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Communicable Disease Control Manual
Chapter 4: Tuberculosis

Section 2: Definitions

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2.0 DEFINITIONS

Many of the following definitions are from the Canadian Tuberculosis Standards 8th ed. (2022) (1). Adaptations were made to enhance clarity and ensure consistency with other content in this manual. Additionally, the content presented here reflects recommendations for positive change made by the End TB guide Words Matter Suggested Language and Usage for Tuberculosis Communications, 2nd ed (2022) (2).

Note: in many of the following definitions, "TB bacteria" is used in place of *Mycobacterium tuberculosis* and other mycobacteria included in the *Mycobacterium tuberculosis* complex.

Acid-fast bacteria (AFB) (*bacilli*) – microorganisms that are distinguished by their retention of specific stains even after being rinsed with an acid solution. Most AFB in clinical specimens are mycobacteria, including species other than *Mycobacterium tuberculosis.*

Active TB disease – see TB disease.

Aerosol – is a suspension of tiny particles or droplets in the air which can be inhaled, exhaled or coughed up. In a patient with respiratory tuberculosis, the droplets may contain TB bacteria suspended in the air leading to the spread of infection.

Atypical mycobacteria – see nontuberculous mycobacteria

Bacille Calmette-Guérin (BCG) – a live attenuated vaccine derived from *Mycobacterium bovis*. BCG is primarily used to prevent severe TB disease in children. BCG is currently used in several high TB incidence countries and in some areas of Canada. Detailed information on current and historical BCG use globally is found at BCG Atlas (3). See here for both current and historical information on BCG vaccine usage in Canada.

Booster phenomenon - increase in **tuberculin skin test (TST)** response after an initially negative or indeterminate test when the test is repeated at any time from 1 week to 1 year later, in the absence of exposure or other evidence of new TB infection.

Case – a person with clinically or laboratory-confirmed TB disease.

Cavitary TB disease – evidence on chest x-ray, CT scan or pathology tests of lung destruction resulting in cavities or cystic areas communicating with a bronchus. TB cavities generally contain large numbers of bacteria. Cases with cavitary TB disease tend to be highly infectious.

Clustered TB cases – are two or more cases with matching TB genotypes ("fingerprints"). A genotype cluster could indicate an outbreak is occurring, but most genotype clusters are not outbreaks.

Contact - see Persons of Contact

Contact Tracing (formerly referred to as Investigation) – targeted screening of people exposed to cases of TB disease. Indicated for cases with laboratory or clinically confirmed respiratory and pleural TB disease; it may also be recommended for people who likely have active respiratory TB based on clinical and epidemiological evidence. Once respiratory involvement has been ruled out, cases of non-respiratory TB generally do not require extensive contact tracing.

Contact Priority - prioritizing persons of contact for TB screening based on their risk of acquiring TB infection and/or for developing TB disease. This involves considering whether a person of contact is a household, close non-household, casual or community contact and if their risk of progressing to active TB is high (e.g. younger than 5 years old, HIV+). See Section 7.7.3.

- **High**: household contacts plus close non-household contacts who are high risk
- **Medium**: close non-household contacts with daily or almost daily exposure, including those at school and work
- **Low**: casual contacts with lower amounts of exposure

Conversion – see Tuberculin conversion

Cultural Safety – The First Nations Health Authority define Cultural Safety (4) as an outcome based on respectful engagement that recognizes and strives to address power imbalances inherent in the health care system. It results in an environment free of racism and discrimination, where people feel safe when receiving health care. For BC College of Nurses and Midwives members practice expectations, refer to the Indigenous Cultural Safety, Cultural Humility, and Anti-Racism practice standard (5). For more resources from PHSA, please see Culturally Safe Care (6).

Directly observed preventive therapy (DOPT): A health care worker or trained pill dispenser watches the patient swallow each dose of medication for tuberculosis infection, to enhance treatment completion rates**.**

Directly observed treatment - this term refers strictly to the direct observation of a person ingesting TB medications.

Disseminated TB disease – TB disease that affects three or more sites in the body, or where there is evidence (positive blood culture) of hematogenous dissemination of TB bacteria. See miliary TB.

Drug resistance – in vitro determination that a TB bacteria strain is not inhibited by standard anti -TB drug concentrations.

Drug susceptibility testing (DST) – testing to determine which anti-TB drugs are likely to contribute to an effective treatment regimen.

Extensively drug-resistant tuberculosis (XDR-TB) disease – TB caused by *Mycobacterium tuberculosis (M. tuberculosis)* strains that fulfil the definition of MDR/RR-TB and which are also resistant to any fluoroquinolone and at least one additional Group A drug (Group A drugs are the most potent group of drugs in the ranking of second-line medicines for the treatment of drug-resistant forms of TB using extended treatment regimens and comprise levofloxacin, moxifloxacin, bedaquiline and linezolid) (7).

Extra-pulmonary TB disease – sites of TB disease outside of the lungs and respiratory tract. This includes tuberculous pleurisy and TB of the intrathoracic lymph nodes, mediastinum, nasopharynx, nose (septum) or sinus (any nasal) and all non-respiratory sites. Please note that this term is often used interchangeably with non-respiratory TB disease, but the definitions are slightly different.

Equity-oriented care – an approach to addressing health inequities in practice by incorporating the principles of contextually tailored care, trauma-and-violence-informed care and culturally safe care (8).

High risk person of contact - Child under 5, a person living with HIV, a transplant recipient on immunosuppressing drugs; and other conditions in consultation with TB Services, such as people with chronic kidney disease on dialysis and/or end-stage; people taking or about to start chemotherapy or TNF-alpha inhibitors or systemic corticosteroids (steroid treatments equivalent to 15mg or more per day for 1 month or longer).

High TB incidence countries/territories – Countries or territories where TB incidence (all forms, 3-year average), as estimated by the World Health Organization (WHO), measure 50 per 100,000 persons or higher. View WHO current international incidence rates (9).

Homeless/Underhoused - The homeless/underhoused risk factor should be reported if a client has had any of the following since their last negative TST or in their lifetime in the absence of TST history:

- any shelter stay;
- no fixed address;
- any stay in a Single Room Occupancy (SRO) hotel or supportive housing including Temporary Modular Housing,
- or use of services for homeless persons more than once per week (e.g., soup kitchen, drop in centre, homeless outreach worker or program).

Immune compromised – having the immune response attenuated by the administration of immunosuppressive therapy, malnutrition or by some disease processes (e.g., HIV Infection). In immune compromised individuals, the immune system functions at less than normal capacity.

Indigenous Peoples – The Canadian Constitution Act of 1982 recognizes three major groups: First Nations, Inuk/Inuit and Métis. These are three distinct peoples with unique histories, languages, cultural practices and spiritual beliefs (10).

Induration – The soft tissue swelling measured when determining the tuberculin skin test response to purified protein derivative (PPD) tuberculin. It is to be distinguished from bruising, erythema or redness, which should not be measured.

Infectious – the condition whereby a person with TB disease can transmit infection to others by producing aerosols that contain TB bacteria. Smear-positive, cavitary respiratory TB disease and laryngeal TB disease are considered the most infectious forms of TB disease.

Index case – the first or initial person diagnosed with TB disease from whom the process of contact tracing begins. Note the distinction from source case.

Interferon gamma release assay (IGRA) – in-vitro T-cell based assays that measure interferon-γ (IFN-γ) release in response to TB antigens; used to assist in the diagnosis of infection with TB bacteria. The significance of IGRA results are informed by clinical circumstances and reason(s) for testing.

Intermittent therapy - Therapy administered three times a week. This therapy must always be administered in a fully supervised, directly observed fashion and is usually reserved for the period after the initial intensive daily portion of therapy.

Latent TB Infection – see TB infection

Location-based TB screening – Identifying locations or sites where the case spent time while infectious and offering broad location-based TB screening at these sites. It is often more useful than the traditional name-based approaches when infectious cases cannot provide names, or their social network is complex.

Mantoux tuberculin skin test – see tuberculin skin test.

Miliary TB disease – Disseminated TB disease with chest x-ray findings that include diffuse micro-nodules (see disseminated TB disease).

Most responsible provider (MRP) – A physician or nurse practitioner with overall responsibility for the management and coordination of client care at any given time.

Multidrug-resistant tuberculosis (MDR-TB) disease – TB disease caused by TB bacteria resistant to at least isoniazid and rifampin with or without resistance to other anti-TB drugs (not including quinolones).

Mycobacteria other than tuberculosis (MOTT) – See nontuberculous mycobacteria.

Mycobacterium tuberculosis complex (MTBC) –A group of mycobacteria that can cause TB disease in humans, specifically: *M. tuberculosis* (including subspecies *M. canetti*), *M. bovis*, *M. bovis* BCG, *M. africanum*, *M. caprae*, *M. microtic*, and *M. pinnipedii*. All except *M. bovis* BCG are included in the Canadian case definition of tuberculosis.

Non-respiratory TB disease – Refers to all other disease sites not included in the definition of respiratory TB. The definition overlaps with, but slightly differs from that of extrapulmonary TB disease. Some sites of non-respiratory TB disease include: peripheral lymph nodes (TB lymphadenitis), central nervous system (e.g., TB meningitis, tuberculoma), abdominal cavity and/or digestive system, genitourinary system, bones and/or joints. Non-respiratory TB is generally not considered infectious once respiratory involvement has been ruled out.

Nontuberculous mycobacteria (NTM) disease – All mycobacterial species other than those that cause TB disease and leprosy. Also known as ‘atypical mycobacteria’ or ‘mycobacteria other than TB’ (MOTT). Common examples include: *M. avium* complex (MAC), *M. kansasii*, and *M. abscessus*.

Outbreak – See TB Outbreak

Persons of Contact - a person exposed to an infectious case of TB disease. Prioritizing contacts is an important component of TB prevention as it allows persons of contact with the greatest risk of TB exposure and the development of TB disease to be evaluated in a timely manner.

Pre-XDR-TB – TB caused by *Mycobacterium tuberculosis* strains that fulfill the definition of multidrug resistant (MDR) and rifampicin-resistant (RR) TB and which are also resistant to any fluoroquinolone. The WHO defined pre-XDR-TB for the first time in 2021 (7).

Primary prophylaxis – See window period prophylaxis.

Proxy interview – Following consent from the person with active TB, an interview conducted with people (proxies) familiar with the case’s practices, habits, and behaviours.

Pulmonary TB disease – Refers to TB disease of the lungs and conducting airways: includes TB fibrosis of the lung, TB bronchiectasis, TB pneumonia, TB pneumothorax, isolated tracheal or bronchial tuberculosis and tuberculous laryngitis.

Reactivation TB disease – TB disease that develops after a period of TB infection.

Respiratory TB disease – Pulmonary TB disease, tuberculous pleurisy (non-primary) and TB disease of intrathoracic lymph nodes, mediastinum, nasopharynx, nose (septum) and sinus (any nasal). It is usually infectious and requires contact tracing.

Reverse contact tracing – See source case assessment.

Secondary case – A person who is a contact to TB and diagnosed with TB infection and then develops TB disease. Note that a case found among contacts is not necessarily a secondary case. For example, the person could be a source case (the source of infection for an index case) or could have TB disease coincidentally. Clinical characteristics and TB genotyping can be helpful in making these distinctions.

Smear – A laboratory technique for preparing a specimen to allow bacteria to be seen using a microscope. Acid-fast bacilli (AFB) smearing is required to examine the prepared specimen for the presence of TB bacteria.

Social network analysis – A quantitative analysis of the social relationships between cases and persons of contact to identify settings and behaviours that characterize transmission events. Open-ended and focused questions about the nature of these settings and behaviours allow a richer understanding of transmission dynamics.

Source case – The original source of infection or exposure for secondary case(s) or persons of contact diagnosed with TB infection. The source case can be, but is not necessarily, the index case.

Source case assessment– A type of contact tracing used to identify the source of infection (source case) for someone (usually a young child) recently diagnosed with TB infection, also known as 'reverse contact tracing.

Symptomatic (signs/symptoms) – For respiratory TB disease, fever, cough for 2 to 3 weeks or more with or without fever or phlegm, unexplained weight loss or failure to thrive, hemoptysis, loss of appetite, and night sweats. See Section 4(b) for managing signs/symptoms consistent with TB disease.

TB disease - an active clinical disease that is usually symptomatic. Microbiological tests are usually TB bacteria positive and radiologic tests are usually abnormal: also known as 'TB disease'.

TB genotyping – A laboratory-based method used to identify the genetic pattern (genotype) of the TB bacteria strain that caused a case's TB disease. The method used in BC for TB genotyping is known as 24-locus MIRU-VNTR. TB genotyping results can be used to monitor the clustering of strains of TB bacteria by population and geography, to identify TB clusters or outbreaks, to help with contact tracing, to differentiate between relapse and reinfection in people diagnosed with TB disease more than once, and to help investigate for possible cross-contamination of laboratory specimens. Every new cultured TB isolate per patient per year will routinely undergo MIRU-VNTR genotyping.

TB infection (TBI) – The presence of latent or dormant infection with *Mycobacterium tuberculosis.* People with TBI have no evidence of clinically TB disease, meaning that they have no symptoms, no evidence of radiographic changes that suggest active disease and negative microbiologic tests; they are non-infectious. The diagnosis of TB infection involves assessment of risk factors, tuberculin skin test (TST)/IGRA results and imaging.

TB outbreak– Refers to situations where TB cases are higher than normal within a geographic area or population in a given period, **AND** there is evidence of recent TB transmission among the cases. Definitions vary by local context. A confirmed outbreak is often declared after the outbreak has begun and is determined by the local MHO in coordination with TBS and other HA's as needed. NOTE: The Canadian TB Standards, 8th ed adopted a working definition of outbreak based on the U.S. Centre for Disease Control.

TB preventive treatment (TPT) – treatment for the prevention of TB disease in those diagnosed with TB infection. In BC, first-line regimens include: 4 months of daily rifampin (4R); and 12 doses of weekly, directly observed isoniazid/rifapentine (3HP). See Section 6.

Therapeutic drug monitoring (TDM) – Monitoring of serum concentrations of TB drugs to ensure sufficient levels in the blood to be therapeutically effective while avoiding potential toxicity.

Tuberculin skin test (TST) – A test used to assist in the diagnosis of infection with TB bacteria by identifying whether a person has a delayed-type hypersensitivity reaction to tuberculin antigens. Also known as a 'Mantoux tuberculin test' or a 'Mantoux' since this universally recommended method consists of the intradermal injection of 5 tuberculin units of PPD in the forearm. The significance of TST results is informed by clinical circumstances and reason(s) for testing (see Appendix A).

Tuberculin conversion – An increase in the size of a tuberculin skin test (TST) reaction on repeated testing that reflects new TB infection (e.g., when contact tracing, initial TST less than 5mm and 8 weeks post-exposure TST greater than 5mm). In general, the greater the increase, the more likely that it is due to true conversion: which is essential to consider in planning for contact tracing.

Tumour Necrosis Factor alpha inhibitors (TNFα-inhibitors) – Medications, often referred to as "biologics" that block a key cytokine or protein in the inflammatory response, leading to tissue damage in several diseases including rheumatoid arthritis, Crohn's disease, psoriasis, psoriatic arthritis and ankylosing spondylitis. As this key cytokine is involved in granuloma formation, blocking its response has been associated with a significant increase in serious infections, such as tuberculosis.

Two-step TST – A tuberculin skin testing protocol used to establish accurate baseline results for people that have TSTs done at regular intervals (**NOT** the same as standard initial and 8-week post-exposure TST assessment done for contact tracing purposes).

Window period – The time between a person of contact's last date of exposure to a case and when a TST or IGRA can reliably detect whether the person of contact is infected with TB bacteria. The definitive TST may be done at 8 weeks post-exposure.

Window period prophylaxis (WPP) - Treatment during the window period to prevent primary TB disease in persons of contact at very high risk for progression to TB disease. WPP is also known as 'primary prophylaxis' and is focused on children under the age of 5 or people living with untreated HIV.

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