Appendix A: Glossary of Terms

Acid Fast Bacteria (bacilli) (AFB): Microorganisms that are distinguished by their retention of specific stains even after being rinsed with an acid solution. The majority of acid-fast bacteria (AFB) in patient specimens are mycobacteria, including species other than Mycobacterium tuberculosis complex.

Active TB: Active clinical disease that is usually symptomatic and for which microbiologic tests are usually positive and radiologic tests usually abnormal.

Acquired Drug Resistance: Drug resistance that develops when patients that initially have drug-susceptible TB bacteria become drug-resistant due to inadequate, inappropriate, or irregular treatment (i.e., irregular adherence, non-adherence).

Adherence: Often used interchangeably with 'compliance'. A patient's and health care provider's ability to follow disease management recommendations appropriately (e.g., ingestion of medications, maintaining airborne precautions).

Adverse Effect: An unexpected or dangerous reaction to a drug or an unwanted effect caused by the administration of a drug.

Aerosol: Small droplets that are exhaled or coughed up. In a person with respiratory TB, aerosols can contain TB bacteria (infectious aerosols). TB transmission is primarily due to inhalation of infectious aerosols. Generation of infectious aerosols is greatest with laryngeal TB and cavitary pulmonary TB.

Airborne infection isolation: The conditions into which a patient with suspected or proven active tuberculosis may be placed for purposes of preventing transmission to other people (formerly termed airborne respiratory isolation).

Alanine Aminotransferase (ALT): Also called SGOT. An enzyme found in plasma (blood). ALT is used, often in combination with other blood tests (e.g., AST, bilirubin) as a biomarker for liver health. Elevations in ALT during treatment with TB drugs can be an indication of liver toxicity.

Anergy: A condition that impairs a person's ability to respond accurately to testing antigens (e.g. tuberculin). Anergy can be due to severe immunodeficiency, such as occurs with HIV infection.

Aspartate Aminotransferase (AST): An enzyme found in plasma (blood). AST is used, often in combination with other blood tests (e.g., ALT, bilirubin) as a biomarker for liver health. Elevations in AST during treatment with TB drugs can be an indication of liver toxicity.

Atypical Mycobacteria: See 'Nontuberculous Mycobacteria'.

Bacillus Calmette-Guérin (BCG): A live attenuated vaccine derived from Mycobacterium bovis. BCG vaccine is primarily used to prevent severe forms of active TB in young children however it does not confer 100% protection. BCG was discontinued on the island of Newfoundland in 1975 and in Labrador in 1979.

Bactericidal: Capable of killing bacteria. Some TB drugs are bactericidal, while others are bacteriostatic.

Bacteriostatic: Capable of inhibiting the growth or reproduction of bacteria. Some TB drugs are bacteriostatic, while others are bactericidal.

Boosting (Booster Effect, Booster Phenomenon): An increase in tuberculin skin test response when the test is repeated one week to one year later, without known exposure to an infectious TB case. Boosting usually occurs in people that were infected with TB bacteria many years ago (e.g. the elderly). It can also occur in those vaccinated with BCG and people with sensitivity to nontuberculous mycobacterial antigens. The initial negative response is due to a failure of the immune system to recall the infection immunologically. Two-step tuberculin testing is recommended in situations where serial TSTs are anticipated (e.g. annual testing of health-care workers) to prevent mislabeling of new positive TST reactions as 'conversions'.

Break in Contact: When exposure to a person with infectious active TB ends. For example: when the case is placed in airborne infection isolation; when the case becomes noninfectious after a period of treatment; or the date on which a contact last shared airspace with a case while the case was still infectious.

Cavitary TB: Radiologic (e.g. chest x-ray) or pathologic evidence of lung destruction resulting in cavities or cystic areas that communicate with a bronchus. Cavities generally contain large numbers of bacteria. As a result, cases with cavitary pulmonary TB tend to be highly infectious.

Cell Mediated Immunity (CMI): An immune response that occurs in response to an antigen. CMI involves activation of phagocytes, natural killer cells, antigen-specific cytotoxic T-lymphocytes, and the release of various cytokines. Presentation of active TB is influenced by the capacity of the host's immune system to mount effective CMI responses.

Chemoprophylaxis: See Treatment of Latent Tuberculosis Infection (LTBI).

Cluster: An unusually high incidence of a particular disease or disorder occurring in close proximity in terms of both time and geography.

Compliance: See adherence

Contact: A person identified as having been exposed to Mycobacterium tuberculosis by sharing space with an infectious case of tuberculosis. The proximity and duration of contact usually corresponds with the risk of becoming infected.

Contact Investigation: A systematic process for identifying people exposed to someone with infectious active TB, evaluating them for latent TB infection (LTBI) and active TB, and when appropriate, providing them treatment for LTBI or active TB.

Conversion: An increase in the size of a tuberculin skin test (TST) reaction on repeated testing that reflects new TB infection. Tuberculin conversion is defined as induration of 10 mm or greater when an earlier test resulted in a reaction of less than 5 mm. If the earlier result was between 5 mm and 9 mm, there are two criteria:

1. An increase of 6 mm or more – this is a more sensitive criterion, which is suggested for those who are immune compromised with increased risk of active TB or during an outbreak.

2. An increase of 10 mm or more – this is a less sensitive but more specific criterion. In general, the larger the increase, the more likely that it is a true conversion.

Converter: Might also be referred to as a "TST converter". A person with a positive tuberculin skin test (TST) result who had a documented negative TST result in the previous two years.

Culture-Positive: When a clinical specimen (e.g., sputum, body secretion, tissue) exhibits growth of M. tuberculosis complex in a laboratory culture.

Cured: Culture negative at the completion of active treatment.

Delayed Type Hypersensitivity (DTH): A cell mediated immune response to an antigen. Induration at the site of a tuberculin skin test (TST) is an example of a DTH reaction.

Directly Observed Prophylaxis (DOP): The process whereby a health care worker watches the patient swallow each dose of medication for latent tuberculosis infection, to enhance treatment completion rates.

Directly Observed Treatment (DOT): The process where by a healthcare worker watches the patient swallow each dose of medication as part of the treatment of active disease, latent TB infection or window prophylaxis, to enhance treatment completion rates.

Disseminated TB: Active TB occurring in three or more sites simultaneously or where there is evidence of hematogenous spread of TB bacteria (e.g. blood culture[s] that are positive for TB bacteria). See also 'Miliary TB'.

Droplet nuclei: Airborne particles resulting from a potentially infectious (microorganism-bearing) droplet from which most of the liquid has evaporated, allowing the particle to remain suspended in the air.

Drug Resistance: Reduced effectiveness of a drug in curing a disease or condition, as determined by laboratory testing (see 'Drug Susceptibility Testing'). Drug-resistant TB that occurs as a result of infection with drug-resistant TB bacteria (e.g. during exposure to a case with drug-resistant TB) is referred to as 'primary drug resistance'. Drug resistance that develops during TB treatment through inadequate, inappropriate, or irregular treatment is referred to as 'acquired drug resistance'.

Drug Susceptibility Testing (DST): Laboratory testing to gauge the effectiveness of individual drugs against the strain(s) of TB bacteria present in a clinical specimen (positive TB culture). Drugs included in the standard, initial DST are the four first-line TB drugs: isoniazid (INH); rifampin; pyrazinamide (PZA); and ethambutol. If resistance to any of the first-line drug is identified, additional DST might be done to identify other TB drugs (e.g. second-line TB drugs) that could be used to supplement the treatment regimen.

Enabler: A practical item given to a patient to facilitate adherence to TB treatment and/or monitoring (e.g. transportation to the clinic for medication dispensing).

Extensively Drug-Resistant TB (XDR-TB): TB disease caused by bacteria that are resistant to at least isoniazid (INH) and rifampin AND any fluoroquinolone AND at least one of three injectable second-line TB drugs (capreomycin, kanamycin and amikacin). Treatment of XDR-TB is more expensive, less effective, longer, and has more side effects than treatment of active TB caused by bacteria with lesser or no, TB drug resistance.

Extrapulmonary TB: Active TB that occurs outside of the lungs and respiratory tract. Includes: tuberculous pleurisy; TB of the intrathoracic lymph nodes, mediastinum, nasopharynx, nose (septum) or sinus (any nasal); and all non-respiratory sites. This term is often used interchangeably with non-respiratory TB, but the definitions are slightly different.

First-Line TB Drugs: First line antibiotics for the treatment of active tuberculosis disease. These are; Isoniazid (INH), rifampin, ethambutol, and pyrazinamide (PZA). NOTE: Streptomycin is no longer considered a first-line TB drug in Canada.

Fit testing: The use of a qualitative or quantitative method to evaluate the fit of a specific manufacturer, model and size of respirator on an individual.

Granuloma: A collection of macrophages that forms when the immune system attempts to wall off substances such as TB bacteria, that it perceives as foreign, but is unable to eliminate. Over time, calcium can deposit on granulomas, resulting in ‘calcified granulomas’.

Health care-associated infection: Infections that are transmitted within a health care setting during the provision of health care (previously referred to as nosocomial infection).

Hepatotoxic: Capable of causing liver injury/damage. Many important TB drugs are hepatotoxic, including isoniazid (INH), rifampin and pyrazinamide (PZA).

High-efficiency particulate air (HEPA) filter: A filter that is certified to remove >99.97% of particles 0.3 microns or greater in size, including M. tuberculosis containing droplet nuclei; the filter can be either portable or stationary.

High TB Incidence Countries/Territories: Countries/territories with TB incidence rates (all forms, 3-year average) estimated by the World Health Organization to be 30 cases per 100,000 or higher. To view current international TB incidence rates, refer to: https://www.canada.ca/en/public-health/services/infectious-diseases/tuberculosis-canada-2012/tuberculosis-6.html

Immunocompromising condition: A condition in which at least part of the immune system is functioning at less than normal capacity.

Inactive pulmonary tuberculosis: Abnormal chest x-ray with findings considered typical of previous TB infection or disease, plus at least three sputum cultures negative for tuberculosis or the chest x-ray abnormalities stable for at least 6 months.

Incentive: An item given to a patient to encourage or acknowledge adherence to treatment.

Incidence: The number of new occurrences of a given disease during a specified period of time

Index Case: The first TB case identified; the initial case from which a contact investigation begins. The index case is not necessarily the source case.

Induration: Soft tissue swelling (not redness/erythema) that is measured when determining the tuberculin skin test response to purified protein derivative (PPD, also known as 'tuberculin').

Infectious TB: Forms of active TB that can allow TB bacteria to be transmitted through the production of infectious aerosols (e.g. by coughing). Patients with smear positive, cavitary pulmonary TB and laryngeal TB are considered the most infectious forms of active TB.

Interferon Gamma Release Assay (IGRA): A blood test to detect infection with TB bacteria. IGRA does not differentiate between latent TB infection (LTBI) and active TB. IGRA testing can differentiate between infection with TB bacteria and prior BCG vaccine. Some nontuberculous mycobacteria such as M. kansasii, M. marinum, M. szulgai, and M. flavascens can cause false-positive IGRA results.

Intermittent Treatment / Intermittent Therapy: TB treatment that is prescribed to be given less frequently than daily. Three-times-weekly treatment might be prescribed for people with active TB after a period of daily treatment. Twice-weekly intermittent therapy is commonly used throughout the treatment of latent TB infection (LTBI). Intermittent treatment, whether for active TB or LTBI, must always be administered as directly observed therapy (DOT).

Intradermal: The injection method used for tuberculin skin testing.

Labrador Grenfell Tuberculosis Database (LGTBDB): The tuberculosis database system that is used for TB patient surveillance, monitoring, care, assessment and follow-up.

Latent Tuberculosis Infection (LTBI): The presence of infection with TB bacteria, without evidence of clinically active TB. Clients with LTBI have no TB symptoms, no evidence of radiographic changes that suggest active TB, and negative microbiology tests (e.g. negative TB smears and cultures). LTBI is not infectious. Treatment of LTBI can prevent development of active TB.

Mantoux Converter: See 'Converter'.

Mantoux technique: The recommended method of administering the tuberculin skin test- the intradermal injection of 5 tuberculin units of PPD into the forearm.

Mantoux Test: See 'Tuberculin Skin Test'.

Miliary TB: Active TB occurring in three or more sites simultaneously or where there is evidence of hematogenous spread of TB bacteria (e.g. blood culture[s] that are positive for TB bacteria). Chest x-ray findings can include diffuse micro-nodules. See also 'Disseminated TB Disease'.

Multidrug Resistant TB (MDR-TB): Active TB caused by bacteria that are resistant to isoniazid (INH) and rifampin, with or without resistance to other first- or second-line TB drugs. Treatment of MDR-TB is more expensive, less effective, longer, and has more side effects than treatment of active TB caused by bacteria with lesser or no, TB drug resistance.

Mycobacterium Tuberculosis Complex: A group of mycobacteria that includes Mycobacterium tuberculosis (including subspecies Mycobacterium canetti), M. bovis, M. bovis BCG, M. africanum, M. caprae, M. microti, and M. pinnipedii. All of these species of mycobacterium except M. bovis BCG are included in the Canadian case definition of tuberculosis.

Natural ventilation: Use of natural forces to introduce and distribute outdoor air into a building, to replace the indoor air. These natural forces can be wind pressures or pressure differences generated by temperature differences between indoor and outdoor air.

Non-Pulmonary TB: See 'Non-Respiratory TB'.

Non-Respiratory TB: Refers to all other sites of active TB not included in the definition of respiratory TB. Some sites of non-respiratory TB include: peripheral lymph nodes (TB lymphadenitis), the central nervous system (e.g. TB meningitis), the genitourinary system, the abdominal cavity, and the bones and joints.

Nontuberculous Mycobacteria (NTM): Mycobacteria that do not cause active TB or leprosy. See also 'Atypical Mycobacteria' and 'Mycobacteria Other Than TB' (MOTT). Common examples include: M. avium complex (MAC), M. kansasii, and M. abscessus.

Nucleic Acid Amplification Test (NAAT): A process whereby genetic material is amplified and then subsequently evaluated for the presence of DNA material; useful to identify specific mycobacterial species.

Outbreak: A community is considered to be experiencing an outbreak when one or both of the following criteria are met:

- During a contact investigation, in two or more of the identified contacts a diagnosis is made of active TB; or
- Any two or more cases occurring within 1 year or less of each other are discovered to be linked, but the linkage is recognized outside of a contact investigation.

Peripheral Neuropathy: A problem with the functioning of the nerves outside the spinal cord. Symptoms of peripheral neuropathy can include numbness, weakness, burning pain (especially at night), and loss of reflexes.

Polymerase Chain Reaction (PCR): A method of nucleic acid amplification; see 'Nucleic Acid Amplification Tests'.

Preventive Therapy (Treatment of Latent TB Infection): Formerly called 'chemoprophylaxis' or 'TB prophylaxis'. Treatment to prevent active TB is most frequently given to people with tuberculin skin test and/or interferon gamma release assay results that suggest latent TB infection (LTBI), and who have no signs or symptoms of active TB.

Primary TB: Active TB that develops within two years of infection with TB bacteria.

Proxy Interview: An interview with a person that is familiar with a TB case's practices, habits and behaviours (e.g., parent, guardian, and spouse).

Pulmonary TB: In Canada, pulmonary TB refers to active TB of the lungs and conducting airways, which includes tuberculous fibrosis of the lung, tuberculous bronchiectasis, tuberculous pneumonia, tuberculous pneumothorax, isolated tracheal or bronchial TB, and tuberculous laryngitis.

Purified Protein Derivative (PPD): A standardized preparation of purified protein from M. tuberculosis. PPD is the antigen used for tuberculin skin testing (TST).

Reactivation TB: Active TB that develops 18 to 24 months or more after infection with TB bacteria.

Recurrence: Patient previously successfully treated (cure or completed) for active TB disease in whom active tuberculosis develops a second time, but without proof that this is the same organism.

Relapse: When a person who was treated for active TB in the past develops active TB again, and the second episode seems to have been caused by the same TB organism (e.g. TB genotypes from the two episodes match).

Respiratory TB: In Canada, respiratory TB includes primary TB, pulmonary TB, tuberculous pleurisy (non-primary) and TB of the intrathoracic lymph nodes, mediastinum, nasopharynx; nose (septum) and sinus (any nasal).

Re-treatment case of tuberculosis: Documented evidence or adequate history of previously active TB that was declared cured or treatment completed by current standards and at least a 6-month interval since the last day of previous treatment and diagnosis of subsequent episode of TB that meets the active TB case definition

OR

Documented evidence or adequate history of previously active TB that cannot be declared cured or treatment completed by current standards, and inactive disease for 6 months or longer after the last day of previous treatment and diagnosis of a subsequent episode of TB that meets the active TB case definition.

Secondary Case: An infected contact that develops active TB.

Second-Line TB Drug: TB drugs used as alternatives to treatment with first-line TB drugs (e.g., when the organism is resistant to first-line TB drugs or when the person is allergic to first-line TB drugs).

Smear: The term used to describe the examination of body secretions under the microscope to determine the presence of acid-fast bacilli. A smear is usually used to determine infectiousness, but initially, before formal culture confirmation, a positive result may be due to infection with mycobacteria other than M. tuberculosis. It therefore requires careful interpretation.

Source Case: The person who was the original source of infection for secondary case(s) or contacts. The source case may or may not be the index case.

Source Case Investigation: A systematic process to find the source when infection with TB bacteria is thought to be recent (e.g. when a young child develops active TB).

Sputum-smear positive: Cases of pulmonary tuberculosis with positive smear results obtained from either spontaneously expectorated sputum, induced sputum, tracheal or bronchial washings/aspiration, or gastric wash.

TB Case: A reportable case of disease in Canada caused by Mycobacterium tuberculosis complex.

TB Genotyping: A laboratory-based method to determine the genetic pattern of the strain of TB bacteria that caused active TB in a person. Comparing TB genotypes between and among TB cases can be helpful to: identify transmission patterns; confirm/rule out transmission between/among cases; identify TB outbreaks; differentiate between relapse and re-infection in people diagnosed with active TB more than once; and identify or rule out instances of cross-contamination in laboratory specimens.

Treatment Failure: When a case has positive sputum cultures after four or more months of treatment or two positive sputum cultures in different months during the last three months of treatment, even if the final culture is negative and no further treatment is planned.

Tuberculin Skin Test (TST): Also known as a 'Mantoux tuberculin skin test' or 'a TB skin test'. Used to determine whether a person has been infected with TB bacteria.

Tuberculin Skin Test (TST) Converter: See 'Converter'.

Tuberculin Skin Test (TST) Reactor: A reaction to a tuberculin skin test ≥10mm, where previous TST history is either unknown, or where last TST test was > 2 years prior.

Two-Step Tuberculin Skin Test (Two-Step TST): A testing protocol during which a second TST is performed one to four weeks after an initial "negative" TST reaction is documented. Two step TSTs are done to establish accurate baseline TST results for people that will be having TSTs done at regular intervals (e.g. health care workers). Only one documented two-step TST is required in a lifetime.

Wheal: an area of the skin that is temporarily raised, typically white, and usually accompanied by itching.

Window Period: The time between a contact's last exposure to an infectious case and when a tuberculin skin test or interferon gamma release assay can accurately detect whether s/he is infected with TB bacteria, generally after date of last known contact.

Window Period Prophylaxis (WPP): Treatment given to a high-risk contact (e.g. child under five years of age) to prevent development of active TB during the window period. WPP may also be recommended for immunocompromised contacts on a case-by-case basis by a respirologist or infectious disease specialist.