

# Tuberculin PPD

Revision Date: October 7, 2022

## Rationale for Update:

- Updated to clarify TST eligibility, including the addition of uveitis, staff and volunteers at shelters and drop-in centres, and removal of the specific stages of chronic kidney disease.

Please consult the Product Monograph <sup>1</sup> for further information about the vaccine.	
	<b>TUBERSOL®</b>
<b>Manufacturer</b>	Sanofi Pasteur Limited
<b>Off-license use</b>	None
<b>Indications for use of provincially funded Tubersol®</b>	<p>Provincially funded Tubersol® is supplied to Alberta Health Services (AHS) for organized province-wide TST programs that are the responsibility of Public Health such as:</p> <ul style="list-style-type: none"><li>screening of health care workers (including students and volunteers) pre-employment and if recommended because of high risk of exposure (but not for routine screening of staff unless the workplace has been assessed as a high-risk facility)</li><li>screening of contacts of cases of active Tuberculosis (TB) disease</li><li>screening of inmates and staff in correctional institutions</li><li>AHS zone programs that reflect public health practice, approved by the AHS Medical Officer of Health to address specific demographics. For example, newcomer's clinics held to address medical needs of immigrants.</li></ul> <p>Tubersol® is not publicly funded in private travel clinics, private occupational health programs outside of those described above, or for diagnostic purposes (either in facilities or physician offices).</p> <p><b>Tuberculin skin test (TST) may be recommended for the following populations:</b></p> <p>Contacts of a known active case of TB.<sup>2</sup></p> <p>Individuals who have lived outside of Canada, including foreign-born persons, immigrants, refugees and evacuees who meet one of the following criteria<sup>2</sup>:</p> <ul style="list-style-type: none"><li>Refugees or evacuees of all ages who are originally from or have lived in a country with TB incidence of <math>\geq 50/100,000</math> <b>and</b> have arrived within the past 2 years.<sup>2</sup></li><li>Foreign born individuals/immigrants 65 years of age or younger who are originally from or have lived in countries with a TB incidence of <math>&gt;200/100,000</math> <b>and</b> have immigrated within the past 5 years.<sup>2</sup></li><li>Foreign-born individuals, immigrants, refugees and evacuees of all ages who are referred for medical surveillance.<sup>2</sup></li></ul> <p>See WHO TB country profiles for incidence rates at <a href="http://www.who.int/tb/country/data/profiles/en/">http://www.who.int/tb/country/data/profiles/en/</a>.<sup>3</sup> (Select country→'Estimates of TB Burden'→Incidence includes HIV and TB→Rate per 100,000).</p>

	<p>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:<sup>2</sup></p> <ul style="list-style-type: none"> <li>• HIV/AIDS</li> <li>• Chronic kidney disease with or without dialysis</li> <li>• Cancer (lung, sarcoma, leukemia, lymphoma or gastrointestinal)</li> <li>• Silicosis</li> <li>• Fibronodular disease</li> <li>• Uveitis<sup>6,7,8,9</sup></li> <li>• Transplant recipients or candidates who are currently on or in anticipation of immunosuppressive treatment<sup>2</sup></li> <li>• Treatment with TNF alpha inhibitors and/or other immunosuppressive medications such as chemotherapy or long-term systemic corticosteroids<sup>2</sup>)<sup>4</sup></li> </ul> <p>Indigenous</p> <ul style="list-style-type: none"> <li>• Current or historical residence in First Nations, Metis or Inuit communities</li> </ul> <p>Residents and staff of congregate living settings, including but not limited to:</p> <ul style="list-style-type: none"> <li>• Addiction or treatment rehabilitation centers.</li> <li>• Inmates of correctional institutions <sup>2</sup></li> </ul> <p>Homeless</p> <ul style="list-style-type: none"> <li>• Individuals using shelters and drop-in centres for the homeless and under-housed</li> <li>• Staff or volunteers in shelters and drop-in centres for the homeless and under-housed</li> </ul> <p>Health Care Workers, Post-secondary Health Care students, and Volunteers</p> <ul style="list-style-type: none"> <li>• Healthcare workers who work with populations at risk for TB.<sup>2</sup></li> <li>• Post-secondary health care students (either in Alberta or in other provinces/countries).</li> <li>• Other individuals who work in programs, facilities, or institutions that provide services to populations at increased risk for TB disease.<sup>2</sup></li> </ul> <p>Travellers (post-travel)</p> <ul style="list-style-type: none"> <li>• Any travel associated with high-risk exposure, regardless of duration, including direct patient contact in a hospital or indoor setting, and work in prisons, homeless shelters, refugee camps or inner-city slums.</li> <li>• Long-term travelers (3 to ≥12 months) to endemic countries with TB incidence ≥100/100,000 may be screened depending on duration of travel and risk assessment. <ul style="list-style-type: none"> <li>- ≥3 months of travel to TB-incidence country ≥400/100,000 population<sup>^</sup></li> <li>- ≥6 months of travel to TB-incidence country 200-399/100,000 population<sup>^</sup></li> <li>- ≥12 months of travel to TB-incidence country 100-199/100,000 population<sup>^</sup></li> </ul> </li> </ul> <p>Exception: travelers who have minimal to no contact with the resident population do not require screening regardless of duration of travel.</p> <ul style="list-style-type: none"> <li>• See WHO TB country profiles for incidence rates at <a href="http://www.who.int/tb/country/data/profiles/en/">http://www.who.int/tb/country/data/profiles/en/</a>.<sup>3</sup> (Select country→'Estimates of TB Burden'→Incidence includes HIV and TB→Rate per 100,000).</li> <li>• For information on high burden countries for tuberculosis see: <a href="#">WHO global lists of high burden countries for tuberculosis (TB), TB/HIV and multidrug/rifampicin-resistant TB (MDR/RR-TB), 2021-2025, Background document.</a></li> </ul>
<b>Dose</b>	0.1 mL

<b>Route</b>	Intradermal (ID) injection	
<b>Schedule</b>	<p><b>Single-step TST</b> Single-step (one TST only) is recommended for most individuals, including post-secondary students at risk for potential occupational exposure to infectious TB.<sup>2</sup></p> <p><b>Two-step TST</b> The second TST should be administered 1 to 4 weeks after the initial test<sup>1,2</sup> Two-step testing criteria:</p> <ul style="list-style-type: none"> <li>• HCWs involved in high risk activities including:<sup>2</sup> <ul style="list-style-type: none"> <li>○ Cough-inducing procedures (such as sputum induction)</li> <li>○ Autopsy</li> <li>○ Morbid anatomy and pathology examination</li> <li>○ Bronchoscopy</li> <li>○ Mycobacteriology laboratory procedures, especially handling cultures of <i>M. tuberculosis</i></li> </ul> </li> <li>• HCWs on high-risk units where patients with respiratory TB may be admitted.<sup>2</sup></li> <li>• Correctional service workers or others who work at sites at high-risk of TB exposure who will undergo repeated screening with TSTs at regular intervals.<sup>1,2</sup></li> </ul> <p><b>Note:</b> A two-step protocol needs to be performed ONCE only if properly performed and documented. It never needs to be repeated. Any subsequent test can be one step, regardless of how long it has been since the last TST.<sup>2</sup></p>	
<b>Timeframe for Tuberculin Skin Test (TST) reading</b>	48 to 72 hours after administration <sup>2</sup> <b>Note:</b> Reading is to be done in person, by health care providers trained in this skill. Self-reading and reporting of TST results, is not acceptable. If the TST is not read within 72 hours, the result is not valid and must be repeated, unless there is 10 mm or more of induration present. The repeat test can be done immediately. Use opposite forearm, or the same forearm, at least 5 cm from the site of the previous TST. <sup>2</sup>	
<b>Interpretation of TST<sup>2</sup></b>	<b>TST reaction size (mm of induration)</b>	Situation in which reaction is considered <b>positive</b>
	<b>0-4 mm</b>	<ul style="list-style-type: none"> <li>• Child under 5 years of age and high risk of TB</li> </ul>
	<b>5 mm and greater</b>	<ul style="list-style-type: none"> <li>• HIV infection.</li> <li>• Close contact of an active infectious case with the past 2 years.</li> <li>• History of abnormal chest x-ray with fibronodular disease (healed TB and not previously treated).</li> <li>• Organ transplantation (related to immune suppressant therapy).</li> <li>• TNF inhibitors.</li> <li>• Other immune suppressive drugs such as corticosteroids or chemotherapy.<sup>4</sup></li> <li>• Chronic kidney disease with or without dialysis.</li> </ul>
	<b>10 mm and greater</b>	Situation in which reaction is considered <b>positive</b> .
<ul style="list-style-type: none"> <li>• Identify the presence or absence of induration. Redness is to be ignored when assessing induration. Measure, using a caliper, the diameter of induration at the widest part transversely to the long axis of the forearm (i.e., from side-to-side, across the forearm).<sup>2</sup></li> <li>• TST readings must be recorded in millimeters, including 0 mm rather than negative. Reporting results as either negative or positive is not appropriate.<sup>2</sup></li> </ul>		

<b>Contraindications</b>	<ul style="list-style-type: none"> <li>• Anaphylaxis or other hypersensitivity to any component of Tubersol® or its container.<sup>1</sup></li> <li>• Severe reaction (e.g., necrosis, blistering or ulcerations) to previous tuberculin skin testing (TST)<sup>1</sup></li> <li>• History of past active tuberculosis or treatment for tuberculosis infection or disease.<sup>1</sup></li> <li>• Extensive burns or eczema because of greater likelihood of adverse reactions or severe reactions.<sup>1</sup></li> </ul>
<b>Precautions</b>	<ul style="list-style-type: none"> <li>• TST should be administered on the same day as live vaccines are administered, or delay TB skin testing for ≥4 weeks after a live vaccine.<sup>1,2</sup></li> <li>• TST should be deferred for four weeks following a major viral infection (e.g. measles, mumps, rubella).<sup>1,2</sup></li> <li>• TST should be administered and read prior to receiving COVID-19 vaccines, or deferred for four weeks after receiving COVID-19 vaccines if required for baseline screening.<sup>5</sup> <ul style="list-style-type: none"> <li>○ If tuberculin skin testing is required for other reasons (e.g., contact tracing, immigrants, query LTBI), testing should not be delayed. However, re-testing (at least 4 weeks post after the complete two dose schedule 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.<sup>5</sup></li> </ul> </li> <li>• Impaired or attenuated cell-mediated immunity may cause a false negative tuberculin reaction.<sup>1</sup></li> <li>• HIV-infected persons may have a compromised ability to react to tuberculin skin tests.<sup>1</sup></li> <li>• Due to immature immune systems, many infants less than 6 months of age who are infected with <i>M. Tuberculosis</i> do not react to tuberculin tests.<sup>1</sup></li> </ul>
<b>Pregnancy</b>	While pregnancy is not a contraindication to the administration of TST, routine screening tests in the absence of symptoms, HIV infection or recent contact with an infectious TB case are usually deferred until after delivery. <sup>1,2</sup>
<b>Lactation</b>	Breastfeeding women may receive TST. <sup>1,2</sup>
<b>Program Notes</b>	<ul style="list-style-type: none"> <li>• 1960 January – Introduced into program.</li> <li>• January 2019 – Updated to align with current Canadian standards (7<sup>th</sup> edition).</li> <li>• February 2021 - Recommended spacing considerations between COVID-19 vaccine and tuberculin skin testing.</li> <li>• July 5, 2022 - Updated to align with the Canadian standards (8<sup>th</sup> edition).</li> <li>• October 7, 2022 – Updated to clarify TST eligibility, including the addition of uveitis, staff and volunteers at shelters and drop-in centres, and removal of the specific stages of chronic kidney disease.</li> </ul>

## References

- <sup>1</sup> Sanofi Pasteur Limited. (2016, February 11). Tubersol®: Tuberculin purified protein derivative (Mantoux). *Product Information*.
- <sup>2</sup> Canadian Journal of Respiratory, Critical Care, and Sleep Medicine. 2022, VOL. 6, NO. S1, 1–7 *Canadian Tuberculosis Standards*, 8th edition. <https://www.tandfonline.com/toc/ucts20/6/sup1>
- <sup>3</sup> World Health Organization (WHO). Geneva: WHO, 2020. Tuberculosis country profiles available at <http://www.who.int/tb/country/data/profiles/en/>
- <sup>4</sup> National Advisory Committee on Immunization. (2018). *Canadian Immunization Guide*. (Evergreen ed.). Ottawa, ON. Public Health Agency of Canada. <https://www.canada.ca/en/public-health/services/canadian-immunization-guide.html>
- <sup>5</sup> National Advisory Committee on Immunization. (2020/2021). Recommendations on the use of COVID-19 Vaccines.
- <sup>6</sup> Nahon-Esteve S, Martel A, Maschi C, Alketbi M, Baillif S, Tieulie N. 2021 Sep;31(5):2457-2466. Uveitis associated with latent tuberculosis: A comparative study of the impact of antitubercular therapy combined or not with systemic corticosteroids. *European Journal of Ophthalmology*.
- <sup>7</sup> Agrawal R, Gunasekeran DV, Grant R, Agarwal A, Kon OM, Nguyen QD, Pavesio C, Gupta V; 2017 Dec 1;135(12):1318-1327. Collaborative Ocular Tuberculosis Study (COTS)–1 Study Group. Clinical Features and Outcomes of Patients With Tubercular Uveitis Treated With Antitubercular Therapy in the Collaborative Ocular Tuberculosis Study (COTS)-1. *JAMA Ophthalmology*.
- <sup>8</sup> Hong BK, Khanamiri HN, Bababeygy SR, Rao NA. 2014 Aug; 98(8):1091-5. The utility of routine tuberculosis screening in county hospital patients with uveitis. *British Journal of Ophthalmology*.
- <sup>9</sup> Agrawal R, Testi I, Bodaghi B, Barisani-Asenbauer T, McCluskey P, Agarwal A, Kempen JH, Gupta A, Smith JR, de Smet MD, Yuen YS, Mahajan S, Kon OM, Nguyen QD, Pavesio C, Gupta V; 2021 Feb;128(2):277-287. Collaborative Ocular Tuberculosis Study Consensus Group. Collaborative Ocular Tuberculosis Study Consensus Guidelines on the Management of Tubercular Uveitis-Report 2: Guidelines for Initiating Antitubercular Therapy in Anterior Uveitis, Intermediate Uveitis, Panuveitis, and Retinal Vasculitis. *Ophthalmology*.