Operational Directives	WRHA Infection Prevention & Control Program	
	Tuberculin Skin Test (TST)	**Page 1 of 6**
	Approval Signature:	**Supersedes:** New
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1.0 PURPOSE

1.1 To promote consistency and competency in administering and measuring the tuberculin skin test (TST) using the Mantoux technique.

NOTE: The interpretation of TST results is outside the scope of this document. Information regarding interpretation is available in chapter 4 in the Canadian Tuberculosis Standards (8th edition).

1.2 TSTs are **NOT** used to diagnose or rule out active Tuberculosis (TB) disease.

2.0 PREAMBLE

2.1 The TST is the primary tool to diagnose latent tuberculosis infection (TBI). Infection can usually be identified with a TST 8 weeks following the last exposure to the initial infection. Thorough assessment of recent contacts to a case of infectious TB is essential to the prevention and control of TB. Symptomatic contacts require assessment, sputum collection and radiography to rule out active TB disease. The goal of testing for TBI is to identify individuals who are at increased risk for the development of active TB and therefore would benefit from treatment of TBI.[5.1]

Administration and measurement of the TST can be performed by **health care workers (HCW)** whose job description includes intradermal injection.

NOTE: Administration and measurement of the TST is not within the Infection Control Professional's (ICP's) job description.

3.0 DEFINITIONS

3.1 **Administration** – preparing, giving and evaluating the effectiveness of prescription and non-prescription drugs.[5.5]

3.2 **Induration** – The soft tissue swelling that is measured when determining the tuberculin skin test response to purified protein derivative (PPD) tuberculin. It is to be distinguished from erythema or redness, which should not be measured. [5.1]

3.3 **Interpretation** – Considered according to three dimensions; size of induration, positive predictive value and risk of disease if the person is truly infected.[5.1]

3.4 **Measurement**- the determination, expressed numerically, of the extent or quality of a substance, energy or time. [5.5]

3.5 **Purified protein derivative (PPD) tuberculin** – A preparation of purified protein derived from culture filtrate of *Mycobacterium tuberculosis*. The tuberculin skin test uses 0.1 mL or 5 tuberculin units of PPD standardized to a common lot.[5.1]

3.6 **Tuberculin skin test (TST)** – Skin test to identify whether a person has delayed-type hypersensitivity reaction to tuberculin antigens. Note: This test is not helpful in diagnosis of active TB and can have a false negative result in advanced active disease and/or immunocompromised patients.[5.1]

3.7 **Wheal** – A discrete, pale elevation of the skin.[5.1]

4.0 OPERATIONAL DIRECTIVES

4.1 Obtaining and Storage of PPD

4.1.1 Fax Tuberculin order to site pharmacy. Pharmacy will send the vial to the care unit.
Fax to MB Health if in the community.

4.1.2 Tuberculin must be: [5.6]

- Stored between 2° and 8° Celsius
- Stored in the dark, except when doses are being drawn
- Dated in ink when opened, document on the vial e.g., "opened: March 21, 2011"
- Discarded when expired. Discard:
    - 30 days after the vial was first opened
    - If past the manufacturer's expiration date printed on the vial

4.2 Preparation for the Administration of the TST

4.2.1 Obtain the following:

- A 0.6 to 1.3 cm (1/4 to ½ inch) 26- or 27- gauge needle with a disposable plastic tuberculin syringe
- Purified protein derivative 5 Tuberculin Units (5-TU) (0.1 mL)
- Alcohol swabs
- Gauze or cotton ball
- Anaphylaxis kit including Epinephrine hydrochloride solution (1:1000)

4.2.2 Complete the health history to determine if it is safe to administer the TST

DO NOT administer the TST if the individual seeking care (individual) has:

- A history of a previous severe or blistering reaction to Tuberculin
- Documented history of active tuberculosis
- Documented history of previous positive TST
- Extensive burns or eczema over the TST site
    - Select an alternative site if available
- A major viral infection
- A vaccination with a live attenuated vaccine (varicella-containing vaccines such as varicella vaccine, measles-mumps-rubella-varicella vaccine and herpes zoster vaccine[5.2]) in the past 4 weeks except if there may not be another opportunity to administer the TST
- Attenuated (live) vaccines are associated with a theoretical risk of a false-negative TST result

- The TST may be administered to an individual who:
    - Has a common cold
    - Is pregnant or breastfeeding

- Has had any vaccine on the same day that they will receive a TST
    - Was immunized in the past 4 weeks with vaccines that were not attenuated (live)
    - Gives a history of positive TST reaction (other than severe or blistering) that was not documented
    - Is taking low doses of systemic corticosteroids, less than 15mg prednisone or equivalent daily.

NOTE: It generally takes a steroid dose equivalent to ≥15 mg prednisone daily for 2-4 weeks to suppress tuberculin reactivity. Drugs that suppress the immune system (e.g., corticosteroids) may interfere with reactivity

4.2.3 Explain the TST procedure to the individual and advise:

- The individual will be observed for 15 minutes following administration of the TST, to reduce risks associated with anaphylactic reaction
- Following the TST, there may be some minor discomfort or itchiness at the site
- **DO NOT** scratch the site or cover it with a bandage
- Use cool cloths or ice to decrease discomfort if necessary
- **DO NOT** use anesthetic creams as they can produce localized swelling and interfere with the TST result
- All normal activities, including showering or bathing, are acceptable and will not interfere with the test
- Measurement may be performed by an HCW whose scope of practice includes intradermal injection if it is within their job description
- A health care worker must measure the TST within 48-72 hours

4.3 Administration of the TST

4.3.1 Draw up 0.1 mL (5 TU) of tuberculin purified protein derivative in the 26- 27- gauge syringe.

4.3.2. It is not necessary to inject air into the vial before withdrawal of tuberculin PPD.

4.3.3 **DO NOT** preload syringes for later use or transfer PPD solution from one container to another, as this may reduce potency.

4.3.4 Seat the individual so they are comfortable with their arm extended and supported on a firm surface, with a slight flexion at the elbow identify a suitable site for the intradermal injection.

4.3.4.1 Use the inner forearm, palm side up of the non-dominant arm, about 10 cm (4 inches) below the elbow.

4.3.4.2 Avoid areas with palpable muscle margins, tendons, visible veins, heavy hair, abrasions, swelling, rashes, burns, eczema, lesions, or tattoos.

4.3.4.3 If neither forearm is suitable, the outside of the forearm or the upper arm can be used

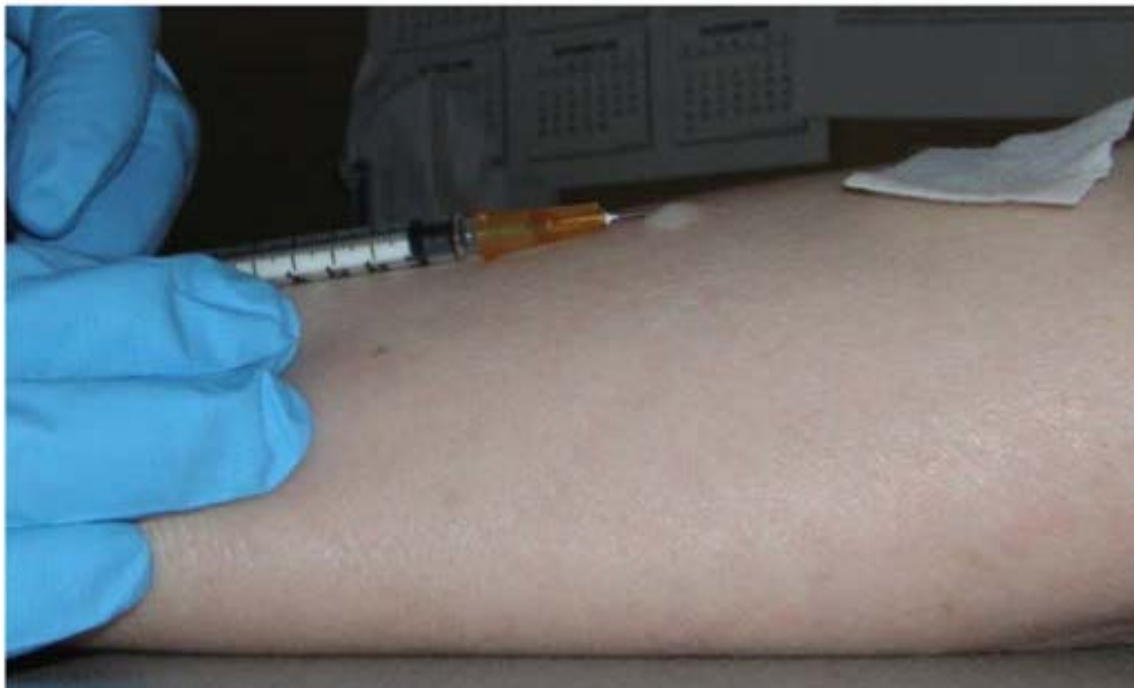
Administer 0.1 mL of 5- TU PPD by ***intradermal*** injection:

- Perform hand hygiene
- Don gloves
- Cleanse site with alcohol swab in a circular motion
- Position the bevel of the needle facing up
- Hold the injection site skin taut
- Insert the needle at a 5- 15 degree angle until the entire bevel has penetrated skin

NOTE: Needle bevel must be positioned at just below the surface of the skin and not in subcutaneous tissue

- **DO NOT** aspirate. Slowly administer the PPD until the safety mechanism on the needle activates

NOTE: Detailed instruction for intradermal injection may also be found on Nursing Skills Online: Medication Administration: Intradermal Injection.



4.4 Assessment for wheal at the injection site

4.4.1 Assess site for:

- Size of wheal; typically 6-10 mm in diameter
- It is common to see a drop of blood at the site
- If there is a significant amount of liquid running out of the site, or no wheal is seen, repeat the injection. The TST can be repeated on the opposite forearm or on the same forearm at least 10 cm from the previous injection
- The wheal will typically disappear in 10–15 minutes. A clearly visible wheal that seems to disappear immediately is considered acceptable

4.5 Documentation following injection

4.5.1 Document the following in health record **after administering the TST**:

- Date and time of injection
- Dose
- Name of product
- Manufacturer
- Lot number
- Site and route of injection
- Any issues with administration of TST
- Name and title of person administering the TST

4.6 Measurement

Measure the TST within 48-72 hours of its administration

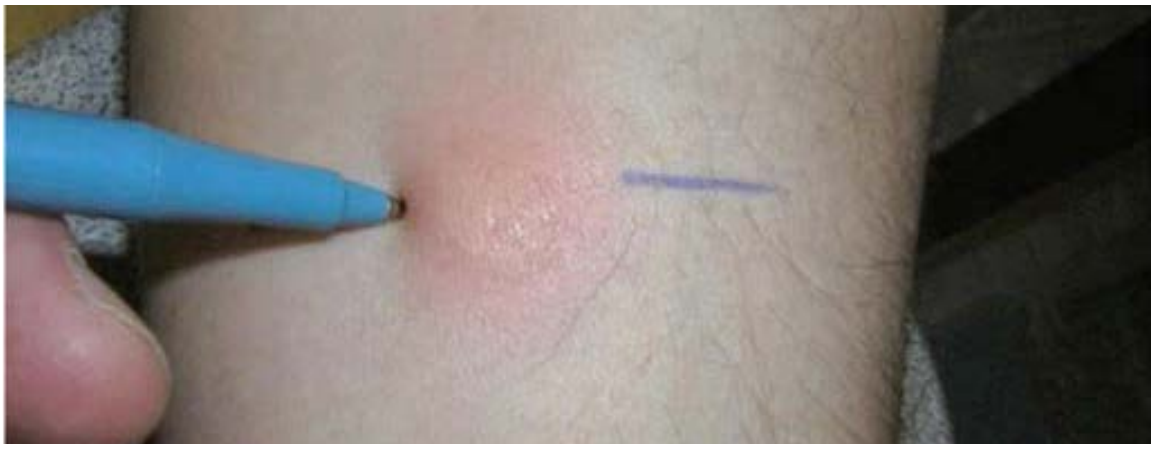
- Seat the individual
- Support the forearm on a firm surface with elbow slightly flexed
- Ensure lighting is good
- Perform hand hygiene
- Don gloves as per Routine Precautions if blood or body fluids present if necessary

4.6.1 Looking at the site; assess for the presence or absence of induration

NOTE: Additional resources may be found in Appendix A in the Canadian Standards (8th edition).

4.6.2 Run fingers directly over the TST site using direct palpation. This is an important step as induration may not always be visible. Feel for raised firm area with clearly defined margins.

4.6.3 Mark the outer edges of the indurated area with a pen by moving the tip of the pen at a 45 degree angle **laterally** across the forearm toward the site of injection. **DO NOT** mark induration parallel to the long axis of the arm. The tip of the pen will stop at the edge of the induration, if present. Repeat the process on the opposite side of the TST test site. Mark the longest diameter across the forearm if the margins of induration are irregular. Disregard and **DO NOT** mark erythema or redness at the TST site. Re-measure closer to 72 hours instead of at 48 hours if the result is challenging to determine.



4.6.4 Measure the distance between the two pen markings using a caliper or flexible ruler perpendicular to the long axis of the forearm. One sided induration (noted only on one side of the injection site) is read as “0 mm”.

4.7 Documentation following measurement

4.7.1 Document in the health record:

- TST result in millimeters (mm); do not record a range of values.
- Record no induration as “0 mm”
- Date and time the TST was measured
- Description of any adverse reaction(s)
- Name and title of person measuring TST.

4.7.2
- Communicate all results to the individual’s prescribing care provider for interpretation
- Provide individual with a record of the TST result and advise them of any follow-up that may be necessary.

4.8 Follow-up

- Individuals with 0 mm result would benefit from repeat TSTs if re-exposed to infectious TB at a future date
- Individuals with positive TST results will never require a repeat TST
- Individuals with severe blistering should not receive a repeat TST but do require careful assessment as there may be induration and the test cannot be repeated
- Individuals with TST more than or equal to 5mm should be offered a referral for TBI treatment assessment. **See** Figure 2 of chapter 4 in the Canadian Tuberculosis Standards (8th edition).

5.0 REFERENCES:

5.1 Canadian Journal of Respiratory, Critical Care, and Sleep Medicine: Vol 6, No sup1 (tandfonline.com). Canadian Tuberculosis Standards 8th ed). Ottawa ON: Tuberculosis Prevention and Control, Public Health Agency of Canada, The Canadian Lung Association. Accessed April 18, 2023.

5.2 ACIP Vaccine-Specific Recommendations | CDC. (2022, January 28). Center for Disease Control and Prevention (CDC). Accessed April 18, 2023.

5.3 Manitoba Tuberculosis Protocol. (2014, February). Manitoba Communicable Disease Control Branch. Accessed October 24, 2018.

5.4 Mantoux Tuberculin Skin Testing Products | Guides & Toolkits | Publications & Products | TB | CDC. Centers for Disease Control and Prevention (CDC). Accessed April 18, 2023.

5.5 Mosby's Medical Dictionary. 9th ed. (2013). St. Louis, MO: Mosby Elsevier.

5.6 Tuberculin Purified Derivative (Mantoux) Product Monograph. Sanofi Pasteur Limited. https://pdf.hres.ca/dpd_pm/00065105.PDF. Accessed April 18, 2023.

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