilli while coughing, and therefore are rarely contagious. When they do occur, common symptoms are fever, cough, and weight loss or failure to gain weight. Although TB is most commonly found in the lungs, it can affect other parts of the body as well (i.e., extrapulmonary TB). (American Academy of Pediatrics [AAP], 2009).

TESTING FOR TUBERCULOSIS

School-based TB testing programs generally utilize skin tests, however, school nurses should be familiar with the different methods of testing for TB infection. In addition to the Mantoux tuberculin skin test that uses purified protein derivative (PPD), there are blood tests called interferon-gamma release assays (IGRA).

TUBERCULIN SKIN TEST (TST)

- Delayed hypersensitivity test
- Uses the Mantoux method - Intradermal injection of purified protein derivative (PPD)
- Response (reaction) to antigen contained in the testing material is measured in millimeters of induration (*See Appendix B*)

INTERFERON-GAMMA RELEASE ASSAYS (IGRA)

- 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
- Results reported as positive, negative, or indeterminate
- Approved products include QuantiFERON®-TB Gold, QuantiFERON®-TB Gold In-Tube, and T-SPOT®.TB

IGRAs have been approved for use in adults in all circumstances where a TST would be used. However, there is a lack of published data related to IGRA use in children. The American Academy of Pediatrics (AAP) and Centers for Disease Control & Prevention (CDC) both recommend its use in place of TST in immunocompetent children 5 years of age or older.

Targeted testing identifies children who are at risk for LTBI and therefore at risk for progressing to TB disease. Because children and adolescents with LTBI represent the future reservoir for cases of TB, it is important that they are identified and treated. Children without risk factors should not be tested. It should be noted that there are some instances where routine testing is required for attendance in school, day care, or camp. This is to be discouraged because the yield of positive results is low, and therefore is an ineffective use of healthcare resources (AAP, 2009).

The following is a summary of the AAP testing recommendations that can be found in the *Red Book: 2009 Report of the Committee on Infectious Diseases*.

Children for whom immediate TST or IGRA is indicated:

- Contacts of persons with confirmed or suspected contagious tuberculosis
- Children with radiographic or clinical findings suggesting tuberculosis disease
- Children immigrating from countries with high prevalence of TB* (e.g., Asia, Middle East, Africa, Latin America, and countries of the former Soviet Union), including foreign adoptees
- Children with travel histories to endemic countries or significant contact with people who live in these countries

**Countries in Eastern Europe also have a high prevalence of TB*

Children who should have annual TST or IGRA:

- Children infected with HIV
- Incarcerated adolescents

Children at increased risk for progression of infection to disease:

Children with other medical conditions, such as diabetes mellitus, chronic renal failure, malnutrition, and chronic or acquired immunodeficiencies deserve special consideration. Underlying immune deficiencies associated with these conditions can increase the possibility for progression to severe TB disease. Information regarding potential exposure to tuberculosis should be elicited from these patients. If histories or local epidemiological factors suggest a possibility of exposure, immediate and periodic TB testing should be considered. In addition, a TST should be performed before initiation of immunosuppressive therapy including prolonged steroid administration or use of tumor necrosis factor-alpha antagonists.

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 4-6 weeks afterwards. 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 contraindication for testing for tuberculosis, provided such testing is part of a targeted testing program. This vaccine is not part of the vaccine schedule in the United States, but is used extensively throughout the world. Since tuberculosis is endemic in many countries, BCG is given for the specific purpose of protecting infants from the serious complications of TB disease. It does not provide lifelong immunity, and, in fact, its effectiveness wanes over time. More than 50% of infants who received BCG at birth will have a non-reactive TST at 9-12 months of age, and the great majority will be negative by 5 years of age (Starke & Smith, 2004).

Therefore, if a child is at risk for tuberculosis, a test for tuberculosis should be performed regardless of BCG vaccine history. A child with a positive TST should be evaluated for TB disease and treated accordingly, because it is impossible to distinguish a reaction caused by infection with the TB bacillus and one that is a result of BCG vaccine. IGRAs can distinguish between TB infection and BCG and are recommended in children 5 years of age and older who have a history of BCG vaccination. The evaluation should include a history, physical examination, and a chest radiograph.

EVALUATION OF CHILDREN AND ADOLESCENTS WITH A POSITIVE TST OR IGRA

Any child with a positive test for TB infection done as part of a school TB testing program should be referred for further evaluation. This evaluation includes a detailed health history, a physical assessment, and a chest radiograph. By focusing on the presence of symptoms, the risk of progression to TB disease, and coexisting medical conditions, the healthcare provider is able to identify or exclude TB disease. Any child suspected of having TB disease, with questionable test results, or with unclear risk factors should be referred to a specialist. Your school district may have an agreement with the local health department, TB control program, or hospital. If the chest radiograph is normal and TB disease has been ruled out, treatment for LTBI is recommended. The child may remain in school.

The diagnostic criteria for LTBI includes a positive test for TB infection, the absence of symptoms or physical findings suggestive of TB disease, and a chest radiograph with no evidence of TB disease (ATS & CDC, 2000; Pediatric Tuberculosis Collaborative Group, 2004).*

Chest radiographs are used as a diagnostic tool to evaluate the child with a positive TST or IGRA

- Frontal and lateral views are recommended for children less than 5 years of age
- In children 5 years or older, healthcare providers may opt to obtain both views to aid in decision making
- Films should be obtained and results reviewed by an experienced radiologist *before* initiation of LTBI treatment
- If the initial chest radiograph is normal and the child remains asymptomatic and completes treatment, no further radiographs are required

* *Chest radiographs that reveal isolated calcified granulomata or calcified intrathoracic lymph nodes without other abnormalities are consistent with LTBI not TB disease.*

* *Hilar adenopathy in a child is consistent with TB disease*

TREATMENT FOR LTBI AND TB DISEASE

Rationale for treating LTBI in children includes the following (Pediatric Tuberculosis Collaborative Group, 2004):

- Young children are at greater risk of progression from latent infection to TB disease once infected as their immune systems are less able to control infection
- Infection is likely to have been recent. Recently infected persons are at a greater risk for developing TB disease
- Children have more years to potentially develop TB disease
- Medications used to treat LTBI are well tolerated by children and there is a low risk of toxicity

TB infection and TB disease are treated differently. There are four first-line drugs used in treatment of TB disease:

- Isoniazid (INH)
- Rifampin (RIF)
- Pyrazinamide (PZA)
- Ethambutol (EMB)

Treatment Regimens

(AAP, 2009)

| Diagnosis | Treatment Regimen |
|--|--|
| TB infection | <ul style="list-style-type: none">• INH for 9 months or• Rifampin for 6 months |
| TB disease | <ul style="list-style-type: none">• INH, RIF, PZA, EMB for the first 2 months• INH and RIF (in pan-sensitive cases) for the next 4 months |
| Multi-drug resistant TB (Resistant to INH and RIF) | <ul style="list-style-type: none">• Treated with drugs to which organisms are sensitive• Any drug resistance should be managed by an expert |

Pyridoxine (vitamin B6) supplementation is recommended for the following patients receiving INH:

- Children on meat and milk-deficient diets
- Exclusively breast-fed infants
- Children with nutritional deficiencies

- Children with symptomatic HIV infection
- Pregnant adolescents

The recommended daily dose: Up to 1 mg/kg/ (maximum 25 mg)
(Pediatric Tuberculosis Collaborative Group, 2004)

Signs and Symptoms of Adverse Reactions to TB Medications *

| Medication | Adverse Reaction | Signs & Symptoms | Comments |
|--|--|--|--|
| Isoniazid (INH) | Hepatitis/ Hepatotoxicity | Dark urine, yellow skin or eyes, nausea, vomiting, flu-like symptoms, abdominal discomfort | Stop medications immediately if patient develops significant nausea, vomiting, anorexia, abdominal discomfort, or jaundice |
| | Peripheral neuropathy | Numbness or tingling of fingers or toes | Pyridoxine supplementation may be indicated |
| <i>Potential Drug Interaction: INH may increase serum levels of phenytoin and carbamazepine. Monitor levels of phenytoin and carbamazepine</i> | | | |
| Rifampin (RIF) | Orange discoloration of bodily fluids (common) | Orange color of tears and urine | Stains contact lenses |
| | Hepatitis/ Hepatotoxicity | Dark urine, yellow skin or eyes, nausea, vomiting, flu-like symptoms, abdominal pain | Stop medications immediately if patient develops significant nausea, vomiting, anorexia, abdominal pain, or jaundice |
| | Hypersensitivity | Rash | |
| <i>Potential Drug Interaction: RIF decreases the effectiveness of oral contraceptives. Advise use of non-hormonal contraceptive.</i> | | | |
| Pyrazinamide (PZA) | Hepatitis/ Hepatotoxicity | Dark urine, yellow skin or eyes, nausea, vomiting, flu-like symptoms, abdominal pain | Stop medications immediately if patient develops significant nausea, vomiting, anorexia, abdominal pain, or jaundice |
| | GI disturbance | Loss of appetite, nausea, vomiting, abdominal discomfort | |
| | Hyperuricemia | Joint pain or swelling | |
| Ethambutol (EMB) | Optic neuritis | Decreased visual acuity Decreased red-green color discrimination | Baseline and monthly visual acuity and red-green discrimination in children old enough to cooperate |

* This is not an exhaustive list of side effects and drug-drug interactions. Consult the prescribing healthcare provider for more information.

Managing Adverse Reactions to TB Medications

In general, children tolerate medications used to treat tuberculosis and adverse reactions are rare. It is important though to monitor for such reactions, as they are reversible when detected early.

- Parents should be educated about recognition of early signs of hepatotoxicity such as nausea, vomiting, abdominal pain, decreased appetite or activity level, or yellowing of the eyes or skin. In addition, flu-like symptoms may precede clinical jaundice.
- Medications should be stopped immediately if patient develops significant nausea, vomiting, anorexia, abdominal pain, or jaundice.

PART TWO
APPLYING TB FUNDAMENTALS
IN THE SCHOOL SETTING

DIRECTLY OBSERVED THERAPY FOR TREATMENT OF LTBI AND TB DISEASE

Directly observed therapy (DOT) is the term used to describe the observation of TB medication ingestion by a member of the healthcare team. While DOT is the standard of care for patients with TB disease, it can also improve adherence in children with LTBI. DOT is a priority for very young children, adolescents, immunocompromised children, and those with evidence of non-adherence.

The school setting is an ideal setting for DOT because the child attends school five days a week during the academic year. There is often a school nurse available to observe and document medication ingestion and to assess the child for possible medication side effects on a regular basis.

When the school nurse is asked to provide DOT for a child with LTBI or TB disease, the referring agency may visit the school and provide appropriate forms for documentation/permission. For example:

- Medication orders/Parental Consent Form (See Appendix G)
- DOT Log (See Appendix H)

They may also provide the medication on a monthly basis as well as guidance and support in areas of patient education, adherence, medication administration, and medication side effects.

Some guidelines for providing DOT in the school setting:

- Use a parent/guardian consent form to obtain permission for medication administration in school.
- Choose the time and place of medication administration to ensure privacy and protection of the child's identity.
- Establish a protocol for managing missed doses due to illness or vacation.
- Consider intermittent regimens. It is generally administered 2 to 3 times per week and should be given at the same time each day. The interval between doses should be 48 hours.

- Use a DOT log to record medication administration that includes the following :
 - Child's name, date of birth, address, and home phone number
 - Name and phone number of child's healthcare provider
 - Name of prescribed TB medications and dosing schedule
 - Name and signature of person dispensing the medication, the date and time
 - Maintain ongoing communication and collaboration with parent or guardian and healthcare provider during the treatment course

The school nurse and the child's healthcare provider or health department are partners in the health and recovery of the child with TB. Therefore, maintaining a good relationship and clear communication is important. Problems or concerns about medication administration or the child's health, should be communicated directly to the healthcare provider who is supervising the child's treatment and all communication should be documented.

KEYS TO SUCCESSFUL TREATMENT

This section that follows suggests ways to manage some potential barriers to successful treatment.

Missed DOT Appointments

If a child does not report to the school nurse for medications:

- Check to see if the child is absent and follow the absentee procedure that has been instituted
- If the child is present, discreetly locate the child, without compromising confidentiality
- Avoid problems by choosing a convenient time for therapy, such as before school or at lunchtime

School Absences and Vacations

School absences and vacations may prevent a child from receiving medications. Therefore, it is important to establish a plan prior to initiation of DOT. The school office can provide information about a child's absence. However, it may be more efficient to have the child's parent or guardian agree to contact the school nurse directly regarding an absence.

If a child who is being treated for TB disease is absent from school, the child's healthcare provider or health department should be contacted so alternate arrangements can be made.

Difficulty Swallowing Medications

All TB medications can be safely administered at the same time. Unfortunately, some children have trouble swallowing pills. Most TB medications, with the exception of rifampin, can be crushed and placed in food, making swallowing easier and more palatable (Starke & Smith, 2004). If food is used, consult the healthcare provider or a pharmacist and consider the following tips:

- For children unable to swallow tablets, tablets can be crushed and mixed with food to mask the bitter taste. Parents can provide food the child likes. Examples include:
 - applesauce
 - mashed bananas
 - yogurt
- Mix medications with the smallest amount of food possible, to ensure the child consumes all medications
- Once the medication is ingested, offer a spoonful of food without medication, and follow that with water
- Vary the choices of foods periodically, so that the child does not develop an aversion to a certain food
- If possible, schedule medication administration when the child is likely to be hungry and less likely to refuse
- Do not add crushed medication to a full glass of water, as the drug will sink to the bottom

Lack of Incentives

If a child is hesitant about taking medications or does not understand the effects of non-adherence, incentives can help (ATS & CDC, 2000).

- Positive feedback boosts a child's morale
- Small, tangible rewards, such as stickers or certificates, are good incentives
- Many clinics and health departments have effective incentive programs and are willing to share ideas

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ADDITIONAL TB RESOURCES

Centers for Disease Control and Prevention (CDC) Division of Tuberculosis Elimination

www.cdc.gov/tb

The CDC Division of Tuberculosis Elimination's website contains information on TB in the United States and provides TB education and training materials and resources.

Find TB Resources Website

www.findtbresources.org

This website includes a searchable database of materials from numerous national and international organizations. The site also includes information about other TB organizations, how to order materials, and funding opportunities.

TB Regional Training and Medical Consultation Centers (RTMCCs)

CDC funds four regionally-assigned RTMCCs to provide training, education and medical consultation services to TB health care workers. The RTMCC all-products page provides RTMCC produced TB educational materials.

<http://sntc.medicine.ufl.edu/rtmccproducts.aspx>

Curry International Tuberculosis Center

CITC serves: Alaska, California, Colorado, Hawaii, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming, Federated State of Micronesia, Northern Mariana Islands, Republic of Marshall Islands, American Samoa, Guam, and the Republic of Palau.

3180 18th Street, Suite 101, San Francisco, CA 94110

415-502-4600 (Phone) 415-502-4620 (Fax)

www.nationaltbcenter.ucsf.edu

Heartland National Tuberculosis Center

HNTC serves: Arizona, Illinois, Iowa, Kansas, Minnesota, Missouri, New Mexico, Nebraska, North Dakota, Oklahoma, South Dakota, Texas, and Wisconsin.

2303 SE Military Drive, San Antonio, TX 78223

800-839-5864 (Phone) 210-531-4500 (Fax)

www.heartlandntbc.org

New Jersey Medical School Global Tuberculosis Institute

GTBI serves: Connecticut, District of Columbia, Delaware, Indiana, Massachusetts, Maryland, Maine, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, and West Virginia.

225 Warren Street, PO Box 1709, Newark, 07101-1709

973-972-3270 (Phone) 973-972-3268 (Fax)

www.umdnj.edu/globaltb

Southeastern National Tuberculosis Center

SNTC serves: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, Puerto Rico, and the U.S. Virgin Islands.

Shipping Address: Emerging Pathogens Institute

2055 Mowry Rd. Suite 250, Gainesville, FL 32611

Mailing Address: PO Box 103600, Gainesville, FL 32610-3600

888-265-7682 (Phone) 352-265-7683 (Fax)

<http://sntc.medicine.ufl.edu>

PART THREE
APPENDICES

APPENDIX A

FREQUENTLY ASKED QUESTIONS

Q. Why do some children take vitamin B6 with their INH while others do not?

A. Although not prescribed routinely, vitamin B6 (pyridoxine) is used to prevent peripheral neuropathy due to INH in children with poor nutrition. The child's healthcare provider will determine this need. Most children have no need for B6 supplementation.

Q. We had a TB outbreak in our school, and a teacher insisted that he must know how the individual was exposed. Isn't it a teacher's right to know?

A. No. You are a healthcare professional, and the infectious individual is a patient. Standard provider and patient confidentiality must be maintained at all times.

Q. A child to whom I give medications is frequently absent. What is my responsibility in making sure this child gets medications?

A. Alternative plans for DOT must be established at the start of treatment. Arrangements may be made with the local health department or whoever provides outreach for TB patients.

Q. Sometimes I am unable to locate a child for TST reading within the recommended 48-72 hours time frame. Do I have to repeat the test?

A. TST reaction may be visible for up to 7 days after the test was administered. However, if there is no induration on the arm or the induration is not large enough to be interpreted as positive, the skin test must be repeated.

Q. Do I have to skin test new children in my school district?

A. TB skin testing regulations vary by school district. Consult your local health department and school board for more information.

Q. What are the responsibilities of the school nurse when a student, teacher, or staff member has been diagnosed with tuberculosis?

- A. Contact investigations are usually conducted by the health department, often in collaboration with school officials. The results of the investigation will determine the extent of transmission and need for TB testing.

APPENDIX B

ADMINISTRATION, MEASUREMENT, INTERPRETATION OF TST

The Mantoux test is the recommended TST. It is administered by injecting 0.1 ml of 5 TU of purified protein derivative (PPD) solution intradermally into the volar surface of the forearm using a 27-gauge needle with a tuberculin syringe. (CDC, 2003)

ADMINISTRATION OF TST

- Store purified protein derivative (PPD) solution at 36-46° F and separate from other biologics, for example DTaP
- Avoid fluctuations in temperature. Do not store on the refrigerator door
- Label the vial with date it was opened and discard unused portion within 30 days
- Fill syringes immediately prior to administration
- Avoid areas of skin with veins, rashes, or excess hair
- Cleanse the area with alcohol swab and inject PPD solution just below the surface of the skin, forming a 6-10 mm wheal (a pale, raised area with distinct edges)
- Measure the wheal. If no wheal forms or if it is less than 6 mm, the test should be repeated immediately at a site that is approximately 2 inches from the original site or on the opposite arm
- Dab the area with cotton at the injection site if minor bleeding occurs,
- Do not cover the area with a bandage
- Record date, time, and site of the intradermal injection
- Record the brand name of the PPD solution, the lot number, manufacturer and expiration date
- Instruct child and parent not to scratch the site or cover it with a bandage
- Inform parent and child of the importance of returning for a reading of the TST within 48-72 hours (2-3 days)
- Give written appointment to return for TST reading
- TST interpretation should be performed by a trained healthcare professional

MEASUREMENT OF TST REACTIONS

- Locate the skin test site and verify with patient/family
- Inspect and palpate area with fingertips to identify areas of induration rather than erythema
- Measure area of induration perpendicular to the long axis of the arm
- Use ballpoint pen to mark edges of induration
- Use a TST ruler or ruler with millimeters to measure the distance between the two edges

DEFINITION OF POSITIVE TST RESULTS

The interpretation of the TST is based on a person's risk of TB infection and of progression to TB disease if infected.

≥5 mm induration

- Child who is a close contact of a person with known or suspected TB
- Child with radiologic or clinical evidence of active TB disease
- Child receiving immunosuppressive therapy or with immunosuppressive conditions including HIV Infection

≥10 mm induration

- Child younger than 4 years of age
- Child with medical conditions such as: lymphoma, Hodgkin's disease, diabetes mellitus, chronic renal failure, or malnutrition
- Child born in region of the world with high prevalence of TB
- Child who has frequent exposure to high-risk adults (HIV-infected, homeless, residents of nursing homes, institutionalized, incarcerated, users of illicit drugs, or migrant workers)
- Child with a history of travel to high prevalence regions of the world

≥15 mm induration

- Child ≥ 4 years with no risk factors

DOCUMENTATION & EDUCATION

- Record date TST was administered
- Record the results in millimeters of induration (00 mm if there is no induration) rather than as positive or negative
- Record date and time of reading
- Record name of person reading TST
- Explain the significance of a positive TST and the next steps in evaluation
- Inform family of possibility that TB control personnel may test other household members in search of a source case
- Counsel family that there is no need for future TB skin testing if the child has a positive TST result
- Provide patient/parent with appropriate educational materials
- Instruct patients who had no induration when the TST was measured at 48-72 hours to return for evaluation if a reaction occurs after the visit
 - Measure any induration that develops and consider that to be the result

APPENDIX C

SCREENING FOR THE RISK OF TB INFECTION

The American Academy of Pediatrics (AAP) suggests that a risk assessment for TB be performed at the provider's first encounter with the child, every six months until age two, and then annually if possible. Testing should be performed only if one or more risk factors are present (AAP, 2009). The following four questions were validated by several studies and incorporated into a risk assessment questionnaire (Pediatric Tuberculosis Collaborative Group, 2004)

Was child born in a high-risk country (countries other than U.S., Canada, Australia, New Zealand or Western European countries)?
Has child traveled and had contact with the resident population in a high-risk country (Africa, Asia, Latin America, countries of the former Soviet Union, or Eastern Europe) for more than a week?
Has child been exposed to anyone with TB disease?
Has a family member or close contact had a positive TST?

See template for risk assessment questionnaire – Appendix D

Providers should become familiar with the incidence of TB in the countries from which their patients and families are emigrating. The most current data available suggests that 59% of TB cases in the United States occurred among foreign-born individuals. Sixty-two percent of those cases reported in 2009 occurred in people from seven countries. They were Mexico, Philippines, Vietnam, India, China, Guatemala, and Haiti (CDC, 2010). The World Health Organization (WHO) website provides a list of countries with a high burden of TB. The link is:
http://www.who.int/tb/publications/global_report/2009/annex_1/en/index.html

APPENDIX D: SAMPLE TB RISK ASSESSMENT TOOL

Persons with any of the following risk factors are candidates for TB testing, unless there is written documentation of a previous positive TST or IGRA.

| Risk Factor | Yes | No |
|--|------------|-----------|
| Was the child born in a high-risk country? (Any country other than United States, Canada, Australia, New Zealand, or Western Europe) | _____ | _____ |
| Has the child traveled and had contact with the resident population of a high-risk country? (Africa, Asia, Latin America, Eastern Europe, countries of the former Soviet Union) | _____ | _____ |
| Has the child had close or prolonged contact with someone with infectious TB disease? | _____ | _____ |
| Has the child had close or prolonged contact with someone with a positive TB test? | _____ | _____ |

Adapted from a questionnaire developed by the Pediatric Tuberculosis Collaborative Group (2004)

Available as a Microsoft Word document at:
<http://www.umdj.edu/globaltb/downloads/products/tbriskassessmenttool.doc>

APPENDIX E: SAMPLE TUBERCULIN SKIN TEST RECORD

Name _____

Address _____

City _____

State _____ Zip Code _____

Telephone _____

Date and time TST administered _____

Name of person who administered TST _____

Site of TST _____

Manufacturer of PPD solution, lot #, expiration date

Results of TST recorded in millimeters of induration _____

Date and time TST interpreted _____

Name of person who measured induration _____

Available as a Microsoft Word document at:

<http://www.umdj.edu/globaltb/downloads/products/tbskintestrecord.doc>

APPENDIX F

ASSESSING FOR ADVERSE REACTIONS TO TB MEDICATIONS

Presence of any side effects or adverse reactions should be reported immediately to the healthcare provider. The following questions can be used to elicit information regarding medication side effects and adverse reactions.

A. Subjective

1. Do you have any of the following?
 - Abdominal pain
 - Nausea or vomiting
 - Loss of appetite
 - Fatigue
 - Rash
2. Are you taking any medications other than anti-TB medications?
3. Has there been a change in your appetite?
4. What color is your urine (should be orange for patients taking rifampin)?

B. Objective

1. Does the child have signs and symptoms of hepatitis including any of the following?
 - Yellow eyes
 - Yellow skin
 - Dark urine
2. Does the child have a rash?
3. Does the child have a fever?
4. Is the child gaining weight steadily (re-evaluate monthly)?

APPENDIX G

SAMPLE REQUEST FOR MEDICATION TO BE ADMINISTERED BY THE SCHOOL NURSE

Student _____

DOB _____ Grade _____

RM# _____

I, the parent/guardian of the above named, request that medication prescribed by a physician be administered to the above named student by the school nurse. I agree to arrange for the supply of medications to be given to the school nurse.

Signature _____

Date _____ Phone _____

PHYSICIAN'S STATEMENT

In order to protect the health of the above named, it is necessary for her/him to have the following medication during school hours.

Diagnosis _____

Medication _____

Dosage _____

Time to be administered _____

Possible side effects that might be expected: _____

Next scheduled office visit: _____

I authorize the school nurse to administer the above medication.

Signature _____

Date _____ Phone _____

*Adapted from Jersey City School District, Jersey City, New Jersey.
Available as a Microsoft Word document at:
<http://www.umdj.edu/globaltb/downloads/products/requestformedication.doc>*

NOTES

NOTES



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