

TREATING LATENT TUBERCULOSIS INFECTION IN HIGH-RISK POPULATIONS: AN OVERVIEW

As tuberculosis (TB) case rates in the U.S. have fallen, priorities have shifted toward prevention of future cases of active TB, increasing attention to treating latent TB infection (LTBI). Treating LTBI provides a remedy for individuals who are infected but have not yet developed the disease. However, as many health departments are confronted with decreasing resources, TB controllers and program administrators will need to focus their efforts on the highest-risk populations in their community.

This TB Toolbox has been developed to assist TB programs in planning for effective LTBI treatment among the highest-risk individuals and ensuring the highest completion rates possible. The Toolbox provides clear, concise information on how to develop a new LTBI treatment program or improve an existing one with a particular focus on urban-based programs. Information is provided to help programs develop community outreach and partnerships as well as implement patient-oriented strategies for treatment completion. It has been designed to meet the needs of highly experienced programs seeking support in a specific area as well as programs desiring more comprehensive knowledge of program development and treatment of LTBI.

WHO IS CONSIDERED TO BE AT HIGHEST RISK?

This Toolbox focuses on population groups whose members are at high risk for TB and who contend with barriers that can make it difficult to complete a course of treatment. These groups include people who are:

- HIV-infected or diagnosed as having HIV disease (AIDS)
- Using or abusing drugs or alcohol

- Homeless or marginally housed
- Chronically mentally ill
- Formerly or currently incarcerated

Individuals in these groups often live in a day-to-day survival mode. Because of social, economic, and medical factors that present obstacles to care, these groups have displayed poor adherence to treatment. Outreach interventions that target such individuals and the community organizations which provide social services to them, can reduce the number of future TB cases and provide a “window of opportunity” to raise the community’s overall health status. The Toolbox also provides examples of outreach efforts to immigrant communities with significant rates of TB infection.

WHY IS IT IMPORTANT TO TREAT LTBI IN HIGHEST-RISK POPULATIONS?

The proportion of all individuals who test positive for LTBI and ultimately progress to TB disease during their lifetime is estimated to be around 10 percent. This translates into ten persons needing to complete treatment for LTBI for every one case prevented. For some individuals, however, the rate of progression from infection to disease can be several times greater. For example, individuals with LTBI who are co-infected with HIV progress to TB disease at the rapid rate of 10 percent per year, rather than 10 percent during a lifetime. Individuals who are homeless or substance users often have other health problems that increase their risk for TB.

New immigrant communities from areas of endemic TB may also be at risk due to lack of healthcare resources and delays in diagnosis or treatment. Therefore, well-structured LTBI treatment programs targeted to those at highest risk for progression can be considered cost-effective and a priority for TB control and elimination. Such programs have the potential to substantially reduce the number of future TB cases among those persons at highest risk.

Accomplishing this goal requires more than simply providing medication. In order to serve these individuals well, an LTBI treatment program must confront the barriers that can prevent patients from completing or even beginning a course of LTBI treatment. Motivating those who are not clinically ill and who, in addition, face social, economic, and medical barriers requires commitment, skills, and resources.

By dedicating program resources to the prevention of TB disease among those who are at highest risk, TB control programs may realize savings in resources over the long term. These savings are then available to be spent on other important areas, such as case management and contact investigation.

The most significant benefit of an LTBI program is its potential to prevent future cases of TB and thereby improve the health of the community. When we forestall the development of disease in a patient with LTBI, we not only enhance the personal health status of that individual, we also prevent the possibility that he or she will infect others. Treatment of LTBI for high-risk populations has been demonstrated to dramatically decrease the number of future TB cases.

HOW DOES A TYPICAL LTBI PROGRAM OPERATE?

An effective LTBI program targeted to high-risk and hard-to-reach populations requires a multifaceted approach, including careful planning (based on a thorough assessment of community characteristics and needs), organizational capacity, available resources, and appropriate strategies. Once the program is up and running, its day-to-day operations consist of activities carried out by an interdisciplinary team that can comprise of clinicians, public health nurses, social workers, and outreach staff. We have separated these activities into five fundamental areas:

1. **Outreach to the target populations.** An LTBI program's success depends on its worker's understanding of the high-risk populations in their jurisdiction. Epidemiological information can help identify these populations. However, to work effectively with them, the program must

engage members of the target groups. This involves establishing partnerships with relevant community organizations, establishing a presence in the community, responding to community needs, and addressing the barriers that impede patients' access to care and their ability to adhere to treatment.

2. **Testing of targeted individuals.** Within the high-risk groups, individuals who have LTBI and would benefit from treatment must be identified through the administration and analysis of tuberculin skin tests, chest x-rays, and medical evaluations. Effective targeted testing programs begin with staff training to ensure successful placement, measurement, and interpretation of the tuberculin skin test.
3. **Case management.** Successful treatment of LTBI requires that the program maintain regular and consistent contact with the patient throughout the course of treatment. Case management has been proven to be an effective method for ensuring that patients complete treatment for TB disease and this approach can be structured effectively for LTBI programs. The patient is assigned to a case manager—a staff member who provides a consistent point of contact, educates the patient about TB, oversees the administration of medications, and facilitates adherence to treatment.
4. **Directly Observed Therapy (DOT).** DOT is a component of case management in which a healthcare worker or another responsible party provides each dose of medication to the patient at the time it is to be taken, and observes and documents that the patient ingests the dose. This procedure can be applied to LTBI to ensure that the patient adheres to and completes the recommended course of therapy. DOT may be administered in a clinic, in the patient's home, or in another mutually agreed-upon setting (such as a shelter, a school, or a drug treatment facility).

5. **Referrals and assistance.** LTBI programs frequently provide referrals and other kinds of assistance to link patients to services that can help meet their needs for healthcare, food, shelter, and other basic needs of daily living. When immediate needs are adequately and appropriately met, the likelihood that the patient will maintain a relationship with the LTBI program and succeed in completing treatment increases.

WHAT ARE THE ESSENTIAL ELEMENTS OF AN LTBI PROGRAM?

In addition to developing a program incorporating the comprehensive activities listed above, experience has shown that the following elements are essential to a program's success:

1. **Well-designed systems and protocols.** Putting good systems, guidelines, and protocols into place will give clarity and consistency to the goals, policies, procedures, and expectations of your program. While the systems and protocols you adopt will be specific to the size, structure, and needs of your program and the characteristics of your patient population, in general they should include:
 - A system for identifying target populations in your jurisdiction and conducting outreach to them
 - Administrative guidelines and protocols for patient eligibility (intake, assessment, retention, and discharge), case management, team communication, and referrals to outside programs
 - Clinical protocols for TB testing and evaluation, medical evaluation of suspected and known LTBI patients, medication regimens for DOT, and nonadherence or interruptions to treatment
 - A system for conducting regular program evaluation

2. **Staff who work as a team.** An LTBI treatment program is an interdisciplinary enterprise that encompasses medical personnel, social and outreach workers, and support staff, ideally in sufficient numbers to handle the caseload with a low patient-to-staff ratio. You want to employ individuals who have experience in working with persons in your target groups, and who can function together as a smoothly running team with a shared commitment to the program's purpose and goals.
3. **Collaboration with community partners.** An effective strategy for an LTBI treatment program is to forge alliances with capable organizations that serve your target populations. Because they know your patients, these groups often can help you extend your outreach efforts and expand your capacity to address community needs. In addition, they can provide resources such as shared space, technical assistance, incentives and enablers for your patients, or other assistance to patients, such as housing or substance abuse treatment. Effective collaborations are mutually beneficial. You should address with prospective partners how the arrangement can meet each partner's needs and what commitments of time, technical assistance, or other resources will be required from your agency.
4. **A patient-centered philosophy.** An LTBI program succeeds best when it addresses the needs and interests of its patients and actively works to remove their substantial barriers to care. By taking a patient-centered approach, you increase the likelihood that your patients will adhere to and complete their treatment. This philosophy requires that you acknowledge the realities of your patients' lives, including such conditions as homelessness, HIV infection, substance abuse, low literacy, or lack of English skills. You must also be aware of their beliefs and attitudes about illness and health, about TB in particular, and about the medical system. If you understand and accept these circumstances, and tailor your program accordingly, you can gain your patients' trust and cooperation. A patient-

centered philosophy is expressed in a program's activities and in the design of its service delivery. It encompasses eight key strategies:

- Seeking knowledge and understanding of the highest-risk populations in your jurisdiction
- Providing services that are located where they are accessible and convenient to patients
- Supporting culturally acceptable care
- Refraining from judgment of transient or other alternative lifestyles
- Accepting a harm reduction approach
- Providing incentives and enablers to motivate and facilitate patient adherence
- Supporting the use of proven low-cost or no-cost adherence strategies
- Providing or referring patients to essential services beyond TB treatment

WHAT RESOURCES WILL YOU NEED?

A program to treat LTBI in hard-to-reach groups requires a serious commitment in terms of time, staff, and financial resources. The budget needed to support this important effort varies from program to program. Factors to consider as you develop your own budget include:

- **The size of your LTBI caseload.** The resources needed to support your program will increase as the numbers of individuals to be tested and/or LTBI cases to be treated goes up
- **The numbers in the target groups you intend to serve.** This will impact supplies and staff ratios needed to provide case management and other services
- **The needs of the target groups you intend to serve.** Different groups have different cultures and needs. The greater the diversity of your patients, the more resources you will need in order to serve them appropriately. For example, you may need to provide interpretation services and materials in foreign languages or address social and financial barriers for homeless patients
- **The geographic scope of your program.** If you serve a major city, or if your jurisdiction encompasses more than one city or has a dispersed population, you may require multiple clinic sites, additional staffing, or provision for transportation expenditures
- **The nature and extent of your collaborations with other organizations.** What resources will your partners bring to the table? What resources will be required from your program? You will want to make a careful assessment of your partnerships' impact on your resources

The question of funding for your program is one of the most critical issues to consider in your planning. To address the above factors, it will be important to set priorities and identify sources of support. You may need to secure additional resources in order to develop, implement, and sustain an effective LTBI treatment program.

For additional resources and further information, please refer to the [Resource Guide](#) and [Bibliography](#) included in the Tools section.