Tuberculosis Surveillance and Screening for Long Term Care Facilities in Colorado

Developed by the Colorado Medical Directors Association and The Colorado Department of Public Health and Environment

Introduction:

Infection with *Mycobacterium tuberculosis* (TB) poses a health risk to patients, health care workers, visitors, and volunteers in long term care facilities (e.g., hospices and skilled and unskilled nursing facilities). When an active TB case occurs in this setting, the disease may spread among the residents. As people age they become more prone to impaired immune function and malnutrition. In addition, immune-suppressing medications are commonly prescribed and long term care residents live in a close environment which facilitates prolonged and repeated contact with other residents.

Since the early 1990s, the number of outbreaks in health-care settings and health-care-associated transmission of *M. tuberculosis* to patients and health-care workers reported to the Centers for Disease Control and Prevention (CDC), U.S. Public Health Service, has decreased as have case rates nationally. Despite this decrease, there continues to be a marked geographic variation in the occurrence of tuberculosis (TB).

In response to the changing epidemiology of TB in this country the CDC issued *Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Health-Care Settings, 2005.* These Guidelines differ from previous Guidelines in several important ways, including: the role of risk assessment includes additional components, whole-blood interferon gamma release assay is allowed to be used instead of the more traditional tuberculin skin testing (TST), the frequency of TB screening for HCWs has been decreased in various settings and the criteria for determination of screening frequency have been changed.

The Colorado Department of Public Health and Environment, in conjunction with the Colorado Medical Directors' Association and other experts in the field have revised *Tuberculosis Surveillance and Screening in Long Term Care Facilities in Colorado* to be more consistent with this new guidance and to emphasize the important role of risk assessment in evaluating these settings as indicated in TB Risk Assessment (Appendix A: Risk Assessment), specifically pages 128 to 133 and chart on page 134 at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm.

The CDC guidance allows facilities to determine a risk classification based upon the incidence of tuberculosis in their community and in their facility and to establish tuberculosis screening programs in accordance with that classification. In particular, although two-step baseline screening should be routine initially, the guidance provides for approaches other than annual follow up skin testing.

Although the CDC guidelines primarily focus upon health care workers, *Tuberculosis Surveillance and Screening in Long Term Care Facilities in Colorado* acknowledges the fact that similar principles can reasonably be applied to tuberculosis screening of residents of long term care facilities, with the concurrence of the Medical Director.

Purpose

This protocol provides a basis to standardize tuberculosis surveillance and screening effects in long term care facilities throughout Colorado.

Goals of this policy are to:

1. Identify active tuberculosis cases upon admission to the long term care facility;
2. Encourage the appropriate use of the CDC risk assessment tool;
3. Identify persons with a positive skin test without evidence of active disease and offering treatment of latent TB infection, as appropriate, for these persons;
4. Conduct risk based monitoring for tuberculin skin test conversion;
5. Provide methodology to record and retrieve results; and
6. Educate staff regarding the nature of tuberculosis

Background

Since 1992, the United States has seen a steady decline in the number of cases of tuberculosis, with just over 14,000 cases reported in 2005, a three percent decrease over 2004. For 2005, those 65 years of age and older continue to be disproportionately represented, accounting for twenty percent of cases of active disease, even though this group accounted for 9.7 percent of the population. The incidence among persons 65+ years was 7.7 per 100,000 in 2005 while the incidence for all ages combined was 4.8 per 100,000. (www.cdc.gov/nchstp/tb).

The number of cases in Colorado beginning in the mid-1990s has ranged from a low of 101 per year to a high of just under 140. Those 65 years of age and older accounted for 26 percent of 2005 cases, occurring at a rate of 5.7 cases per 100,000 population, versus an overall incidence for all ages of 2.1 per 100,000.

Over the years, facilities have relied on the tuberculin skin test (TST) to determine whether or not an individual is infected with *M. tuberculosis*. Long term care residents who test positive with tuberculin skin testing represent a reservoir of latent tuberculosis infection and

are at risk of reactivation tuberculosis and those who test negative may be at risk for a primary tuberculosis infection.

The value of the TST is limited, however, particularly among the elderly and immunosuppressed. Approximately 20 percent of those with active disease have a negative TST, making screening for signs and symptoms of disease even more important. In 2005, for example, four cases of tuberculosis occurred among residents of long term care facilities in Colorado. Ages ranged from 65 to 95 years and all were US born. Two had pulmonary tuberculosis and two had extrapulmonary disease. Of the three for whom a TST was administered, none had a positive skin test. For two, the diagnosis was made post mortem.

Further, since 1994, the number of TB outbreaks in health-care settings and health-care-associated transmission of *M. tuberculosis* to patients and health-care workers reported to CDC has decreased, as have case rates nationally.

Given changes in the epidemiology of TB in this country and the challenges inherent to the TST, the CDC, in conjunction with the Advisory Council for the Elimination of Tuberculosis (ACET) and others undertook the task of updating previous guidelines to reflect shifts in the epidemiology of TB, advances in scientific understanding and changes in health-care practice that have occurred in this country over the past ten years. This version of *Tuberculosis Surveillance and Screening for Long Term Care Facilities in Colorado* is updated to be consistent with that guidance.

Risk Assessment

Consistent with this document and guidance from CDC, long term care facilities should perform a TB Risk Assessment. (See Appendix A: Risk Assessment) The risk assessment will determine if any follow-up testing is needed after the initial two-step testing. The medical director and facility staff may prefer, however, to develop a policy that is more stringent than the guidelines suggest. The initial and ongoing risk assessment for these settings should consist of the following steps:

1. Review the community profile of TB disease in collaboration with the local or state health department.

2. Consult the local or state TB-control program to obtain epidemiologic surveillance data necessary to conduct a TB risk assessment for the health-care setting.

3. Determine if persons with unrecognized TB disease were encountered in the setting during the previous 5 years.

4. Determine if any health care workers need to be included in the TB screening program.

5. Determine the types of environmental controls that are currently in place, and determine if any are needed in the setting (see Environmental Controls; Appendices – B and C, pages 121-126 and 135).

6. Document procedures that ensure the prompt recognition and evaluation of suspected episodes of health-care associated transmission of TB.

7. 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 airborne precautions of suspected infectious TB cases before transfer; 4) prompt transfer of suspected infectious TB cases; 5) proper functioning of environmental controls, as applicable; and 6) ongoing TB training and education for health care workers.

Environmental Controls

Long term care facilities must have adequate administrative and environmental controls, including airborne precaution capabilities and a respiratory-protection program, if they accept patients with suspected or confirmed infectious TB disease. The setting should have 1) a written protocol for the early identification of patients with symptoms or signs of TB disease and 2) procedures for referring these patients to a setting where they can be evaluated and managed. Patients with suspected or confirmed infectious TB disease should not stay in long term care facilities unless adequate administrative and environmental controls and a respiratory-protection program are in place. Persons with TB disease who are determined to be noninfectious can remain in the long term care facility and do not need to be in an airborne infection isolation room.

PROTOCOL for Residents of Long Term Care Facilities

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

All new admissions to a long-term care 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 should receive 2-step tuberculin skin testing or BAMT.

If using the TST, the first step should be applied at admission according to the following protocol. If the first TST is negative, the second test should be placed one to three weeks after placement of the first test. A documented TST result is negative within the past 12 months may

be considered the first step. If the BAMT is being used, one blood sample should be drawn at admission. No additional samples are required.

In addition *current residents*, except those with known active tuberculosis, documented positive TST or BAMT, or a documented severe hypersensitivity to purified protein derivative such as vesiculation, ulceration or necrosis at the test site should participate in an annual testing program only if the facility risk assessment or written policy develop indicates that annual testing is appropriate.

Protocol for tuberculin skin testing (TST)

Note: A patient with written documentation of a previous positive TST does not need a repeat tuberculin skin test.

A. 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. Repeat the tuberculin skin test on the opposite arm or three (3) inches from original test site if the wheal created is not of adequate size.

B. The TST is read between 48-72 hours. Measure the area of INDURATION, a hard, dense, raised formation (erythema or redness - does not indicate a positive reaction). The number of millimeters of INDURATION is recorded.

C. If there is <5 mm of induration or no reaction at all, the test is considered negative. Always record the test results in millimeters (mm) and not as "negative".

D. A reaction of ≥5 mm is 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

E. A reaction of ≥10 mm is classified as a POSITIVE reaction in all other persons who do not meet the above criteria but who have other risk factors for tuberculosis, including:

   Persons who are:
   - Recent immigrants (i.e., within the past 5 years) from countries with a high prevalence of TB such as Africa, Asia, Eastern Europe, Russia, and Latin

America
- Injection drug users
- Residents and employees of high-risk congregate settings: prisons and jails, nursing homes and other long-term facilities for the elderly, hospitals and other health-care facilities, and homeless shelters
- Mycobacteriology laboratory personnel
- Children <4 years of age, or children and adolescents exposed to adults in high-risk categories.

Or persons with:

- Substance abuse (especially drug injection)
- Recent infection with *M. tuberculosis* (within the past 2 years)
- Chest x-ray findings suggestive of previous TB (in a person who received inadequate or no treatment)
- Diabetes mellitus
- Silicosis
- Prolonged corticosteroid therapy
- Other immunosuppressive therapy
- Cancer of the head and neck
- Hematologic and reticuloendothelial diseases (e.g. leukemia and Hodgkin's disease)
- End-stage renal disease
- Intestinal bypass or gastrectomy
- Chronic malabsorption syndromes
- Low body weight (10% or more below the ideal).

F. For new admissions and/or persons for whom a baseline tuberculin skin test is unknown or undocumented, steps A and B should be repeated one to three weeks following the initial tuberculin skin test only if the initial test was negative. This is the two-step method. The second test is performed and read in the same manner as the initial test.

G. Following the initial skin test, annual skin testing is performed only if the completed risk assessment determines the facility is of medium risk or facility policy instructs to do so. If it is determined that annual testing is needed in the facility, only a single step is performed. The booster response produced by the two-step methodology persists for at least a year.

H. Anergy testing among HIV-positive persons is no longer routinely recommended. The results of currently available anergy testing methods in U.S. populations have not been demonstrated to make a useful contribution to most decisions about treatment of latent tuberculosis infection.

I. Exceptions to skin testing should be limited to persons with:
    - Known active tuberculosis

- Previous documented positive tuberculin tests following the definition of "positive" provided in D and E above
- Documented severe hypersensitivity to tuberculin purified protein derivative.

J. Tuberculin skin testing is not contraindicated for persons who have been vaccinated with BCG, and the tuberculin skin test results of such persons are used to support or exclude the diagnosis of *M. tuberculosis.*

K. Individuals who do not qualify for skin testing, or who refuse skin testing, should receive a PA chest x-ray.

L. Do not use multiple puncture TB skin tests (tine tests).

Protocol for Blood Assay for *M. tuberculosis* BAMT

Settings that use TST as part of TB screening and want to adopt BAMT can do so directly (without overlapping TST) or in conjunction with a period of evaluation (1 or 2 years). During which time both TST and BAMT are used. Baseline testing for BAMT would be established as a single step test. As with TST, BAMT results should be recorded in detail. The details should include date of blood draw, result in specific units, and the laboratory interpretation (positive, negative, or indeterminate – and the concentration of cytokine measured, for example, interferon-gamma [IFN-y]).

BAMT does not require two-step testing and is more specific than skin testing. BAMT that uses M. tuberculosis- specific antigens (e.g. quantiFERON-®gold) are not expected to result in false-positive results in persons vaccinated with BCG. Baseline test results should be documented, preferably within 10 days of HCWs starting employment.

BAMT takes blood samples that are mixed with antigens (substances that can produce an immune response) and controls. For QFT-G, the antigens include mixtures of synthetic peptides representing two *M. tuberculosis* proteins, ESAT-6 and CFP-10. After incubation of the blood with antigens for 16 to 24 hours, the amount of interferon-gamma (IFN-gamma) is measured. If the patient is infected with *M. tuberculosis*, their white blood cells will release IFN-gamma in response to contact with the TB antigens. The QFT-G results are based on the amount of IFN-gamma that is released in response to the antigens.

II. EVALUATION OF POSITIVE TUBERCULIN SKIN TEST REACTORS

A. A person with a positive TST or BSMT result is considered to have latent TB infection (LTBI). Obtain a chest x-ray to determine if there is evidence of active disease. If a portable chest x-ray is equivocal or of unsatisfactory quality, then a PA chest x-ray should be obtained.

B. Sputum examination is a critical diagnostic procedure for pulmonary TB disease and is indicated for the following persons:
• Anyone suspected of having pulmonary or laryngeal TB disease
• Persons with chest x-ray findings consistent with TB disease
• Persons with symptoms of infection in the lung, pleura, or airways, including larynx
• HIV-infected persons with any respiratory symptoms or signs, regardless of chest x-ray findings
• Persons suspected of having pulmonary TB disease for whom bronchoscopy is planned

Persons requiring sputum collection should have at least three consecutive sputum specimens obtained smear, culture and sensitivity, each collected in 8–24 hours intervals, with at least one being an early morning specimen. Specimens should be collected in a sputum induction booth or in an airborne infection isolation room. In resource-limited settings without environmental containment or when an airborne infection isolation room is not available, sputum collection can be performed safely outside of a building, away from other persons, windows, and ventilation intakes.

Patients should be instructed on how to produce an adequate sputum specimen (containing little saliva) and should be supervised and observed by a health care worker during the collection of sputum, if possible. If the patient's specimen is determined to be inadequate, it should still be sent for bacteriologic testing, although the inadequate nature of the specimen should be recorded. The health care worker should wear an N95 disposable respirator during sputum collection.

All sputum specimens should be sent to a laboratory that uses rapid methods, i.e. liquid and solid media with automated monitoring. The State Lab will perform the culture with rapid methods at no charge.

C. If the physician suspects TB because of symptoms (e.g. chronic cough, fever, night sweats or weight loss), sputum specimens should be obtained even if the tuberculin skin test is negative.
D. For those with a positive tuberculin skin test and without active tuberculosis (See No. 4 below). After the initial chest x-ray has excluded active TB disease, follow-up chest x-rays are not recommended unless the person develops signs or symptoms suggestive of TB.

III. **EVALUATION OF TUBERCULIN SKIN TEST CONVERTERS**

"CONVERSION" indicates new or recent infection and is defined as an increase in the size of induration of $\geq$ 10 mm within a 2-year period, regardless of age.

A. All new converters should be evaluated with a chest x-ray. Sputum for AFB smears and culture should be obtained if the chest x-ray suggests active disease or if the patient has

symptoms of increasing cough for more than three weeks, fever, hemoptysis, night sweats, weight loss or chest pain.

B. All new converters without evidence of active disease should be reported to the attending physician with a recommendation for treatment of latent TB infection (see No. 4 below).

C. Any new converters with culture or smear evidence of active disease must be reported within 24 hours to the county and/or state health departments as well as the attending physician. The directions of the county and/or state health department must be followed in managing a suspected or confirmed active case of TB.

IV. TREATMENT OF LATENT TB INFECTION TO PREVENT DEVELOPMENT OF ACTIVE DISEASE:

Although individual exceptions can be made, a decision to skin test is usually considered a decision to treat if the test is positive, regardless of age. Age is no longer a contraindication to treatment. If you choose not to treat, there should be documentation of the reasons for not treating the patient. The patient should be evaluated for signs and symptoms of TB at least annually. If signs or symptoms develop, a medical evaluation should be conducted to determine the need for a chest x-ray and sputa collection.

Patients who have been diagnosed with latent TB infection should receive an initial clinical evaluation. If treatment for LTBI is started, they should also receive follow-up evaluations at least monthly. This evaluation should include questioning about side effects and a brief physical assessment checking for signs and symptoms of hepatitis. Patients should be educated about the side effects associated with treatment of latent TB infection and advised to stop treatment and promptly seek medical evaluation should they occur.

Baseline laboratory testing is not routinely indicated for all patients at the start of treatment for latent TB infection. However, patients whose initial evaluation suggests a liver disorder should have baseline hepatic measurements of serum aspartate aminotransferase (serum glutamic oxaloacetic transaminase) (AST [SGOT]) or alanine aminotransferase (serum glutamic pyruvic transaminase) (ALT [SGPT]) and bilirubin. Baseline testing is also indicated for patients with HIV infection, pregnant women, and women in the immediate postpartum period (i.e., within 3 mo of delivery), persons with a history of chronic liver disease (e.g., hepatitis B or C, alcoholic hepatitis, or cirrhosis), persons who use alcohol regularly, and persons at risk for chronic liver disease.

Baseline testing is not routinely indicated in older persons. However, such testing may be considered on an individual basis, particularly for patients who are taking other medications for chronic medical conditions. Active hepatitis and end-stage liver disease are relative contraindications to the use of isoniazid for treatment of latent TB infection.

Routine laboratory monitoring during treatment of latent TB infection is indicated for

persons whose baseline liver function tests are abnormal and other persons at risk for hepatic disease. Laboratory testing may also be indicated for the evaluation of possible adverse effects that occur during the course of treatment (e.g., liver function studies for patients with symptoms compatible with hepatotoxicity or a uric acid measurement to evaluate complaints of joint pain). Experts recommend that isoniazid be withheld if transaminase levels exceed three times the upper limit of normal if associated with symptoms and five times the upper limit of normal if the patient is asymptomatic.

For further information regarding side effects to medications used in the treatment of LTBI, see "Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection", CDC, MMWR 2000; Vol 49; RR-6, pp 27-38. This document can also be found at http://www.cdc.gov/mmwr/PDF/rr/rr4906.pdf.

Contact the state or local health department to discuss treatment for latent tuberculosis infection if you have any questions. (Colorado Department of Public Health and Environment 303-692-2700)

Regimens for TREATMENT OF LATENT TB INFECTION

There are now three drug regimens that are recommended by the American Thoracic Society and the CDC (MMWR 2000; Vol 49; RR-6, pp 27-38). **The *preferred* regimen is No. 1 below:**

1) INH daily for 9 months or INH twice weekly for 9 months if given as directly observed therapy.
   - *Usual daily dose = 5 mg/kg, not to exceed 300 mg for adults.*
   - *Usual twice-weekly dose = 15 mg/kg, not to exceed 900 mg for adults.*

2) INH daily for 6 months or INH twice weekly for 6 months if given as directly observed therapy.
   - *Usual daily dose = 5 mg/kg, not to exceed 300 mg for adults.*
   - *Usual twice-weekly dose = 15 mg/kg, not to exceed 900 mg for adults.*
   - *This regimen is not indicated for HIV-infected persons or for persons with fibrotic lesions on chest radiographs or for children.*

3) Rifampin daily for 4 months.
   - *Usual daily dose = 10 mg/kg, not to exceed 600 mg for adults.*
   - *This regimen is used with both HIV-negative and HIV-positive patients who cannot tolerate INH*
   - *Minimum of 120 doses of rifampin administered within 6 months.*
   - *Used with persons who are known to be contacts of patients with INH-resistant, rifampin-susceptible TB.*

A side effect noted of INH, the most commonly used treatment of LTBI, is peripheral neuropathy. It is dose related and is uncommon (less than 0.2%) at conventional doses.

The risk is increased in persons with other conditions that may be associated with neuropathy such as nutritional deficiency, diabetes, HIV infection, renal failure, and alcoholism, as well as for pregnant and breastfeeding women. Pyridoxine supplementation (25 mg/day) is recommended for patients with these conditions to help prevent this neuropathy.

V. **SUSPECTED OR CONFIRMED ACTIVE TUBERCULOSIS**

IF ACTIVE TUBERCULOSIS IS SUSPECTED, IT MUST BE REPORTED TO THE COUNTY AND/OR STATE HEALTH DEPARTMENT WITHIN 24 HOURS.

For consultation, the state health department telephone in Denver during regular working hours is 1-303-692-2700 and after hours is 1-303-370-9395. It is acceptable to leave the report as a message on a toll-free reporting machine 1-800-866-2759.

A. The facility should comply with all recommendations of the state or county health department regarding management of active cases and screening of contacts.

B. All residents who develop active tuberculosis in the nursing home should also be evaluated for HIV risk factors regardless of age. HIV antibody testing is strongly recommended, even if there are no risk factors present.

C. Treatment of active tuberculosis is changing rapidly because of the emergence of multi-drug resistant tuberculosis. The county and/or state health department is an excellent resource for advice and help in managing tuberculosis.

VI. **ISOLATION OF RESIDENTS WITH SUSPECTED OR CONFIRMED ACTIVE TUBERCULOSIS**

Any resident with symptoms consistent with active tuberculosis, a positive chest x-ray, positive sputum smears or cultures should be placed in a airborne infection isolation room that has negative airflow and exhausts to the outside. Standard surgical masks worn by employees are not effective protection against infection by *Mycobacterium tuberculosis*. The CDC recommends the use of particulate respirators by health care workers and environmental engineering modifications for rooms in which health care workers may be exposed to bursts or aerosolized infectious particles.

Most long term care facilities will not be equipped to provide this degree of airborne infection isolation. UNLESS THE FACILITY CAN PROVIDE ADEQUATE AIRBORNE INFECTION ISOLATION, ACCORDING TO CURRENT FEDERAL GUIDELINES, THE PATIENT MUST BE TRANSFERRED TO A HOSPITAL OR FACILITY THAT HAS APPROPRIATE RESPIRATORY ISOLATION CAPACITY.

In general, a patient with active TB should be considered potentially contagious until sputum smears become negative on three consecutive exams and there is clinical improvement while on appropriate anti-TB medications.

The most recent guidelines of CDC/NIOSH should be followed and may be obtained from the state health department TB Program (303-692-2700) or at:

http://www.osha.gov/SLTC/tuberculosis/index.html
http://www.cdc.gov/niosh/topics/tb/default.html

VII. **DOCUMENTATION:** A complete and detailed system of record keeping is essential for tracking and assessing the status of residents and staff with tuberculosis.

A. A new positive tuberculin skin test result should be reported to the resident's attending physician and to the medical director of the facility.

B. A master card file (or computerized equivalent) should be maintained for the facility documenting the dates of tuberculin skin test, the measurement of induration in mm, and treatment rendered.

C. The file should be maintained to make the following data easily accessible:

- At risk residents who have tested negative to tuberculin
- Residents who have tested positive and may not be at risk in the event of an outbreak
- Any resident who has received treatment for LTBI
- A listing of all staff tuberculin skin test or chest x-ray status

C. The following format is recommended:

- Resident or employee name
- Age and sex
- Medical conditions date of admission (or employment)
- Dates tuberculin skin test administered and results
- Dates and results of other diagnostic tests (such as chest x-ray, sputum smear and culture)
- Treatment and dates
- Name and telephone number of treating physician.

This data should be readily available to the county or state health department for surveillance or for assistance in the event of an outbreak. Upon transfer to a hospital or another long-term care facility, their tuberculin skin test status must be documented in transfer records.

VIII. EDUCATION

At least once a year TB education should be provided for all staff. The content of the in-service should address the demographics, risk factors, and manifestations of tuberculosis. Also include TST testing, the difference between latent and active TB, case management of patients, and infection control activities. It is recognized that staff education is the single most important aspect of any infection control program. A teaching video for tuberculin skin test placement and

interpretation is available through the Centers for Disease Control and Prevention at www.cdc.gov/nchstp/tb.

PROTOCOL for HEALTH CARE WORKERS including employees, volunteers, and practitioners working in Long Term Care Facilities:

Tuberculin skin tests (TST) or BAMT shall be offered to all new employees prior to exposure, and volunteers who have face-to-face contact with residents for eight or more hours per month. The tuberculin skin test or BAMT are provided at no cost to the employees.

New employees except those with known active tuberculosis, a documented positive TST, or a documented severe hypersensitivity to tuberculin purified protein derivative such as gesticulation, ulceration or necrosis at the test site should receive 2-step testing or BAMT. The TST or BAMT shall be offered at a time and location convenient to workers.

If using the TST, the first step should be applied at hire according to the following protocol. If the first TST is less than 10 mm, the second test should be placed one to three weeks after placement of the first test. The BAMT should be drawn at hire. A documented TST result of less than 10 mm within the past 12 months may be considered the first step.

Annual tuberculin skin testing or BAMT is performed for current potentially exposed employees, providers or volunteers only if the completed risk assessment determines the facility is of medium risk or written policy indicates that annual testing is appropriate. If it is determined that annual testing is needed in the facility, a single step is used. The booster response produced by the two-step methodology persists for at least a year.

A baseline chest x-ray should be substituted at hire if the employee has known active tuberculosis, a documented positive TST or BAMT, or a documented severe hypersensitivity to tuberculin purified protein derivative such as vesiculation, ulceration or necrosis at the test site. Follow-up and treatment evaluations are also to be offered at no cost to the workers.

The state or local health department may provide treatment for latent TB infection, but will not assume the costs of the tuberculin skin test and chest x-ray. For suspect/active TB, the state or local health department will provide for sputum tests through the state laboratory, medications, and directly observed therapy. The state and local health departments are the payer of last resort, after it has been determined that the employee does not have private insurance, Medicare, Medicaid, or other funding source.

A. Any individual who has patient contact on a regular and repeating basis should be included in the facility-testing program per risk assessment or facility policy. This might include dentists, dental hygienists, psychologists, podiatrists, ombudsmen, respiratory therapists, contractual therapists, etc. CDC recommends and OSHA may require that others in the facility, such as volunteers, be tested.

B. Positive skin test reactors should have an initial chest x-ray. Follow up chest x-rays in these employees are required only if the employee develops symptoms consistent with TB, is immunosuppressed, or has had exposure to multi-drug resistant TB.

C. A chest x-ray should be done if the employee is a converter (i.e., there is an increase in the tuberculin skin test induration of ≥10mm within a 2 year period). If the initial chest x-ray is negative, follow-up chest x-rays are needed only if the employee develops symptoms consistent with TB, is immunosuppressed, or has had exposure to multi-drug resistant TB.

D. Persons whose skin test has converted to positive should have further evaluation for signs and symptoms of TB and a chest x-ray. Sputa specimens should be collected if the person has symptoms of TB; the results of the evaluation or chest x-ray indicate further testing. New converters should be reported to the facility medical director. The employee with symptoms or a chest x-ray suspicious for active disease should not work until active contagious disease is ruled out.

E. Any new converters with positive smear or culture or evidence of active disease must be reported within 24 hours to the county and/or state health department as well as the facility medical director. The facility should comply with all recommendations of the state or county health department regarding management of active cases and screening of contacts.

F. The facility is required to report within 7 days positive skin test results (defined as ≥ 5mm induration) for any employee or health care worker who has had prolonged or frequent face-to-face contact with a case of active pulmonary tuberculosis. For example, if a resident is diagnosed with active disease and in the ensuing investigation of close contacts, a health care worker is found to have a skin test with ≥ 5 mm induration, the facility must report to the county or state health department the name of the health care worker.

G. Should the employee who is a new converter choose to obtain their chest x-ray or sputum evaluation from a private physician, it is the employee's responsibility to provide the nursing facility with adequate documentation of the nature and results of the evaluation. The documentation may also need to be provided to the state or local health department in the event of a contact investigation.

H. Pregnancy is not a contraindication to receiving a tuberculin skin test or BAMT.

J. Physicians and physician extenders are required (by OSHA) to have annual testing, if indicated in the risk assessment or facility policy, as described above for long-term care facility employees**.**

K. For information concerning treatment of latent TB infection to prevent development of active disease, see IV. above.

Resources:

1. American Thoracic Society. Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection. Am J Respir Crit Care Med 2000; 161: S221 – S247.
2. CDC. Core Curriculum on Tuberculosis: What the Clinician Should Know. Fourth Edition, 2000.
3. Guidelines for preventing the transmission of Mycobacterium tuberculosis in health-care settings, 2005. MMWR 54; RR-17.
4. Screening for tuberculosis and tuberculosis infection in high-risk populations. MMWR 44; RR-11; pp 19-34; September 8, 1995.
5. The use of preventive therapy for tuberculous infection in the United States. MMWR 39; RR-8; pp 9-12; May 18, 1990.
6. American Thoracic Society/Centers for Disease Control and Prevention/Infectious Diseases Society of America. Treatment of Tuberculosis. Am J Respir Crit Care Med 2003; 167: 603 – 662 or MMWR; 6/20/03; Vol. 52; No. RR-11.
7. U.S. Dept of Labor, Occupational Safety and Health Administration, Directives CPL 02-00-106-CPL 2.106 – Enforcement Procedures and Scheduling for Occupational Exposure to Tuberculosis.

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Colorado Department of Public Health and Environment
Colorado Medical Directors Association