

Clinical Watch

FROM CSAC, THE CLINICAL AND SCIENTIFIC AFFAIRS COUNCIL OF THE AAPA

TUBERCULOSIS

Testing and treatment in special populations

›WHO SHOULD READ THIS?

PAs who provide care to special populations, work in public health settings, or work in migrant or community health centers.

›WHY IS THIS IMPORTANT?

Changing patterns of migration and increased ease of international travel have caused growing concerns about screening and treatment of tuberculosis (TB) in special populations. These are defined as new immigrants to the United States and transient populations, including the homeless and imprisoned. The number of cases of TB in the United States has been steadily decreasing since 1992. In 2006, however, the TB incidence rate in foreign-born persons living in the United States was nearly 10 times greater than that in US-born persons.¹

Transient populations are at increased risk of contracting TB because of overcrowded living conditions, lower socioeconomic status, poor nutritional state, and reduced access to health care. Left untreated, these populations have increased mortality rates from TB with a survival rate of only 50%, and they can pose a significant public health risk.¹ Persons with immunodeficiency diseases, such as HIV infection and AIDS, also deserve special consideration. Compounding fac-

tors have significantly increased the morbidity caused by TB among HIV-infected persons.²

The majority of people infected with TB are able to contain the bacterium, a condition known as *latent tuberculosis infection* (LTBI).³ Someone with LTBI is not considered infectious and will not spread the disease. However, up to 10% percent of persons exposed to the bacterium will not be able to mount an immune response and will develop active TB (termed *TB disease*) if they are not given preventive therapy. Those with TB disease are considered infectious to others.

›WHAT'S NEW IN TARGETED TUBERCULIN TESTING?

Initial screening for TB is performed with the tuberculin skin test using purified protein derivative (PPD). Because of the variable prevalence of TB in special populations, the newest recommendations for defining a positive reaction are divided into three groups⁴ (see Table 1, page 25). Previous vaccination with bacille Calmette-Guérin (BCG) is not a contraindication to administering a tuberculin skin test. Evaluation of reactions in persons vaccinated with BCG should be interpreted using the same criteria used for those not BCG-vaccinated.^{4,5}

TAKE-HOME POINTS

- Screening and treatment of tuberculosis can be very different in special populations.
- Aggressive approaches are warranted to decrease the risk of future transmission of TB.
- All cases of TB need to be reported to local public health agencies.
- Outbreaks of resistant strains of TB portend challenges to continued decreases in the rates of TB in the United States.

In 2005, the FDA approved the QuantiFERON-TB Gold test for use as an aid in diagnosing TB. It has advantages over the PPD test, including the benefit that results can be available within 24 hours; it requires only one patient visit; it is not subject to reader bias; and it is not affected by prior BCG vaccination. Disadvantages include limited data on its use in special populations and in children younger than 17 years, the need for processing within 12 hours, and potential errors in collecting or transporting blood specimens.⁶

›WHAT ARE THE CURRENT RECOMMENDATIONS FOR LTBI THERAPY IN SPECIAL POPULATIONS?

Once TB disease has been ruled out by history, physical examination, chest film, and, if warranted, sputum or other clinical samples, treatment for LTBI can be initiated. Four regimens are currently recommended, but the preferred one is isoniazid (INH) for 9 months.^{4,7} Local disease prevalence, health department policies, patient adherence to a long regimen, and potential side effects all need to be considered when deciding which regimen to follow. In persons at risk of developing peripheral neuropathy, pyridoxine should be added to the therapy.⁵ Patients should receive periodic follow-up evaluations while on therapy to assess for side effects or signs of hepatitis. Routine baseline and follow-up laboratory testing are not recom-

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mended, unless the initial assessment has suggested the need.^{4,8}

PAs providing care to special populations should be aware of the potential barriers to successfully treating LTBI. In order to achieve a high rate of patient adherence, proper patient education on the need for therapy is paramount. Some patients may have a difficult time understanding the need for therapy when they are asymptomatic. In addition, patients may have health beliefs that differ from those accustomed to Western medicine, they may have difficulty communicating their understanding of the situation because of language barriers, or they may be unable pay for the necessary health services.

Treatment decisions can be complicated by circumstances that put the success of therapy in doubt. If you suspect the patient may discontinue therapy early for financial reasons, lack of knowledge, or plans to travel, take time to provide careful education on the importance of completing therapy. Some countries, such as Mexico, will not initiate or continue INH therapy for a positive PPD test result. These issues should be raised and discussed with the patient. In cases where patients intend to leave the country, a follow-up chest film should be obtained when the patient returns.⁹

WHAT ARE THE CURRENT RECOMMENDATIONS FOR TREATMENT OF TB DISEASE?

In patients suspected to have TB disease, and because of the relatively high number of organisms showing resistance to INH, a four-drug regimen of INH, rifampin (Rifadin, Rimactane), pyrazinamide, and ethambutol (EMB, Myambutol) is initiated for the first 2 months of therapy. Once drug susceptibility results are known and if there is no resistance, EMB can be discontinued. The therapeutic regimen is continued for another 4 months for most patients. If cultures at completion of the

TABLE 1. Tuberculin skin test reactions in special populations

Population	Cut point for positive result
Persons from low-risk, low-prevalence populations, unlikely to have been exposed to TB	≥15 mm induration
Persons with normal immunity and a high likelihood of exposure to TB, including <ul style="list-style-type: none"> Recent arrivals (<5 y) from high TB prevalence countries Residents and employees of high-risk settings such as homeless shelters, prisons, and nursing homes Other persons with high-risk clinical conditions 	≥10 mm induration
Persons with a history of TB infection and immunocompromised persons, including <ul style="list-style-type: none"> Persons with HIV infection Organ transplant recipients 	≥5 mm induration

Data from American Thoracic Society. Diagnostic standards and classification of tuberculosis in adults and children. *Am J Resp Crit Care Med.* 2000;161(4):1376-1395.

initial phase of treatment remain positive; therapy is continued for 7 additional months. At each follow-up visit, visual changes should be assessed in all patients taking EMB.¹⁰ If cultures remain positive after the first 2 months of treatment, then directly observed therapy should be considered.¹⁰

WHAT ELSE IS IMPORTANT?

The screening and treatment of LTBI can be very different in special populations, depending on risk factors, the mobility of the population involved, and the availability of follow-up. However, the increased incidence in special populations and the ease of transmission warrants an aggressive approach to the management. All cases of LTBI and TB disease must be reported to local and state health departments. The health department will conduct a contact investigation by screening all family members and close contacts.

Reports of outbreaks of multidrug-resistant TB around the world, sporadic cases of extensively drug-resistant TB, and virulent TB strains seen among persons with HIV/AIDS have reinforced

the importance of screening and treatment for this deadly disease. Special populations and immunocompromised persons represent groups particularly at risk for TB and can present challenges to its successful eradication. **JAAPA**

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