

Table 9

Policy for Tuberculosis Surveillance and Screening

Purpose: to identify active cases of tuberculosis or latent TB among residents and staff of the nursing home in order to prevent transmission in this setting.

Goals:

1. Identify active tuberculosis cases among residents at the time of admission to the facility;
2. Identify persons with latent TB and offer treatment as appropriate, for these persons;
4. Conduct risk based monitoring for tuberculin skin test conversion;
5. Provide methodology to record and retrieve results of TB testing; and
6. Educate staff regarding the nature of tuberculosis

Background

Since 1992 there has been a significant decline in the incidence of tuberculosis in the United States in all age groups including those over age 65. However, the incidence of TB remains highest in those 65 and older, the group living in nursing homes. Some residents have been infected with *M. tuberculosis* earlier in their lives but did not develop active diseases. These people have latent tuberculosis. The tuberculin skin test (TST) has been utilized for decades to identify people with latent TB infection. Long term care residents who test positive with the TST represent a reservoir of latent tuberculosis infection and are at risk of reactivation to active TB; those who test negative are presumed to be nonimmune and may be at risk for a primary tuberculosis infection if exposed to an active case of TB.

The TST has several significant limitations, however. This test has several steps that must be done correctly and interpretation of the test is not straightforward. People administering the TST must be trained in the proper application and interpretation of this test. It should be kept in mind that the TST is not to be used to make a diagnosis of active TB as a substantial number of people with active TB will have a negative TST.

Because of the limitations of the TST new methods to detect latent TB have been developed. These tests utilize whole blood samples from which the lymphocytes are isolated and exposed to a *M. tuberculosis*-specific protein. If a person has been infected with *M. tuberculosis* and has had an appropriate cell-mediated immune response, he will have present in the circulating blood T lymphocytes that have been specifically sensitized to the tuberculosis protein. In that situation when T lymphocytes from whole blood are exposed to a *M. tuberculosis*-specific protein, they will secrete large quantities of the cytokine interferon gamma that can be directly measured in the sample. Several of these assays are FDA-approved and have been marketed. These interferon assays have several advantages over the TST: eliminates the need for multiple visits as only one test is required; eliminates the variation associated with placement, reading and interpretation of the TST; eliminates the potential confounding effect of Bacille Calmette-Guèrin and most atypical mycobacteria; and provides results that are readily documented and retrievable. However, the interferon assays have several limitations that, up to the present time, have not seen their widespread use: the marketed test kits are expensive; few labs presently perform the test; and the processing requirement that the blood reach the laboratory and be set up

Table 9

within 12 hours of obtaining the specimen is problematic. Either the TST or the interferon whole blood assay is an acceptable method for health care worker and resident screening for latent TB.

Risk Assessment

A TB risk assessment to determine the incidence of TB in the community will be done on a yearly basis. The initial and ongoing risk assessment will consist of the following steps:

1. Review the community profile of TB disease in collaboration with the local or state health department.
2. Determine if persons with unrecognized TB disease were encountered in the facility during the previous 5 years.
3. Document procedures that ensure the prompt recognition and evaluation of suspected episodes of health-care associated transmission of TB.
4. Conduct periodic reassessments (annually, if possible) to ensure 1) proper implementation of the TB infection-control plan; 2) prompt detection and evaluation of suspected TB cases; 3) prompt initiation of precautions of suspected infectious TB cases before transfer; 4) prompt transfer of suspected infectious TB cases; 5) ongoing TB training and education for health care workers.

PROTOCOL for Residents

I. PERFORMING AND READING TUBERCULIN SKIN TESTS (TST) or obtaining a blood assay for *M. tuberculosis* (BAMT).

A. *All new admissions* to the facility except those with known active tuberculosis, a documented positive TST, or a documented severe hypersensitivity to purified protein derivative such as vesiculation, ulceration or necrosis at the test site will receive a 2-step tuberculin skin testing or BAMT.

1. If the TST is used, the first test will be applied within the first week of admission.
2. If the first TST is negative (< 10 mm of induration or no induration), the second test will be placed one to three weeks after the first test. A documented TST result that was negative within the past 12 months will be considered the first step. If the BAMT is being used, one blood sample will be drawn at admission and no additional samples are required.
3. In addition *current residents*, will participate in an annual testing program only if the facility risk assessment indicates that annual testing is appropriate. [**Author's note: the 2005 CDC guideline does not recommend yearly testing of residents; however, some states require yearly testing of residents**].

Table 9

B. Protocol for tuberculin skin testing (TST)

[A resident with written documentation of a previous positive TST does not need a repeat tuberculin skin test]

1. When performing a TST, the manufacturer, lot number, date placed, date read and names of the person placing, reading and interpreting the test will be documented in the resident's record.
2. Intradermally inject 0.1 cc of intermediate strength purified protein derivative containing 5 tuberculin units in the volar or hairless area of the forearm about 4 inches below the elbow, creating a wheal 6-10mm in size.
3. The TST will be read between 48-72 hours after placement. The extent of INDURATION, a hard, dense, raised formation (erythema or redness - does not indicate a positive reaction) will be measured across the transverse diameter of the forearm (3 o'clock to 9 o'clock). The number of millimeters of INDURATION will be recorded.
4. If there is <10 mm of induration or no reaction at all, the test will be considered negative. The test results will be recorded in millimeters (mm) and not as "negative".
5. A reaction of ≥ 10 mm will be considered a POSITIVE reaction in residents, employees of the facility, volunteers, and providers unless they fall into a high risk group (see below). The results will be recorded in millimeters and not as "positive".
6. A reaction of >5 mm will be considered a POSITIVE reaction for high risk groups:
 - Persons with HIV infection
 - Persons who have had close contact with an infectious tuberculosis case in the past year
 - Persons who have chest x-rays with fibrotic lesions likely to represent healed tuberculosis
 - Persons with organ transplants and other immunosuppressed patients (e.g. receiving the equivalent of >15mg/day prednisone for >1 month)
 - Persons receiving treatment with tumor necrosis factor-alpha (TNF- α) antagonists
7. For new admissions and/or persons for whom a baseline tuberculin skin test is unknown or undocumented, the TST will be repeated one to three weeks following the initial tuberculin skin test only if the initial test was negative. This procedure is referred to as the two-step method. A small percentage of people who are negative on the first test will have 10 mm or more of induration on the second test. This is not considered a conversion but rather a "booster phenomenon" and indicates the presence of latent TB infection.
8. Exceptions to skin testing should be limited to persons with:
 - Previously documented positive tuberculin tests
 - Documented severe hypersensitivity to tuberculin purified protein derivative.
9. Tuberculin skin testing is not contraindicated for persons who have been vaccinated with BCG, and the tuberculin skin test results of such persons can be used to support or exclude the diagnosis of latent TB.

Table 9

10. Individuals who do not qualify for skin testing, or who refuse skin testing, will receive a chest x-ray as well as yearly screening for signs/symptoms of TB.

II. EVALUATION OF POSITIVE TUBERCULIN SKIN TEST REACTORS

- A. A person with a positive TST will be considered to have latent TB infection and the following protocol will be used.
 1. Chest x-ray will be done to identify the presence of active TB.
 2. If the chest x-ray is negative, follow-up chest x-rays will not be done unless the person develops signs or symptoms suggestive of TB.
 3. The individual with latent TB will be referred to the local county or state health department for recommendations regarding treatment.
 4. If the chest x-ray is suggestive of active TB, the resident will be transferred to a facility that can provide the appropriate isolation, work-up, and treatment.

III. EVALUATION OF TUBERCULIN SKIN TEST CONVERTERS

"TST CONVERSION" indicates a new or recent TB infection and is defined as an increase in the size of induration of > 10 mm within a 2-year period.

- A. All converters will be evaluated with a chest x-ray and evaluation for signs/symptoms of active TB.
- B. All new converters without evidence of active disease will be reported to the attending physician with a recommendation for treatment of latent TB infection (see IV below).
- C. The attending physician may seek additional assistance in dealing with a TST convertor from the county and/or state health department

IV. TREATMENT OF LATENT TB INFECTION TO PREVENT DEVELOPMENT OF ACTIVE DISEASE [this will be done in conjunction with recommendations from the county and/or the state health department]

V. SUSPECTED OR CONFIRMED ACTIVE TUBERCULOSIS

Residents or employees suspected to have TB will be transferred/referred to a facility that has the appropriate isolation rooms and ability to evaluate the person for active TB.

Table 9

VII. DOCUMENTATION:

- A. Results of TST will be documented in each resident's chart or the health records of each employee.
- B. For residents or employees identified with latent TB, the results of a chest x-ray and other evaluations and treatment will be recorded in the appropriate record.

VIII. EDUCATION

At least once a year TB education will be provided for all staff. The content of the in-service will address the demographics, risk factors, and manifestations of tuberculosis as well as information on TST and how it is used to identify latent TB.

PROTOCOL FOR EMPLOYEES

- A. All new employees will undergo a 2-step TST procedure as outlined above
- B. Interpretation of the TST or BAMT is also identical to that outlined above for residents
- C. Management of TST positive employees or converters is the same as for residents.
- D. However, employees with a TST result that is < 10 mm or nonreactive will have the test repeated on a yearly basis as part of the TB surveillance program for the facility.
- E. Employees with a history a "positive" TST must provide written documentation of test results and will undergo yearly evaluation for signs and symptoms of TB.

REFERENCES

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm> Preventing transmission of TB in healthcare settings 2005