

Tuberculosis Contact Screening Parameters Tool

INSTRUCTIONS

This tool provides the **MINIMUM guidelines for initial follow-up** of contacts of infectious tuberculosis (TB) cases. Contact investigation outcomes must be analyzed for all settings to decide if contact follow-up should be expanded. This tool should be used in conjunction with Toronto Public Health's (TPH) TB Contact Identification and Evaluation Procedure. **If variations to parameters exist**, media attention expected, and/or cases spent time in school, daycare, long-term care, shelters/corrections, or high risk facilities (e.g. hospital settings), an immediate discussion with TB manager and AMOH is required. The cumulative hour thresholds are guidelines, not absolute.

Definitions and Considerations	
Cumulative exposure	Total number of hours during the case's period of infectivity that contacts shared the same airspace with the case (and contact did not use an N95 mask). In facility settings, contacts may include direct care and support staff, volunteers, visitors, etc.
Period of infectivity (POI)	Calculate start of infectivity by counting back from TB symptom onset or date of first test indicating TB, whichever is first, as below: <ul style="list-style-type: none"> For smear negative and CXR normal/non-cavitary: 4 weeks For smear positive and CXR normal/non-cavitary OR smear negative and CXR cavitary: 8 weeks For smear positive and CXR cavitary: 12 weeks POI normally ends on the date the case is placed in respiratory isolation. See break in contact.
Break in contact (BIC)	<ul style="list-style-type: none"> Last date a contact was exposed to an active infectious TB case (e.g. last day at work/school, date placed in negative pressure respiratory isolation in hospital). Repeat TST is done at least 8 weeks after BIC. BIC may vary in different settings – please note on the TPH Contact Investigation Line List (CILL) and on BIC column below. For case in home isolation with fully sensitive TB (or INH resistant only), for household contacts 5+ years use BIC = <ul style="list-style-type: none"> For smear negative: 2 weeks on effective treatment For smear positive: 4 weeks on effective treatment OR date of smear conversion, whichever first For household contacts <5 years old, when case is in home isolation BIC is the date case is no longer infectious.
Effective TB treatment (in relation to BIC)	On standard RIPE treatment, or as appropriate for known drug sensitivities (see Canadian TB Standards) AND clinical improvement AND tolerating medication with no breaks in treatment. For smear positive: AND repeat sputum smears declining.
Initial & repeat tuberculin skin test (TST)	All contacts should be assessed for TB signs and symptoms when doing a skin test. Initial tuberculin skin test means it should be done as soon as possible, then repeated ≥ 8 weeks after BIC date.
Ventilation	In poorly ventilated spaces, consider lowering threshold for exposure time. Example: a small room with radiator/baseboard heating, no forced air and no open windows. Consider the direction/path of air flow (e.g. fan blowing air from infectious patient towards others; basement apartment in a house with forced air furnace - air recirculates through entire house). If number of air changes per hour (ACH) is available, 6 or more ACH is considered good ventilation; below 2 ACH is considered poor ventilation.
Clinical pulmonary case	(a) Radiology suggestive of active pulmonary TB AND culture negative on respiratory sample (or no laboratory specimens available), OR (b) PCR positive on lung biopsy. If deceased and no specimens will be available, clinical consultation may be necessary to determine the working classification of the case.
Pleural TB	If sputum/BAL is culture positive, manage as pulmonary case. If radiology indicates pulmonary involvement (e.g. infiltrates, cavities) but sputum/BAL culture negative, manage as clinical pulmonary case. If radiology does not indicate pulmonary involvement and sputum/BAL culture negative, manage as extrapulmonary - no contact follow-up.
TB wounds (smear and culture positive tissue/fluid from surgical wounds, abscesses)	Diseased tissues are not typical sources of infection unless procedures create aerosols. Staff involved in high pressure irrigation of open TB wounds, orthopaedic procedures (i.e. cutting with power tools) or cauterization of TB infected tissue while not wearing a N95 mask should be screened. Dressing changes with or without packing but no irrigation do not need screening. Autopsy and embalming have also been associated with TB transmission; staff not using an N95 mask during these procedures on a deceased untreated TB case should be screened.
Cough inducing procedure	Refers to aerosol-generating procedures (e.g. bronchoscopy, sputum induction, suctioning if not a closed system, intubation/extubation, CPAP). Staff must be present during the procedure without an N95 mask to be at risk.
<1 year of age contacts	Start with minimum guideline for contacts <5 years old and consider lowering threshold based on closeness of exposure (e.g. index case held baby while infectious).
Elderly contacts	For community-living contacts 85 years or older: in addition to symptom screening, do a chest x-ray rather than a TST. For long-term care contacts, see section 3 below.
Immunosuppressed contacts	Examples of immunosuppressed contacts include HIV positive with low CD4 counts; dialysis, oncology, and transplant patients. Consider lowering threshold based on extent of immunosuppression and closeness of exposure (e.g. direct caregivers). Consider symptom assessment and chest x-ray with or without TST, and flag TB exposure in the client's hospital/physician chart.
Masks	Only N95 masks are considered adequate PPE for TB. Surgical masks are not considered sufficient PPE.

1. Assess Case Level of Infectivity (LOI)

- For **extrapulmonary cases**, no contact follow-up required so long as pulmonary involvement has been ruled out and no wound care.
- Source case investigation** indicated for children less than 5 years of age only.
- Child cases <10 years of age** are rarely infectious; no contact follow-up required unless cavitary disease or smear positive sputum / gastric lavage.
- For **clinical pulmonary TB cases**, only screen household contacts.
- For **laryngeal TB**, score as high risk regardless of smear/chest x-ray score. If also pulmonary involvement, lower exposure threshold.
- For all other pulmonary TB cases, score level of infectivity rating by adding highest smear count (from sputum, BAL, or gastric aspirate specimens) and chest x-ray results:

Check all that apply:	Circle smear and chest x-ray score, add scores for level of infectivity rating:	Risk Level																																								
<input type="radio"/> Pulmonary → proceed to level of infectivity rating <input type="radio"/> Clinical pulmonary → proceed to section 3 <input type="radio"/> Extrapulmonary (wound care only) → proceed to bottom of page 2 <input type="radio"/> Extrapulmonary (no pulmonary involvement, no wound care) → stop here	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">HIGHEST SMEAR</td> <td style="width: 40%;">Negative/Not applicable</td> <td style="width: 10%; text-align: right;">0</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td></td> <td>Scarce/Moderate (few, 1+, 2+)</td> <td style="text-align: right;">1</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Numerous (3+, 4+)</td> <td style="text-align: right;">2</td> <td></td> <td></td> </tr> <tr> <td></td> <td><i>plus</i></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CHEST X-RAY</td> <td>Normal/Calcified granuloma</td> <td style="text-align: right;">0</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Infiltrates/Opacities/Fibronodular densities</td> <td style="text-align: right;">1</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Cavitation</td> <td style="text-align: right;">2</td> <td></td> <td></td> </tr> <tr> <td colspan="2" style="border-top: 1px solid black;">LEVEL OF INFECTIVITY RATING</td> <td style="text-align: center; border-top: 1px solid black;">=</td> <td></td> <td></td> </tr> </table>	HIGHEST SMEAR	Negative/Not applicable	0				Scarce/Moderate (few, 1+, 2+)	1				Numerous (3+, 4+)	2				<i>plus</i>				CHEST X-RAY	Normal/Calcified granuloma	0				Infiltrates/Opacities/Fibronodular densities	1				Cavitation	2			LEVEL OF INFECTIVITY RATING		=			0Low 1Low 2Low 3High 4High
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2. Establish Case Period of Infectivity (POI)

Beginning of Infectiousness yyyy/mmm/dd:	Date of Respiratory Isolation yyyy/mmm/dd:	Treatment Start Date yyyy/mmm/dd:
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3. Identify Contacts Requiring Follow-up and Establish Break In Contact – please complete the following:

Location of Exposure	Low Risk (0 – 2)	High Risk (3 – 4)	Contacts meeting criteria? (complete CILL for each "yes")		Name of Facility	BIC
			No	Yes		
Household	<ul style="list-style-type: none"> Everyone in household – <i>initial & repeat TST</i> For rooming houses/basement apartments, consider those on the same floor as "household" 	<ul style="list-style-type: none"> Everyone in household – <i>initial & repeat TST</i> For rooming houses/basement apartments with forced air, consider all floors as "household" 	No	Yes		
Close non-household (e.g. family, friends)	<ul style="list-style-type: none"> Contacts ≥ 5 years old with ≥ 120 hours cumulative exposure – <i>initial & repeat TST</i> Contacts < 5 years old or immunosuppressed contacts with ≥ 60 hours cumulative exposure – <i>initial & repeat TST</i> 	<ul style="list-style-type: none"> Contacts ≥ 5 years old with ≥ 96 hours cumulative exposure – <i>initial & repeat TST</i> Contacts < 5 years old or immunosuppressed contacts with ≥ 36 hours cumulative exposure – <i>initial & repeat TST</i> 	No	Yes		
Worksites / Universities / Colleges	<ul style="list-style-type: none"> Smear negative index case – <i>no screening</i> Smear positive index case – follow-up contacts with ≥ 120 hours of cumulative exposure in a poorly ventilated or small space (e.g. approximately 150 square feet) – <i>TST > 8 weeks BIC</i> 	<ul style="list-style-type: none"> Contacts with ≥ 96 hours of cumulative exposure in a medium space (e.g. classroom or smaller size space), or within 8 feet of index case in a large space (e.g. lecture hall, large open warehouse or open office floor) – <i>TST > 8 weeks BIC</i> Lower threshold for poorly ventilated or small space (e.g. lunch room, approximately 150 square feet) 	No	Yes		
School Contacts ≥ 5 years of age <small>(excludes universities/colleges)</small>	<ul style="list-style-type: none"> Smear negative index case – <i>no screening</i> Smear positive index case – follow-up contacts with ≥ 120 hours of cumulative exposure in classroom and group activities – <i>initial & repeat TST</i> 	<ul style="list-style-type: none"> Contacts with ≥ 96 hours of cumulative exposure in classroom and group activities – <i>initial & repeat TST</i> 	No	Yes		
Daycare / School Contacts < 5 years of age	<ul style="list-style-type: none"> Contacts < 5 years old with ≥ 60 hours cumulative exposure – <i>initial & repeat TST</i> Staff/volunteers with ≥ 120 hours cumulative exposure – <i>initial & repeat TST</i> 	<ul style="list-style-type: none"> Contacts < 5 years old with ≥ 36 hours cumulative exposure – <i>initial & repeat TST</i> Staff/volunteers with ≥ 96 hours cumulative exposure – <i>initial & repeat TST</i> 	No	Yes		
Shelters / Group Homes / Drop-ins	<ul style="list-style-type: none"> Contacts ≥ 5 years old who spent ≥ 5 nights sleeping in the same room – <i>TST > 8 weeks BIC</i> Staff and others with ≥ 120 hours cumulative exposure – <i>TST > 8 weeks BIC</i> Contacts < 5 years old or immunosuppressed contacts with ≥ 60 hours cumulative exposure – <i>initial & repeat TST</i> 	<ul style="list-style-type: none"> Contacts ≥ 5 years old who spent ≥ 3 nights sleeping in the same room – <i>TST > 8 weeks BIC</i> Staff and others with ≥ 96 hours cumulative exposure – <i>TST > 8 weeks BIC</i> (for staff, initial TST may also be feasible) Contacts < 5 years old or immunosuppressed contacts with ≥ 36 hours cumulative exposure – <i>initial & repeat TST</i> If infectious case spent ≥ 60 hours in facilities with drop-in services, consider holding site-based screening in addition to the above. 	No	Yes		
Correctional Facilities	<ul style="list-style-type: none"> Contacts who spent ≥ 5 nights sleeping in the same cell – <i>initial & repeat TST</i> Staff and others with ≥ 120 hours cumulative exposure – <i>TST > 8 weeks BIC</i> 	<ul style="list-style-type: none"> Contacts who spent ≥ 3 nights in same cell – <i>initial & repeat TST</i> Staff and others with ≥ 96 hours cumulative exposure – <i>initial & repeat TST</i> 	No	Yes		
Long Term Care, Assisted Living and Retirement Facilities, Home Care	<ul style="list-style-type: none"> Residents who spent ≥ 5 nights sleeping in the same room or residents with ≥ 120 hours cumulative exposure in a medium size space (e.g. classroom or smaller size space) – <i>initial symptom screen and CXR; if symptomatic, collect sputum as well. Consider TST if prophylaxis is an option. Recommend LTCF to flag TB exposure on resident chart and that they conduct enhanced TB symptom surveillance for 2 years.</i> Staff with direct patient care and others with ≥ 120 hours cumulative exposure in classroom size or smaller airspace – <i>TST > 8 weeks BIC</i> 	<ul style="list-style-type: none"> Residents who spent ≥ 3 nights sleeping in the same room or residents with ≥ 96 hours cumulative exposure in a medium size space (e.g. classroom or smaller size space) or within 8 feet in a larger size room (e.g. large dining hall) – <i>initial symptom screen and CXR; if symptomatic, collect sputum as well. Consider TST if prophylaxis is an option. Recommend LTCF to flag TB exposure on resident chart and that they conduct enhanced TB symptom surveillance for 2 years.</i> Staff with direct patient care and others with ≥ 96 hours cumulative exposure – <i>TST > 8 weeks BIC</i> 	No	Yes		
Hospitals and Clinics	<ul style="list-style-type: none"> Patients with ≥ 48 hours cumulative exposure in the same room, or for larger bay areas the patients in adjacent beds, or participation in patient group activities (e.g. pediatric play room, psychiatric group programs) – <i>TST > 8 weeks BIC, unless <5 years old, initial & repeat TST</i> Staff with direct patient care for ≥ 60 hours cumulative exposure; all staff involved during cough inducing/aerosolizing procedures if not wearing PPE – <i>TST > 8 weeks BIC</i> 	<ul style="list-style-type: none"> Patients with ≥ 24 hours cumulative exposure in the same room, or participation in patient group activities (e.g. pediatric play room, psychiatric group programs) – <i>TST > 8 weeks BIC, unless <5 years old, initial & repeat TST</i> Staff with direct patient care ≥ 36 hours cumulative exposure; all staff involved during cough inducing/aerosolizing procedures if not wearing PPE – <i>TST > 8 weeks BIC</i> 	No	Yes		
Emergency Medical Services	Notify EMS of situation and recommend if any follow-up is needed (use above hospital staff parameters)	Notify EMS of situation and recommend if any follow-up is needed (use above hospital staff parameters)	No	Yes		
Public Travel	<ul style="list-style-type: none"> For air travel, utilize Public Health Agency of Canada guidelines For long distance (i.e. >8 hours) public bus and train travel, consider follow-up only if evidence of transmission among closer contacts. No follow-up for local public transit (e.g. TTC, GO train). 		No	Yes		
Wound Care	<ul style="list-style-type: none"> Wound specimens smear negative – <i>no screening</i>. Wound specimens smear <u>and</u> culture positive – staff involved in high pressure irrigation of open TB wounds, orthopaedic procedures (i.e. cutting with power tools) or cauterization of TB infected tissue while not wearing a N95 mask should be screened – <i>TST > 8 weeks BIC</i> 		No	Yes		