

Session #5 Practicum: Placing and Measuring TST

Introduction

In this session, participants will have hands-on practice with placing intradermal injections (saline) and measuring standardized TST reactions on model arms. Participants will practice these essential TST tasks under the supervision of the class instructor and, in some cases, assistant instructors. The practicum will include information about how to prepare and educate clients for TST and how to utilize universal precautions. Finally, participants will learn how to properly document TST placement and measurement.

Learning objectives

Upon completion of this training session, participants will be able to:

1. Identify the supplies/equipment needed for TST and explain how to use them.
2. Prepare a client for TST.
3. List the steps for handling tuberculin and syringes for TST injection.
4. Correctly perform an intradermal injection (saline).
5. Accurately measure a TST reaction.
6. Correctly document TST placement and measurement.

Material in this session is adapted from:

- *Mantoux Tuberculin Skin Test* (video). Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2003.
- *Tuberculin Skin Testing: A Model for Trainers*. San Francisco, CA: Francis J. Curry National Tuberculosis Center; 2001.
- *Tuberculosis Fundamentals and Mantoux Tuberculin Skin Testing: Train-the-Trainer Course*. Presented by the New Jersey Medical School National Tuberculosis Center on June 12, 2000, in Newark, New Jersey.

Review of key concepts from Sessions 3 and 4

1. What are the three main steps of the Mantoux method?
2. List the supplies needed to perform TST.
3. Describe how tuberculin should be handled.
4. What are examples of "universal precautions"?
5. How does a history of BCG vaccination affect TST?
6. What skills contribute to good communication with clients?
7. What is an open-ended question?
8. What are the most important pieces of information to relay to clients receiving TST?
9. What are some of the questions most frequently asked by clients? How would you respond to the questions?
10. What are ways that people may culturally identify themselves?
11. How can you learn more about a specific culture and health beliefs?
12. What barriers to health care are faced by clients who are homeless or use substances?
13. What local community resources exist for clients who are homeless or use substances to address their non-TB-related needs?

I. Intradermal injection practicum

A. Preparing the client for intradermal injection

1. Seat the client and sit across from him/her. Young children may sit on an adult's lap.
2. Explain why the test is being performed.
3. Explain how the procedure will be done.
4. Verify that you are testing the correct client.
5. Make sure the client is available for follow-up appointment in 48-72 hours; if not, reschedule the TST placement.
6. Ask client to complete consent form and any other necessary paperwork.
7. Ask client if he/she has any questions.

B. Preparing for the injection

1. Infection control
 - a. Wash hands.
 - b. Put on gloves, if indicated by your program's policies.
 - c. Follow any other infection control procedures practiced at your facility.
2. Select the injection site
 - a. Examine the inside of the client's arm (palm-side-up) on a firm surface, with the elbow slightly bent.
 - b. Consult your program's policy for which arm (left or right) to test.
 - c. Aim the injection approximately 4 inches below the elbow. Avoid:
 - Sites too close to the elbow
 - Sites too low on the forearm
 - Sites directly over veins, scars, rashes, or sores
 - Sites on the hairy surface of the forearm
 - If the client has any of these features at the injection site, use the other arm or a standard alternative site (often the shoulder) chosen by your program.
 - d. Clean the area of the injection site with an alcohol swab by circling from the center of the site outward. Allow the site to dry completely before the injection.
3. Prepare the tuberculin and syringe

Note: Although saline, not tuberculin, will be used in the practicum, keep in mind the following steps involved in handling tuberculin.

 - a. Remove tuberculin vial from refrigerator or cooler. (Tubersol and Aplisol are two available brands of tuberculin.)
 - b. Check the tuberculin vial to make sure it is the correct solution.

- c. Check the expiration date and the date the vial was opened. If you open the vial, write the date on it. Discard expired vials or vials open for more than 30 days.
- d. Wipe the top of the tuberculin vial with an alcohol swab. Make sure alcohol has dried before proceeding.
- e. If using a safety needle, twist the needle hub into the syringe to set the needle; remove needle guard.
- f. Pull back on the plunger and draw in 0.1 cc of air.
- g. The needle bevel should be perpendicular to the flange of the syringe.
- h. Place the tuberculin vial on a flat surface; hold the vial between the thumb and fingers; insert needle through the neoprene stopper.
- i. Inject air into empty space.
- j. Invert the vial while keeping a firm hold on the syringe and plunger.
- k. With the needle tip below the fluid level in the vial, draw in slightly more than 0.1 cc of tuberculin solution into the syringe.
- l. Remove the needle from the vial. Hold syringe in an upright position.
- m. Draw back slightly on the plunger. Gently tap barrel to break up any air bubbles.
- n. Expel all air and excess solution until exactly 0.1 cc remains.
- o. Return the tuberculin to the refrigerator/cooler.

C. Injection

1. Place needle bevel facing up (good lighting is important) with syringe flange parallel to the forearm.
2. Stretch skin taut over injection site. There are a few techniques for pulling the skin taut. Here, we will demonstrate 3 techniques:
 - a. Stretch skin between your index finger and thumb, or
 - b. Grasp the client's dorsal forearm and gently pull it to tighten the ventral skin; i.e., pull the client's skin from under his/her arm.
 - c. Pull skin toward the wrist with your thumb.
3. Hold needle almost parallel to the skin, at a 5- to 15-degree angle. Make sure the needle bevel stays upward.
4. Insert the needle through the epidermis (the superficial layer of skin) approximately 3 mm so the entire bevel is covered and lies just under the skin. You should be able to see the tip of the needle through the top layer of skin.
5. Release the stretched skin and hold the syringe in place. (Note: During this maneuver, the released skin retracts, and by holding syringe in place, the bevel may be exposed, and when injecting, fluid comes out.)

6. Stabilize the hub of the syringe before pushing on the plunger. (Although the needle may be inserted correctly, a common mistake is to push too deeply when trying to inject the solution.)
7. Using your thumb to press on the plunger, slowly inject the solution. A tense, pale wheal, 6 to 10 mm in diameter, should appear over the needle bevel.
8. Do not press or massage the area.
9. Discard the syringe in the designated needles disposal container. If using a safety needle, engage the safety-needle mechanism before discarding.
10. To prevent needlestick injuries, used needles should not be:
 - a. Recapped
 - b. Purposely bent or broken
 - c. Removed from disposable syringes
11. If a drop of blood appears at the injection site, let it dry (the blood forms a plug and if one rubs it off, more blood comes.) Then place a swab or cotton ball on top. Do not use alcohol or a bandage. Properly dispose of the pad or ball.
12. To determine if the test was correctly placed, measure the wheal at its maximum size with a millimeter ruler. If wheal is less than 6 mm:
 - a. Needle bevel may have been inserted too deeply
 - b. An inadequate dose may have been administered
13. If wheal is less than 6 mm, another test must be administered. Immediately fill a *newsyringe* and place two inches away from original site or on other arm.
14. Wash your hands.
15. Complete paperwork on client's medical record or designated form. Record:
 - a. Date and time
 - b. Arm or area of skin test placement
 - c. Brand name, lot #, and expiration date of PPD solution
 - d. Any other details required by your program
16. Client education
 - a. Inform client about what to expect in the period after injection
 - Mild itching, swelling, or irritation may occur; these are normal and do not require treatment; ice can relieve itching.
 - Avoid scratching the site; keep the site clean and dry; avoid putting lotions or bandages on it; water is OK, but do not scrub it.
 - Caution patient that if a more severe reaction occurs, call back or see a physician because blistering or even infection may occur.
 - b. Remind client about follow-up appointment in 48-72 hours; provide appointment card.
 - c. Provide client with the TB/TST educational material used by your program.

II. Measurement/documentation practicum

*Model arms with standardized indurations will be used in the practicum; all the steps normally taken when measuring TST results will be practiced **except** for the pen technique and alcohol swab, which will be discussed but not practiced.*

A. Practicing measurement

1. Although this practicum utilizes model arms, when real clients are involved, it is important to take the following steps *before* TST measurement takes place:
 - a. Wash hands.
 - b. Introduce self to client and explain procedure.
 - c. Verify that you have the correct client.
 - d. Verify from record which arm received skin test.
 - e. Place client arm in relaxed, palm-up position. Support arm and slightly flex it at the elbow.

2. Palpation – finding the induration
 - a. It is the presence or absence of induration (the hard, raised formation) that is measured; not the redness (erythema) of the site.
 - b. To find the induration and its edges, feel the site with your fingertips, lightly sweeping a 2-inch diameter of the area, in all four directions, with the pads of your fingers. (Fingernails should not protrude beyond the finger.)
 - c. Do not push or prod with the fingers; gently sweep in a zigzag fashion to locate the margins of the induration.
 - d. Avoid confusing the edge of an induration with a margin of muscle on the forearm by raising the client's arm to a 45-degree angle and palpating again.
 - e. Once the induration, if any, has been identified, its diameter will be measured across the forearm, from the thumb side of the arm to the little finger side, or vice versa. Another way to remember this is to visualize the direction a watch band lies across the arm.

3. Marking the induration

NOTE: DO NOT mark the model arms with pen.

 - a. Swab the injection site with alcohol.
 - b. Place your finger pad onto client's arm and move it toward the injection site.
 - c. Rest one fingernail firmly against the induration edge on one side and mark the edge lightly with a fine dot of ink.
 - d. Repeat with the opposite side of the induration.

- e. Inspect dots, repeat finger movements towards site, adjust dots if needed.
 - f. If the margins of the induration are irregular, mark and measure the longest diameter across the forearm.
 - g. Make sure the dots lie across the forearm.
4. Measuring the induration
- a. Place the zero ruler line inside the left dot (or on model arms, the left edge of the induration) and read the ruler line inside the right dot (or edge).
 - b. If the measurement falls between two values on the ruler, record the lower mark.
 - c. Measurements should always be recorded in millimeters and never as "positive" or "negative." If no induration is present, the measurement should be recorded as "0 mm."
5. Recording the induration (practicum)
- o *Please follow instructions from your trainer.*
6. Documenting measurements (with real clients)
- o *Please follow instructions from your trainer.*
7. Client education
- a. Client educational materials
 - b. Frequently asked questions
 - 1. What are appropriate responses to the clients who ask, "What does my measurement mean? Am I positive?"
 - 2. Explain to clients how and when they will be notified and counseled about their TST results.

Notes: _____

Review questions or post-test

1. Name three things to say to or ask a client in preparation for TST.
2. List three universal precautions to take during TST.
3. When administering a TST, what is the correct amount of tuberculin to use?
4. What is the standard injection site used by the local program?
5. True or false: When administering a TST, the bevel should be facing down.
6. If the wheal created by the TST injection measures less than 6 mm, what should you do?
7. How long after a TST is administered should it be read?
8. When measuring a TST reaction, you measure the _____,
NOT the _____.
9. In what direction (across the arm or down the arm) should the TST reaction be measured?
10. True or false: A 0 mm TST reaction should be recorded as "negative."

Participant evaluation

Your feedback about this training session is important. Please read each statement and circle one number to indicate the level of your agreement/disagreement. Include any comments on the lines provided below.

Name _____ Date _____

Instructor _____ Session # _____

1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree

1. Topics are covered comprehensively. 1 2 3 4 5

2. Session meets its objectives. 1 2 3 4 5

3. Session length is appropriate. 1 2 3 4 5

4. The information is well organized. 1 2 3 4 5

5. The session maintained my interest. 1 2 3 4 5

6. The level of the material is appropriate. 1 2 3 4 5

7. The printed materials are useful. 1 2 3 4 5

8. The delivery of the material was effective. 1 2 3 4 5

9. I now feel more prepared to perform my TST duties. 1 2 3 4 5

10. Overall, the session was excellent. 1 2 3 4 5

What do you recommend to improve this session? _____

What additional training do you need? _____

Other comments: _____