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Communicable Disease Control Manual

Chapter 4: Tuberculosis

Contact Investigation

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7.0 CONTACT INVESTIGATION

This section of the TB Manual provides information on provincial, national, and international standards for TB contact investigation.

Additional information can be found in:

- Chapter 12 of the Canadian Tuberculosis Standards, 7th Edition
- Guidelines for the Investigation of Contacts of Persons with Infectious Tuberculosis: Recommendations from the National Tuberculosis Controllers Association and CDC (MMWR 2005;54 [No. RR-15]),

Roles and responsibilities for TB contact investigation in BC are as follows:

- **Regional Health Authorities (RHAs)** - responsible for ensuring contact investigations are performed for TB cases reported in their jurisdictions. There is some variability in specific roles and responsibilities for contact investigation among RHAs.
- **First Nations Health Authority** - responsible for ensuring contact investigations are performed for TB cases reported within a First Nations community. As a coordinating and case management entity, they coordinate closely with the RHA associated with the community. FNHA TB Services follow RHA MHO and BCCDC TB Services guidance on the parameters of contact investigation.
- **TB Services** - responsible for coordination of contact investigations that involve multiple jurisdictions (e.g., Corrections, PHAC) and are available for consultation as requested by RHAs. Other roles and responsibilities vary depending on the Health Authority:
    - **Fraser Health Authority & Vancouver Coastal Health -** TB Services is responsible for completing the initial index case interview and for providing recommendations to support the contact investigation plan.

7.1 Objectives

The primary objective of TB contact investigation is to identify people who have been exposed to infectious TB disease to ensure they receive appropriate screening, and when indicated, treatment for TB disease or latent TB infection (LTBI).

Achieving this objective helps to:

- Stop transmission of TB (from any additional cases found among contacts).
- Prevent development of TB disease in infected contacts.

A secondary objective of contact investigation is to prevent or minimize TB clusters or outbreaks by monitoring for and responding to, contact investigation findings that suggest extensive or ongoing transmission.

7.2 Indications

Contact investigations are indicated for cases with laboratory or clinically confirmed respiratory TB disease, **regardless** of acid-fast bacilli (AFB) smear results[1]. Contact investigations are also performed for cases with pleural TB disease since up to 50 per cent of such cases have been found to have positive sputum cultures, even in the absence of pulmonary disease on chest x-ray [1].

In some situations, contact investigation may be recommended for clients who likely have active respiratory TB disease based on clinical and epidemiological evidence (e.g., prior to laboratory confirmation). Examples could include clients with AFB-positive sputum smears and/or positive nucleic acid amplification tests, and those with chest x-ray abnormalities or pathology findings consistent with active TB disease.

Cases with confirmed or presumed **nonrespiratory** active TB disease usually do not require extensive contact investigations. However, chest x-rays and sputum testing for TB should be included in the clinical evaluation of such cases to **rule out concurrent active respiratory TB disease.** In these situations, household contacts will often be assessed prior to concurrent respiratory TB disease being confirmed, as culture results can take 6-8 weeks.

Source case investigations are indicated when children less than five are found to have TB disease or in circumstances where recent transmission likely occurred (e.g., pleural TB, TB in a younger person). Refer to Section 7.11 for information on source case investigation.

7.3 Scope

The initial scope of a contact investigation is informed by:

- The period of time during which the case was capable of transmitting TB bacteria (the infectious period, see Section 7.4).
- Factors that influence the risk of TB transmission (Section 7.5).
- Social characteristics of the case (see Section 7.6).

The scope is often adjusted as the investigation progresses. For example, contact investigations may be expanded in response to additional information about the case and/or findings from assessments of contacts such as secondary cases or if the proportion of contacts found to have TB infection is significant.

[1] Although cases with cavitary or extensive disease and/or AFB smear-positive respiratory specimens are considered more likely to transmit TB, AFB smear-negative pulmonary TB cases can also transmit and should be considered potentially infectious.

7.4 Determining Infectious Period

Table 7-1: Guidelines used by TB Services to estimate the start of the infectious period [2]

Respiratory Symptoms		AFB Smear-Positive Respiratory Specimens, Laryngeal TB, or Cavitary Pulmonary TB Disease	Recommended Minimum Estimate for Start of Infectious Period
YES	OR	YES	**Three months** before onset of symptoms or first finding consistent with TB disease, whichever is earlier
NO	AND	NO	**Four weeks** before the date TB disease was first presumed by a health care provider[2]

NOTE: These guidelines are widely accepted as a **MINIMUM** standard for informing initial contact investigation activities.

For contact investigation purposes, the end of the period of infectiousness is typically when the case is isolated under airborne precautions (see Appendix B) or is no longer infectious, whichever comes first.

7.5 Assessment of Transmission Risk

The likelihood of infection with TB bacteria during exposure to an infectious case is influenced by clinical characteristics and activities of the case, and the exposure circumstances (see Table 7-2 below).

Table 7-2: Factors that increase TB transmission risk

Clinical Characteristics	Source Case Activities	Exposure Circumstances
• Respiratory or laryngeal TB disease • Positive AFB sputum smears or cultures • Cavitation on chest x-ray • Adolescent or adult case • Lack of TB treatment, ineffective TB treatment*, or non-adherence to TB treatment	• Frequent coughing, sneezing, or other activities involving forceful expiration (e.g., singing, playing wind instruments) • Cough inducing procedures or activities	• Significant duration of exposure (eg. more than 8 hours/week) • Close physical proximity to case during exposure (eg. sleeping in the same room) • Exposure in small or crowded and/or inadequately ventilated areas (eg. lack of windows) • Contacts without adequate personal respiratory protection (e.g., health care providers donning surgical masks instead of N-95 particulate respirators)

* Cases with drug-resistant TB disease are not typically more infectious than cases with fully drug-susceptible TB disease. However, delays can occur in rendering infectious cases non-infectious, which can lead to ongoing transmission if effective infection prevention and control measures are not maintained.

[2] Recommendation is often appropriate for persons being evaluated for TB or clinical cases, and clients placed on treatment for active TB disease empirically. Post mortem diagnoses may not fit into this category. Non-respiratory cases may eventually be determined to be non-infectious but at the time of diagnosis this is not always clear. As such, some contact investigation may be appropriate, certainly with the focus on high-priority contacts.

Additional information on clinical characteristics and activities that influence TB transmission is provided in Table 7-3. Guidelines for estimating the level of infectiousness for individual cases have been developed based on these considerations (Table 7-4).

Table 7-3: Clinical characteristics and activities that influence risk of TB transmission

Anatomical site of TB disease	• Ordinarily, only cases with respiratory TB disease or laryngeal TB disease can transmit. However, contact investigations are also done for cases with pleural TB disease since up to 50 per cent of such cases have been found to have positive sputum cultures, even in the absence of pulmonary disease on chest x-ray [1]. • Rarely, transmission from non-respiratory cases can occur during medical procedures that release aerosols (e.g., autopsy, high-pressure irrigation of draining TB abscesses). • Transmission from cases presenting with nonrespiratory TB disease can occur if there is undiagnosed concomitant respiratory TB disease.
Sputum bacteriology	• Sputum status is the single most reliable indicator of infectiousness [3]. • Cases with AFB smear- positive sputum are generally considered more infectious than cases with AFB smear-negative sputum. • Expert opinion suggests results from respiratory specimens other than expectorated sputum (e.g., bronchial washings or bronchoalveolar lavage fluid), should be regarded as equivalent to sputum.
Radiographic findings (x-rays)	• Chest x-rays are used to determine the location and extent of TB disease in the lungs and other visible structures (e.g., pleural space, hilar lymph nodes). Cases with cavitary disease observed on chest x-ray are generally considered to be more infectious than cases without cavitary disease. • Presentations of respiratory TB disease, such as upper lobe disease and/or cavities, are influenced by immune function. For this reason, chest x-rays can be less helpful for predicting level of infectiousness for cases with severe immune deficiency (e.g., HIV-infected cases with low CD4 T-cell counts). Results from sputum and other tests must also be considered.
Co-morbidities	• Co-morbidities resulting in advanced immune suppression (e.g., HIV infection) can cause delays in diagnosis. Delays in diagnosis can result in cases having been infectious for an extended period prior to diagnosis, and being more infectious at time of diagnosis. • NOTE: HIV testing is recommended for all TB cases. Although cases with HIV infection are not typically more infectious than cases without HIV infection, HIV status is relevant because contacts to HIV infection cases are at increased risk for HIV infection. As such (they are at higher risk for rapid progression to active TB disease after infection with TB bacteria) [4]. HIV testing is recommended for TB contacts whose HIV status is unknown (see Section 8.2).
Age	• In general, TB disease in children less than 10 years is not considered infectious. However, transmission from children has been reported in association with presentations of pulmonary TB disease more typically seen in adults. Therefore, contact investigations are indicated when children present with adult-type pulmonary TB (e.g., cough, cavitation on chest x-ray, AFB smear-positive sputum or gastric washings). • A source case investigation (reverse contact tracing) is recommended when children less than 5 years old are diagnosed with active TB disease and in the event of pleural TB in a younger person (see Section 7.11) [1].

(cont'd) Table 7-3: Clinical characteristics and activities that influence risk of TB transmission

Extent of TB treatment	• Cases become less infectious rapidly after effective TB treatment is initiated. The exact rate of decline of infectiousness cannot be predicted for individual cases. Considerations include:
	  ○ Extent of TB disease
	  ○ Treatment regimen
	  ○ Length of time on treatment
	  ○ Evidence of clinical and/or radiographic improvement
	  ○ Results from drug susceptibility testing
	• Reported adherence

Activities	• Activities that involve forceful expiration can cause TB bacteria to be released into the airspace around an infectious case. Examples of forceful expiration include: coughing, sneezing, singing, playing wind instruments, and if there is laryngeal involvement, talking. • Cough-inducing activities such as certain medical procedures (e.g., sputum induction), or smoking crack cocaine or marijuana have also been linked to TB transmission [5, 6, 7].

Table 7-4: Guidelines used by TB Services to estimate the relative level of infectiousness

High Level of Infectiousness	Medium Level of Infectiousness	Likely Low Level of Infectiousness
Presence of cough ***AND*** Laryngeal TB disease ***OR*** Cavitary pulmonary TB disease on chest x-ray ***OR*** AFB smear-positive respiratory specimens*, regardless of Gaffky count	Presence of cough ***AND*** Non-cavitary pulmonary TB disease on chest x-ray ***AND*** AFB smear-negative / culture-positive respiratory specimens*	No cough ***AND*** Concomitant respiratory TB disease ruled out ***OR*** Respiratory TB disease with AFB smear- and culture-negative respiratory specimens* (i.e. "clinical case") ***OR*** Patient has received and is tolerating adequate treatment** for 2 weeks or longer and respiratory specimens* have become (or continue to be) AFB smear-negative

* This could include spontaneous or induced sputum, bronchial washings, tracheostomy and endotracheal aspirates, or gastric washings/aspirates in the case of pediatric clients.

** As evidenced by drug susceptibility testing, adherence, and clinical and radiographic response to treatment.

7.6 Social and Structural Factors that can Influence Contact Investigations

Social and structural factors can influence the size of a person's social network, the complexity of the contact investigation, and how the investigation is best approached.

For a variety of reasons, a case may hesitate or refuse to share information, or is unable to participate in contact investigation interviews. For example, TB stigma is recognized as a social condition that may negatively impact contact investigations [8]. TB stigma is perceived to increase TB diagnostic delay and treatment adherent issues [9, 10] and it has been argued that, at a broader population level, it is a central driver of morbidity and mortality [11, 12].

For each contact investigation, it is necessary to consider the contextual social and structural factors impacting the situation and to explore creative and flexible approaches to providing care from a client-centric, equity-oriented perspective. As such, consider the following recommendations:

- Adapt case interview tools to make them more effective for identifying contacts or exposure locations.
- Incorporate location-based TB screening to reach contacts that cases cannot or hesitate to identify by name (e.g., in situations involving illicit drugs use or illegal activities).
- Consider power differentials among service providers and clients, how this impacts care and what strategies could alleviate barriers.
- Integrate TB-related health literacy and counselling into contact investigations (eg. family counselling, support people in ways to disclose their illness) [13].
- Empower clients involved in contact investigations to become "TB Champions" to address the consequences of TB stigma [12].
- Appreciate competing priorities in people's lives and find opportunities to work with other health and social professionals known to the contacts and consider offering incentives (eg. monetary) to encourage participation in testing [14, 15].
- Examine the social relationships between cases and contacts to identify settings and behaviours that characterize transmission events (social network analysis).

7.7 Systematic Approach to TB Contact Investigation

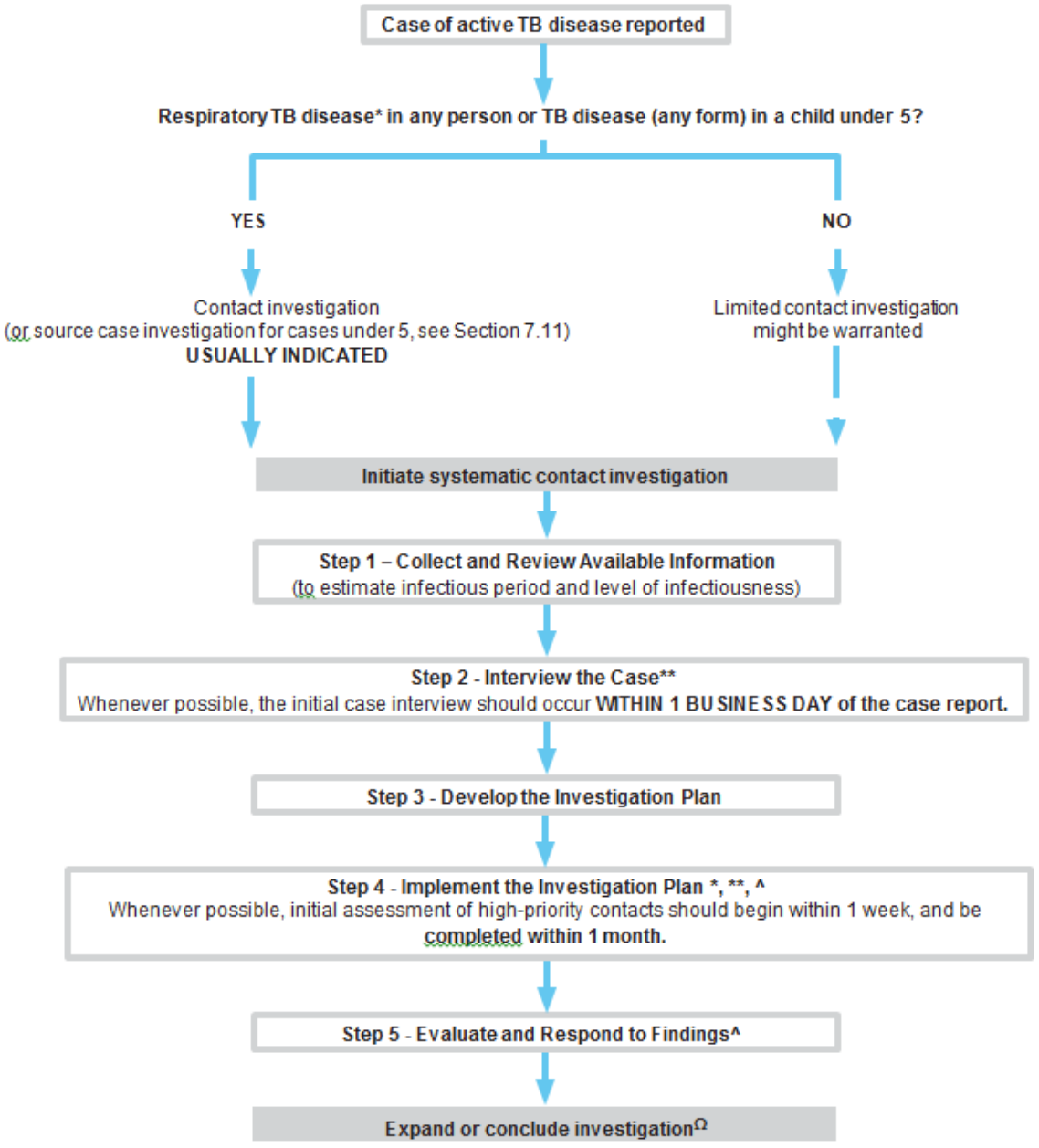
Using a systematic approach to contact investigations is essential for supporting collaboration among the involved programs and health care providers, and for ensuring the most effective use of resources.

The systematic TB contact investigation process described recently by the US Centers for Disease Control and Prevention [16] has been adapted for the BC context, and condensed into five steps:

- Step 1 - Collect and Review Available Information
- Step 2 - Interview the Case
- Step 3 - Develop the Investigation Plan
- Step 4 - Implement the Investigation Plan
- Step 5 - Evaluate and Respond to Findings

Although the steps are presented in sequence in Figure 7-1, there is often overlap of activities among steps. Refer to the appropriate RHA Guidelines for further specific processes beyond what is outlined below.

Figure 7-1, TB contact investigation flowchart. Refer to local guidelines for further RHA specific processes.



* Include chest x-rays and testing of respiratory specimens (usually sputum) for TB in the clinical evaluation of cases that present with non-respiratory TB disease.

** Notify TB Services of additional high priority contacts, contacts from other RHA's, information regarding travel (e.g. flight, cruise), incarceration, time spent in First Nations Communities, and/or information that could impact parameters initially set for the investigation (e.g. information pertaining to infectious period, transmission risk).

^ Notify your local Medical Health Officer and TB Services if evidence of transmission is found.

Ω Consider consultation with TB Services prior to expanding a contact investigation. Notify TB Services upon conclusion of the contact investigation.

7.7.1 Step 1 – Collect and Review Available Information

When a new person to be evaluated for TB or confirmed case is reported to TB Services, information is collected to:

- Confirm the identity and location of the case.
- Estimate the infectious period and level of infectiousness.
- Identify highest priority contacts (e.g., household contacts, symptomatic contacts, contacts who are candidates for window period prophylaxis, immune compromised contacts).
- Support follow-up interviews with the case (e.g., by public health).

This information includes:

- Diagnosis, date of diagnosis and presenting site(s) of TB disease
- Consultation reports
- Current treatment regimen
- Available clinical findings, such as:
    - Chest x-rays and/or other diagnostic imaging
    - Sputum (and/or other specimen) smears and cultures, and nucleic acid amplification tests (NAAT)
    - TST and/or IGRA
    - Blood tests
- Details about prior diagnosis with LTBI or TB disease, and any treatment
- Risk factors for infection with TB bacteria or development of TB disease (e.g., medical condition; substance use; setting or travel)
- Language preferences and translation services requirements

7.7.2 Step 2 - Interview the Case

Prepare for the Interview:

- Consider your interview strategy or approach. Demonstrating sensitivity, awareness and compassion regarding client and community TB perceptions and the impact of a TB diagnosis is important to establishing a trusting relationship with your client. Cases may be reluctant or unable to identify some or all of their contacts or activities for a number of reasons. For example, they may not know their contacts by name or may be concerned about the repercussions of divulging information (See Section 7.6). Be sensitive to a case's concerns and fears, explain the importance of screening contacts for TB, and reassure cases that the information provided will be kept confidential.
- Determine what resources are needed to support an effective interview. Eliciting and documenting complete and accurate information from cases is essential to identifying contacts, and consequently, ensuring those at risk receive timely and appropriate TB screening.
    - Consider translation services, support persons and access to a space to conduct the interview that is private and convenient to the client.
    - Use data collection tools for TB case interviews approved by your jurisdiction.
    - Use proxy interviews as needed. Follow RHA policies and procedures for proxy interviewing, as they can pose a risk to client confidentiality.

- Ensure the presence or consent of parents or guardians of minors. Follow RHA policies and procedures.

- If possible, arrange to do case interviews in person. A site visit to assess the case's place of residence is strongly recommended, even if the initial interview with a case occurs in the hospital [2]. Site visits often result in the identification of additional priority contacts and provide opportunities to begin TB screening. Follow infection prevention and control precautions, as needed (see Appendix B).

Conduct the Interview:

- When possible, the first case interview to identify contacts should occur **within 1 business day** of the case being reported [2].

Gear questions toward:

- Confirming and expanding on information on hand, particularly the date of onset of TB signs/symptoms.

- Identifying contacts through inquiries about:
  - **Who** they spent time with while infectious.
  - **Whether there are any high risk** contacts that require immediate evaluation (See Section 8.3.2).
  - **Where** they spent time while infectious.
  - **What** activities/events they participated in while infectious. As appropriate, provide information on:
    - TB disease and transmission
    - The contact investigation process
    - What the case can do to help protect others from TB.

Using a checklist can substantially improve the consistency and effectiveness of case interviews.

7.7.3 Step 3 - Prioritize Contacts and Develop the Investigation Plan

Prioritize Contacts

Prioritize contacts for TB screening based on their risk for having acquired TB infection and/or for developing active TB disease if infected.

Contact categories are used to help prioritize contacts for screening. Contact categories used in BC are:

- **Household Contacts -** people who have slept in the same household or congregate setting as the case (e.g., three or more times per week) during the infectious period. Household contacts can include members of an extended family, room-mates, cell-mates, boarders, 'couch surfers', etc.
- **Close, Non-Household Contacts -** people who have had regular, extensive contact with the index case and share breathing space daily or almost daily but do not sleep in the same household most of the time. Close, non-household contacts can include caregivers, regular sexual partners, close friends, extended family, daycare and primary/secondary school classroom contacts, and coworkers

that work in close physical proximity (particularly in small rooms). Regular contacts in specialized health care settings such as dialysis units or rehabilitation programs may also qualify.

- **Casual Contacts -** people that spent time with the case regularly but less frequently than close, non-household contacts, such as high school classmates that share fewer courses with the case, classmates in college/university classes, less exposed colleagues at work, members of a club, team, weekly children's play-group, or other social/recreational/religious group, extended family members that are seen occasionally, and other students on a school bus.
- **Community Contacts -** people with only transient or occasional exposure to the case such as those living in the same community as the case, or attending the same school or workplace as the case but in a different classroom or area of the workplace.

Priority Contacts

Priority assignments should consider not only which categories contacts fall within, but also whether:

- They are symptomatic (see Table 4-6).
- They are at increased risk for progression to active TB disease if infected (see Table 3-1).
- Their exposures occurred under conditions that facilitate TB transmission.

Contacts at highest risk for TB infection or TB disease are referred to as **'high-priority'** contacts and are included in the initial round of screening.

High priority contacts can include:

- Household contacts
- Symptomatic contacts in any priority category.
- Contacts in any priority category[3], who are at high risk for progression to active TB disease if infected (eg. contact < 5 years old, HIV-infection. See Section 8.3.2).
- Contacts with daily or almost daily exposure to cases with AFB smear-positive/cavitary respiratory TB disease and/or cases with laryngeal TB.
- Contacts that slept in the same household or congregate setting as the case (e.g., three or more times per week) during the infectious period.
- Contacts exposed (without wearing an N95 particulate respirator) during bronchoscopy, sputum induction, autopsy or other aerosolizing medical procedures.

In some situations, it may be necessary to target initial efforts towards high priority contacts exposed during the period when the case was the most infectious (see Section 7.4). For example, an active case of respiratory TB disease may have a recommended infectious period of longer than six months.

Medium priority contacts are defined as close, non-household contacts with daily or almost daily exposure, including those at work or school.

Low priority contacts are defined as casual and community contacts, who have lower amounts of exposure to the source case.

[3] Only in very rare certain circumstances would this include community contacts.

Practitioner Alert!

Notify TB Services of any contacts who are candidates for window period prophylaxis, symptomatic contacts, contacts from other RHA's, or information regarding travel (e.g. flight, cruise), incarceration, or time spent in First Nations Communities.

Prioritization of contacts exposed within hospitals and other congregate facilities should be determined on a case-by-case basis, in consultation with infection control representatives within the involved facility. Consider consultation with TB Services and/or a case conference to assist in planning.

Develop the Investigation Plan

An effective way to develop an investigation plan is through a case conference. During a case conference, individuals involved in the investigation:

- Confirm or refine the infectious period and level of infectiousness.
- Confirm which contacts and contact cohorts will be included in the initial round of screening (e.g., high-priority contacts and groups of contacts at risk for rapid development of active TB disease or associated with high-transmission risk activities/settings).
- Review the plan of care for contacts at high-risk for developing active TB disease (e.g., window period prophylaxis).
- Determine TB screening activities to reach priority contacts and contact cohorts.
- Clarify and confirm roles and responsibilities of involved individuals.
- Identify and discuss "red flags", such as:
    - Evidence of transmission among high priority contacts (e.g., additional cases or TST conversions or IGRA conversions among contacts already screened)
    - Involvement of large numbers of contacts and/or complex transmission sites
    - Media interest
- Establish a communication plan among staff and others involved in the investigation, and for media.
- Establish timeframes and methods for investigation activities and data collection/management (e.g., whether additional questions should be added to data collection tools).
- Establish a schedule for follow-up meetings to review findings, challenges, and progress.

7.7.4 Step 4 - Implement the Investigation Plan

Initiate Contact Assessments

Whenever possible, initial assessment of high-priority contacts should begin **within 1 week**, and be completed **within 1 month** [1]. Similar to the social and structural considerations of the case interview, ensure a client-centred, culturally safe approach when engaging in contact assessments (see Section 7.6). Refer to Section 8 for detailed information on testing of TB contacts.

Practitioner Alert!

Notify TB Services and your local Medical Health Officer when evidence of transmission is found, as there could be implications for clinical management of contacts and/or portions of the investigation occurring in other programs/jurisdictions (see Section 7.7.5).

Site Visits

"Site visits" are visits to places where cases spent time while infectious. Site visits can provide very important information, including characteristics of exposure environments.

Other potential benefits of site visits include:

- Identifying additional cases.
- Identifying additional contacts.
- Gathering information and building relationships that could help to facilitate additional contact investigation activities at those locations if necessary.

Practitioner Alert!

It is essential that the confidentiality of all cases and contacts is maintained during site visits.

Site visit tasks typically include:

- Observing and recording environmental characteristics of sites (e.g., activities, room sizes, presence/degree of crowding, ventilation).
- Looking for signs of contacts who may not be present at the time of the site visit (e.g., toys, pictures of visiting children, posters for unrelated gatherings/events held at the sites that indicates contact numbers may be larger than originally expected).
- Obtaining lists of clients, employees, volunteers, and visitors who were present during the case's infectious period.
- Exploring viability for provision of on-site TB screening if necessary.
- Referring high priority contacts who require more immediate medical evaluation (i.e. signs/symptoms of TB disease or candidates for window period prophylaxis.
- Using a consistent approach to field visits and a standardized data collection tool to record findings can ensure maximum benefits are achieved.
- Follow RHA policies and practices for safety and infection prevention and control during site visits.

7.7.5 Step 5 - Evaluate and Respond to Findings

Timely evaluation of findings is critical to ensure contact investigation activities remain appropriate and effective. Certain findings may influence the scope of a contact investigation, while other findings may suggest a potential TB cluster or outbreak.

Monitoring for and responding to evidence of transmission is key.

Evidence of transmission can include:

- TB infection or disease in contacts under five years.

- Any TST conversions (changes in contacts' TSTs results from less than 5 mm of induration to induration of 5 mm or more).

  Changes in IGRA results from non-reactive to reactive.
- A higher-than-expected rate of TB disease or TB infection among contacts[4].

Findings and outcomes that may suggest a potential TB outbreak include:

- More than one case of TB disease found among an index case's contacts.
- TB disease found in contacts that were not prioritized for screening (e.g., TB disease in someone with very limited exposure to the index case), occurring within one year of each other.
- TB disease found in people within the prior two years, who were not identified as contacts during the investigation, but whose TB genotypes match the TB genotype of the index case.

Practitioner Alert!

Notify TB Services and your local Medical Health Officer when evidence of transmission or findings suggestive of a potential TB outbreak or cluster is found, as there could be implications for clinical management of contacts and/or portions of the investigation occurring in other programs/jurisdictions.

7.8 Expanding Contact Investigations

Contact investigations are usually expanded when evidence of transmission is found. Depending on the circumstances, expansion could involve:

- Increasing the scope of the investigation to include lower-priority contacts and/or additional exposure sites, and /or
- **Extending the period of infectiousness.** For example, if evidence of transmission is found in contacts whose last exposure to a smear-positive case was near the beginning of the period of infectiousness, it may be prudent to extend the start of the infectious period from three months before symptom onset to six months before symptom onset.

7.9 Concluding Contact Investigations

Provided that no additional cases have been identified among contacts, contact investigations for confirmed cases can generally be concluded once the majority of:

- Contacts prioritized for screening have completed or are close to completing TB screening.
- Contacts with LTBI have completed or are close to completing treatment, or have a plan in place for follow-up if LTBI treatment was indicated but not taken.

TB Services should be notified upon conclusion of the contact investigation to ensure TB Services role in the contact investigation is complete and timely documentation at TB Services is maintained.

[4] For expected range of prevalence of TST results in various Canadian populations, refer to the Canadian Tuberculosis Standards 7th Edition (2014)

7.10 Evaluating Contact Investigation Outcomes

Evaluation of contact investigation outcomes can be used to help strengthen TB prevention and control efforts. For example, evaluations can be used to:

- Confirm whether provincial and jurisdictional key indicators for contact investigations were met[5].
- Monitor program effectiveness (e.g., whether resources were used efficiently and for the highest priority activities).
- Identify program strengths and areas in need of improvement.
- Identify training needs.
- Identify how program activities and resources may be prioritized differently in the future.

7.11 Source Case Investigation

A source case investigation (also known as a 'reverse contact investigation') is a type of contact investigation done to identify the source case of someone recently diagnosed with active TB disease. Source case investigations are recommended when children less than 5 years old are diagnosed with active TB disease and in the event of pleural TB (primary TB) in a younger person.

Source case investigations focus on identifying and screening those most likely to have TB disease among the people that spent the most time with the index case. This means that, in some situations, chest x-rays and testing of sputum specimens for TB may be recommended for everyone being screened, regardless of TST (or IGRA) results.

For index cases that are children, source cases are most likely to be found among adolescents or adults from:

- Within the household (persons living in the home, frequent visitors, babysitters)
- School
- Daycare
- Carpools or school buses
- Playgroups
- Places of recent travel

When a potential source case is found, TB genotyping can help confirm or disprove whether transmission between the two cases is likely. When a source case is not found, comparing the index case's TB genotyping to those from recent cases in the community can sometimes help to identify the source case. For example, when a matching TB genotype is found, a review of the medical and contact investigation records for the most recent case could reveal connections (epidemiologic links) between the two cases that were not recognized initially.

[5] Key indicators for evaluation of TB contact investigation in BC are under development. Refer to Chapter 12 of the Canadian Tuberculosis Standards, 7th Edition (2014) for some examples of key indicators that may be useful.

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