Tuberculin Purified Protein Derivative (PPD) (Mantoux)

BIOLOGICAL PAGE

Alberta Health Services
Communicable Disease Control

Section 7	Biological Product Information	**Standard # 07.330**	
Created and approved by	Provincial Immunization Program Standards and Quality		
Approval date	February 12, 2013	**Revised**	January 31, 2025

	Tubersol
Manufacturer	Sanofi Pasteur Ltd.
Indications for Provincially Funded Vaccine	**Do not use a Tuberculin Skin Test (TST) to diagnose active TB disease.** • Consult TB Services before performing a TST on individuals with symptoms of active TB disease or an abnormal chest radiograph consistent with active TB disease.
	Recent contact of a known infectious case of TB. • Determine in consultation with TB Services.
	Individuals who have lived outside of Canada, including foreign-born individuals, immigrants, refugees and evacuees who meet one of the following criteria: • All people less than 65 years of age who were born in a **country with TB incidence greater than 200 per 100,000** and who have arrived in Canada within the past 5 years. • All refugees and evacuees aged less than 65 years originating from **countries with TB incidence greater than or equal to 50 per 100,000** AND have arrived in Canada within the past 2 years. • Foreign-born individuals, immigrants, refugees and evacuees of all ages who are referred for medical surveillance. For TB incidence in individual countries see the World Health Organization TB country, regional and global profiles.

	Individuals of any age with medical conditions/therapies that have a high or very high risk of progression from latent TB infection (LTBI) to development of active TB disease. This includes individuals who will soon be starting immunosuppressive therapies.
	• HIV/AIDS
	• Transplantation (donor and recipient)
	• Chronic renal failure / chronic kidney disease with or without dialysis
	• Silicosis
	• Carcinoma of head & neck
	• Lung cancer
	• Hemolytic malignancies
	• Uveitis
	• Radiologic changes of inactive TB, that is fibronodular scarring, calcified granulomata, or other changes suggestive of prior TB disease.
	• Individuals with any chronic inflammatory condition, or individuals who are on or may require immune suppressive therapy.
	  ○ Ideally, complete TST prior to starting immunosuppressive therapy.
	  ○ Examples of immunosuppressive therapy that qualify for Latent TB Infection (LTBI) screening include:
	  ▪ Anti-rejection medications (mTOR inhibitors, calcineurin inhibitors, mycophenolate)
	  ▪ B-cell depleting agents
	  ▪ Corticosteroids (equivalent of greater than or equal to 15mg/day of prednisone or equivalent for greater than or equal to 1 month)
	  ▪ Cytotoxic chemotherapy

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Immune check-point inhibitors
Integrin inhibitors
Interleukin signal inhibitors
Kinase signal-transduction inhibitors
Patients on non-specific immune modulating drugs, such as methotrexate, azathioprine and leflunomide, who may be candidates for future biological therapy.
TNF-inhibitors.

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Residents and staff of congregate living settings, including but not limited to:

Addiction or treatment rehabilitation centres

Residents of addiction or treatment rehabilitation centres residing there for longer than 3 months AND have a risk factor for progression from LTBI to active TB disease.

Correctional institutions

Inmates at Provincial Correctional Institutions (does not include Remand Centres)
Inmates at Federal Correction Institutions

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Health care workers, post-secondary health care students, and volunteers

Individuals at risk for potential occupational exposure to infectious TB

Health care workers (HCW)

See the Program Notes section below for the definition of health care worker and the Standard for Immunization of Health Care Workers.

Post-secondary health care students

See the Program Notes section below and Standard for Immunization of Post-Secondary Health Care Students and Students in Other High-Risk Occupational Programs.

Other individuals who work in programs, facilities or institutions that provide services to populations at increased risk for TB disease.

Volunteers who regularly work with populations at increased risk for TB, who will be volunteering for 150 or more hours in a year, that is approximately one-half day per week.

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<tr><th>Populations at increased risk for TB disease</th></tr>
<tr><td>Individuals using shelters and drop-in centres for persons experiencing homelessness or those who are under-housed.</td></tr>
<tr><td>Residents of congregate living settings such as correctional centres, addiction or treatment rehabilitation centres, or continuing care homes.</td></tr>
<tr><td>Foreign-born individuals from countries with high TB incidence.</td></tr>
<tr><td>Canadian Indigenous Peoples from communities with high rates of TB.</td></tr>
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Travellers (post travel)

Travellers to high incidence TB countries who meet the following guidelines should undergo a single post-trip TST, performed 2-months after return.

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<tr><th>For post-travel TST</th></tr>
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Greater than or equal to 1 month of travel with very high-risk contact, including:

Direct patient contact in a hospital or indoor setting
Work in prisons, homeless shelters, refugee camps or inner-city slums.

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Travel to TB incidence countries:

Greater than or equal to 400/100,000 population – greater than or equal to 3 months
200-399 / 100,000 population – greater than or equal to 6 months
100-199 / 100,000 population – greater than or equal to12 months.

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<tr><td>Schedule</td><td>
Timeframe for reading a Tuberculin Skin Test (TST):

Read the TST 48 to 72 hours after administration.

Self-reading of TSTs is not an acceptable practice under ANY circumstances.

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	○ If the TST is not read within 72 hours: ▪ The result is not valid unless there is 10 mm or more of induration present. ▪ The repeat test can be done immediately. • The test needs to be repeated at a different site. • Use opposite forearm, or the same forearm, at least 5 cm from the site of the previous TST. **Interpretation**

TST reaction size (mm of induration)	Situation requiring referral to the AHS TB Program
0 to 4 mm	• Person with HIV **AND** the expected likelihood of TB infection is high (that is, the client is from a population with a high incidence of TB infection, or is a close contact of an active infectious case, or has an abnormal x-ray) • Child under 5 years of age and recent contact of infectious TB case.
5 mm and greater	• Person with HIV • Known contact of an active infectious case within 2 years • Bone marrow or solid-organ transplantation (related to immune suppressant therapy) • Stage 4 or 5 chronic kidney disease, with or without dialysis • History of abnormal chest x-ray with fibronodular disease (suggestive of prior TB disease not previously treated) • Medical immune suppression such as use of corticosteroids or biological immune modulators.
10 mm and greater	All others meeting indication criteria for TST, including individuals with: • TST conversion • Silicosis, carcinoma of head or neck, lung cancer, hematologic malignancies such as leukemia or lymphoma • Prior to initiating biologic drugs such as a TNF-inhibitor • Prior to immune suppressive medical therapy such as corticosteroids.

Single-step TST

- Single-step TST (1 TST only) is recommended for most persons, including post-secondary students at risk for potential occupational exposure to infectious TB.

2-step TST

- 2-step TST testing is recommended when a person meets one or more of the following criteria:
  - ○ It is anticipated that the individual will undergo repeated screening with TSTs at regular intervals. This includes:
    - ▪ HCW involved in high-risk activities:
      - Cough-inducing procedures, such as sputum induction. This does not include throat and or nasal swabs
      - Autopsy
      - Morbid anatomy and pathology examination
      - Bronchoscopy
      - Designated mycobacteriology laboratory procedures especially handling cultures of M. tuberculosis.
    - ▪ HCW who works on high-risk units to which patients with active TB are admitted.
      - High-risk units are determined in collaboration with Infection Prevention & Control, Workplace Health and Safety, and TB Services based on the Canadian Tuberculosis Standards risk classification of health care facilities.

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	▪ Other employees or volunteers at facilities that require TST screening at regular intervals due to high risk of TB exposure, such as homeless shelters, correctional facilities, and inner-city agencies. • Administration of 2-step TST: o Administer the first TST in the same manner as a single step TST. o Do not do the second TST if the initial TST is positive. If the initial TST result is negative, administer a second TST at a different site 7-28 days after the first TST. ▪ Do not administer the second TST before 7 days and or later than 28 days. **Note:** A 2-step TST only needs to be administered ONCE if it is properly performed and documented. It never needs to be repeated. Any subsequent test can be a single step TST, regardless of how long it has been since the last TST. **TSTs for Contact Investigation** • Consult with the TB program. • Perform a baseline TST for close contacts in a contact investigation as soon as possible after the source case diagnosis is made. • If this first TST is negative and it was performed less than 8 weeks after contact with the source case was broken, then perform a second TST between 8-12 weeks after the contact was broken. **Note:** This second TST is considered a repeat TST and not a 2 step TST. This repeat test does not follow the criteria or parameters for a 2 step TST. o The purpose of this close contact testing is to detect very recent infection that occurred just before contact was broken. It takes anywhere from 3-8 weeks for a TST to become positive after new infection. • For some contacts with less significant exposure, a single TST, performed 8 weeks after last contact, may be all that is advised (in consultation with the TB program).
Preferred Use	N/A
Dose	0.1 mL
Route	Intradermal
Contraindications/ Precautions	**Contraindications:** • Anaphylactic or other allergic reaction to previous tuberculin PPD • Known hypersensitivity to any component of Tubersol • History of past active tuberculosis or treatment for LTBI • History of blistering TST reaction • Well documented history of a significant TST reaction o Individuals with a history of **undocumented** significant TST reaction (other than blistering) **can** receive a TST. If these individuals decline to have baseline TST they require baseline chest x-ray through their family physician • Inflammatory skin condition at the site of injection, such as burns or eczema • Have received a live virus vaccine within the past 28 days • Major viral infections. **Precautions:** • Do not inject subcutaneously, intramuscularly or intravenously. • False positive reaction may occur in individuals who have been: o Infected with non-tuberculous mycobacterium (NTM) o Vaccinated with BCG (Bacille Calmette-Guerin) for tuberculosis. • False negative reactions may occur due to: o Immune suppression due to HIV, advanced age, treatment with immune suppressive drugs or therapies o Severe illness which may include active TB disease o Major viral illness such as mononucleosis, mumps and measles, but **NOT** the common cold o Immunization with MMR, varicella, or yellow fever vaccine within the previous 28 days

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	○ Very young age (less than 6 months) ▪ The validity of TST is unknown in this age group. ▪ TST in this age group is not generally recommended.
Possible Reactions	**Common** • Local pain, itchiness and discomfort at the test site may occur. **Rare** • 2 to 3% will have localized redness or rash without induration within 12 hours of testing. This does not indicate TB infection. **Very Rare** • Ulceration or necrosis at the test site in highly sensitive persons • Acute allergic reactions including anaphylaxis, angioedema, urticaria and/or dyspnea.
Pregnancy	May use during pregnancy; however, administration of TST is usually deferred until after delivery except when the pregnant person has HIV or recent contact with a person who is a confirmed TB case.
Lactation	May use for people who are lactating and feeding their milk to infants or children.
Composition	• Purified protein derivative of M tuberculosis – 5 TU per 0.1 mL • Polysorbate 80 – 0.0006% • Phenol – 0.22% to 0.35% in sterile isotonic phosphate buffered saline.
Blood/Blood Products	Does not contain any human blood/blood products.
Bovine/Porcine Products	Does not contain bovine or porcine products.
Latex	Does not contain latex.
Interchangeability	N/A
Administration with Other Products	• TST and live virus vaccines: ○ TST can be administered either: ▪ Before live virus vaccines, ▪ On the same day as live virus vaccines, or ▪ At least 4 weeks after the live virus vaccine. ○ Administer the TST and the live virus vaccine at separate anatomic sites. • TST and COVID-19 vaccines: ○ Currently there is no data on the impact of the COVID-19 mRNA vaccines on tuberculin skin testing or IGRA (QFT) test results. There is a theoretical risk that COVID-19 vaccines may temporarily affect cell-mediated immunity, resulting in false-negative tuberculin skin testing or IGRA (QFT) test results. ▪ In the absence of data and acknowledging the importance of both timely tuberculosis testing and immunization, immunization with COVID-19 vaccines can take place at any time before, after or at the same visit as the TST or IGRA test. ▪ However, re-testing (at least 28 days after a dose of COVID-19 vaccine) of individuals with negative results for whom there is high suspicion of TB infection may be prudent in order to avoid missing cases due to potentially false-negative results. Consult with TB services. • TST may be given at any time before or after quadrivalent live attenuated influenza vaccine (QLAIV). There is no spacing required. • Do not use EMLA cream (or similar local anesthetic cream). ○ Application of this cream has been reported to cause localized edema which could easily be confused with a positive TST result.
Appearance	Clear, colorless liquid

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Storage	• Store product between +2°C and +8°C at all times. • Do not freeze. • Label product with the day opened on the vial. Use YYYY MON DD. ○ YYYY=4 digit year, MON=3 letter month, DD=2 digit date. • Discard any unused solution after **30 days** from first puncture of the vial. • Store in original packaging to protect from light.
Vaccine Code	PPD
Antigen Code	PPD
Licensed for	All individuals

Program Notes	• Draw up solution with tuberculin syringe just prior to giving. Do not pre-load syringe. D**o not inject air into the vial**.
	• If wheal does not appear, repeat TST immediately in opposite arm.
	• Do not massage or cover the site with a bandage after injection.
	• Measure only the transverse diameter of induration; ignore redness.
	• Record the result in millimeters. Do not round off the diameter of the induration to the nearest 5 mm, as this can interfere with determining whether TST conversion has occurred in the event of a future TST. If the measurement falls between demarcations on the ruler, record the smaller of the 2 numbers.
	• If a TST cannot be performed in the preferred site of the inner forearm (that is, if the person has had a double mastectomy), then the alternate site is an intradermal injection in the upper back in the skin overlying the scapula.
	Health care worker (HCW) definition:
	• Includes all hospital employees, other staff who work or study in hospitals (for example, students in health care disciplines and contract workers), physicians, volunteers and other health care personnel (for example, those working in clinical laboratories, long term care facilities, home care agencies and community settings), who are at risk of exposure to infectious TB because of their contact with individuals or material from individuals with infectious TB both diagnosed and undiagnosed.
	• Students in dental programs are not routinely included as an eligible group for baseline TST unless they are working with high risk clients or in high risk settings.
	Refer all individuals with symptoms of active TB immediately to TB Services.
	• Call TB Services for direction before the client leaves your site.
	• A TST is not appropriate for these clients.
	Referral to TB Services
	• Instructions for referral are found on the Immunization Program Standards Manual webpage on Insite: https://insite.albertahealthservices.ca/cdc/Page11322.aspx (under Tuberculin PPD).
	• For all positive reactors, please either:
	  ○ Follow the local zone referral process to TB Services (for Calgary and Edmonton TB Clinics and for TB Central Services) or
	  ○ Return patient and results to the specialty program/specialist requesting the TST, such as oncology, rheumatology, dermatology, transplant.

Related Resources	Referral process for Calgary TB Clinic Referral process for Central TB Services Referral process for Edmonton Tuberculosis (TB) Clinic Tuberculin Skin Test for Healthcare Workers and Post-Secondary Students in Health Care Programs

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