



# Tuberculosis and coinfection with HIV

## What is tuberculosis and how is it diagnosed?

Tuberculosis (TB) is caused by a bacterium called *Mycobacterium tuberculosis* that usually affects the lungs.<sup>1</sup> TB is spread when the bacterium enters the air through coughing, sneezing, or speaking.<sup>2</sup> People living with HIV (PLHIV) are much more likely to become sick with TB than people who are HIV-negative. If not treated appropriately, TB can be fatal. TB is one of the leading causes of death among PLHIV globally.<sup>3</sup>

TB can manifest itself in 2 ways:

1. **Latent TB Infection:** Not everyone infected with the bacterium that causes TB becomes sick. When a person has TB but does not exhibit symptoms and/or feel sick, s/he is considered to have “latent TB infection.” S/he is not infectious and cannot spread it to other people.<sup>2</sup>
2. **Active TB Disease:** Approximately 5–10% of latent TB infection progresses to TB disease.<sup>4</sup> This happens when the immunity of an infected person is not strong enough to protect against the bacteria.<sup>3</sup> A person with active TB disease feels sick and exhibits symptoms that may include a bad cough for multiple weeks, chest pain, coughing blood or mucus, weakness, fatigue, weight loss, decreased appetite, chills, fever, and night sweats.<sup>2</sup>

Both latent TB infection and active TB disease can be diagnosed through either a skin or blood test. To discern latent TB from active TB, a lung x-ray or sputum test<sup>1</sup> is required.<sup>3</sup>

<sup>1</sup>Culturing mucus from the lungs to view under a microscope.

## What treatments are available for tuberculosis?

Latent TB often only requires one type of medication. Active TB may entail several treatments at once. Common TB treatments include Isoniazid, Rifampin, Ethambutol, and Pyrazinamide, which are used as first-line medications.<sup>5</sup> Possible side effects of these medications include nausea, vomiting, jaundice (yellow skin), loss of appetite, dark urine, and fever for multiple days.<sup>4</sup>

Some strains of the bacterium that causes TB have become resistant to the most commonly used medications, making them very difficult to treat. Multi-drug resistant TB (MDR-TB) and extremely drug resistant TB (XDR-TB) are types of active TB that may necessitate the use of second-line TB medications. These medications are much more expensive than first-line treatment and are known to have amplified and more serious side effects, including hepatitis, depression, and hallucinations.<sup>1,6</sup> About 9% of all active TB cases (650 000 cases in 2010) are classified as MDR-TB or XDR-TB.<sup>5</sup>

## How common is infection worldwide?

Excluding HIV and AIDS, TB kills more people globally than any other “single infectious agent.”<sup>1</sup> Approximately 8.8 million people fell ill to TB in 2010, 1.1 million of whom died.<sup>1</sup> TB is closely linked with poverty, overcrowding, and malnutrition. Hence, the vast majority of TB-related illness and mortality occur in resource-challenged settings such as low- and middle-income countries (LMIC).<sup>15</sup>

## What is tuberculosis and HIV coinfection?

TB and HIV coinfection is when an individual is living with both HIV and either latent or active TB.<sup>7</sup> Globally, TB is the number 1 cause of morbidity for PLHIV and is the cause of 25% of deaths among PLHIV.<sup>1</sup> Given HIV's deleterious effect on the immune system, PLHIV with TB coinfection are 20 times more likely to develop active TB.<sup>8</sup> In addition, TB is known to increase viral replication in PLHIV and is also believed to accelerate progression of HIV disease when left untreated.<sup>9</sup>

## What are the recommendations for PLHIV with TB coinfection?

The World Health Organization (WHO) has established guidelines for PLHIV with TB coinfection. Broadly, these interventions include antiretroviral therapy (ART) and “the 3 I's”:<sup>10</sup>

- **ART:** Research has shown that initiation of ART can lower a person's viral load and restore immunity, which in turn decreases the negative impact of TB and HIV coinfection. The WHO recommends that all PLHIV with active TB be placed on ART immediately.<sup>11</sup>
- **Intensified TB Case Finding:** All PLHIV should be regularly screened for TB, whether or not they are on ART. Operations research focusing on TB case finding revealed that the presence of 1 or more of the following 3 symptoms—persistent cough, fever, and night sweats—detects the vast majority of all active TB cases.<sup>10, 12</sup>
- **Isoniazid Preventive Therapy:** It is recommended that PLHIV who test positive for latent TB infection are put on isoniazid preventive therapy (IPT) for up to 36 months.<sup>11</sup>
- **Infection Control for TB:** This includes rapid detection of people who are infectious, precautions to reduce airborne transmission in healthcare settings, and treatment of those either suspected or confirmed to have active TB.

## What is needed to address tuberculosis coinfection globally?

### Broad-based challenges in addressing HIV/TB coinfection

Two key challenges to eradicating TB globally are (1) MDR-TB, and (2) treatment interactions.<sup>13</sup> To prevent the spread of MDR-TB, TB treatment must be optimized worldwide. Incomplete or partial treatment is the main driver of the continued emergence MDR-TB.<sup>12</sup> Research has shown that directly observed therapy short course (DOTS) is the most effective means for preventing partial and/or incomplete treatment. DOTS entails having a health care worker meet in person with a TB patient and observe him/her take each dose of TB medication.<sup>12</sup> This strategy must be expanded globally, especially in countries with a high rate of HIV/TB coinfection.

The clinical management of HIV/TB coinfection can be complicated due to the fact that many medications for HIV and TB interact with one another, potentially causing liver-related illness and other negative health effects.<sup>8</sup> Guidelines, training, and capacity building are needed to ensure that health care professionals are ready to provide quality care to PLHIV who are coinfecting with TB.

### Challenges specific to MSM

Although little to no data is available on how gay men and other MSM are specifically impacted by HIV/TB coinfection, we know that MSM are disproportionately affected by HIV and experience greater barriers to accessing HIV care and treatment. Hence, it is important that TB screening and case finding be integrated into the minimum service package for gay men and other MSM, which includes:

- Promotion and distribution of condoms and water-based lubricants<sup>14</sup>
- HIV/AIDS testing and counseling<sup>13</sup>
- Community-based outreach, education, and social marketing<sup>13</sup>
- Individual-level and community-level behavioral intervention/mobilization<sup>13</sup>
- Prevention and treatment of sexually transmitted infections<sup>13</sup>

- Harm reduction for substance use and prevention of blood borne infections (eg, needle exchange)<sup>13</sup>
- Efforts to reduce stigma and discrimination based on sexual orientation and HIV status<sup>15</sup>

## Conclusion

Given that gay men and other MSM are disproportionately affected by HIV and the strong linkages between HIV and TB, more efforts are needed to better understand MSM,

their experiences with TB coinfection, and access to related prevention and care services. This technical bulletin serves as a starting point to promote a better overall understanding of HIV/TB coinfection among MSM globally. To date, little research has been conducted on this topic. In light of new funding streams to support comprehensive HIV prevention and treatment targeting gay men and other MSM, greater efforts are needed to support and integrate TB prevention and treatment into global HIV programming and policy efforts targeting gay men and other MSM.

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