INFECTION PREVENTION

Tuberculosis Testing: From Routine to Risk-Based Screening for Home Care and Hospice Staff

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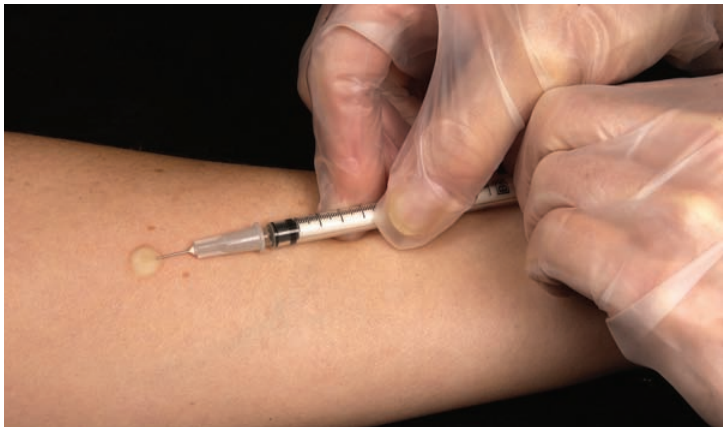
Tuberculosis (TB) transmission has been documented in healthcare settings; therefore, employees, contracted staff, and volunteers must receive baseline TB screening. Home care and hospice staff who need to be tested for TB include those at risk for being exposed to *M. tuberculosis* through face-to-face contact, exposure through shared air or space with an infectious patient, or handling clinical specimens that might contain *M. tuberculosis*. Baseline TB screening must include a written assessment of any current symptoms of TB, and a two-step tuberculin skin test (TST), *or* single interferon gamma release assay (blood test) for *M. tuberculosis* (e.g., QuantiFERON® TB Gold or TB Gold-In Tube, TSPOT®.TB). A two-step skin test is the administration and reading of two TSTs placed 1 to 3 weeks apart (CDC, 2005). If a staff member has documentation of a negative TST result for *M. tuberculosis* that was conducted within the past 365 days (and no less than 7 days), the negative TST result can count as the first step of the baseline two-step, and a second TST administered (McGoldrick, 2017).

Two-step testing is necessary in order to obtain an accurate baseline when using the TST because of a condition referred to as Booster Phenomenon. Booster Phenomenon can occur when a person who was infected with TB in the past has a TST placed years after being infected. Because their body is so used to living with TB infection, when an initial TST is placed, the person's immune system does not react. However, if a second TST is placed it "boosts" the person's immune system and a positive reaction will result. This positive reaction is an old infection and does not represent a recent infection. The baseline TB test results obtained can then be compared with later TB tests to help identify a recent work exposure and determine if recent TB transmission has occurred. Staff with abnormal TB screening results must receive follow-up medical evaluation according to current Centers for Disease Control and Prevention (CDC) recommendations for the diagnosis of TB (CDC, 2005). If a person has documentation of a prior positive TB test and/or completion of TB therapy, he or she does not need to repeat a TB test. Instead, a symptom screen should be administered on hire and annually, and if symptomatic, a chest x-ray should be completed. If the person cannot provide documentation of a positive TB test and/or completion of TB therapy, it is appropriate to administer another TB test.



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The frequency for serial TB screening is determined by state regulations or the outcome of a TB risk assessment. Unless the state's regulations require that annual TB testing be performed, the frequency for ongoing TB testing should be based on a risk-based screening method. Risk-based screening is a method to determine how frequently the home care and hospice staff should receive a TB test based on their level of risk. An annual TB risk assessment must be completed and be based on risk factors such as the number of TB cases

encountered, characteristics of the population encountered, the type of procedures performed, and presence of a respiratory protection program. If a TB risk assessment is not conducted, an employer could be cited by the Occupational Safety and Health Administration (OSHA) for a failure to "identify and evaluate the respiratory hazard(s) in the workplace" (29 CFR 1910.134(d)(1)(iii)) or for a failure to "assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment" (29 CFR 1910.132(d)(1)) (OSHA, 2015). The types of administrative, environmental, and respiratory protection controls needed and the need for medical surveillance will depend on the risk classification assigned to the home care or hospice provider based on the risk assessment. Risk assessments also serve as an ongoing evaluation tool for the Respiratory Protection Program.

At the conclusion of the TB risk assessment, one of three risk categories is assigned: low risk, medium risk, or potential ongoing transmission. Most home care and hospice providers are classified in the low-risk category as many have cared for less than three TB patients the preceding year. If state licensure regulations do not require annual TB screening and a low-risk classification is assigned at the conclusion of the TB risk assessment, annual TB testing is not required. The classification of low risk should be applied when there is a low risk of encountering people with TB disease, staff will never be exposed to persons with TB disease or to clinical specimens that might contain *M. tuberculosis*, and, therefore, exposure to *M. tuberculosis* is unlikely. If an exposure to a person with TB or a specimen containing TB occurs, the exposed staff will need to be retested for TB and the risk assessment updated in accordance with the 2005 CDC Guidelines (OSHA, 2015).

If state licensure regulations do not require annual TB screening, and a low-risk classification is assigned at the conclusion of the TB risk assessment, annual TB testing is not required.

The classification of medium risk should be applied to settings in which the risk assessment has determined that staff will or will possibly be exposed to persons with TB disease or to clinical specimens that might contain *M. tuberculosis*. If three or more TB patients were cared for during the preceding year, the risk classification would be medium risk and annual TB screening will need to be conducted (CDC, 2005). If uncertainty exists regarding whether to set a classification of low risk or medium risk, choose medium risk and conduct annual TB screening.

The classification of potential ongoing transmission is a temporary category that should be applied if there is evidence suggestive of person-to-person (e.g., patient-to-staff, staff-to-patient, or staff-to-staff) transmission of *M. tuberculosis* occurring during the preceding year. Evidence of person-to-person transmission of *M. tuberculosis* includes 1) clusters of TST or blood test conversions, 2) staff with confirmed TB disease, 3) increased rates of TST or blood test conversions, 4) unrecognized TB disease in patients or staff, or 5) recognition of an identical strain of *M. tuberculosis* in patients or home care workers with TB disease identified by deoxyribonucleic acid fingerprinting (CDC, 2005). Refer to the Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Settings, 2005 (CDC) for additional information on category of potential ongoing transmission determining risk categories. Even if home care or hospice services are provided in a state that requires annual TB testing, a TB risk assessment still needs to be conducted on an annual basis. ☗

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The author declares no conflicts of interest.

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