INTRODUCTION

Latent Tuberculosis (TB) Infection

This resource provides an introduction to latent TB infection for clinical and non-clinical staff from agencies in Massachusetts that provide latent TB infection services. It includes links to tools and resources, as well as information about:

- What is latent TB infection?
- What is the difference between latent TB infection and TB disease?
- How common are latent TB infection and TB disease?
- Why is testing for and treating latent TB infection important?
- What are the components for the testing and treatment of latent TB infection?
- Where can I get more information about latent TB infection?

This Introduction is part of a series of Fact Sheets on key components of latent TB infection service delivery.

What is latent TB infection?

Tuberculosis (TB) is caused by *Mycobacterium tuberculosis* (*M. tuberculosis or M.tb*). It is spread through the air, often when someone with the disease coughs or sneezes. TB is common in many countries in Latin America, the Caribbean, Asia, Africa, and Eastern Europe. People who are exposed to TB may become infected, and the bacteria may remain in their body without causing illness. Some people may get sick with TB soon after becoming infected.

Latent TB infection (sometimes referred to as LTBI) is a clinical diagnosis meaning that someone has live *M. tuberculosis* in their body, but it is contained by the immune system and they do not have TB disease. Individuals with latent TB infection are not infectious and cannot spread TB germs to others.

TB disease is the progressive state when the bacteria *M. tuberculosis* actively multiplies in the body, causing illness. This usually happens when the immune system can no longer contain the infection. It occurs in 5-10% of individuals with latent TB infection during their lifetime.

TB disease can occur anyplace in the body. When the disease is in the lungs, symptoms usually include cough, fever, night sweats, loss of appetite, weight loss, fatigue, and chest pain for several weeks. People with active TB disease in the lungs are able to spread TB to others, especially those people close to them, usually by coughing. Diagnosis and treatment for individuals with TB disease is important, as TB disease can lead to significant illness or death. TB disease can be prevented by treating individuals with latent TB infection before disease develops.

Individuals who are at risk for TB infection may not yet understand how TB is transmitted, or about infection, latency, prevention, or treatment. In addition, some individuals may have incomplete or inaccurate information, or experience fear or confusion as a result of stigma or past negative experiences. This may impact how the individual understands the information being given. Your agency can provide patient education and engagement to make it easier for individuals to understand risk and accept testing and treatment.

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These Fact Sheets include helpful sample messages for communicating with individuals, as well as tips and links to sites with ideas on how to explain information clearly, and to check that individuals understand what you mean. This understanding is essential to help individuals get linked to and retained in care, and adhere to treatment if prescribed.

In this document, we will explain the differences between latent TB infection and TB disease, and why treating latent TB infection is crucial to eliminating TB. This is the first in a series of Fact Sheets that address key considerations for testing and treating individuals for latent TB infection. These Fact Sheets are intended to serve as a resource for agencies receiving funding from the Massachusetts Department of Public Health (MDPH), Bureau of Infectious Disease and Laboratory Sciences (BIDLS) to provide infectious disease services, including TB testing and latent TB infection services.

What is the difference between latent TB infection and TB disease?

Characteristic	Latent TB infection	TB disease
Able to spread TB to other people	**No.** Individual cannot spread TB to other people (is not infectious).	**Yes**, if the disease is in the lungs or airways. Individual can spread TB to other people (i.e., they are infectious).
Having signs and symptoms of TB	**No.** Individual is not sick and does not show signs or symptoms of TB disease.	**Yes**, but not always. Individual is often sick and shows signs and/or symptoms of TB disease.
Diagnostic tests available	**Yes.** The individual is tested for TB infection. If the test is positive, they are evaluated for active TB disease. If the evaluation does not show active TB disease, the provider makes a diagnosis of latent TB infection.	**Yes.** The individual is tested for TB infection and undergoes a comprehensive evaluation to diagnose active TB disease.
Treatment available	**Yes.** Treatment is available for latent TB infection. Treating latent TB infection prevents the infection from progressing to active TB disease.	**Yes.** Treatment is available for active TB disease.

Individuals with a diagnosis of active TB disease must complete their treatment regimen to prevent the spread of TB and prevent relapse. Public health and clinical teams provide support to help individuals be successful with treatment. For individuals with latent TB infection, completing treatment is important to preventing active TB disease and future spread of TB.

How common are latent TB infection and TB disease?

Both latent TB infection and TB disease are common at the global level. It is estimated that one-quarter of the world's population is infected with TB, and TB disease was one of the top 10 causes of death around the world in 2019[1]. The table below shows data on active TB disease and latent TB infection in Massachusetts[2,3], in the U.S.[4], and at the global level.

TB and Latent TB Infection – Massachusetts, U.S., and Global

	Cases of TB Disease (Year) (incident cases)	Estimated Number Living with Latent TB Infection (Year) (prevalent cases)
Massachusetts	178 (2019)	261,000-381,000 (2019)
U.S.	8,916 (2019)	13 million (2019)
Global	10 million (2019)	25% of world population (2019)

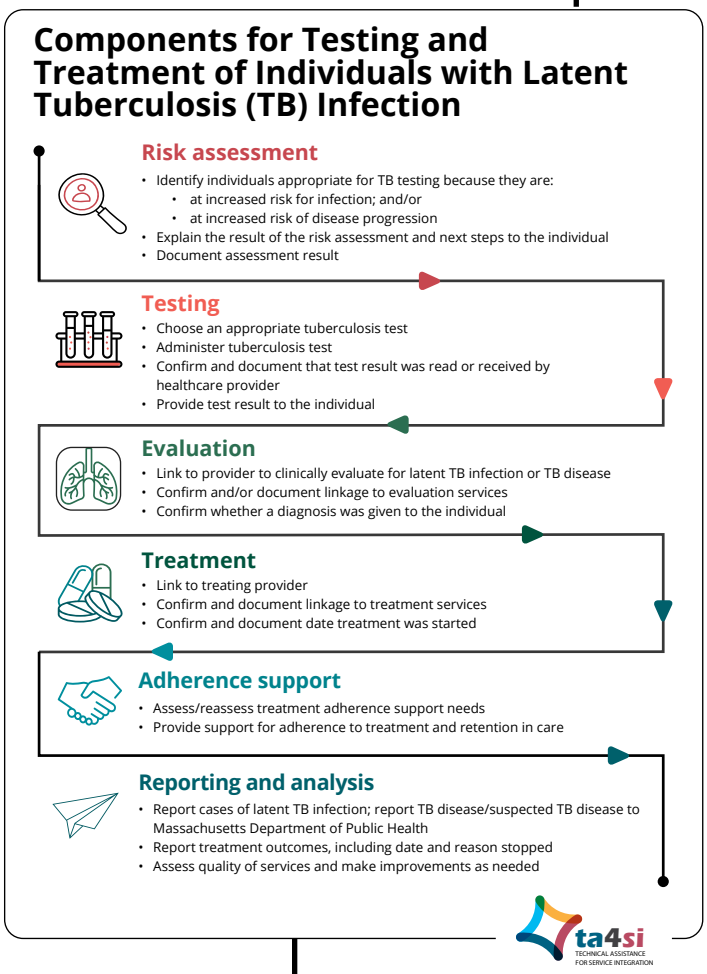
Detailed TB disease summary data for Massachusetts can be found on the MDPH TB website Tuberculosis data and statistics page.

Why is testing for and treating latent TB infection important?

Overall, about 5-10% of individuals with untreated, latent TB infection develop TB disease in their lifetime. For individuals with weakened immune systems, the risk of developing TB disease is much higher. Some individuals with latent TB infection develop TB disease soon after being infected; most do not develop TB disease for many years. In the U.S., it is estimated that approximately 80% of individuals with TB disease have had latent TB infection for years without getting treatment for it[5].

Latent TB infection and TB disease can be treated. Treating latent TB infection to prevent TB disease is easier than treating active TB disease. Individuals with latent TB infection have fewer bacteria in their body, so the treatment requires fewer drugs. There are several regimens available for individuals with latent TB infection. All are effective at keeping latent TB infection from developing into TB disease. Individuals taking treatment for latent TB infection may experience adherence challenges, so it's important to help prepare them for such challenges and provide adherence support throughout the duration of treatment.

[1] World Health Organization, Global Tuberculosis Report, 2020
[2] MDPH, Tuberculosis Data and Statistics (Please note that 2019 data will be posted on this site when available)
[3] CDC, NHANES, 2019
[4] CDC, Reported Tuberculosis in the United States, 2019; TB Data and Statistics
[5] CDC, Guidelines for the Treatment of Latent Tuberculosis Infection: Recommendations from the National Tuberculosis Controllers Association and CDC, 2020



What are the components for the testing and treatment of latent TB infection?

There are six components for the testing and treatment of latent TB infection.

Component A - Risk assessment
Component B - Testing
Component C - Evaluation
Component D - Treatment
Component E - Adherence support
Component F - Reporting and analysis

Each component is identified and described in the graphic on the left.

Where can I get more information about latent TB infection?

The TA4SI project is developing Fact Sheets for each of the components listed above. Each factsheet will give an overview of the component itself and provide links to related tools. These Fact Sheets can be found at https://ta4si.jsi.com/ or by contacting ta4si@jsi.com. If you have further questions about TB, please contact the MDPH TB program at (617) 983-6970. Additionally, the Massachusetts Department of Public Health (MDPH), US Preventative Services Task Force (USPSTF), and the Centers for Disease Control and Prevention (CDC) offer resources on latent TB infection. Links to these, and other resources, can be found on the TA4SI resources fact sheet.

These Fact Sheets are intended to serve as a resource for agencies receiving funding from the Massachusetts Department of Public Health (MDPH), Bureau of Infectious Disease and Laboratory Sciences (BIDLS) to provide infectious disease services, including TB testing and latent TB infection services through the HIV/HCV/STI/TB Prevention, Linkage, and Retention in Care and Treatment Request for Response (DPH RFR Document Number: 181926).

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