
 Corrections and Community Supervision DIRECTIVE	TITLE Tuberculosis Control Program		NO. 4322
			DATE 07/24/2019
SUPERSEDES DIR# 4322 Dtd. 02/02/17	DISTRIBUTION A	PAGES PAGE 1 OF 8	DATE LAST REVISED
REFERENCES (Include but are not limited to) HSP #1.18; Directive #4068; CDC Guidelines; ACA Expected Practices 4-4355, 4-4386, 4-JCF-4C-23	APPROVING AUTHORITY 		

- I. POLICY:** The Tuberculosis (TB) Control Program of the Department of Corrections and Community Supervision (DOCCS) is based on a hierarchy of control measures. Administrative measures, engineering, and work practice controls reduce the risk of exposure from patients with contagious TB.
- A. Administrative controls include policies to ensure the rapid detection, isolation, diagnostic evaluation, and treatment of TB. These policies are applied in DOCCS as per Health Services Policy (HSP) #1.18, "Tuberculosis."
 - B. Engineering controls refer to proper design and maintenance of isolation rooms and areas for cough-inducing procedures.
 - C. Work practice controls are measures which workers can use to reduce the risk of exposure to a work hazard. Examples relevant to tuberculosis control include keeping isolation room doors closed, organizing tasks to reduce the number and duration of trips into isolation rooms, and the use of Personal Protective Equipment (PPE). The PPE device that is effective against tuberculosis transmission is the particulate respirator specified in Directive #4068, "Respiratory Protection Program." These measures reduce, but do not eliminate, the risk of TB transmission.
- II. SCOPE:** This directive applies to all employees in the Department.
- III. DEFINITIONS**
- A. **Balometer:** A large handheld device consisting of an electronic section with a digital readout and a fabric or plastic "hood" section. The balometer is placed over an air supply diffuser or exhaust air grill in order to measure the volume of air flowing (air flow) into or out of a diffuser or grill, as expressed in cubic feet of air per minute.
 - B. **Continuous Air Pressure Differential Monitor (see Section VI-D-4 below):** A device used to continuously measure the pressure differential between the isolation room and the anteroom. It is designed to produce an audible alarm when appropriate pressure readings are not obtained. This device is produced using one of two designs:
 1. The first is a small ping-pong ball contained inside a clear tube which indicates the direction of air flow from the room with higher pressure to the room with lower pressure by indication of which end of the tube the ball is pushed from.
 2. The second design uses electronic sensors located in the supply and exhaust ductwork which, in conjunction with a digital environmental control system, provide a direct readout of the status of the air pressure differential between the two spaces.

- C. Manometer: A handheld device used to measure a difference in pressure between two points or spaces.
- D. Smoke Tube: A device that, when activated, produces a small quantity of harmless smoke used to indicate the direction of air flow.
- E. Airborne Infection Isolation Room: Also known as negative pressure isolation room and respiratory isolation room; Single occupancy patient care room in which environmental factors are controlled to minimize the transmission of infectious agents spread via coughing/aerosolization of contaminated fluids.
- F. Anteroom: Also known as an antechamber; A smaller room or vestibule serving as an entry way into a larger one.
- G. Mantoux Skin Test: A diagnostic Purified Protein Derivative (PPD) skin test used as a screening tool for tuberculosis.
- H. Quantiferon: A diagnostic serum blood test that is alternately used as a screening tool for tuberculosis.

IV. RESPONSIBILITY ASSIGNMENT

- A. Deputy Commissioner/Chief Medical Officer
 - 1. Develops and periodically reassesses the TB Control Plan;
 - 2. Determines risk assessment for work areas in the Department;
 - 3. Advises the Central Office Infection Control Unit on the analysis of TB control data;
 - 4. Consults with facility Health Unit staff on clinical management of TB patients and matters of Departmental policy; and
 - 5. Determines policy changes to enhance TB control efforts.
- B. Assistant Commissioner for Health Services or Designee
 - 1. Prepares periodic summary reports detailing employee compliance with the TB Control Program; and
 - 2. Monitors program compliance.
- C. Central Office Infection Control Unit Staff
 - 1. Supports compliance with the TB Control Program;
 - 2. Assists facilities with the performance of tasks required by the program;
 - 3. Enters data into the Employee Occupational Health Tracking System (KOCH) for Central Office and Community Supervision staff;
 - 4. Collects, analyzes, and presents data required for periodic reassessment of the TB Control Plan;
 - 5. Monitors employee TB test data and notifies the Deputy Commissioner/Chief Medical Officer, Superintendent(s) or Bureau Chief(s), and local Public Health Department when either of the following occurs:
 - a. Skin test data show clusters or unusual numbers of skin test conversions (clusters of skin test conversions will be defined as two or more skin test conversions in the same work unit occurring within three months of each other);

- b. Evidence of patient-to-patient or patient-to-staff tuberculosis transmission is observed.
 6. Works with local Health Departments in investigating clusters of skin test conversions and incidents of patient-to-patient or patient-to-staff TB transmission;
 7. Maintains a registry of all inmates with known or suspected cases of TB disease. The TB registry will include all clinical laboratory and radiological data pertinent to diagnosis; and
 8. Monitors care provided to inmates with suspected or known TB; reviews charts of all inmates treated for TB disease and reports clinical data to the TB registry.
- D. Superintendent or Bureau Chief
1. Ensures that all employees comply with TB testing annually and as directed in the event of a contact investigation;
 2. Ensures that engineering controls and PPE are available and properly maintained;
 3. Identifies qualified staff who will monitor ventilation in airborne infection isolation rooms;
 4. Ensures the confidentiality of employee TB testing records;
 5. Designates a member of the Executive Team as the TB Screening Coordinator; and
 6. Ensures that all facility employees complete training required by Section VII below.
- E. Facility Plant Superintendent
1. Ensures that isolation room air testing policies and procedures are followed;
 2. Ensures that each facility with airborne infection isolation rooms possesses a set of test equipment (balometer, manometer, and smoke tubes) kept in good condition and calibrated in accordance with manufacturer's recommendations. This equipment is mandatory in order to comply with Section VI-B-3 below.
 3. Trains staff in isolation room air testing procedures;
 4. Maintains test records and test results;
 5. Immediately reports test results that do not meet standards to the Nurse Administrator, Deputy Superintendent for Health, Deputy Superintendent for Administration, and Facilities Planning and Development; and
 6. If OGS Technical Services Unit is utilized to perform the three-month and six-month air flow testing described in Section VI-B-1 below, the Plant Superintendent shall still maintain records of tests and test results. They shall also make appropriate contacts, as outlined above, in cases where test results do not meet standards.
- F. Tuberculosis Screening Coordinator
1. Arranges dates and times for Health Services staff to administer and read employee Mantoux PPD tests. Central Office Infection Control Nurses will assist the TB Coordinator in this task;
 2. Ensures that employees comply with testing; consults KOCH and notifies employees at least two weeks before indicated testing is due;

3. Coordinates with the Nurse Administrator and staff to provide initial and annual testing; and
4. Notifies the Superintendent or Bureau Chief of employees who do not respond to notices of required testing, or who refuse testing. Reports employees who refuse testing to Labor Relations for possible disciplinary action.

G. Health Unit Staff

1. Complies with HSP #1.18 to ensure rapid detection, isolation, diagnostic evaluation, treatment, and/or appropriate referral of persons likely to have TB;
2. Performs employee Mantoux skin tests; informs employees of test results and provides a copy of the test record to the employee upon request;
3. Forwards tuberculosis infection and TB test information to the Personnel Office for filing and entering into KOCH; and
4. Records (in millimeters) new positive skin tests on [Form #3107](#), "Positive TB Test Follow-Up," and [Form #1203](#), "Employee Accident/Injury Report."

H. Correctional Facility Personnel Staff: Maintains records of test dates, results, and notes of employee refusals; and this data into KOCH.

I. Employee

1. Complies with the TB Control Program;
2. Uses engineering controls and PPE when indicated; and
3. Must have TB testing annually and as directed in a contact investigation.

V. **TUBERCULOSIS SCREENING PROGRAM**: Every employee, as well as others working regularly for DOCCS, must have Mantoux skin testing annually and as directed in a contact investigation.

Exceptions include:

- Individuals with a documented prior positive TB test will not be retested. They are permanently exempt from tuberculosis skin testing requirements.
 - If the prior positive test was not performed by DOCCS staff, the employee must provide written documentation from a physician specifying the circumstances of the testing. Employees unable to provide this documentation must be retested.
- A. New employees must have a Mantoux skin test at the time of employment. Positive results are acceptable from any date. Only results showing the type of test, date of testing, and measured results in millimeters are considered valid.
 - B. The Tuberculosis Screening Coordinator will ensure that employees are informed of needed testing before the anniversary date of their last recorded skin test.
 - C. Mantoux skin tests will be performed in accordance with current Centers for Disease Control (CDC) Guidelines.

- D. A reaction of 5mm or greater induration will be considered positive for the following groups:
1. Human Immunodeficiency Virus (HIV) infected persons;
 2. Recent contacts of persons with TB disease;
 3. Persons with fibrotic changes on a chest radiograph consistent with prior TB; and
 4. Individuals with organ transplants and others with immunocompromising conditions (including patients receiving the equivalent of at least 15 mg/day of prednisone for a month or more).

A reaction of 10mm or greater induration will be considered positive for both inmates and employees without the above criteria.

- E. Employees with a new positive skin test will be advised to see their private physician or county health authority for follow-up evaluation, including a chest x-ray, within two weeks. Therapy to prevent progression to TB disease is recommended for all previously untreated persons with a positive skin test.
- F. Employees that bring documentation of past positive TB tests and chest x-ray screening from the time frame prior to DOCCS employment should be assessed regarding prior treatment:
- Those new employees who give a history with documentation of completed treatment for TB infection **are not required** to have a chest x-ray.
 - Those new employees **without** documentation of completed treatment for TB infection **are required** to have a new chest x-ray.
- G. Annual chest x-rays are not necessary for continued employment in DOCCS for those individuals with past positive TB tests.
- H. Employees with a new positive skin test who exhibit symptoms of TB disease (see definitions in HSP #1.18) must be excluded from the workplace. This exclusion will be maintained until they produce documentation from their physician or county health authority showing that a diagnosis of TB disease has been ruled out.
- I. Employees who choose to have TB testing done by a personal physician must do so at their own expense and submit documentation of the type, date, and measured response (in millimeters) within two weeks of notice that the test is due.

VI. ISOLATION ROOM AIR TESTING

- A. Equipment: The equipment for isolation room air testing will be available in those facilities with negative pressure rooms. This will include a balometer, a manometer, and smoke tubes.
- B. Frequency of Monitoring
1. The airborne infection isolation room and anteroom air flow testing will be done immediately prior to a patient being admitted to respiratory isolation. This can be done by trained Health Services staff using the smoke tube method. The Plant Superintendent or designee must be notified the next business day for additional testing.

2. The negative pressure differential between the airborne infection isolation room and anteroom will be demonstrated daily while the room is in use (outlined in Section D below). If not currently in use, the isolation rooms should be checked monthly.
 3. The air flow of the airborne infection isolation rooms and anterooms will be tested and measured at least every six months, as described in Section C below.
- C. Air Flow Measurement Procedure
1. Airborne infection isolation room and anteroom air flow (supply and exhaust) will be measured in cubic feet per minute with a balometer.
 2. Air changes per hour will be calculated with the following formula:
$$\text{ACH} = (\text{CFM} \times 60) / \text{VOL}$$

ACH Air Changes per Hour
CFM Cubic Feet per Minute
VOL Room Volume = length x width x height (measured in feet)
- D. Measurement of Air Pressure Differentials
1. Air pressure differentials must be tested by using the smoke tube method. This will be done immediately prior to patient admission, daily while occupied for airborne isolation, or at a minimum of monthly when not in use.
 2. Smoke tube method: The smoke tube is placed near the bottom of the door separating areas for which air pressure is to be compared. The long axis of the smoke tube should be parallel with the door. A small amount of smoke is generated by gently squeezing the smoke tube bulb. Care should be taken not to direct the smoke stream into either room through the force of squeezing the bulb. The smoke will travel in the direction of air flow. Stationary smoke indicates stagnant air. Air flows from positive to negative pressure.
 3. **If the negative pressure room does not pass the smoke test, the patient will be moved immediately to a working negative pressure room, and the Plant Superintendent will be notified.**
 4. Continuous air pressure differential monitors must be inspected for proper operation every month. These monitors (see Definitions for a description of the monitors) are an additional measure to indicate the negative pressure status of the airborne infection isolation room at any given point in time. These monitors are not to be relied on solely; the smoke tube test method must still be used as outlined above to determine the proper operation of the ventilation and exhaust systems.
- E. Air Flow and Pressure Differential Standards
1. Isolation rooms constructed before 1994:
 - a. At least 6 air changes per hour in the isolation room;
 - b. At least 10 air changes per hour in the anteroom (if present); and
 - c. Isolation room shows negative pressure to anteroom or adjacent corridor.

2. Isolation rooms constructed in or after 1994:
 - a. At least 12 air changes per hour in the isolation room;
 - b. At least 20 air changes per hour in the anteroom (if present); and
 - c. Isolation room shows negative pressure to anteroom or adjacent corridor.
3. Airborne infection isolation room purge times will be posted outside the room and within the Medical Unit. Purge times are the calculated periods of time, based on the number of air exchanges per hour, required for removal of contaminated air from the isolation room. Perfect air mixing does not always occur; therefore, a mixing factor of 3 will be used to ensure adequate removal of the contaminated air from negative pressure rooms (see table below). Respiratory protection is not required if entering the negative pressure room after the purge time has elapsed. **If an isolation room must be entered before the purge time has elapsed, respiratory protection is required.**

**PURGE TIMES FOR
REENTRY INTO
ISOLATION ROOMS**

Air changes per hour (ACH) and time required for removal of 99.9% of airborne contaminants.

ACH	Minutes Required	3X – Hours Required
1	414	20.7
2	207	10.35
3	138	6.9
4	104	5.18
5	83	4.14
6	69	3.45
7	59	2.96
8	52	2.59
9	46	2.3
10	41	2.07
11	38	1.88
12	35	1.73
13	32	1.59
14	30	1.48
15	28	1.38
16	26	1.29
17	24	1.22
18	23	1.15
19	22	1.09
20	21	1.04

F. Record Keeping

1. All air flow and pressure differential measurements will be recorded.
2. The record of air flow and pressure differential measurements will be maintained by the Facility Plant Superintendent. This record must be readily available to facility Health staff as well as other appropriate personnel.
3. At a minimum, the following data must be recorded at the frequency designated in Section VI-B above:
 - a. Date and time of test;
 - b. Room number;

- c. Air pressure differential test method and result;
- d. Air flow measurements: supply and exhaust CFM, calculated ACH;
- e. Any action taken as a result of test;
- f. Name and signature of the person doing the test; and
- g. Name and signature of the person interpreting the test result.

An MP2 Program Work Order History Record containing the above information will suffice.

VII. TRAINING

A. Tuberculosis Risks and Prevention

1. All employees will receive training regarding TB and methods to prevent transmission. Employees assigned to Health Care Units, Transport staff, and staff posted to hospitals will be trained prior to their initial work assignment. TB training will be required annually for all employees.
2. TB training will be appropriate for duties and background of each employee, but at a minimum will include the following:
 - a. Basic concepts of TB transmission;
 - b. The potential for occupational exposure;
 - c. Infection control principles and practices that reduce the risk of TB transmission;
 - d. The purpose of PPD testing;
 - e. The principles of preventive therapy for latent TB infection;
 - f. The responsibility of employees to promptly seek medical attention if they develop symptoms consistent with TB disease;
 - g. The principles of drug therapy for active TB;
 - h. The responsibility of employees to notify their facility if they are diagnosed with TB disease;
 - i. The responsibility of DOCCS to confidentially manage employee medical information while ensuring that employees with contagious TB are excluded from the workplace; and
 - j. The higher incidence of TB for individuals with HIV or other medical conditions that compromise the immune system.

B. Training for Isolation Room Air Flow and Pressure Differential Monitoring

1. Facility Plant Superintendents will designate and train sufficient qualified staff to meet the isolation room monitoring needs of their facility.
2. Training for air flow and pressure differential monitoring will include, at a minimum:
 - a. Calibration of test equipment;
 - b. Proper use of test equipment, including training video;
 - c. Recognition of problems; and
 - d. Record keeping requirements.