

**ASHLEY COUNTY MEDICAL CENTER
TUBERCULOSIS CONTROL PLAN/
RESPIRATORY PROTECTION PLAN**

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TUBERCULOSIS CONTROL PLAN/RESPIRATORY PROTECTION PLAN

The TUBERCULOSIS CONTROL PLAN describes the policies for the management of TB patients and prevention of transmission of TB. Implementation, compliance, and enforcement of the TUBERCULOSIS CONTROL PLAN is required to reduce the risk of TB transmission among employees, patients, and visitors.

The RESPIRATORY PROTECTION PLAN describes the policies for protecting employees from exposure to respiratory hazards.

CEO

CHAIRMAN, INFECTION CONTROL COMMITTEE

Reviewed/Revised:_____

TUBERCULOSIS CONTROL PLAN

INTRODUCTION

Transmission of tuberculosis (TB) is a recognized risk in health care facilities. Recently, several TB outbreaks in health care facilities have raised much concern about transmission in these settings. The emergence of multidrug-resistant TB in areas across the United States has heightened the concern. *M. tuberculosis*, the organisms that cause tuberculosis, is carried in airborne particles, called droplet nuclei that may be generated when persons with pulmonary or laryngeal TB cough, sneeze, speak, or sing. The droplet nuclei are approximately 1-5 microns in size and can remain airborne and spread throughout a room or building with normal air currents. Infection occurs when a susceptible person inhales the *M. tuberculosis* (contained in droplet nuclei) and the particle is able to reach the alveoli of the lungs. Usually, the immune response limits the spread of the infection, but the tubercle bacilli may remain dormant and viable for years. This is known as latent TB infection. Individuals with latent TB infection usually have a positive Purified Protein Derivative (PPD) skin test, but not symptoms of active TB, and they are not infectious. They have approximately a 10-percent chance of developing active TB during their lifetime, but the risk is greatest during the first 2 years after initial infection.

Since 1986, there have been substantial increases in tuberculosis morbidity in areas with a high prevalence of Human Immuno-deficiency Virus (HIV) infection. In addition to persons with HIV infection, others at particularly high risk include close contacts of known infectious tuberculosis cases; persons with other medical risk factors known to have increased risk of tuberculosis once infection has occurred; foreign-born individuals from high prevalence countries, such as Asia, Africa, and Latin America; the medically underserved populations; alcoholics and IV drug users; and residents of long-term care facilities, including nursing homes and correctional institutions.

The degree of risk of TB transmission varies considerably by type of health care facility; TB prevalence in the community; areas within the health care facility in which a person works; and the effectiveness of the TB infection control interventions, particularly early detection, isolation, and treatment of persons with active TB.

The CDC has established guidelines for preventing the transmission of TB in the health care facility. OSHA has recommended that health care facilities follow the CDC guidelines and develop a TB control program.

The TUBERCULOSIS CONTROL PLAN is based on the CDC-published guidelines and is intended to provide staff a comprehensive plan for the management, early detection,

isolation and treatment of persons with active tuberculosis. This plan includes policies and procedures designed to protect personnel from occupational exposure to active tuberculosis. Although it is unlikely that complete elimination of TB transmission risk can be totally achieved, adherence to the policies and procedures addressed in the TB CONTROL PLAN will greatly reduce that risk.

The TUBERCULOSIS CONTROL PLAN includes information on a hierarchy of control measures, including:

- a. Administrative measures
- b. Engineering controls
- c. Respiratory protection
- d. Evaluation of transmission
- e. Coordination with the local health department

The TUBERCULOSIS CONTROL PLAN is available on the intranet for all employees and in the Infection Control department. THE PLAN is reviewed at least annually and updated, as needed, to reflect new or modified policies and procedures for the prevention of tuberculosis exposure in the health care setting.

For additional information or consultation related to the TUBERCULOSIS CONTROL PLAN, contact Infection Control.

SECTION I

RESPONSIBILITY FOR TB INFECTION CONTROL PROGRAM

The TUBERCULOSIS CONTROL PLAN was developed by the TB Task Force.

Myrna Bryan, RN--Infection Control
Greg Frye--Respiratory Therapy
Benson A. Grigsby, M.D.
Don Noble--Maintenance

The TB Task Force has the responsibility and authority for the development, implementation, monitoring compliance, and ongoing evaluation of the TUBERCULOSIS CONTROL PLAN. All employees are expected to follow the policies and procedures, contained herein, that are designed to prevent the transmission of TB. Management personnel are responsible for ensuring compliance with THE PLAN.

As of November, 1995 the TB Task Force was disbanded and the Infection Control Committee will be responsible for implementation, monitoring compliance and ongoing evaluation of the Tuberculosis Control Plan.

SECTION II

TB RISK ASSESSMENT

- A. A thorough evaluation of risk, based on the prevalence of TB in the community and at this facility and the risk of TB transmission in each area and occupational work group, has been conducted by the TB Task Force. The risk assessment was done, retrospectively, using data gathered from medical records and laboratory surveillance of TB cases. The protocol for the risk assessment includes:
1. An analysis of the number of TB patients admitted to the facility and each area, and the estimated number of infectious TB patients to which each occupational group may have been exposed.
 2. The results of an analysis of Health Care Worker (HCW) PPD test conversions and possible patient-to-patient TB transmission.
 3. The results of an analysis of the management of infectious TB patients in the facility, drug-susceptibility patterns, and adequacy of treatment of TB patients.
- B. Based on the risk assessment protocol, the facility and each area and occupational work group has been classified according to degree of risk.
1. "LOW RISK" areas/groups are those in which:
 - a. The PPD test conversion rate is not greater than in areas/groups without occupational exposure to TB patients or than the rate in previous years in the same area/group.
 - b. There are no clusters of PPD test conversions.
 - c. There is no evidence of patient-to-patient transmission.
 - d. There are fewer than six TB patients hospitalized or cared for in that area/group per year.
 2. "INTERMEDIATE RISK" areas/groups are those in which:
 - a. The PPD test conversion rate is not greater than in areas without occupational exposure to TB patients or than the rate in previous years in the same area/group.
 - b. There are no clusters of PPD conversions.
 - c. There is no evidence of patient-to-patient transmission.
 - d. More than six TB patients hospitalized are cared for in that area/group per year.

3. "HIGH RISK" areas/groups are those in which:
 - a. The PPD test conversion rate is significantly greater than areas without occupational exposure to TB patients or than previous rates in the same area/group.
 - b. There is a cluster of PPD test conversions.
 - c. There is other evidence of patient-to-patient or patient-to-HCW transmission of *M. tuberculosis*.

Ashley County Medical Center has been determined from the risk assessment to be at low risk.

Patient care areas and occupational work groups determined to be at risk for exposure to infectious tuberculosis have been classified as follows:

- 2-Center--low risk
- Emergency Room--low risk
- CCU/ICU--low risk
- OB--low risk
- Surgery--low risk
- Generations--low risk
- Laboratory--low risk
- Radiology--low risk
- Respiratory Therapy--low risk
- PT/OT--low risk

C. Employee Health Requirements

The employee health requirements for each area/work group are determined according to the assigned job risk classification as follows:

1. "Low Risk"--PPD test annually
2. "Intermediate Risk"--PPD test every 6 months
3. "High Risk"--PPD test every 3 months

At the time of employment and then annually each employee will have a PPD skin test. A two step method of TB testing will be done unless the newly hired employee can produce proof of a TB test within the last 12 months. It is the responsibility of the Infection Control nurse to notify each employee of need for testing. TB skin testing is done in ER by ER nurse or Employee Health Nurse, and records are kept in Employee Health File.

D. Reassessment of Risk

The risk for occupational exposure for the facility will be reevaluated annually by the Infection Control Committee following the risk assessment protocol. "Low Risk" areas/groups will be reevaluated annually, "Intermediate Risk" areas/groups will be reevaluated every 6 months, and "High Risk" areas/groups will be reevaluated every 3 months.

SECTION III

PROTOCOL FOR EARLY DETECTION

- A. Screening Patients With Symptoms of TB
1. Screening is done to identify TB-infected persons at high risk of disease who would benefit from preventive therapy. Appropriate follow-up should occur after screening is completed and appropriate preventive therapy is to be administered at that time.
 2. Tuberculosis should be considered in any patient presenting the following signs and symptoms:
 - a. Productive, persistent cough of 2-3 weeks duration
 - b. Bloody sputum
 - c. Night sweats
 - d. Weight loss
 - e. Loss of appetite
 - f. Easy fatigability
 - g. Fever
 3. Certain groups experience disease and infection rates substantially in excess of the general population. These groups include:
 - a. Persons with HIV infection
 - b. Close contacts with known infectious tuberculosis cases
 - c. Persons with other medical risk factors known to substantially increase the risk of tuberculosis once infection has occurred
 - d. Foreign-born persons from high prevalence countries
 - e. Medically underserved low-income populations, including high risk minorities, especially Blacks, Hispanics, and Native Americans
 - f. Alcoholics and intravenous drug users
 - g. Residents of long-term care facilities, such as correctional facilities and nursing homes
 - h. Certain other populations that have been identified locally as having an increased prevalence of tuberculosis (HCWs in some areas)
 4. Persons with medical risk factors that increase the risk of developing clinically active tuberculosis once infection has occurred should be PPD skin tested for tuberculosis. Medical risk factors include:
 - a. HIV infection
 - b. Silicosis

- c. Abnormal chest radiograph showing fibrotic lesions
 - d. Prolonged corticosteroid therapy
 - e. Diabetes mellitus
 - f. Immuno-suppressive therapy
 - g. Hematologic and reticuloendothelial diseases
 - h. End-stage renal disease
 - i. Intestinal bypass
 - j. Post-gastrectomy
 - k. Chronic malabsorption syndromes
 - l. Carcinomas of the oropharynx and upper GI tract
 - m. 10-percent or more below ideal bodyweight
5. Considering the prevalence of TB in this area and facility, diagnostic measures should be initiated on any person with suspected tuberculosis. Diagnostic measures include:
- a. History and physical examination
 - b. Mantoux tuberculin skin test
 - c. Chest x-ray
 - d. AFB sputum smear and culture
6. Tuberculin skin testing is the standard method of identifying persons infected with *M. tuberculosis*. The intradermal Mantoux test is used to determine if tuberculosis infection has occurred.
- a. The Mantoux test is performed by the intradermal injection of 0.1 ml of PPD tuberculin containing 5 Tuberculin Unit (TU) into either the volar or dorsal surface of the forearm, using a disposable tuberculin syringe. The injection is made just beneath the surface of the skin, with the needle bevel facing upward to produce discrete, pale elevation of the skin (a wheel) 6 mm to 1 mm in diameter. Do not cleanse the site with alcohol.
 - b. Needles should not be recapped, purposely bent, or broken by hand; removed from disposable syringes; or otherwise manipulated by hand. Used needles and syringes should be placed in puncture-resistant container immediately following use. No gloves are necessary.
 - c. Mantoux test should be read 48-72 hours after the injection. Positive reactions may still be measurable up to 1 week after testing. Measure the diameter of induration, not erythema, transversely to the long axis of the forearm and record in millimeters.
7. A reaction of 5 mm or more is classified as positive in the following groups:
- a. Persons with close recent contact with an infectious TB patient.
 - b. Persons who have chest x-rays with fibrotic lesions likely to represent old

- healed tuberculosis
 - c. Known or suspected HIV-infected persons
 - d. Persons on steroids(15mg/day for a month) &/or immunosuppressed
8. A reaction of 10 mm or more is classified as positive in persons who do not meet the above criteria but have other risk factors present for TB. These include the following groups:
- a. Persons with other medical risk factors known to substantially increase the risk of tuberculosis once infection has occurred
 - b. Foreign-born persons from high prevalence countries
 - c. Medically underserved, low-income populations, including high-risk minorities
 - d. IV drug users
 - e. Residents of long-term care facilities
 - f. Other populations identified locally as having an increased prevalence of TB
9. A reaction of 15 mm or more is classified as positive in all other persons.
10. Absence of a reaction does not exclude the diagnosis of tuberculosis or tuberculous infection. Cell-mediated responses such as tuberculin reactions may decrease or disappear during any severe or febrile illness, measles or other exanthemas, HIV infection, live-virus vaccination, Hodgkin's disease, sarcoidosis, overwhelming miliary or pulmonary tuberculosis, and after the administration of corticosteroids or immuno-suppressive drugs. Persons who have been recently infected may not yet have a reaction to the skin test.
11. Bacillus of Calmette and Guerin (BCG) is used in many foreign countries as part of their tuberculosis control program. PPD sensitivity and immunity to TB infection after BCG vaccination is highly variable, depending upon the strain of BCG used and the population vaccinated. There is no reliable method of determining whether the tuberculin reaction is caused by BCG or natural infection with *M. tuberculosis* and should be evaluated for isoniazid preventive therapy.

SECTION IV

MANAGEMENT AND ISOLATION OF PATIENTS WITH POSSIBLE TB

A. AFB Precautions

1. Any patient with signs and symptoms suggestive of TB will be placed in isolation in a designated isolation room (Room 206).
2. An AIRBORNE PRECAUTIONS sign is to be posted on the door to the isolation room.
3. Visitors must report to the nursing station for special instructions on respiratory protection.
4. Doors must be kept closed, except when entering or leaving room.
5. Standard precautions should be followed.

B. Respiratory Protection

The respiratory protection devices selected for use in this facility are:

N95 respirators (Technol)

1. Only personnel who have received specific education on TB, been fit-tested for a Respiratory Protective Device (RPD), and undergone training regarding the use and wearing of RPD may enter the isolation room or assist with procedures being performed on the suspected or known TB patient.
2. Prior to entering the isolation room and prior to use of the RPD, the employee should perform a fit check, which has been demonstrated in the training session.
3. **Fit Testing**
A fit test is done to determine whether an RPD adequately fits the individual health care worker.
4. **Medical Evaluation for Fit Testing**
 - a. All personnel will be evaluated for any condition that may preclude the use of an RPD. Personnel will be screened upon employment

and periodically thereafter. At this facility, periodic screening will be

done at the following intervals:

Employees will be screened when they are hired. Thereafter, screening will be done yearly.

- b. General screening for pertinent medical conditions will be conducted prior to fit-testing. Each employee will complete a general medical screening questionnaire (attachment II). Further medical evaluation will be done on any employee (indicating medical conditions exist) who may have difficulty wearing the RPD while performing his/her duties or when adverse health effects may result. Screening will be done by the Infection Control Nurse. Questionable employees will then be sent to ACMC'S designated Physician, who would in turn refer to the pulmonologist if necessary

C. Management of Possible TB Patients

- 1. TB Isolation room is located in the following area:

Room 206 (second floor)

Portable Negative Air Flow units (3) are available to make any room at ACMC that has a window that will open a Negative Air flow room. Engineering will be notified to set these up when needed.

- 2. Inpatients

- a. AFB precautions apply.
- b. Any inpatient with confirmed or suspected active TB is to be placed in a private TB isolation room equipped with appropriate negative-pressure ventilation.
- c. Known TB patients who are readmitted to the facility are to be placed in TB isolation until infectiousness is ruled out or adequate therapy and complete cure is confirmed.
- d. A care plan should be initiated and implemented.
- e. Adherence to isolation compliance by the staff and patient is mandatory.
- f. Any incident of noncompliance with isolation protocol must be reported to your supervisor or infection control nurse.
- g. For appropriate intervention, the infection control nurse and patient's physician must be notified if the patient will not comply with isolation protocols.
- h. The physician and/or nurse will provide the following education to the patient in isolation:
 - 1. Transmission of TB
 - 2. Reasons for isolation
 - 3. Precautions, such as covering the mouth and nose with tissue

- when coughing or sneezing.
 - 4. Importance of staying inside the isolation room
 - 5. Specific instruction for transportation to areas outside the isolation room
 - 6. Importance of adherence to isolation precautions
 - i. If a patient in TB isolation must be transported outside the TB isolation room for a medically essential procedure that cannot be done in the room, the patient should wear a surgical mask. The transporter does not need to wear respiratory protection outside of the isolation room. Staff should make all attempts to schedule the procedure at a time when it can be performed rapidly and when waiting areas are less crowded.
3. Outpatients:
- a. Place suspected TB patient in a separate waiting area, away from other patients. Place patient in a room equipped with the recommended ventilation, if available.
 - b. Place a surgical mask on the patient and instruct patient.
 - c. Provide the patient with tissues.
 - d. Clinics should schedule a suspected TB patient at times to avoid contact with immuno-compromised patients.
4. Cough-Induction Procedures:
- a. Perform only when absolutely necessary.
 - b. Use local exhaust ventilation devices, such as special enclosures if this procedure must be done. (If these devices are not available, a specially ventilated room is recommended.)Room 206
 - c. HCWs must wear respiratory protective devices during the procedure.
 - d. Following the procedure, confine patient to the isolation room or enclosure, until coughing subsides and have patient use tissues to contain any secretions.
 - e. Allow sufficient airing time 2 hours following the procedure to remove any expelled droplet nuclei.
5. Emergency Medical Services
- a. The patient should wear a surgical mask when being transported if TB is suspected or confirmed.
 - b. The HCW should wear respiratory protection.
 - c. Emergency-response personnel are included in the respiratory protection program.

6. Operating Rooms
 - a. Elective operative procedures should not be done on infectious TB patient.
 - b. Operating Room procedures that must be done, should be in OR's with anterooms or, if not possible, the door should be kept closed and traffic minimized.
 - c. If possible, perform procedures at the end of the day when few patients and staff are present.
 - d. Place a bacterial filter on the endotracheal tube and/or expiratory side of the anesthesia breathing circuit.
 - e. Recovery should be in an individual room meeting ventilation requirements.
 - f. OR personnel should wear respiratory protection rather than surgical masks alone (a surgical mask may be worn over the valved or positive pressure respirator).

D. Treatment

1. Drug susceptibility tests should be performed on all initial isolates.
2. Confirmed TB cases or highly suspicious cases should begin treatment promptly.
3. Drugs should be administered by directly-observed therapy while in health care facility.
4. In areas with high prevalence of multiple-drug resistant TB, the initial phase treatment may be enhanced.
5. Coordinate discharge planning with local health department.

The CDC recommends three options for the initial treatment of tuberculosis in adults and children, 12 and under.

OPTION 1:

Initial phase

1. Administer isoniazid, rifampin, pyrazinamide, and either ethambutol or streptomycin daily for 8 weeks duration.
2. Discontinue ethambutol or streptomycin, if susceptible to isoniazid and rifampin.
3. In areas with documented isoniazid resistance less than 4-percent, ethambutol or streptomycin may not be necessary.

Continuation phase

1. Administer isoniazid and rifampin daily, twice weekly, or three times per week for 16 weeks duration.
2. Consult a TB medical expert if first-line drugs are resistant or smears remain positive after 3 months of therapy.

Dosage

Isoniazid daily:	10-20 mg/kg-children 5 mg/kg-adults 300 mg maximum
Rifampin daily:	10-20 mg/kg-children 10 mg/kg-adults 600 mg maximum
Pyrazinamide daily:	15-30 mg/kg-children or adults 2 g maximum
Ethambutol daily:	15-25 mg/kg-children or adults

Streptomycin daily: 2.5 g maximum
20-40 mg/kg-children or adults
1 g maximum

OPTION 2:

Initial phase

1. Administer isoniazid, rifampin and pyrazinamide daily for 2 week duration, then twice weekly for 6 weeks duration.
2. Administer either ethambutol or streptomycin daily for 2 weeks duration, then twice weekly for 6 weeks duration.

Continuation phase

1. Administer isoniazid and rifampin twice weekly for 16 weeks duration.
2. Consult a TB medical expert if first-line drugs are resistant or AFB smears remain positive after 3 months of therapy.

Dosage 2 times/weekly dose:

Isoniazid daily: 20-40 mg/kg-children
15 mg/kg-adults
900 mg maximum

Rifampin daily: 10-20 mg/kg-children
10 mg/kg-adults
600 mg maximum

Pyrazinamide daily: 50-70 mg/kg-children or adults
4 g maximum

Ethambutol daily: 50 mg/kg-children or adults

Streptomycin daily: 20-40 mg/kg-children or adults
1.5 g maximum

OPTION 3:

1. Administer isoniazid, rifampin, pyrazinamide, and either streptomycin or ethambutol three times weekly for 6 months duration, by directly observed therapy.
2. Consult a TB medical expert if first-line drugs are resistant or AFB smears remain positive after 3 months of therapy.

Dosage 3 times/weekly dose:

Isoniazid daily: 20-40 mg/kg-children
15 mg/kg-adults
900 mg maximum

Rifampin daily: 10-20 mg/kg-children
10 mg/kg-adults
600 mg maximum

Pyrazinamide daily: 50-70 mg/kg-children or adults
4 g maximum

Ethambutol daily:
Streptomycin daily:

25-30 mg/kg-children or adults
20-40 mg/kg-children or adults
1 g maximum

E. Discontinuing Isolation

1. Isolation may be discontinued if the patient is on effective therapy, clinically improving, and AFB sputum smear is negative on 3 consecutive days.
2. Monitor patient for relapse with sputum smears every 2 weeks.
3. Multidrug resistant TB patients are to remain in isolation for duration of hospitalization.
4. The following persons are authorized to discontinue isolation:
 Attending M.D.

SECTION V

ENGINEERING CONTROLS

A. Ventilation

1. Local exhaust ventilation
 - a. Air from these devices is directly exhausted to the outside of the building, away from air intake vents, people, and animals.
2. General Ventilation
 - a. Ventilation meets all federal, state, and local requirements.
 - b. Air flows from clean areas to less clean areas (negative pressure) and is monitored at monthly intervals with smoke tubes.
 - c. Supplemental general ventilation:
None available at this time.

B. Air Cleaning

1. Isolation and treatment rooms have a minimum of 12 Air Changes per Hour (ACH) (the health care facility should be designed to achieve the best possible ventilation air flows).
2. A pressure differential of 0.001 inch of water and inward air velocity of 100 ft/min minimum.
3. Cough induction or aerosolization procedures, such as bronchoscopy or irrigation of TB abscesses, are not to be performed on any suspected TB patient in positive pressure rooms.
4. Ultra-violet lights will be placed in the Emergency Department and Room 206. A portable ultra-violet light will be available to move with the Negative Air Flow units.

C. Monitoring

1. Monitor monthly to assure negative pressure is maintained, by use of smoke tubes or air velocity measuring device with smoke tube.
2. Where in use, check rooms where suspected TB patients are cared for negative pressure daily, by the smoke tube method.

3. Verify minimum air velocity of 100 ft/min monthly.

D. Maintenance Procedure

1. HEPA filters are to be properly installed, tested, and maintained.
2. Filters are to be installed to prevent leakage between filter segments and between the filter bed and its frame.
3. Regularly scheduled maintenance to monitor for possible leakage and for filter loading is done quarterly.
4. Quantitative leakage and filter performance tests, using the DiOctal Phthalate (DOP) penetration test are to be done upon installation and during filter changes or if moved and repeated every 6 months.
5. A manometer or pressure-sensing device is to be installed in the filter system to determine the need for filter replacement.
6. Installation should allow for maintenance without contaminating the delivery system or area served.
7. Use the "bag-in, bag-out" method for changing filters.
8. Clearly mark the filter housing and ducts leading to the housing with a sign "contaminated air".
9. Adequately train maintenance personnel on the installation and maintenance procedures and have them wear respiratory protection during maintenance and testing.
10. Engineering will be notified when there is TB patient admitted to the hospital.

SECTION VI

HEALTH CARE WORKER EDUCATION

Education appropriate to the job should be conducted before initial assignment, during orientation, and annually thereafter.

A. TB Education Course Content

1. TB basics on transmission, pathogenesis, and diagnosis, including the difference between latent and active TB, the signs and symptoms of TB, and the possibility of reinfection.
2. Occupational exposure to TB
 - a. Community and facility prevalence
 - b. The ability of the facility to appropriately isolate TB patients.
 - c. Situations that increase TB exposure risk
3. Infection control to reduce the risk of TB transmission.
 - a. Hierarchy of infection control measures
 - b. Written policies and procedures
 - c. Site specific control measures for appropriate personnel
4. PPD testing
 - a. Purpose
 - b. Significance of test results
 - c. Importance of participation in skin testing program
5. Prevention therapy for latent TB infection, including drug treatment medication, use, effectiveness, and adverse effects
6. HCW responsibility to seek medical evaluation if symptoms present indicate TB or if PPD conversion differs
7. Principles of drug therapy for active TB
8. Notification of facility if diagnosed with active TB
9. Responsibility of health care facility to protect confidentiality of HCW with TB, while assuring the HCW receives appropriate treatment and is noninfectious before returning to work

10. HIV and immuno-suppressed individuals TB risk
 - a. Development of clinical TB
 - b. Differences in clinical presentation of TB
 - c. Mortality rate associated with multidrug-resistant TB
11. Potential development of cutaneous anergy as CD4/T counts decline
12. Policy for voluntary work reassignment options for healthcare workers that are immuno-compromised

B. Education Plan and Schedule

Initially the TB Control Plan will be presented at a mandatory inservice for all employees. Annual mandatory (for all clinical employees) inservice will be held in March/April of each year. TB education will be included in orientation.

SECTION VII

COUNSELING AND SCREENING HCWs

Counseling and screening of employees will be provided by Infection Control Nurse/Infection Control Chairman (MD).

A. TB Information

1. All HCWs are to be counseled about potential risk for occupational exposure to TB.
2. Immunocompromised or HIV-positive persons are at increased risk of rapid progression from latent TB infection to active TB. Counseling will include the following information:
 - a. All employees are encouraged to seek counseling and testing for HIV antibody status or other medical conditions that may lead to cell-mediated immunity, appropriate preventive measures, and to consider voluntary work reassignment if at increased risk.
 - b. Recommendations must be followed for infection control to minimize the risk of exposure to infectious diseases.
 - c. Avoid exposure to *M. tuberculosis*.
 - d. Provide individual employee health counseling regarding risk of TB.
 - e. Perform appropriate follow-up and screening for infectious diseases, including TB.
 - f. Supply baseline PPD testing and cutaneous anergy (consider retesting every 6 months).
 - g. Assure confidentiality for HCW and have written procedures on maintaining confidentiality.

B. PPD Screening/Intervals

1. HCWs with persistent coughs will be screened for active TB if other symptoms of TB are present.
2. HCWs being evaluated for active TB may not return to work until TB is excluded or therapy is initiated and the HCW is determined to be noninfectious.
3. All HCWs and those with previous vaccination with BCG will receive a Mantoux PPD test.

4. HCWs with a history of positive PPD test, adequate treatment for disease, or adequate preventive therapy are excluded from skin testing, unless development of symptomatic TB occurs.
5. Negative PPD HCWs receive repeat PPD testing at intervals determined by the risk assessment and classification.
6. Administer, read, and interpret PPD test following current CDC guidelines, and described in THE TB CONTROL PLAN.
7. PPD test results should be recorded in employee health records.
8. A two step method of testing will be done on all newly hired employees unless he/she can produce proof of a TB test within the last 12 months. Testing will be yearly thereafter.

C. TB Exposure Investigation

1. Determine the source of TB infection and drug-susceptibility pattern.
2. Contact investigation is to be initiated and PPD tests conducted on co-workers in the area/group. (3 month and 6 month intervals)
3. Contact investigation and PPD tests are to be conducted on exposed patients, if indicated (positive findings among co-workers).
4. If indicated, problem investigation should be initiated

**PROTOCOL FOR
PROBLEM INVESTIGATION
IDENTIFY TB PATIENTS
MATCH TB PATIENTS and HCWs PPD
TEST CONVERSIONS BY LOCATION**

POSSIBLE SOURCE CASE FOUND?

Possible Source Case found?			
Yes*			No**
Review Records of TB for factors contributing to transmission			Evaluate patient Detection process
<u>Patient problem?***</u>		<u>Potential problem identified?***</u>	
Yes	No	No	Yes
1. Implement Intervention	1. Use high risk protocol		1. Revise patient detection protocol
2. Initiate high risk protocol	2. Investigate other TB control issues		2. High risk protocol until low risk determined on two consecutive evaluations.
3. Maintain protocol until low risk determined on two consecutive evaluations			

* if problem with patient detection is determined, check isolation practices, engineering controls, implement appropriate interventions and follow high-risk protocol for 2 consecutive three months periods without evidence of TB transmission

** if no problem is identified, follow high-risk protocol and consult with local health department or TB expert

*** if transmission appears to be occurring in isolation or procedure rooms, improve engineering controls

SECTION VIII

EVALUATION OF CONVERSIONS/TRANSMISSION

A. HCW PPD Conversions

1. If an HCW's PPD test converts to positive, co-workers will be tested to evaluate if transmission has occurred in the area. A chest x-ray will be done on the converted worker and they will be referred to the local health department of INH prophylaxis.
2. If it is determined that TB transmission has occurred, PPD testing will be repeated every 3 months until no new conversions are detected, for two consecutive 3 month intervals.

B. Development of TB In an HCW

1. A contact investigation among other HCWs, patients, and visitors with significant TB exposure will be initiated.
2. The public health department for community contact investigation and consultation must be contacted.

C. Patient-to-Patient TB Transmission

1. Conduct case findings through HCW PPD test conversions and patient surveillance data.
2. Look for prior admissions of TB patients.
3. If determined that transmission is likely to have occurred:
 - a. Initiate problem evaluation to determine potential transmission causes
 - b. Identify potential patient exposures and perform PPD tests
 - c. Consult with local health department

D. Exposure Follow-up For Unrecognized TB at Time of Hospitalization

1. Case finding for exposures:
 - a. Interview patient and review medical record
 - b. Determine area and persons potentially exposed

- c. Contact investigation should begin with closest contacts, and if transmission has occurred, expand to less-close contacts
2. PPD test all HCWs and patients with documented exposures, and, if negative, repeat 12 weeks after exposure
3. Clinically evaluate PPD conversions or symptomatic persons and perform chest x-ray
4. Persons known to have positive PPD do not require testing unless symptomatic
5. Initiate investigation to assess detection program and correct inefficiencies

SECTION IX

LIAISON WITH PUBLIC HEALTH DEPARTMENT

Contact the local health department for consultation and/or community contact investigation for the following:

1. Health care worker is known or suspected to have TB.
2. Patient is known or suspected to have TB.
3. Discharge planning must be done for TB cases.
4. Results of all AFB and sputum smears and cultures, and drug susceptibility results on M. Tuberculosis isolates

The Infection Control Nurse (or supervisor of 2 Center in her absence) will contact the local health department and also report to ASHD, L.R. in any case of TB.

APPENDIX

**RESPIRATORY PROTECTION
MEDICAL SCREENING QUESTIONNAIRE**

NAME: _____ DEPARTMENT:

DATE:

Circle all of the following medical conditions that apply to you (during past 2 years):

Bronchitis

Pneumonia

Emphysema

Asthma

Heart Disease

Disease or Illness Causing Immuno-suppression

Other

(If you circle any of the above, please explain:)

Signature _____

**ASHLEY COUNTY MEDICAL CENTER
RESPIRATORY MEDICAL QUESTIONNAIRE**

**Appendix C to See. 1910.134: OSHA Respiratory Medical Evaluation Questionnaire
(Mandatory)**

To the employer:

Answer to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee:

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator. (Please print)

1. Today's date: _____
2. Your name: _____
3. Your age (to the nearest year): _____
4. Sex (circle one): Male / Female
5. Your height: _____ ft. _____ in.
6. Your weight: _____ lbs.
7. Your job title: _____
8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include area code): _____
9. The best time to phone you at this number: _____

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10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes / No

11. Check the type of respirator you will use (you can check more than one category):
- ___ N, R, or P disposable respirator (filter-mask, non-cartridge type only).
 - ___ Other type (ex. half or full -face piece type, powered air purifying, supplied air, self contained breathing apparatus).
12. Have you worn a respirator (circle one) : Yes / No
If “yes”, what type(s): _____

Part A Section 2. (Mandatory) Questionnaire 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle “yes” or “no”).

- Do you currently smoke tobacco, or have you smoked tobacco in the last month:
Yes / No
- Have you ever had any of the following conditions?
 - Seizures Yes / No
 - Diabetes (sugar disease): Yes / No
 - Allergic reaction that interferes with your breathing: Yes / No
 - Claustrophobia (fear of closed-in places): Yes / No
 - Trouble smelling odors: Yes / No
- Have you had any of the following pulmonary or lung problems?
 - Asbestosis: Yes / No
 - Asthma: Yes / No
 - Chronic bronchitis: Yes / No
 - Emphysema: Yes / No
 - Pneumonia: Yes / No
 - Tuberculosis: Yes / No
 - Silicosis: Yes / No
 - Pneumothorax (collapsed lung): Yes / No
 - Lung cancer: Yes / No
 - Broken ribs: Yes / No
 - \Any chest injuries or surgeries: Yes / No
 - Any other lung problems that you’ve been told about: Yes / No
- Do you currently have any of the following symptoms of pulmonary or lung illness?
 - Shortness of breath: Yes / No
 - Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes / No
 - Shortness of breath when walking with other people at an ordinary pace on level ground: Yes / No
 - Have to stop for breath when walking at your own pace on level ground: Yes / Yes
 - Shortness of breath when washing or dressing yourself: Yews / No
 - Shortness of breath the interferes with your job: Yes / No
 - Coughing that produces phlegm (thick sputum): Yes / No
 - Coughing that wakes you early in the morning: Yes / No

- i. Coughing that occurs mostly when you are lying down: Yes / No
 - j. coughing up blood in the last month: Yes / No
 - k. Wheezing: Yes / No
 - l. Wheezing that interferes with your job: Yes / No
 - m. Chest pain when you breath deeply: Yes / No
 - n. Any other symptoms that you think may be related to lung problems: Yes / No
5. Have you ever had any of the following cardiovascular or heart problems?
- a. Heart attack: Yes / No
 - b. Stroke: Yes / No
 - c. Angina: Yes / No
 - d. Heart failure: Yes / No
 - e. Swelling in your legs and feet (not caused by walking): Yes / No
 - f. Heart arrhythmia (heart beating irregularly): Yes / No
 - g. High blood pressure: Yes / No
 - h. Any other heart problem that you've been told about: Yes / No
6. Have you ever had any of the following cardiovascular or heart symptoms?
- a. Frequent pain or tightness in your chest: Yes / No
 - b. Pain or tightness in your chest during physical activity: Yes / No
 - c. Pain or tightness in your chest that interferes with your job: Yes/No
 - d. In the past two years, have you noticed your heart skipping or missing a beat: Yes / No\
 - e. Heartburn or indigestion that is not related to eating: Yes / No
7. Do you currently take medications for any of the following problems?
- a. Breathing or lung problems: Yes / No
 - b. Heart trouble: Yes/No
 - c. Blood pressure problems: Yes / No
 - d. Seizures: Yes / No
8. If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, check the following space and go to question # 9)
- a. Eye irritation: Yes / No
 - b. Skin allergies or rashes: Yes / No
 - c. Anxiety: Yes / No
 - d. General weakness or fatigue: Yes / No\
 - e. Any other problem that interferes with your use of a respirator: Yes / No
9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes / No

Questions 10 through 15 below must be answered by every employee who has been selected to use either a full-face piece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you ever lost vision in either eye (temporarily or permanently): Yes / No
11. Do you currently have any of the following vision problems?
 - a. wear contact lenses: Yes / No
 - b. wear glasses: Yes / No
 - c. Color blind: Yes / No
 - d. Any other eye or vision problem: Yes / No
12. Have you ever had any injury to your ears, including a ruptured ear drum: Yes / No
13. Do you currently have any of the following hearing problems?
 - a. Difficulty hearing: Yes / No
 - b. Wear a hearing aide: Yes / No
 - c. Any other hearing or ear problem: Yes / No
14. Have you ever had a back injury? Yes / No
15. Do you currently have any of the following musculoskeletal problems?
 - a. Weakness in any of your arms, hands, legs, or feet: Yes / No
 - b. Back pain: Yes / No
 - c. Difficulty fully moving your arms and legs: Yes / No
 - d. Pain or stiffness when you lean forward or backward at the waist: Yes / No
 - e. Difficulty moving your head up or down: Yes / No
 - f. Difficulty moving your head from side to side: Yes / No
 - g. Difficulty bending at your knees: Yes / No
 - h. Difficulty squatting to the ground: Yes / No
 - i. Climbing a flight of stairs or a ladder carrying more than 25 lb.: Yes / No
 - j. Any other muscle or skeletal problem that interferes with using a respirator: Yes / No

Part B: Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: Yes / No

If “yes” do you have feelings of dizziness, shortness of breath, pounding in your chest or other symptoms when you’re working under these conditions: Yes / No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have any come into skin contact with hazardous chemicals: Yes / No

If “yes”, name the chemicals if you know them:

3. have you ever worked with any of the following materials, or under any of the conditions, listed below:
- a. Asbestos: Yes / No
 - b. Silica (e.g., in sandblasting): Yes / No
 - c. Tungsten/cobalt (e.g., grinding or welding this material): Yes / No
 - d. Beryllium: Yes / No
 - e. Aluminum: Yes / No
 - f. Coal (for example, mining): Yes / No
 - g. Iron: Yes / No
 - h. Tin: Yes / No
 - i. Dusty environments: Yes / No
 - j. Any other hazardous exposures: Yes / No

If “yes”, describe these exposures:

4. List any second jobs or side businesses you have:

5. List your previous occupations:

6. List your current and previous hobbies:

7. Have you been in the military services? Yes / No

8. Have you ever worked on a HAZMGT team? Yes / No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in the questionnaire, are you taking any other medications for any reason (including over the counter medications)? Yes / No

If “yes”, name the medications if you know them:

10. Will you be using any of the following items with your respirator(s)?
- HEPA Filters: Yes / No
 - Canisters (for example, gas masks): Yes / No
 - Cartridges: Yes / No
11. How often are you expected to use the respirator(s). (Circle “yes” or “no” for all answers that apply to you)
- Escape only (no rescue): Yes / No
 - Emergency rescue only: Yes / No
 - Less than 5 hours per week: Yes / No
 - Less than 2 hours per day: Yes / No
 - 2 to 4 hours per day: Yes / No
 - Over 4 hours per day: Yes / No
12. During the period you are using the respirator(s), is your work effort:
- Light(less than 200 kcal per hour): Yes / No

 If “yes”, how long does this period last during the average
 Shift_____hrs._____min._____
 Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work, or standing while operating a drill press (1-3 lbs.) or controlling machines.
 - Moderate (200 to 350 kcal per hour): Yes / No

 If “yes”, how long does this period last during the average
 Shift:_____hrs._____mins._____
 Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing performing assembly work, or transferring a moderate load (about 35 lbs.) at truck level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.
 - Heavy (above 350 kcal per hour): Yes / No

 If “yes”, how long does this period last during the average
 Shift_____hrs._____mins._____
 Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.)
13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you’re using your respirator: Yes / No

If “yes”, describe this protective clothing and/ or equipment:

14. Will you be working under hot conditions (temperature exceeding 77°F)? Yes / No

15. Will you be working under humid conditions? Yes / No

16. Describe the work you'll be doing while you're using your respirator(s):

17. Describe any special or hazardous conditions you might encounter when you're using your respirator (s) (for example, confined spaces, life-threatening gases):

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):

Name of the first toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift: _____

Name of second toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift: _____

Name of third toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift: _____

The name of any other toxic substances you'll be exposed to while using your respirator:

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):
