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Communicable Disease Control Manual

Chapter 4: Tuberculosis

4.0(b) TB SCREENING DST

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TUBERCULOSIS SCREENING

BC COLLEGE OF NURSES AND MIDWIVES (BCCNM) LIMITS AND CONDITIONS

Tuberculosis (TB) screening is a restricted activity. RNs and RPNs who administer purified protein derivative or order chest x-ray (CXR) for the purpose of TB screening must possess the competencies established by the BC Centre for Disease Control (BCCDC) and follow the decision support tool (DST) established by BCCDC (BCCNM, 2018). This also applies to LPNs with the exception of ordering CXRs. See TB screening competencies.

INTRODUCTION

Even with the availability of effective treatment, rates of TB remain universally tied to the social determinants of health and health inequities. A disproportionate burden of TB disease continues to affect individuals born outside of Canada, Indigenous people, and homeless or under-housed populations. Nursing professionals can improve equitable access to TB screening, treatment, follow-up care and education, through the application of trauma informed practice[1] and cultural competency[2] principles in all client interactions.

The TB Screening DST provides information on comprehensive TB assessment including the health history, screening and diagnostic tests to obtain when individuals present for TB screening. See the BCCDC TB Manual for further guidelines and information.

TB screening programs target populations who are at increased risk of exposure to and development of active TB disease. TB screening guidelines described in this DST include:

1. **Routine** – asymptomatic, not a contact to a case of active TB disease within the past 2 years. May be required for school, volunteering, employment, prior to entry into a congregated living setting, related to a targeted screening program, or referral by a health care provider (e.g. prior to initiating immune suppressing therapy).
2. **Contact** - screening related to contact with a case of active TB disease within the past 2 years.
3. **People living with HIV infection** – baseline and annual follow-up screening.
4. **Immigration** - screening done to detect active TB disease, as required by Citizenship and Immigration Canada's Immigration Medical Examination.
5. **Symptomatic** - diagnostic investigations are required to rule out active TB disease.
6. **Travellers** – screening related to travel.
7. **Indigenous People** - People self-identifying as Indigenous are eligible for publicly funded annual screening (see Section C). The First Nations Health Authority (FNHA) TB Services Community Programming Guide recommends annual and enhanced screening guidelines for surveillance purposes in First Nations communities.

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[1] For more details on trauma informed practice, refer to the Trauma Informed Practice Guide
[2] For more details on culturally competent care, refer to the San'yas Indigenous Cultural Safety Training.

CAUSE

Mycobacterium tuberculosis complex is a group of mycobacteria that can cause TB disease in humans. Transmission is primarily airborne, from person-to-person. It usually infects the lungs, but can occur anywhere in the body. It is preventable and curable.

TB ASSESSMENT

The comprehensive TB assessment outlines information required for effective client referral to BCCDC TB Services. It provides information regarding potential TB exposure and/or infection, and the risk for development of active TB disease.

Identify any barriers to care before the assessment, including the need for translation services and/or a support person. Clearly outline your role, the purpose of the TB assessment and what will happen.

A) TB HEALTH HISTORY

TB History

- Prior history of active TB disease and treatment
- Prior history of latent TB infection and treatment
- Prior TB screening results (TST, CXR, IGRA)
- History of BCG vaccination and/or BCG scar
- Country of origin
- Contact to active TB disease within the past 2 years (include source case's name/case number, last date of contact, nature of contact)
- Historical exposure greater than 2 years ago (include source case's name/case number, approximate date, other relevant details if known)

Risk Factors

Table 1: Risk factors for TB exposure and latent TB infection

- Recent or historical close contact to a case of active respiratory TB disease
- Born in a country with high prevalence of TB disease
- Travel to a country with high prevalence of TB disease for more than 3 months
- Residence in regions with a high incidence of active TB disease
- Homeless or underhoused (i.e. shelters, no fixed address)
- Residence in a congregate living setting (e.g. correctional facility)
- Persons who inject drugs (PWID) and/or crack/cocaine use

Table 2: Risk factors for developing active TB disease

High Risk	Moderate Risk	Slightly Increased Risk
• Acquired Immunodeficiency Syndrome (AIDS) • People living with HIV infection • Transplantation (related to immune-suppressant treatment and underlying chronic disease) • Chronic renal failure requiring hemodialysis • Carcinoma of the head and neck • TB infection within the past 2 years • Abnormal CXR – fibronodular disease (may reflect healed TB) • Silicosis	• Tumour necrosis factor, alpha inhibitors and/or other biologics • Diabetes mellitus (all types) • Treatment with glucocorticoids (equivalent of ≥ 15 mg/day prednisone) • Young age when infected (0 to 4 years of age)	• Heavy alcohol consumption (≥ 3 drinks/day) • Underweight (< 90% ideal body weight or BMI < 20) • Cigarette smoker (1 pack/day) • Abnormal CXR – granuloma (may reflect healed TB)

Symptoms

Table 3: Signs and symptoms of active TB disease

Systemic **Signs and Symptoms**	**Active *Respiratory* TB Disease**	**Active *Nonrespiratory* TB disease**
• Fever * • Night sweats * • Loss of appetite (anorexia) • Unexplained weight loss • Fatigue	• Systemic signs and symptoms • Cough (dry or productive) for more than 2-3 weeks, with/without fever • Bloody sputum (hemoptysis) • Chest pain • Shortness of breath • Abnormalities on CXR **	• Systemic signs and symptoms • Pain, swelling, and/or dysfunction of the involved body site(s) (i.e. swollen lymph node)

* May be absent in the very young and elderly
** Radiographic presentation can be atypical in clients who are immune compromised, and in the very young or old.

B) PHYSICAL ASSESSMENT

A physical assessment may be appropriate in certain situations, such as when clients present with symptoms of active TB disease. Table 3 can be used to guide decision making as to whether further objective information should be obtained (e.g. temperature).

If less than 5 years of age and at high risk for TB infection (e.g. close contact), document the weight and arrange for a referral to BCCDC TB Services for further clinical assessment. If outside of the lower mainland, refer to TB Services ***and*** arrange for a timely clinical assessment by a local physician or NP.

C) SCREENING TESTS

Tuberculin Skin Test (TST)

A TST is used to identify people who may have a TB infection. TST's are not generally used to diagnose active TB disease. Further diagnostic tests are required to rule out active TB disease. In BC, TSTs are provided without cost for clients with a public health/medical indication for testing including:

- Person being evaluated for TB (most relevant for pediatric clients. See Symptomatic TB Screening).
- Contacts of presumed or confirmed cases of TB.
- Persons at high risk for TB infection (e.g. persons undergoing immigration TB medical surveillance ; homeless or underhoused; PWID and or crack/cocaine use).

- People self-identifying as Indigenous.
- Persons starting immune suppressant treatment at baseline (e.g., biologics).
- HIV positive persons and persons at significant risk for HIV infection.

Fee for testing is applicable for:

- International travelers who will be residing in countries where TB is endemic and travelers returning from prolonged visits to endemic areas, unless clear contact history or exhibiting symptoms.
- Persons requiring testing for an educational program, a volunteer position, or for employment.
- Persons who self-refer that do not meet the criteria for testing without cost.

Two-step TST Indications

Where resources permit, consider two-step TST's for clients who anticipate undergoing regular testing, such as:

- health care providers (HCP)
- inmates and employees of correctional facilities
- some travellers prior to departure to countries with high TB incidence, where TB exposure is likely

Live virus vaccines may be administered on the same day as the ***second*** step of the two-step TST. For further information, see Appendix A.

Practitioner Alert!

A two-step TST is **NOT** equivalent to initial and 8-week post-exposure TST's done as a part of contact investigations.

Notes on TST's

TST's are safe to administer to:

- women who are pregnant
- women who are breastfeeding
- people with a history of BCG
- people with an unclear or undocumented history of previous TST positive
- people who have taken prior window period prophylaxis (WPP)/primary prophylaxis

TST Results

Considered in context with other factors, a TST result is used to determine if further testing or treatment is indicated. Not all positive TST results indicate treatment for TB infection, and not all negative TST results indicate an absence of TB infection.

The interpretation of a TST result is based upon the:

- size of the TST (see Table 4)
- likelihood of true infection (see Table 1) and
- risk factors for developing active TB disease (see Table 2)

Practitioner Alert!

Clients with clearly documented positive TST results should not have this test again.

In general, a TST result of 0mm to 4mm is considered to be negative. There are some scenarios (e.g. severely immunosuppressed) where a TST less than 5mm may be considered positive. This would be clarified by a BCCDC TB Services physician upon review of the TB Assessment.

See Chest X-ray section for who to send for CXR and referral to BCCDC TB Services.

Table 4: TST cut-points

TST reaction size (mm's induration)	Situation in which the reaction is considered positive
5 mm or more	• Children less than 5 years and at high risk for TB infection (e.g. close contact to an case of active TB disease)* • People living with HIV infection* • Immune compromised* (e.g. chronic kidney disease on dialysis or end-stage, organ transplant (pre/post), immune suppressant drugs or treatments equivalent to ≥ 15 mg/day prednisone for 2 weeks or longer) • Contacts to a case of active TB disease within the past two years • Fibronodular or other changes on existing chest x-ray that could represent healed TB (if not previously treated)
10 mm or more	• All others

***** If a contact, consider if client is a candidate for window period prophylaxis (WPP). See Section 8: Assessment and Follow Up of TB Contacts.

Recommendations for further follow-up (including treatment for LTBI) from TB Services are based on:

- Information provided on the TB Screening Form, including findings from assessments for TB signs/symptoms and risk factors for development of active TB disease.
- Historical TST results (when available).
- Results from other tests done before the client was referred (e.g., chest-x-rays, TB testing of sputum specimens).

Potential TST complications

Severe allergic reactions related to the administration of Tubersol® are considered rare. They may include: swelling, pain/discomfort, blistering or sloughing of tissue at the injection site, inflammation of the associated lymph nodes +/- streaking. Sterile dressings may be gently applied to any open/sloughing areas. Refer the client to her/his primary health care practitioner as needed for further management. Report severe reactions as per agency guidelines and on the referral documentation being sent to BCCDC TB Services.

In the instance an anaphylactic event occurs post-TST administration follow the BC Immunization Manual, Part 3: Management of Anaphylaxis in a Non-Hospital Setting. Anaphylactic kits must be available at the time of administration and clients should be monitored for 15 minutes post-injection.

Mild reactions that could occur at the injection site include: itching, swelling, irritation and bruising. These minor reactions may be treated with a cold compress after the wheal is no longer visible, and/or antihistamines as per agency guidelines.

Table 5: Contraindications and special considerations for TST

Contraindications and when to avoid repeating a TST	Special Considerations
• Prior allergic response or severe reaction (e.g. blistering) to a TST or any allergy to the components of Tubersol® • Documentation of a previously positive result (use clinical judgment to re-administer if the TST is undocumented and the client is unable to provide a clear description of the positive response) • Previous IGRA reactive • Previous active TB disease or LTBI, whether treated or not	• Reactivity may be suppressed by current or recent major viral infection (within 4 weeks) • Reactivity may be suppressed if immune compromised due to medical condition or treatment (eg. steroid dose ≥ 15mg prednisone daily for 2-4 weeks) • It can take 2-8 weeks after a TB exposure to reliably respond to tuberculin if infected • TST can be given on the same day or 4 weeks after administration of an injectable live virus vaccine[3]

NOTE: Use precaution if burns or eczema present at skin testing sites. If localized, consider using alternate sites (see Appendix A TB Manual). If extensive, avoid administering TST and consult TB Services for guidance
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[3] TST can be given on the same day or at any time before or after a live oral typhoid vaccine, live oral rotavirus vaccine or a Quadrivalent Live Attenuated Influenza Vaccine (LAIV-Q) is provided.

INTERFERON GAMMA RELEASE ASSAY (IGRA)

The IGRA does not replace a TST, but may help diagnose TB infection in certain populations (e.g. Indigenous or foreign born person with BCG, immune compromised). In BC, IGRA testing can ***only*** be ordered by BCCDC TB Services (TBS) physicians and clinic nurses, select physician specialists, and Federal Corrections, and can only be performed at designated testing sites at this time.

See Table 6 for TB screening recommendations when clients present with a prior history of IGRA testing. For clients with prior IGRA reactive results, discuss LTBI therapy if not completed previously. A TB health history (includes risk factors and symptoms), and if appropriate, a physical examination, is required for all screening indications.

Table 6: TB screening recommendations for clients where TST contraindicated and/or prior history of IGRA testing

Prior results		**Future Testing**			
TST	**IGRA**	**TST (see TST section)**	**CXR (see CXR section)**	**IGRA**	**Refer to BCCDC TB Services**
positive and/or contraindicated	not done	No	Yes^	If indicated by TB Services	***If*** CXR or IGRA result
positive, negative, contraindicated or not done	reactive	No	No*	No	***If*** CXR or candidate for LTBI therapy
positive	non-reactive	No	No*	If a recent contact (see Screening of contacts section)	***If*** CXR indicated If a recent contact, refer with request for IGRA**
negative or not done	non-reactive	Yes	***If*** TST positive or CXR indicated	No	***If*** TST positive and/or CXR done

^ In certain circumstances, if no new TB risk factors or TB symptoms present, a CXR may not be recommended. See TB Screening Guidelines Table 8, annual HIV screening recommendations and FNHA TB Services Community Programming Guide.

***** Unless symptomatic or new risk factors (see Tables 1, 2 & 3) since prior TB screening

****** If recent contact, do IGRA ***at least 8 weeks after*** the last date of contact. ***If*** IGRA is reactive, send client for CXR.

See IGRA testing Guidelines for physicians and IGRA testing process for nurses..

D) DIAGNOSTIC TESTS

Chest X-Ray (CXR)

Who to send for CXR and referral to BCCDC TB Services:

- Anyone with a new positive TST result (see Table 6)
- Anyone presumed to have active TB disease (See Symptomatic TB Screening)
- ALL immune compromised or clients getting screened just prior to starting immune suppressant therapy, regardless of TST result
- ALL new dialysis clients, as per BC Renal Agency TB Screening & Follow-Up guidelines
- ALL clients getting screened for live donor assessment
- ALL baseline screening for people living with HIV infection, regardless of TST result (see 'People living with HIV infection' for annual follow-up recommendations)
- ALL less than 5 years of age at high risk for infection (e.g. symptomatic, contact to a case of active TB disease), regardless of TST result

Note: Not all clients will need a CXR if a TST is contraindicated or if they have a history of a reactive IGRA. Rather, CXR requirements will be determined by the reason for screening. Review relevant TB Screening Guidelines in Section 4(b) TB Screening DST and Table 6: TB screening recommendations for clients where TST contraindicated and/or prior history of IGRA testing.

Forward all screening documentation and results to BCCDC TBS (see regional guidelines for exceptions). Further recommendations from a BCCDC TB Services physician will follow.

Practitioner Alert!

Chest x-ray views:

- For children less than 5 years of age and people living with HIV infection, order posterior-anterior (PA) ***and*** lateral CXR views
- Order PA view only for all other clients

Table 7: Timeframes for use of pre-existing CXR's and when to order new CXR's

Within the past 3 months* (if asymptomatic)	Within the past 6 months* (if asymptomatic)	New
• Contacts with previous positive TST or IGRA, greater than 5 years (initial post-exposure assessment only)** • Immune compromised	• Entry into a group living setting (e.g. corrections, adult residential care, detox or treatment program) • School • Employment	• Signs/symptoms of active TB disease (see Table 3) • Contacts whose recent TST results convert to positive or whose IGRA results are newly reactive • Clients referred for Immigration Medical Surveillance assessment^

***** If prior CXR is abnormal (e.g. showing evidence of pneumonia) a new CXR is required
****** If no prior CXR is available, recommend a CXR ***at least 8-weeks after*** the last date of contact with the source case.
^ If client is asymptomatic, request clients complete CXR once their Medical Service Plan (MSP) is activated (usually within 3 months of arrival).

Contraindications for CXR

If a client is pregnant or possibly pregnant, consult TB Services ***or*** a most responsible provider (MRP). Chest x-rays may be deferred until after delivery for asymptomatic clients. In lieu of a shielded CXR, sputum specimen testing may be recommended by BCCDC TB Services, or screening may be deferred if not deemed essential.

Limitations of CXR

Abnormal chest x-ray findings are not all specific for TB therefore additional tests, such as sputum specimen testing and a relevant TB risk assessment, are required to confirm or exclude active TB disease.

Sputum Collection

Mycobacterial culture is the gold standard method for the detection of active pulmonary TB disease. Proper collection and processing of respiratory specimens is essential in providing valid results.

Collect 3 sputum specimens for AFB smear and culture. Whether spontaneous or induced, specimens may be collected on the same day, at least 1 hour apart. Ideally one specimen will be collected in the morning, prior to eating or drinking. They may also be collected daily, for three days in a row (ideally in the morning). Consult BCCDC TB Services for guidance on the management of clients who are unable to spontaneously produce sputum (e.g. young children).

When to consider collecting 3 sputum samples:

- e client has signs and symptoms of active respiratory TB disease (see Table 3) Th
- e client has a CXR result suggestive of active TB disease Th
- e client has HIV infection and is TST positive and/or IGRA reactive (see HIV section) Th
- he client has or is suspected of having active non-respiratory TB disease (concurrent active respiratory TB disease needs to be ruled out) T

Note: If client is symptomatic, collect one stat sputum specimen for AFB, plus two additional AFB specimens. See Section 5, Symptomatic TB Screening.

For further information on the collection of specimens, see the Appendix C ('Collection of Specimens for TB Testing') and Appendix D ('Sputum Induction') in the BCCDC TB Manual.

The BCCDC Public Health Laboratory Mycobacteriology/tuberculosis lab requisition form is here. For details on expected turnaround times for TB mycobacteriology lab tests, see Table 4-10 "Mycobacteriology Lab Results Timelines" in the BCCDC TB Manual.

HIV Testing

Offer an HIV test to all clients tested for or diagnosed with TB (see HIV Testing Guidelines for the Province of British Columbia).

TB SCREENING GUIDELINES

This section describes recommendations for the following TB screening scenarios: routine, contact, people living with HIV infection, immigration, symptomatic, travellers, and surveillance screening in First Nations communities.

Recommendations provided here will be appropriate in most but not every situation. Consult TB Services when there is uncertainty on TB screening for individual clients.

Local documentation systems (e.g. BCCDC TB Screening Form or Panorama) provide the framework for TB screening, and act as referral pathways for BCCDC TB Services to communicate recommendations. Incomplete information may result in a delayed response time. The reason for screening code must be clear on all TB screening documentation, as this greatly influences the interpretation of the screening assessment.

A TB Health History (includes risk factors and symptoms), and if appropriate a physical examination is required for **ALL** TB screening as a part of the comprehensive TB assessment.

Practitioner Alert!

If a client has signs/symptoms of active TB disease (see Table 3) when presenting for any type of TB screening, follow the Symptomatic TB Screening section below.

See local regional guidelines for exceptions to the referral recommendations described below.

1. ROUTINE SCREENING

A TB Health History (includes risk factors and symptoms), and if appropriate, a physical examination, is required for **ALL** routine screening.

Table 8: Routine TB Screening Guidelines for health care workers, employees, volunteers and students[Ω]

Clients	Timeframe for Initiating TB Screening	TST[^]	CXR[∞]	Refer to BCCDC TB Services [Ω]
Health Care Workers*	Upon first hire in BC, no further testing unless TB work exposure identified	Yes	If new TST positive and/or symptomatic	If TST positive and/or CXR done
Health Care Volunteers	Symptom checks recommended if volunteers work with vulnerable groups such as neonatal intensive care or dialysis units. Manage symptomatic volunteers as described in Section 5.			
Employees/Volunteers • Corrections • Public Service Employees ** • Shelters • Drop-In Centres • Addiction Treatment Centres • Licenced Child Care Facilities	Upon starting employment or at the discretion of the employer or institution	Yes	If TST positive and/or symptomatic	If TST positive and/or CXR done
Students				

***** Defined as all workers in a healthcare institution
****** Each Health Authority determines which Public Service Employee groups require routine TB screening
^ A two-step TST at baseline is recommended if no prior TST or previous TB treatment
∞ A healthcare worker or volunteer that has a previous positive TST should only have a CXR done if symptoms are present or risk of exposure has occurred.
Ω If a referral to BCCDC TB Services is **not** indicated, a nurse may provide a clearance letter for routine screening purposes.

Table 9: Routine TB Screening Guidelines for clients based on medical risk factors

Clients	Timeframe for initiating TB screening	TST	CXR*	Refer to TB Services
Immune compromised **or** starting immune suppressant treatment^	Ideally prior to starting treatment (needs to be done once at baseline, not with regimen change. Only repeat if new TB risk factors)	Yes	Yes	Yes
Newly diagnosed HIV positive For ongoing screening recommendations see Section 3	At baseline	Yes	Yes	Yes
New or incident dialysis patients∞	Within 1 week of their 1st chronic dialysis start	IGRA only	Yes	Yes
Live donor transplant	Prior to donating organ	Yes	Yes (typically ordered by transplant team)	Yes

* See Table 7 and Chest X-Ray section for use of pre-existing chest x-rays and chest x-rays during pregnancy.
^ Transplant recipient on immune suppressing treatment; taking (or about to begin) treatment with immune suppressing therapies such as TNF alpha inhibitors, chemotherapy, or systemic corticosteroids (equivalent of ≥ 15 mg/day of prednisone for 2 weeks or longer); chronic kidney disease on dialysis or end-stage and/or other conditions per clinical judgement/consultation with TB Services.
∞ IGRA indicated for dialysis clients. Exceptions include clients who have had previous documented reactive IGRA and/or documented TB or LTBI treatment.

Table 10: Routine TB Screening Guidelines for clients based on congregate settings

Clients		TB symptom screen to rule out active TB▲	Screen for LTBI (TST¥)	CXR* Indications	Refer to TB Services
Entering acute, short-term^ in-patient detox program		Yes, before admission into facility	No	Only if symptomatic	If CXR done
Entering residential drug and alcohol treatment program			Yes■	If TST positive and/or symptomatic	If TST positive and/or CXR done
Entering adult residential care facility	< 60 years old		YesΩ	If TST positive and/or symptomatic	If TST positive and/or CXR done
	≥ 60 years old		No	Only if symptomatic	If CXR done
Correctional facility resident	Short-term sentence (< 2 years)		No	If risk factors in addition to incarceration and/or symptomatic	If CXR done
	Long-term sentence (≥ 2 years)		Yes, offer upon admission into facility	If TST positive and/or symptomatic	If TST positive and/or CXR done

▲ The TB symptom screen should be accompanied by a TB risk factor assessment and TB testing history.
¥ Previous TST results valid if done within past 6 months and no new TB risk factor or no new TB signs or symptoms present.
* See Table 7 and Chest X-Ray section for use of pre-existing chest x-rays and chest x-rays during pregnancy.
^ Typical stays are approximately 1 week.
■ The timing of LTBI screening may occur at the discretion of the facility to promote client-centred care. The purpose of TST testing in this instance is primarily for the benefit of the client and therefore lack of TST testing should not delay or otherwise impact admission.
Ω May be offered within 1 month of admission if asymptomatic. If a client's TB screening is completed, but there is a delay in admission to facility, there is no need to repeat TB screening unless new TB risk identified.

2. SCREENING OF CONTACTS TO ACTIVE TB WITHIN THE PAST 2 YEARS

A TB Health History (includes risk factors and symptoms), and if appropriate, a physical examination, is required for **ALL** contact screening (see Table 10). For contacts presenting with a ***prior*** history of IGRA testing, see IGRA section for recommendations.

Consult with the BCCDC TB Services Nurse Consultants for any contacts who are symptomatic (see Table 3) or who reside in other Regional Health Authorities. Consult with the First Nations Health Authority for any contacts residing in First Nations communities.

Timing of testing

If a TST is indicated, a timely initial assessment is advised. If the initial TST is negative, a second assessment done at least 8 weeks since the last date of contact is required. If the client presents for an initial assessment at least 8 weeks since the last date of contact, only one TST is indicated.

If prior TST positive and no prior CXR is available, conduct an initial assessment and advise CXR at least 8 weeks after the last date of contact.

If an IGRA is recommended, it must be done at least 8 weeks since the last date of contact.

Consult BCCDC TB Services if there is ongoing exposure and concern that the source case has not been effectively self-isolating since the date initially identified as the end of the infectious period. It may be appropriate to delay the second assessment.

Table 11: TB Screening Guidelines for contacts to active TB within the past 2 years

Contacts	Consult with BCCDC TB Services at time of screening to discuss window period prophylaxis*	Recommend initial TST and if negative, a 2nd TST at least 8 weeks after the last date of contact^ (unless contraindicated)	CXR (see Table 7)	Refer to BCCDC TB Services
Immune competent	No	Yes	If new or prior TST positive	If TST positive and/or CXR done
Immune compromised	If indicated	Yes	If new or prior TST positive or WPP candidate.	Yes, if TST positive and/or CXR done.
HIV positive**	Yes			
Children less than 5 years and older than 6 months	Yes Also, refer to primary HCP if outside the Lower mainland	Yes	Yes	Yes, obtain weight
Children less than 6 months		In consultation with TB Services		
Transient/ marginalized populations	No, unless other risk factor makes contact candidate for WPP	Yes, if feasible. If contact is unable to return for TST read, offer sputum testing and CXR to promote client-centred care		If TST positive and/or CXR done

***** See definition of window period prophylaxis (WPP). For further information see Section 8.3.2 of TB Manual.

^Low priority contacts only need one TST 8 weeks after the last date of contact. See Section 7.7 of the TB Manual.

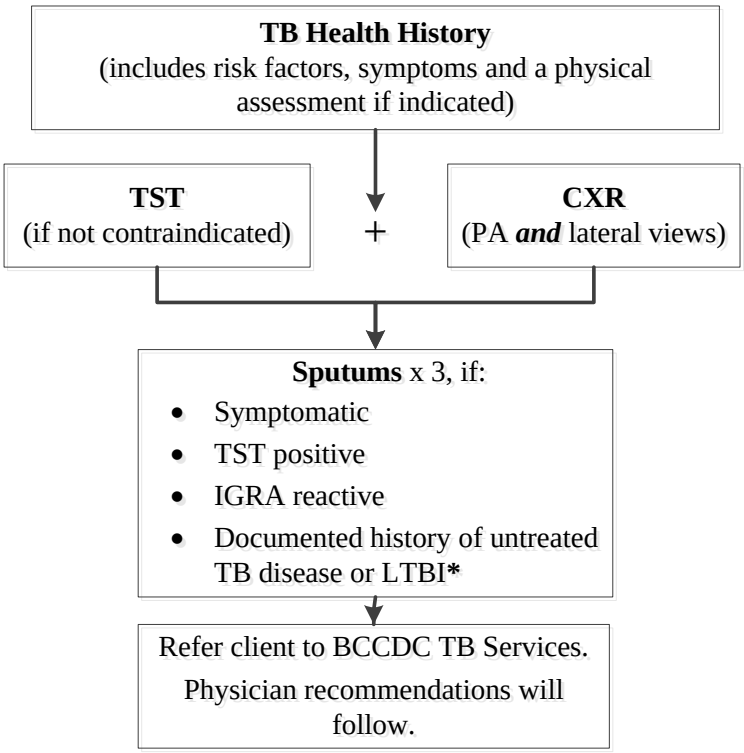
****** Consider sputum collection if HIV positive and a documented history of untreated LTBI (see Section 4.5 of TB Manual).

3. SCREENING OF PEOPLE LIVING WITH HIV INFECTION

Baseline screening for people living with HIV infection

Upon initial diagnosis with HIV infection or if no documentation of prior TB screening, recommend:

Figure 1: Comprehensive TB Assessment



* **Untreated LTBI** can be indicated by: prior TST positive or IGRA reactive results, fibronodular changes on pre-existing CXR or prior documentation. Review any prior recommendations for LTBI therapy with client if not previously completed

Additional screening recommendations

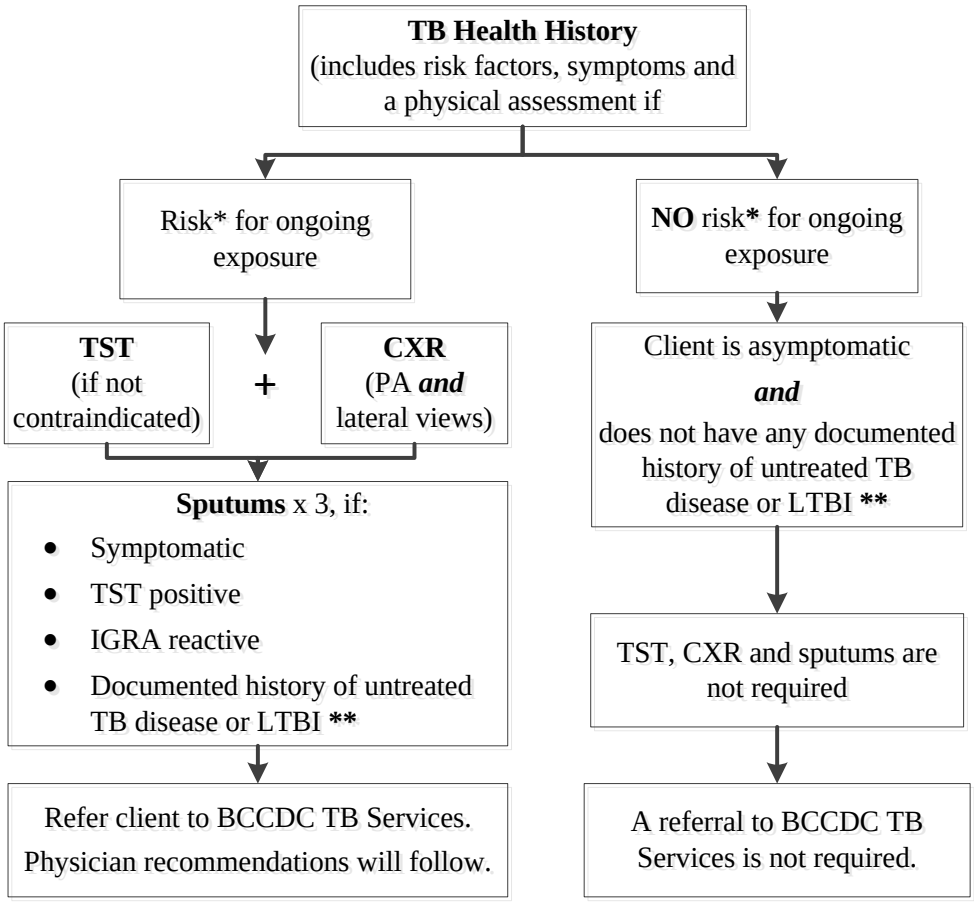
A CD4 count < 200 x 10*6/L compromises the capacity of the immune system to mount a response to the TST. When CD4 increases to > 200 x 10*6/L (e.g. after beginning anti-retroviral treatment), recommend repeat TB screening if TST negative at baseline.

Baseline and annual follow-up TB screening does not preclude formal contact tracing or assessment of symptoms. Additional screening outside of baseline and annual follow-up may be indicated more frequently if there is evidence of new exposure or risk factors

Annual screening for people living with HIV infection

Outside of other indications (e.g. contact tracing, symptomatic, baseline screening), recommend:

Figure 2: Comprehensive TB Assessment



* **Risk for ongoing exposure** can include: travel to a high TB incidence country, residence in regions with a high incidence of active TB disease , homeless or under-housed, residing in a congregate living setting (e.g., corrections, residential treatment program), or contact to an active case of TB disease within the past 2 years

** **Untreated LTBI** can be indicated by: prior TST positive or IGRA reactive results, fibronodular changes on pre-existing CXR or prior documentation. Review any prior recommendations for LTBI therapy with client if not previously completed.

4. IMMIGRATION SCREENING

As a part of the Immigration Medical Surveillance Program, clients with CXR abnormalities suggestive of previously treated TB or history of prior TB are referred to BCCDC TB Services for further investigation to rule out infectious TB disease. Immigration, Refugees, and Citizenship Canada (IRCC) officers determine whether clients need to present to public health within 7 or 30 days.

Clients presenting to public health with their Medical Surveillance Undertaking Form (IMM 0535B) require the following for post-landing TB surveillance:

1. Initial visit

- TB Health History (includes risk factors and symptoms) and if appropriate, a physical examination. Include a description of any prior treatment or records of previous diagnosis.
- CXR if symptomatic (see Table 3 and Symptomatic screening section)
- Collect 3 sputum samples, ideally within 30 days of arrival in Canada (see Sputum collection section). If specimens are not submitted, note reasons why on the referral documentation. Consider consult with BCCDC TB Services.

2. Asymptomatic clients are recalled 3 months after arrival in Canada

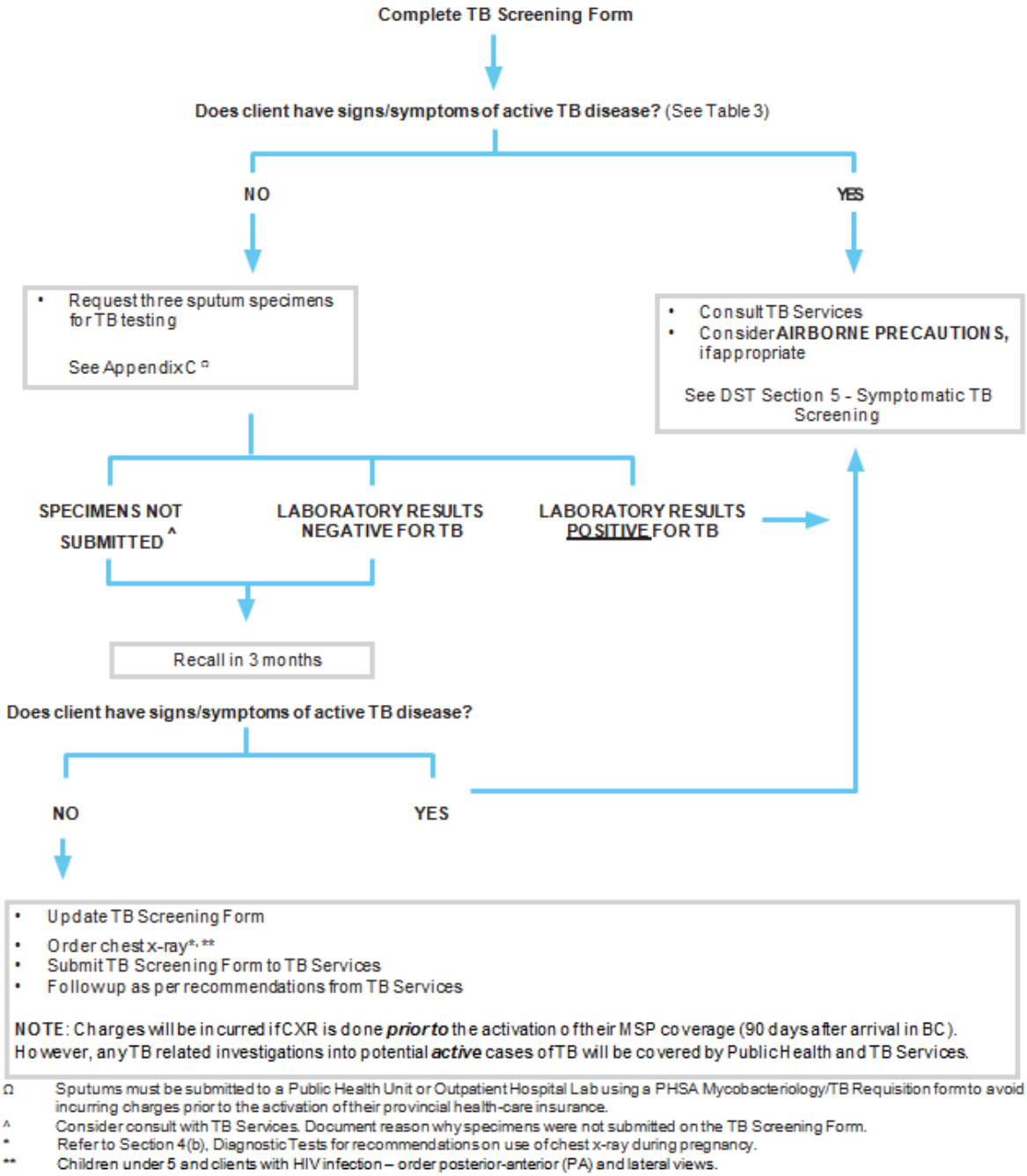
- Update documentation
- Order new CXR (will need active Medical Services Plan (MSP) coverage)

Forward documentation to BCCDC TB Services. Follow-up recommendations based upon the above TB assessment and IMM 0535B Form will be forwarded to the local public health program.

Notes

- Any costs related to investigations into potential infectious cases of active TB disease will be covered by Public Health
- Contact BCCDC TB Services if client presents without their IMM 0535B Form
- Clients may need to be recalled earlier than 3 months if there are any positive sputum results
- Sputum samples must be submitted to Public Health Units or Outpatient Hospital Labs using a BCCDC Public Health Laboratory Mycobacteriology/TB Requisition form
- Costs will be incurred by the client if sputum samples are submitted to private laboratories, or if CXR's are done prior to their MSP coverage being active (required 90 day waiting period after arrival in BC) in the absence of symptoms

Figure 3: Post-landing TB surveillance testing flowchart



Ω Sputums must be submitted to a Public Health Unit or Outpatient Hospital Lab using a PHSA Mycobacteriology/TB Requisition form to avoid incurring charges prior to the activation of their provincial health-care insurance.
^ Consider consult with TB Services. Document reason why specimens were not submitted on the TB Screening Form.
* Refer to Section 4(b), Diagnostic Tests for recommendations on use of chest x-ray during pregnancy.
** Children under 5 and clients with HIV infection – order posterior-anterior (PA) and lateral views.

5. SYMPTOMATIC TB SCREENING

Figure 4: Management of clients when there is a *high degree* of clinical evidence for active TB disease

Signs or symptoms of active TB disease (see Table 3) **AND**
Risk factors for the exposure to and development of active TB disease (see Table 1 and Table 2)

1. Initiate comprehensive TB assessment and documentation.
2. Consult BCCDC TB Services Nurse Consultants (604-707-5678) or your local CD unit to confirm a clinical care plan and to discuss infection control and prevention recommendations:

Clinical care plan*	Airborne Precautions

Order diagnostic tests
• **Sputums**: 3 x specimens for AFB smear and culture, at least 1 hour apart
  o If possible, collect 1 x sputum stat
  o If unable to spontaneously produce sputum, consult BCCDC TB Services. Gastric lavage is typically recommended in young children, and induced sputums for adults.
  o See Sputum collection section
• **Chest x-rays**: posterior-anterior (PA) views
  o Order both PA **and** lateral views if less than 5 years or if client has an HIV infection
  o Consult TB Services if client is pregnant
• Offer an HIV test
 	
Note: Cases of non-respiratory TB disease should be assessed for active pulmonary TB disease (3 sputum samples and CXR)
	If in a facility, consult Infection Control Practitioner (ICP) team and attending physician for further direction.
	
	If in the community, advise the client to self-isolate until BCCDC TB Services or your local CD unit has been consulted. This includes:
	• Masking (surgical/procedure-type mask)
	• Home isolation
	• If there are essential medical appointments, alert other health care providers of the recommended precautions
	
	Refer to Appendix B of the BCCDC TB Manual for more on Infection Prevention and Control recommendations.

*The use of TST or IGRA alone for the diagnosis of active TB (as a rule-in or rule-out test for TB) in adults is not recommended. See Chapter 9, Pediatric Tuberculosis in the Canadian TB Standards for further details on the use of TST/IGRA, in addition to other testing, to support the diagnosis of TB disease in children.

6. SCREENING FOR TRAVELLERS

See appropriate sections for the management of travellers who are immune compromised, or starting immune suppressing therapy ('Routine screening'), symptomatic, people living with HIV infection, or who self-identify as contacts to cases of active TB disease outside of Canada.

A TB Health History (including risk factors and symptoms), and if appropriate, a physical examination, is required for **ALL** screening of travellers as a part of the comprehensive TB assessment. Recommend a single post-trip TB screening assessment ***at least 8 weeks*** after returning to Canada.

Table 12: TB screening guidelines for travellers of all ages

<table>
<tr><th>Clients</th><th>Timeframe for Initiating TB Screening (Section 4.1)</th><th>TST (See Screening Tests)</th><th>CXR* (see Diagnostic Tests)</th><th>Refer to BCCDC TB Services</th></tr>
<tr><td>Under 6 months</td><td rowspan="4">Post-trip assessment at least 8 weeks after returning to Canada</td><td>If indicated, consult TB Services for interpretation of results</td><td rowspan="2">If TST positive and/or under 5 years and high risk for TB infection</td><td>If TST completed</td></tr>
<tr><td>6 months up to 5 years</td><td>Yes▲</td><td rowspan="3">If TST positive and/or CXR done</td></tr>
<tr><td>5 to 16 years</td><td>Yes▲</td><td rowspan="2">If TST positive and/or symptomatic</td></tr>
<tr><td>16 years and older^Ω</td><td>Yes</td></tr>
</table>

* See Diagnostic Tests for use of pre-existing chest x-rays (Table 7) and chest x-rays during pregnancy.
^ For detailed recommendations on TB screening for travellers, refer to Chapter 13 of the Canadian Tuberculosis Standards.
▲ Consult TB Services for interpretation of TST results for children with history of BCG vaccine.
Ω For travellers greater than 16 years old, consider two-step TST prior to travel with repeat single-step TST 8 weeks after return to Canada if history of BCG vaccination and/or repeated testing expected (e.g. health care providers).

7. INDIGENOUS PEOPLE

The complexities of the history of TB, residential schools, and social determinants of health have contributed to increased TB infection within some First Nations communities. Persons self-identifying as Indigenous are eligible for annual routine screening at no cost regardless of place of residence (See Section C).

Additionally, as a part of ongoing surveillance and preventative measures, the First Nations Health Authority (FNHA) recommends annual and enhanced screening guidelines for Indigenous people and persons living and working within First Nations communities. For further information on these screening guidelines, programming and/or consultation please refer to FNHA TB Services or call 1-844-364-2232 or email FNHATB@fnha.ca.

CLIENT EDUCATION

While the choice of educational materials can largely be determined in collaboration with the client, it is recommended to ensure client understanding of the following key points:

- The purpose of the screening and diagnostic tests and why they are being recommended
- The difference between latent TB infection and active TB disease
- Window periods and timing for repeat testing if necessary
- How the test is done
- When to expect results (ensure up to date contact information)
- Significance of negative or positive TST and IGRA results
- If TST positive:
    - advise not to have this test done again and provide a copy of the result
    - advise future screening may require CXR
    - advise a positive TST result does not exclude the client from school, work or volunteering after active TB disease has been ruled out
- Risk factors that could increase the chances of acquiring a TB infection and developing active TB disease
- Signs and symptoms of active TB disease and to contact a health care provider if they occur
- Review recommendations and required follow-up
- Provide agency contact information and local resources, reflecting the risk factors identified in the TB Health History and needs of the client (e.g. HIV care, Diabetes management, Smoking Cessation)

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