

Recommendations for screening and prevention of tuberculosis in patients with HIV and for screening for HIV in patients with tuberculosis and their contacts

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The HIV epidemic has had a dramatic impact on rates of tuberculosis (TB) and on TB control in populations where both infections are prevalent.¹ HIV infection, in particular advanced HIV infection (AIDS), is more potent than any other risk factor for the progression to disease of recent or remotely acquired TB infection.² It destroys or renders ineffectual the 2 immune cells most important to the containment of tubercle bacilli, macrophages and CD4 receptor bearing lymphocytes.³ Among people coinfecting with *Mycobacterium tuberculosis* and HIV before availability of highly active antiretroviral therapy, the estimated risk of active TB relative to patients with no other known risk factor for active TB was 170.0 times greater for AIDS and 113.0 times greater for HIV infection without AIDS.² Cases of reactivation TB attributable to HIV infection increase the risk of transmission of *M. tuberculosis* within the community, thereby constituting a second, indirect mechanism by which HIV increases TB morbidity.⁴

In Canada, dormant or latent TB infection is most common in 4 groups: foreign-born people from countries where TB is endemic, Aboriginals, the inner-city poor and homeless, and elderly people.⁵ Coinfection with HIV is common among inner-city people with a history of injection drug use,⁶ and recent data suggest that HIV/AIDS is increasing among Aboriginals⁶⁻⁸ and among foreign-born people from countries where TB is endemic.⁹ Treatment of latent TB infection reduces the risk of progression to active disease in people with HIV-TB coinfection.^{10,11}

Patients with TB constitute an important "sentinel" population for HIV screening. In some African countries with high TB prevalence, the prevalence of HIV among TB patients exceeds 70%.¹² In the United States, between 1985 and 1992, TB patients were 204-fold more likely to

have AIDS than the general population.¹³ The benefits of identifying previously unrecognized HIV infection are substantial, in terms of both preventing future HIV transmission and providing antiretroviral therapy to affected patients.¹⁴ Knowledge of the HIV serostatus of TB patients may also influence the treatment of their TB.¹⁵ Even among those not receiving antiretroviral therapy there may be an increased risk of adverse reactions from anti-TB drugs.¹⁶ Because HIV-infected patients are at risk of peripheral neuropathy, coadministration of pyridoxine with isoniazid may be prudent. Some HIV-infected TB patients have reportedly experienced malabsorption of their anti-TB drugs, so measurement of serum drug levels

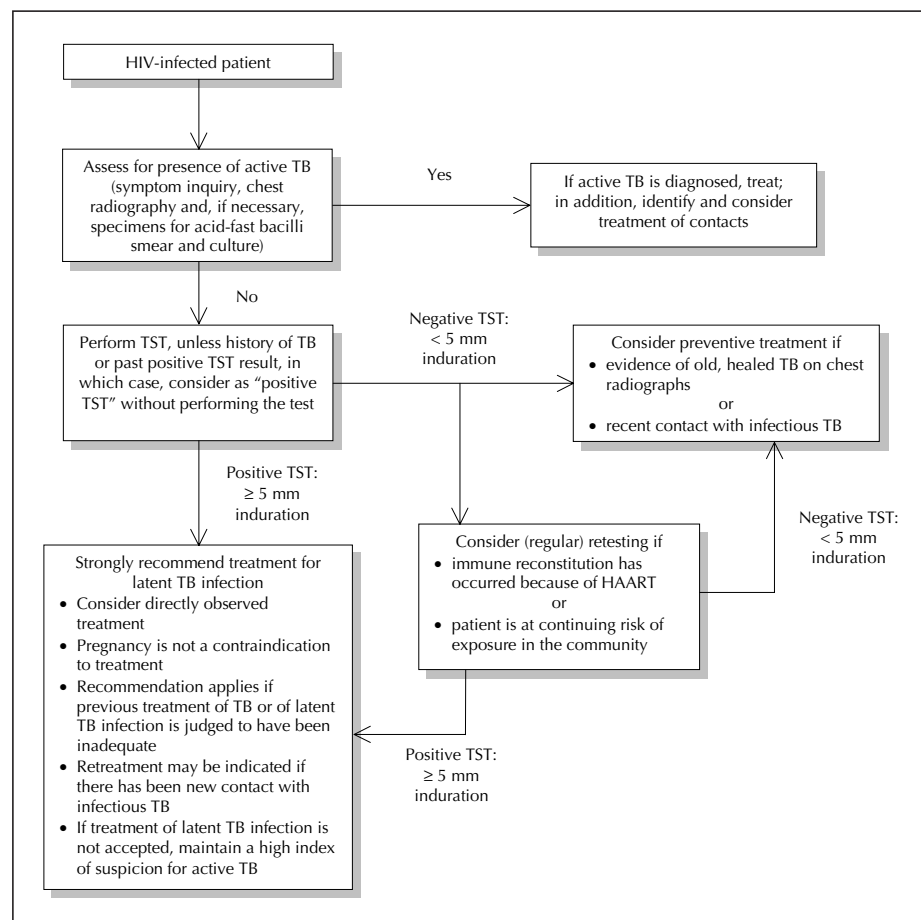


Fig. 1: Screening and prevention of tuberculosis in HIV-infected patients. TST = tuberculin skin testing, HAART = highly active antiretroviral therapy.

Table 1: Recommendations for the screening and prevention of tuberculosis (TB) in HIV-infected patients

Every patient in whom HIV infection has been newly diagnosed should be assessed for the presence of active TB at the time of diagnosis of HIV. Inquiries should be made about symptoms that would suggest active TB (cough, especially if productive or associated with hemoptysis, fever, night sweats, weight loss), and any history of TB or known or likely exposure to TB should be ascertained. In those reporting previous treatment of active TB or latent TB infection, the adequacy of prior treatment must be determined. As well, a physical examination, including examination of extrapulmonary sites of disease such as lymph nodes,¹⁷ and chest radiography should be performed and features of current or past TB sought. The examiner should be conscious that the clinical presentation of TB may be altered in the presence of HIV infection and that radiographic features may be altered or absent in approximate proportion to the person's degree of immunosuppression.¹⁸ For patients with suspected active TB, sputum or other appropriate specimens should be submitted for acid-fast bacilli smear and culture.

Health care workers caring for patients with HIV infection should maintain a high level of suspicion for TB.

Except in those with a history of active TB or a well-documented positive result on previous TST, every HIV-infected person should undergo a TST with intermediate strength (5-TU) purified protein derivative by the Mantoux method, the test result being read at 48 to 72 hours by a health care worker experienced at reading TST results.

TB screening with TST should be performed as soon as possible after HIV infection has been diagnosed because the reliability of the TST can diminish as the CD4 lymphocyte count declines.

In those in whom annual testing is felt to be justified because of high infection rates, a baseline 2-step TST should be considered.²

Induration of 5 mm or more on the TST should be considered indicative of TB infection.^{2,14}

Routine anergy testing (i.e., anergy testing of all HIV-infected, tuberculin-negative patients) is not recommended.^{19,20} Administration of TB preventive therapy to anergic HIV-infected patients has not been found to be useful or cost-effective if none of the other indications is present (see below).^{15,21,22}

TST-negative patients with evidence of old, healed TB on chest radiography, especially those with a history of TB exposure, should be considered for TB preventive treatment, once active TB is excluded. Repeat TST may be considered after institution of antiretroviral therapy and evidence of immune reconstitution.¹⁴

Unless specifically contraindicated,² HIV-positive patients should be strongly encouraged to undergo preventive treatment if they have a documented positive TST result (induration of 5 mm or more) and have not already been treated for TB infection or disease, and if active TB has been excluded.^{1,23-25} This preventive therapy is indicated even if the date of TST conversion cannot be determined. Because of the very high risk of progression to active TB in people with HIV-TB coinfection, creative means of enhancing adherence such as directly observed preventive therapy should be considered, particularly if concerns exist about the patient's adherence. Regimens for treatment and monitoring of latent TB infection are outlined in the 5th edition of *The Canadian Tuberculosis Standards*.²⁶

HIV-infected close contacts of patients with infectious TB should receive treatment for presumptive latent TB infection, even when repeat TST after contact is not indicative of latent infection.²⁵ Because reinfection can occur, this recommendation may lead to retreatment of a person who has undergone treatment in the past.

Preventive therapy is recommended during pregnancy for HIV-infected patients who have either a positive TST result or a recent history of exposure to active TB, once active TB has been excluded.

HIV-infected people who are candidates for, but who do not receive treatment for, latent TB infection should be assessed periodically for symptoms of active TB as part of their ongoing HIV infection management. Clinicians should educate these people about the symptoms of TB disease and advise them to seek medical attention promptly should such symptoms develop.

The administration of BCG vaccine to HIV-infected patients is contraindicated because of its potential to cause disseminated disease.

HIV-infected patients should be advised that certain activities and occupations may increase the likelihood of exposure to TB, including volunteer work or employment in health care facilities, correctional institutions and shelters for homeless people, as well as travel to countries where TB is endemic.

Cases of TB and AIDS should be reported to the public health department.²⁷ TB disease in an HIV-infected person is an AIDS-defining illness.

Note: TST = tuberculin skin testing, TU = tuberculin units, BCG = bacille Calmette-Guérin.

Table 2: Recommendations for screening for HIV in TB patients and their contacts

All patients with newly diagnosed TB should be strongly encouraged to undergo HIV serologic testing according to established guidelines.^{28,20}

HIV testing of contacts of patients with infectious TB should be considered if the contacts are at risk for HIV.^{30,31}

Additional information resources concerning HIV should be made available to patients for whom HIV testing is recommended, as well as to other patients seen through TB programs.

may be necessary if there is a poor response to treatment.¹⁴

It is thus important to identify and treat active TB or latent TB infection in HIV-infected people (as outlined in Fig. 1 and Table 1) and HIV infection in those with TB (as in Table 2).

Health care providers, administrators and those involved in TB control should strive to promote coordinated care for patients with TB and HIV and to improve information-sharing between TB control programs and HIV/AIDS programs.

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