Tuberculosis Screening and Testing

Site Applicability

All VCH Acute and Community settings – with Manager and Professional Practice approval

Practice Level

Setting	Profession	Advanced Skill (requiring additional education)
Community sites and Mary Pack Arthritis Program (Vancouver Clinic)	**RN and RPN**	**Nurse Independent Activity (NIA):** • Administer purified protein derivative (PPD) by injection, for the purpose of tuberculosis screening • Read a Tuberculin Skin Test (TST)
VCH CDC Team and Mary Pack Arthritis Program (Vancouver Clinic)	**RN and RPN**	**Nurse-Initiated Protocol (NIP)*** • Order a chest x-ray for the purpose of tuberculosis screening
Acute Care	**RN, RPN, and LPN**	**With an Order:** • Administer purified protein derivative (PPD) by injection, for the purpose of tuberculosis screening • Read a Tuberculin Skin Test (TST)
Community	**LPN**	

***For Mary Pack Arthritis Program**: If the patient has received a chest x-ray in the last 3 months, a physician must review the x-ray report to assess if this x-ray can be used for the purposes of TB Screening or if a new chest x-ray is required. If a new chest x-ray is required, a physician's order is required for this x-ray.

Education Required

- With an order:
  - Successful completion of the BCCDC Tuberculosis Skin Testing Course
  - Anaphylaxis is a rare reaction to intradermal TST testing using purified protein derivative. Successful completion of the Anaphylaxis Initial Emergency Treatment by Nurses (Adult and Pediatric) and follow the VCH-PHC Anaphylaxis: Initial Emergency Management DST.
- Nurse Independent Activity (NIA) and Nurse-Initiated Protocol (NIP):
  - Must meet BCCDC Registered Nursing Competencies for Tuberculosis Screening
  - Successful completion of Understanding Autonomous Practice and Nurse Independent Activities (NIA) or Nurse Initiated Protocols (NIP)

- Anaphylaxis is a rare reaction to intradermal TST testing using purified protein derivative. Successful completion of the Anaphylaxis Initial Emergency Treatment by Nurses (Adult and Pediatric) and follow the VCH-PHC Anaphylaxis: Initial Emergency Management DST
- Successful completion of the BCCDC Tuberculosis Skin Testing Course
- Successful completion of the BCCDC Tuberculosis Essentials Course

Requirements

- Nurses must possess the competencies established by the BCCDC in order to perform the skills outlined in the Practice Level section of this guideline. Refer to Appendix A for TST Competency Checklist to support staff with administering and reading a TST.
- NIA and NIP:
  - RNs and RPNs are supported in this NIA and NIP as per Policy: Nurse Independent Activities (NIA) and Nurse Initiated Protocols (NIP) (BCD-11-11-40001)
  - Nurses will follow the BC Center for Disease Control's (BCCDC) Tuberculosis Screening Decision Support Tool and practices outlined in this DST when screening and testing patients for tuberculosis
- Physician or NP orders override the use of NIA and NIP

Need to Know

- Refer to BCCDC Tuberculosis Manual for information on symptoms, causes, transmission, risk factors, and epidemiology, complications, test and diagnosis, treatment, coping and support, and prevention related to TB.
- **For TST, acute allergic reactions** including anaphylaxis, angioedema, urticaria, and or dyspnea have been very rarely reported following intradermal testing using purified protein derivative (PPD);
  - Therefore, epinephrine hydrochloride (1:1000) must be available for immediate use and the patient should be monitored for immediate reactions for a period of at least 15 minutes after administration, as per the VCH or PHC Anaphylaxis DST.
  - Refer to the Parenteral Drug Therapy Manual for additional medication information.
- **Tuberculosis Infection Prevention and Control Resources**:
  - When screening an individual with a high degree of clinical evidence (symptoms AND risk factors) for active TB, airborne precautions are required.
    - Community settings: See BCCDC Tuberculosis Screening Decision Support Tool, Section 5, and Symptomatic TB Screening Guidelines.
    - Acute inpatient: Connect with an Infection Prevention and Control (IPAC) Practitioner when patients are suspected or confirmed for TB.
  - VCH IPAC Guidelines:
    - Infection Prevention and Control (IPAC) Diseases and Conditions Table: Recommendations for Management of Patients, Residents and Clients in VCH Health Care Settings
      - Click "T" for quick navigation to then choose Tuberculosis
    - Infection Prevention and Control: Resource Manuals

- IPAC Airborne Precautions Summary Sheet

Equipment and Supplies

See Tuberculin Skin Test (TST) - Quick Reference Guide for Health Care Providers for supplies required to administer and read a Tuberculin Skin Test. Additional supply requirements:

- Sharps disposal bucket
- For sites or areas that do not have anaphylaxis kits, epinephrine hydrochloride (1:1000) must be available for immediate use.

See VCH Microbiology page under policies and Manuals: Microbiology Specimen Collection Manual or Microbiology Specimen Collection Guide.

Guideline and Procedure

Refer to the following resources depending on the activity or skill you are performing:

Community Settings and Mary Pack Arthritis Program (RNs and RPNs):

Follow BCCDC Tuberculosis Screening Decision Support Tool for TB assessment, administering and reading a TST, referring for chest x-ray, and referring to BCCDC TB Services.

Mary Pack Arthritis Program: If patient is assessed to have had a chest x-ray completed in the last three months ensure physician assesses and interprets chest x-ray to decide if this x-ray can be used for TB Screening or if a new chest x-ray is required. If new chest x-ray required, obtain physician order for new x-ray.

Acute Inpatient (all nurses) and Community LPNs:

Follow Tuberculin Skin Test (TST) - Quick Reference Guide for Health Care Providers for procedure and supplies required to administer and read a TST.

Tuberculosis Specimen Collection (acute inpatient only): For direction on sputum sample collection (if ordered), see VCH Microbiology page under policies and Manuals: Microbiology Specimen Collection Manual or Microbiology Specimen Collection Guide

Documentation

Community Settings:

Document on the BCCDC TB Screening Form (see BCCDC Tuberculosis Manual Chapter 4).

NOTE: This form is available as an electronic form in PARIS and Profile EMR (use *Nursing TB Skin Test* encounter title). Keep a copy of the form in client health record, or document TST in the client health record as per Tuberculin Skin Test (TST) - Quick Reference Guide for Health Care Providers.

Mary Pack Arthritis Program

Document the administration and reading of the TST on page 1 BCCDC TB Screening Form (see BCCDC Tuberculosis Manual Chapter 4) and in the VCH chart progress notes.

If patient received a chest x-ray in the last three months:

- Nurse to review the most responsible physician's documentation of their assessment and interpretation of the chest x-ray in the patients chart and if it is to be used for TB Screening or if they have ordered a new chest x-ray.
  - If new chest x-ray ensure physician order for the chest x-ray is faxed over to the clinic and it is placed in the patients chart.
- Transcribe the physician's assessment and interpretation about whether the previous chest x-ray is to be used or not onto the TB Screening form page 3 as part of your assessment criteria for TB Screening to communicate this information to BCCDC TB Services.
  - As well, chart this assessment in the VCH progress notes as page 3 of the screening form is provided to the patient as the chest x-ray requisition.

Acute Inpatient:

For TST administration, document administration information on the MAR or eMAR, ensure to include medication lot number. For non-Cerner sites, document site location and reading on Tuberculosis Skin Test Documentation form (VCH.VA.0211). For Cerner sites, document site location on the eMAR and the reading of the TST in iVIEW.

Notification to BCCDC

Community settings:

If a TST reads positive, refer to TB Screening Decision Support Tool for recommendations for referral to BCCDC TB Services for further follow-up.

Mary Pack Arthritis Program

All patients will be referred to TB services (regardless of TST result) using the TB screening form via fax.

Acute Inpatient:

BCCDC TB Services do not need to be made aware of patients who are screened for TB (i.e. TST) and results are negative.

If a chest x-ray or sputum specimen results are positive for TB, BCCDC TB services will be notified through existing radiology/laboratory processes.

- Most Responsible Provider discuss results with the patient and to send referral to BCCDC Tuberculosis Clinic using the BCCDC Tuberculosis Clinic Referral Form

If patient is found to have a positive TST, IGRA, or latent TB:

- Most Responsible Provider to review TST/IGRA result with the patient and to send referral to BCCDC Tuberculosis Clinic using the BCCDC Tuberculosis Clinic Referral Form

Acute In-Patient Discharge Planning

If patient found to have active TB:

- Refer to BCCDC Hospital Discharge Planning Checklist for TB Patients
- Referral process should have already been completed as per above notification to BCCDC, however ensure follow-up appointment with BCCDC TB Services is scheduled prior to discharge.

Expected Patient Outcomes

- Receives appropriate screening and testing
- Receives information for follow-up
- Understands the result of the test(s)
- Understands when and how to get any further follow-up test if required

Patient Education

- See HealthLinkBC: Tuberculosis (TB) Resource (available in 8 languages)
- TB Health Files: Tuberculosis; Home Isolation for Tuberculosis; Sputum Collection for Tuberculosis Testing
- BCCDC's TB Resource Webpage (includes patient handouts and medication sheets)

Related Documents

VCH Resources

- VCH Mycobacterium Tuberculosis Fact Sheet
- VCH Infection Prevention and Control: Resource Manuals
- IPAC Diseases and Conditions Table: Recommendations for Management of Patients, Residents and Clients
- VCH Microbiology: Microbiology Specimen Collection Manual or Microbiology Specimen Collection Guide
- Nurse Independent Activities (NIA) and Nurse-Initiated Protocols (NIP) Policy
- Anaphylaxis: Initial Emergency Treatment

BCCDC Resources

- BCCDC Tuberculosis Clinic Referral Form
- BCCDC TB Screening Form
- BCCDC TB Manual
- BCCDC Tuberculosis Screening Decision Support Tool
- BCCDC Tuberculosis Clinical Resources
- Tuberculin Skin Test (TST) - Quick Reference Guide for Health Care Providers
- BCCDC Registered Nursing Competencies for Tuberculosis Screening

References

- BC Center for Disease Control. (2018). Tuberculosis Manual.
- BC Strategic Plan for Tuberculosis Prevention, Treatment and Control: First Annual Progress Report
- Canadian Tuberculosis Standards 7th edition (2014), Public Health Agency of Canada.

Appendices

- Appendix A: TB Skin Testing Skill Performance Checklist

Appendix A: TB Skin Testing Skill Performance Checklist

TB Skin Testing: Administration of Test and Interpretation of Results

Name: _____

Unit: _____

Consistent with the skill performance checklist, the nurse will perform the above skills safely and competently, and will correctly answer questions about principles underlying the skill.

Prior to being evaluated on the competency to administer and interpret a TB skin test, obtain the required knowledge and skills by following these directives:

1. Review the Tuberculosis Screening Decision Support Tool (DST) on SHOP and complete required education based on your care setting.
2. Observe a TB skin test administration and reading by a competent RN, RPN or LPN in this skill.

Once the above is completed, administer and interpret a TB skin test under the direct supervision of an RN, RPN or LPN evaluated competent in this skill.

THE NURSE DID:	YES	NO	COMMENTS	RELATED QUESTIONS
ADMINISTRATION OF Purified Protein Derivative (PPD)				
With an order: Check the physician's orders to ensure there is an order to administer TB skin test. NIA: Follow BCCDC Tuberculosis Screening Decision Support Tool for TB assessment				1. What is the usual dose of PPD?
Obtain client TB history (TB disease, treatment, exposure, previous skin test result) and current symptoms.				2. What information does the TB skin test provide? 3. What are contraindications to having a TB skin test?
Gather supplies: • Alcohol swab • Cotton ball or 5 cm X 5 cm gauze • MAR record or physician's order • Vial of PPD • TB syringe with 26 or 27 gauge ¼-1/2 inch needle • Sharps disposal bucket • Gloves				4. Describe the proper storage of PPD. 5. How long is PPD stable once drawn up in a syringe?

THE NURSE DID:	YES	NO	COMMENTS	RELATED QUESTIONS
Explain procedure to patient and obtained informed consent. Follow 7 rights of medication administration.				
Plan (have a plan in place) to interpret (read) test in 48 to 72 hours post administration. Document in client care record.				
Support patient's arm on a firm surface and assess for suitable injection site.				6. What is the preferred site for TB skin testing and what considerations deem it a suitable site?
Wipe injection site with alcohol and allow to dry completely.				
Hold arm and stretch skin tautly at injection site. With bevel of needle upward, and at a 5 to 15 degree angle, insert needle point into the skin until bevel fully inserted and tip visible under the skin.				7. Where does the needle point need to be located for injection?
Inject antigen slowly. NOTE: For correct injection, bevel up is visible just below the skin. Resistance will be felt as tuberculin enters between the layers of the skin and forms a wheal 6 to 10 mm in diameter (this will subside in 10 to 15 minutes).				8. What are signs and resulting problems that the needle has been placed too deeply? 9. What are the signs and resulting problems if the needle has not been placed deeply enough? 10. What should be done if the administration of PPD was too shallow or too deep?
Withdraw needle slowly to prevent leakage and gently wipe site with cotton ball. Do not massage.				11. Why is it important not to massage the site?
Discard needle into sharps bucket. Record dose on MAR.				12. What information is recorded on the MAR?
Provide appropriate patient teaching.				13. What teaching should be provided to patient?

THE NURSE DID:	YES	NO	COMMENTS	RELATED QUESTIONS
				14. What is a possible consequence of TB skin testing?

EVALUATION CRITERIA

- The skill performance is consistent with performance steps outlined above.
- The related questions about the principles underlying the skill are correctly answered.

[ ] Satisfactory [ ] Repeat [ ] Reschedule

Assessor:_____Signature:_____

Date: _____

Comments:

INTERPRETATION OF RESULTS

Gather supplies: ruler and pen				1. When is the TB skin test read and why? 2. What do you do if the test is not read until after 72 hours?
Position patient's arm on a supported surface. Ensure room is well lit.				
Palpate arm gently to determine if induration present. Disregard erythema.				3. Why is erythema disregarded? 4. Why do we palpate for induration?
Mark the edges of the induration with a ballpoint pen.				5. How do you measure induration that is not uniform in size?
Use a flexible ruler (caliper) to measure, in mm, the induration at its widest point, side to side (transverse to the arm).				
Acute: Document reading result of TST on the Tuberculosis Skin Testing Documentation form.				6. How do you record absence of induration?

THE NURSE DID:	YES	NO	COMMENTS	RELATED QUESTIONS
Community: Document on the BCCDC TB Screening Form (Note: form available as electronic form in PARIS)				7. What conditions may result in a false positive or false negative result? 8. What is considered a positive result?
Provide education related to result.				9. What education is provided?

EVALUATION CRITERIA

- The skill performance is consistent with performance steps outlined above.
- The related questions about the principles underlying the skill are correctly answered.

[ ] Satisfactory [ ] Repeat [ ] Reschedule

Assessor:_____Signature:_____

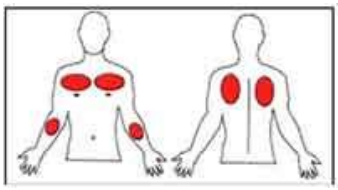
Date: _____

Comments:

Answer Keys next page…

PERFORMANCE CHECKLIST – ANSWER KEYS

Administration TB Skin Test

QUESTION	ANSWER
1. What is the usual dose of PPD?	Intradermal 0.1 mL (5 TU) of PPD (purified protein derivative – derived from tubercle bacilli)
2. What information does the TB skin test provide?	If properly administered, a negative TST indicates that the person likely does not have TB infection. A positive skin test indicates that the person has likely been infected with the TB bacteria. When the TST is positive, further diagnostic tests are required to determine if the person has LTBI or active TB disease. The test does not indicate active disease.
3. What are some contraindications to having a TB skin test?	• Documented active TB • Prior allergic response to a TST or any ingredient in Tubersol® • Documentation of a prior positive TST • Previous severe reaction after TST (e.g. blistering, ulceration) • Previously reactive IGRA • Previous active TB disease or latent TB infection • Current or recent major viral infections (E.g. measles, mumps, varicella) • Receipt of live vaccine within past 4 weeks.
4. Describe the proper storage of PPD.	Refrigerate. Protect from light. Date vials when opening for the first time and discard 30 days after opening.
5. How long is PPD stable once drawn up into a syringe?	Twenty minutes, so draw up just before administering.
6. What is the preferred site for TB skin testing and what considerations deem it a suitable site?	Flexor surface of forearm (palm side), 5 to 10 cm (2 to 4 inches) below antecubital fossa. Choose site free of blood vessels, lesions, scars, tattoos, muscle margins hair or edema. Left forearm preferable site for consistency between providers. Right arm alternate as well as: 

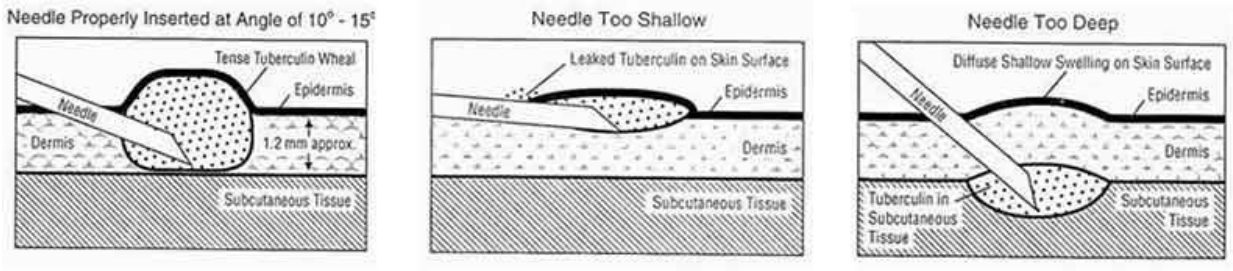
7. Where does the needle point need to be located for injection?	Shallow, bevel up, between epidermis and dermis. **See diagram** at the end of this document.
8. What are signs and resulting problems that the needle has been placed too deeply?	If little resistance is felt and there is no wheal or a shallow diffuse bulge appears, the needle has likely been placed too deeply. This may result in induration which will be difficult to measure and impossible to interpret.
9. What are the signs and resulting problems if the needle has not been placed deeply enough?	If the needle has not been placed deeply enough, a substantial portion of the dose will leak out and the test will not be reliable.
10. What should be done if the administration of PPD was too shallow or too deep?	Redo the test at least 5 cm (2 inches) from the original site, or on the opposite arm.
11. Why is it important not to massage the site?	Massaging could disperse the medication.
12. Acute: What information is recorded on the MAR? What information is recorded on the Tuberculosis Skin Testing documentation form? Community: Documents on BCCDC TB Screening form	Document medication administration on the MAR and include product lot number of PPD. On the TST documentation form document date administered, location of injection site, when TST is to be read, reading result of TST and who was notified of result.
13. What teaching should be provided to patient?	• Test will be read 48 to 72 hours later. • Site may have mild itching, irritation or swelling and these will subside over the week. • Do not cover site with adhesive bandaid. • Avoid scratching or rubbing the site. • Keep site clean and dry. • Do not apply creams and lotions. • It is fine to get the site wet (showering) NOTE: Review Patient Education section of TB Screening DST.
14. What is a possible consequence of TB skin testing?	• Anaphylaxis. Ensure epinephrine HCl 1:1000 is available. Patient should be monitored for immediate reactions for a period of at least 15 minutes post inoculation.

Interpretation of TB Skin Test:

QUESTION	ANSWER
1. When is the TB skin test read and why?	Between 48 – 72 hours post administration when maximum effect is present.
2. What do you do if the test is not read before 72 hours?	Redo the test unless: 10 mm or more of induration present; 5 mm of induration for a client who: is a contact to active TB disease within the past two years, or has evidence of fibronodular disease (healed but not previously treated TB) on existing chest x-ray
3. Why is erythema disregarded?	Erythema is not measured. Only induration is measured.
4. Why do we palpate for induration?	Induration is not always visible.
5. How do you measure induration that is not uniform in size?	Measure at the maximum (widest) measurements.
6. How do you record absence of induration?	When there is no induration, the record will indicate 00 mm. **Note: Words such as "positive", "negative," or "doubtful" are not acceptable.**
7. What conditions may result in a false positive or false negative result?	**False-positive** reactions may occur in people infected with mycobacterium other than M. Tuberculosis and in people vaccinated with BCG. **False-negative** reactions may occur in people with HIV infection, overwhelming miliary or pulmonary TB, severe or febrile illness, measles or other viral infections, Hodgkin's disease, sarcoidosis, live-virus vaccinations, and those receiving corticosteroids or immunosuppressive drugs.
8. What is considered a positive result?	Induration of 5 mm or more in a patient who is immune compromised or recent exposure. Otherwise, 10 mm and greater induration is considered a positive response.
9. What education is provided?	The key messages in education will depend on the TST result. When there is a **negative TST** result and no need for referral to TB Services you can say: • you do not have the TB germ in your body • repeat the TST if there is a future exposure or you need to be screened for work or school

	• repeat the TST if the initial test was done within 8 weeks of a recent TB exposure When there is a **positive TST** result you can say: • you do not have active infection • you likely have the TB germ in your body, you may need a TB blood test to confirm the TB skin test result • you need a CXR to make sure the TB germ is sleeping and there is no sign of active disease • You will be referred to TB services for follow-up (routine practice for anyone who has a positive test) • you may be offered treatment to lower the chances that the TB germ will become active • you need to know signs and symptoms of TB disease, talk to a healthcare provider if you get symptoms • you never have to have another TST

Injection of the Tuberculin Skin Test:



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