State of Alaska Epidemiology Bulletin

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Latent Tuberculosis Infection (LTBI)
Part I: Diagnosis and Evaluation

In April 2000, the American Thoracic Society (ATS) and the U.S. Centers for Disease Control and Prevention (CDC) released updated recommendations for the treatment of latent tuberculosis (TB) infection.[1] In addition, the ATS and CDC jointly released updated recommendations for the diagnosis and classification of tuberculosis.[2] This *Bulletin* reviews the new recommendations for the diagnosis and evaluation of persons with latent TB infection (LTBI).

Tuberculin skin testing: Persons with conditions or situations shown in Table A should receive a TB skin test. If infected with TB, they are at greater risk to develop TB than the general public. The frequency of repeat testing depends on each person's risk for ongoing exposure to TB.

Mantoux skin testing remains the standard for identifying persons with LTBI. It is administered by injecting 0.1 ml of 5-TU purified protein derivative (PPD) intradermally into the volar or dorsal surface of the forearm. The test is read by a health care provider 48-72 hours after placement. Multiple puncture tests (Mono-Vacc®, Tine Test PPD®) are not as reliable as the Mantoux method and are not recommended.

The Alaska TB Program recommends two cut-points to detect LTBI:

1. ≥5 mm induration is considered significant for persons who are immunosuppressed, infected with HIV, have a chest x-ray (CXR) suggestive of old inactive TB, or who are recent contacts to active TB;
2. ≥10 mm induration is considered significant for all others.

This differs from the three cut-point system recommended by the CDC, because the rate of TB in Alaska (9.8 cases/100,000) remains considerably higher than the U.S. rate (6.4 cases/100,000) in 1999.

Chest radiography: A CXR to exclude active pulmonary TB should always be obtained prior to beginning treatment for LTBI. Children ≤5 years of age should have both posterior-anterior and lateral chest x-rays, while older individuals require a PA view alone, unless otherwise indicated. A pregnant woman with either a newly positive skin test or a negative skin test with recent contact to active TB should have a shielded CXR, even during the first trimester of pregnancy.

Sputum examination: Sputum for AFB smear and culture should be obtained from 1) persons with CXR findings suggestive of old, healed TB 2) HIV-negative persons with persistent respiratory symptoms or a CXR suggesting TB and 3) HIV-positive persons with any respiratory symptoms.

BCG: BCG vaccination is not a contraindication for TB skin testing. Although BCG is used in many parts of the world to prevent TB, its efficacy against pulmonary disease in children and adults is unproven. Unfortunately, there is no reliable method to distinguish PPD reactions caused by BCG vaccination from those caused by TB infection. Therefore a significant PPD reaction in a BCG-vaccinated individual should be interpreted as LTBI if that person is a) from a country with a high incidence of TB or b) has other conditions or situations listed in Table A.

Anergy testing: Although anergy testing is a clinical tool to assess the cell-mediated delayed-type immune response, anergy testing as a part of the diagnosis of LTBI or TB disease is unreliable. Patients may have a negative PPD test, positive anergy test results, and yet be infected with TB. Conversely, negative anergy test results can occur in patients with positive PPD reactions. Consecutive anergy testing in HIV-positive patients has not been found to accurately reflect the current state of immunosuppression. For these reasons, anergy testing is not recommended to identify individuals with LTBI.

Which patients with LTBI should be considered for treatment? *Any individual with a condition or risk factor listed in Table A should be considered for treatment, regardless of age.* For individuals with LTBI who are at low risk of developing active TB, the decision to treat should be based on the likelihood of drug toxicity weighed against the likelihood of TB transmission to vulnerable contacts should TB disease develop.

Pretreatment evaluation: Once LTBI is diagnosed, a pretreatment evaluation should include an interview asking about risk factors for TB, prior TB or LTBI treatment, and potential conditions or medications that could complicate treatment. *Baseline laboratory testing is not routinely indicated* but should be performed for persons with suspected or known liver disorders, HIV infection, those who use alcohol regularly, or who are pregnant or in the immediate postpartum period (3 mo.).

HIV testing: Routine HIV testing is not required for pre-treatment evaluation of LTBI. However, individuals with risk behaviors for HIV infection should be offered risk reduction counseling and HIV testing.

Treatment for LTBI should be started only after active TB has been ruled out by history, physical examination, and CXR.

See Latent Tuberculosis Infection. Part II: Treatment and Follow-up. Epidemiology Bulletin No. 11 June 27, 2000.

Table A: Persons with latent tuberculosis infection (LTBI) who are at higher risk for developing active TB	
Recent TB infection likely - PPD converter - Contact to person with active TB - From an area of world with high TB rates Children and adolescents ≤ 18 years old Homeless HIV infection Injection drug user Silicosis Chest x-ray findings consistent with prior TB Immunosuppression (prolonged corticosteroids or other agents)	Excessive alcohol use Weight loss of 10% of ideal body weight Diabetes mellitus (especially poorly controlled) Chronic renal failure/hemodialysis Gastrectomy Jejunoileal bypass Solid organ transplantation (renal or cardiac) Carcinoma of head or neck Other neoplasms (lung cancer, lymphoma, leukemia) Reside or work in institutional settings (e.g., nursing home, hospital, correctional facility, or homeless shelter)

References:

1. Targeted tuberculin testing and treatment of latent tuberculosis infection. *Am J Respir Dis* 2000;161:S221-S247.
2. Diagnostic standards and classification of tuberculosis in adults and children. *Am J Respir Crit Care Med* 2000; 1376-1395.

Both articles also available at http://www.cdc.gov/nchstp/tb/

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