

D.C. EVEREST AREA SCHOOL DISTRICT
6300 Alderson Street, Schofield, Wisconsin 54476
Tuberculin Skin Test (Mantoux)
Protocol and Procedure

- I. PURPOSE: To describe how to administer and interpret the Mantoux Test. To serve as a diagnostic aid in screening for tuberculosis infection.
- II. PERSONS AFFECTED: District Nurses, Employee(s) to be tested, D.C. Everest Medical Advisor.
- III. EQUIPMENT: Mantoux Antigen (Tuberculin Purified Protein Derivative, i.e. PPD) 5 U.S. units (TU) per test dose of 0.1ml, Tuberculin Syringe with 25-27 gauge, 1/2 inch to 5/8 inch needle, alcohol wipes, TB Skin Test Record card, Millimeter ruler, Emergency Medication Kit.
- IV. GENERAL INSTRUCTIONS:
 - A. Definitions – to differentiation between multiple puncture (Tine Test) and Mantoux Tuberculin Skin Test.
 1. *The Mantoux Tuberculin Skin Test is the worldwide standard used to determine if a person has been exposed to tuberculosis.*
 2. *The Tine Test is no longer considered valid. Literature recommends that anyone who has taken a Tine Test should be re-screened using the Mantoux test.*
 - B. Contraindications
 1. Individuals with a documented history of:
 - a. Known hypersensitivity to the test antigen;
 - b. Tuberculin-positive test reaction in the past;
 - c. Reaction to small pox vaccination; and/or,
 - d. Active rash or skin disorder.
 2. Individuals who received a live-virus vaccination within the six weeks before PPD testing.
 3. Note: Pregnancy, recent administration of immune globulin, and prior BCG vaccination are NOT contraindications.
 - C. Antigen Management
 1. All unused vials of Purified Protein Derivative (PPD) are to be stored in a cool, dark place.
 2. The PPD solution is not transferred from one vial to another.
 3. All partially filled vials are refrigerated when not in use.
 4. Record the date on the outside of the vial after opening the solution.
 5. Check vial for expiration date. If the vial has been open for more than thirty (30) days or if the length of time is unknown, the vial should be discarded.
 6. Fill the syringe at the time the skin test is scheduled in order to minimize reduction in potency of the PPD due to high tendency of adsorption.
 - D. Factors Causing Decreased Ability to Respond to Tuberculin Skin Tests
 1. Factors related to the person being tested:
 - a. Viral-related infections (measles, mumps, chickenpox).
 - b. Bacterial-related infections (typhoid fever, brucellosis, typhus, Hansen's disease, pertussis, overwhelming tuberculosis, Tuberculosis pleurisy).
 - c. Fungal-related infections (South American blastomycosis).
 - d. Live virus vaccinations (measles, mumps, polio).
 - e. Metabolic derangements (chronic renal failure).
 - f. Nutritional factors (severe protein depletion).
 - g. Diseases affecting lymphoid organs (Hodgkin's disease, lymphoma, chronic lymphatic leukemia, sarcoidosis).
 - h. Drugs (corticosteroid and many other immunosuppressive agents).
 - i. Age (newborn, elderly).
 - j. Recent or overwhelming infection with M. tuberculosis.
 - k. Stress (surgery, burns, mental illness, graft versus host reactions).
 - l. HIV infection.
 2. Factors related to the tuberculin solution used:

- a. Improper storage (exposure to light and heat).
- b. Improper dilutions.
- c. Chemical denaturation.
- d. Contamination.
- e. Adsorption.
- 3. Factors related to the method of administration:
 - a. Injection of too little antigen.
 - b. Delayed administration after drawing into syringe.
 - c. Injection too deep.

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V. ESSENTIAL STEPS:

A. Preliminary Steps

1. Potential allergic reaction preparation. Epinephrine Hydrochloride solution (1:1000) should be readily available for use in case an anaphylactic or acute hypersensitivity reaction occurs.
2. Wash hands. If soap and running water are not available, use antiseptic towelettes or waterless disinfectant.
3. Cleanse the vial top with 70% alcohol.
4. Insert syringe needle and withdraw slightly more than 0.1 ml (5TU) of PPD. Leave inserted into the vial until administration.

B. Intake

1. Inform the employee about the purpose of the skin test.
2. Ask the employee to complete the TB SKIN TEST RECORD card, which includes a consent signature.
3. Review the employee's history for skin test contraindications and suspicion/symptoms of active disease.
4. Inform the employee about the necessity to return in 48-72 hours to have the skin test read.
5. Answer any of the employee's questions.

C. Administration

1. Instruct employee to sit up, extend the arm, and support it on a flat surface, with the volar surface exposed.
2. Select either the volar or dorsal surface of the left forearm, about four inches below the elbow. Verify that the site has adequate subcutaneous tissue and is free of excess hair or blemishes.
3. Cleanse the site using 70% alcohol and allow to dry.
4. Eliminate air bubbles and any excess PPD in order to measure exactly 0.1 ml (5TU) of PPD.
5. Pull down on the skin, and insert the needle, bevel side up, intradermally at a 15-degree angle to the skin.
6. Inject tuberculin, producing a wheal or bleb (pale elevation of the skin) between 6-10 mm in diameter. If no wheal forms, you have injected the antigen too deeply and should repeat the test at least two inches from the first site.
7. Withdraw needle and apply gentle pressure to the injection site. Do not rub the site. You may place a Band-Aid over the site to cushion it and prevent friction.

D. Documentation

1. Record the following information on the back of the TB SKIN TEST RECORD card:
 - a. Site;
 - b. Date PPD applied; and,
 - c. Signature of the RN.
2. Schedule a return appointment within 48-72 hours.

E. Interpretation/Follow Up

1. After 48-72 hours, inspect injection site for reactivity.
 - a. Flex the client's forearm slightly at the elbow
 - b. Palpate to determine the presence or absence of induration. Erythema without induration is NOT significant.
 - c. If in doubt, repeat the test.
 - d. Inspect the test site from the side, silhouetting against a light source as well as

viewing directly.

- e. Measure the diameter of the induration in millimeters transversely to the long axis of the forearm.

2. Record the results in millimeters on the TB SKIN TEST RECORD Card.
 - a. Examples: 9mm, 3mm, 0mm, etc.
 - b. DO NOT write "positive" or "negative."
 - c. Sign and date the card.
3. Interpret indurations per page 2 of ANTITUBERCULOSIS THERAPY PROGRAM form under CRITERIA FOR TB PREVENTION THERAPY. Guidelines are also found in the TB CORE CURRICULUM, page 20, available at Marathon County Health Department.
4. Terminate any further activity if the client does not have a significant reaction, is not immunocompromised, and is not part of an ongoing investigation due to suspected exposure.
5. A repeat or step method may be used for clients with 0mm readings but suspect of exposure or if interpretation is in doubt.
 - a. This would involve repeating the administration essential steps.
 - b. This may be done 1-3 weeks after the first test (follow Two-Step Testing procedure in TB CORE CURRICULUM).
6. Coordinates follow up with the employee's physician for all reactors. The urgency of referral is dependent on the presence or absence of symptoms. All PPD positive reactors, with symptoms, are assumed diseased until proven otherwise. Positive reactors should have further medical evaluation to rule out disease.

References:

Wisconsin Bureau of Public Health (1992). TB Reference Handbook for Local Public Health Agencies.
 Centers for Disease Control Core Curriculum on Tuberculosis (1994). Georgia: US Department of Health & Human Services.
 American Thoracic Society. Diagnostic Standards and Classification of Tuberculosis. Am Rev Respir Dis 1990; 142:8.
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 Marathon County Health Department (1999). Procedure, Section # 207, Tuberculin Skin Test (Mantoux), Administration and Interpretation.

Exhibit Adopted: 08-28-01
 Exhibit Revised:
 RWD/ems

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 D.C. Everest Area School District
 6300 Alderson Street
 Schofield, Wisconsin 54476