

TUBERCULOSIS EXPOSURE CONTROL PLAN

1. REFERENCES

- (a) U.S. Department of Labor, OSHA ltr Enforcement Policies and Procedures for Occupational Exposure to Tuberculosis dtd 8 Oct 93
- (b) OSHA 2.106, Enforcement Procedures and Scheduling for Occupational Exposure to Tuberculosis dtd 9 Feb 96
- (c) MMWR, Dec 90, Guidelines for Preventing the Transmission of Tuberculosis in Health Care Settings With Special Focus on HIV-Related Issues
- (d) Federal Register, CDC Vol. 58, No. 195 52811-52854, Draft Guidelines for Preventing the Transmission of Tuberculosis in Health Care Facilities
- (e) MMWR, Vol 43, No. RR-13, Oct 94, Guidelines for Preventing the Transmission of *Mycobacterium Tuberculosis* in Health Care Settings, 1994
- (f) NAVMEDCENPTSVAINST 6260.4L, Regulated Medical Waste Management Procedures
- (g) U.S. Department of Health and Human Services, 1993, CDC INIH Biosafety in Microbiology and Biochemical Laboratories, 3rd ED, Washington, D.C.

2. PURPOSE

To provide a comprehensive, integrated written policy to prevent or minimize employee exposures to tuberculosis (TB).

3. SCOPE

This plan applies to core hospital and to all branch medical clinics which comprise the Naval Medical Center, Portsmouth command.

4. BACKGROUND

Since 1985, the rate of new cases of TB in the general U.S. population has dramatically increased. Drug resistant strains of *Mycobacterium tuberculosis* have become a serious concern. *M. tuberculosis* is carried through the air in infectious droplet nuclei. These droplet nuclei may be generated when a person with infectious TB coughs, speaks, sings or spits. In an occupational setting, workers in close prolonged contact with persons with infectious tuberculosis disease are at increased risk of infection with TB. Certain high-hazard medical

procedures which are cough-inducing may further increase the risk of infection of health care workers.

5. **POLICY**

a. Naval Medical Center Portsmouth has and will continue to adopt and implement measures for the protection of its employees against exposure to TB. These measures will focus on meeting Occupational Safety and Health (OSHA) compliance reflected in references (a) and (b), and CDC recommendations described in references (c) through (e).

b. OSHA enforcement guidelines require airborne precautions and a hierarchy of exposure controls:

(1) Engineering controls such as maintaining physical measures to reduce microbial contamination of the air must be used when possible to reduce or eliminate the hazard at its source.

(2) When it is not possible to prevent exposure through engineering controls, administrative and/or work practices must be used. This would include isolation practices and procedures for persons with or suspected of having infectious TB, screening employees of TB infection, and education of employees.

(3) Lastly, personal protective equipment (PPE), such as respirators, must be used to protect employees.

6. **RESPONSIBILITIES**

a. Safety Policy Council (SPC) shall:

(1) Serve as the command oversight authority ensuring all aspects of the TB Exposure Control Plan meet current regulations and guidelines.

(2) The SPC delegates administration and enforcement of the TB Exposure Control Plan requirements to the Director for Public Health Services.

b. The Directorate for Public Health Services (DPHS), Preventive Medicine section specifically, shall provide overall program management of the TB Exposure Control Plan, and shall:

(1) Assume responsibility for maintenance and implementation of the Tuberculosis Exposure Control Plan.

(2) Review/revise plan annually, or more frequently as needed/required.

(3) Report cases of active TB to the required public health authorities.

(4) Act as Lead for Contact Investigations and coordinate appropriately with Occupational Health, Infection Control and other stakeholders.

(5) Provide required surveillance and coordinate treatment for all eligible NMCP staff member PPD converters as required.

c. Infection Control Committee shall assist the DPHS with overall program management of the TB Exposure Control Plan.

d. Department Heads and supervisors shall:

(1) Access the potential for tuberculosis exposure in their departments based on the results of the current TB exposure risk assessment, their knowledge of the presence and frequency of high-risk procedures performed by their subordinates, and current communicable disease information provided by the Infection Control and Preventive Medicine Departments.

(a) When tuberculosis exposure is reasonably anticipated, a sufficient number of personnel to care for the exposed number of known or suspected TB patients should be trained and fit-tested for TB respirator use.

(b) In addition, consideration should be given to performing PPD testing at the intermediate or high-risk level if more than 6 known or suspected TB patients will be treated in any 12 month period, or if high-risk procedures will be routinely performed. (See table (1)).

(2) Orient all new employees to the TB Exposure Control Plan, and provide instruction on the use of appropriate PPE.

(3) Provide personnel training annually or as necessary.

(4) Identify, document, report and correct instances of noncompliance of TB Exposure Control measures through appropriate channels.

e. Employees shall:

(1) Comply with the required protective measures and standards outlined in this Exposure Control Plan.

(2) Be knowledgeable of the TB Exposure Control Plan and the use of PPE required for contact tasks performed in their job classifications.

7. EXPOSURE DETERMINATION AND RISK ASSESSMENT

a. All employees whose jobs involve likely occupational exposure to tuberculosis will be included in this exposure control plan. Employee exposure to TB is defined as potential exposure to the exhaled air of an individual with suspected or confirmed TB disease, or exposure to a high hazard procedure performed on persons with suspected or confirmed TB. High hazard procedures are characterized by the potential to generate airborne droplets, and include the following: aerosol treatment, bronchoscopy, sputum induction, endotracheal intubation and suctioning, autopsies and processing of potentially infectious tissues or secretions.

b. According to OSHA requirements, employees will be placed into one of three categories of exposure risk. These will be assessed annually by the Preventive Medicine Department and the Infection Control Committee.

(1) High risk - CDC defines high risk as PPD test conversion rates greater than for areas or groups in which occupational exposure for TB is unlikely or than previous conversion rates and epidemiological evaluation suggests nosocomial infection; or cluster of PPD test conversions has occurred and epidemiological evaluation suggests nosocomial transmission; or possible person-to-person transmission of TB has occurred in the facility or area. (See figure 1.) More frequent testing, up to every 3 months, is permitted in designated high risk areas.

(2) Intermediate/medium - Employees with occasional patient contact with TB patients (greater than 6 TB patients per year). Testing will occur every six months.

(3) Low risk - Employees with rare or no patient contact with TB patients (less than 6 TB patients per year). Testing will occur annually.

FIGURE 1.
 EXPOSURE DETERMINATION AND RISK ASSESSMENT WILL BE CONDUCTED BY THE PREVENTIVE MEDICINE DEPARTMENT AND INFECTION CONTROL DEPARTMENT AT NMCP

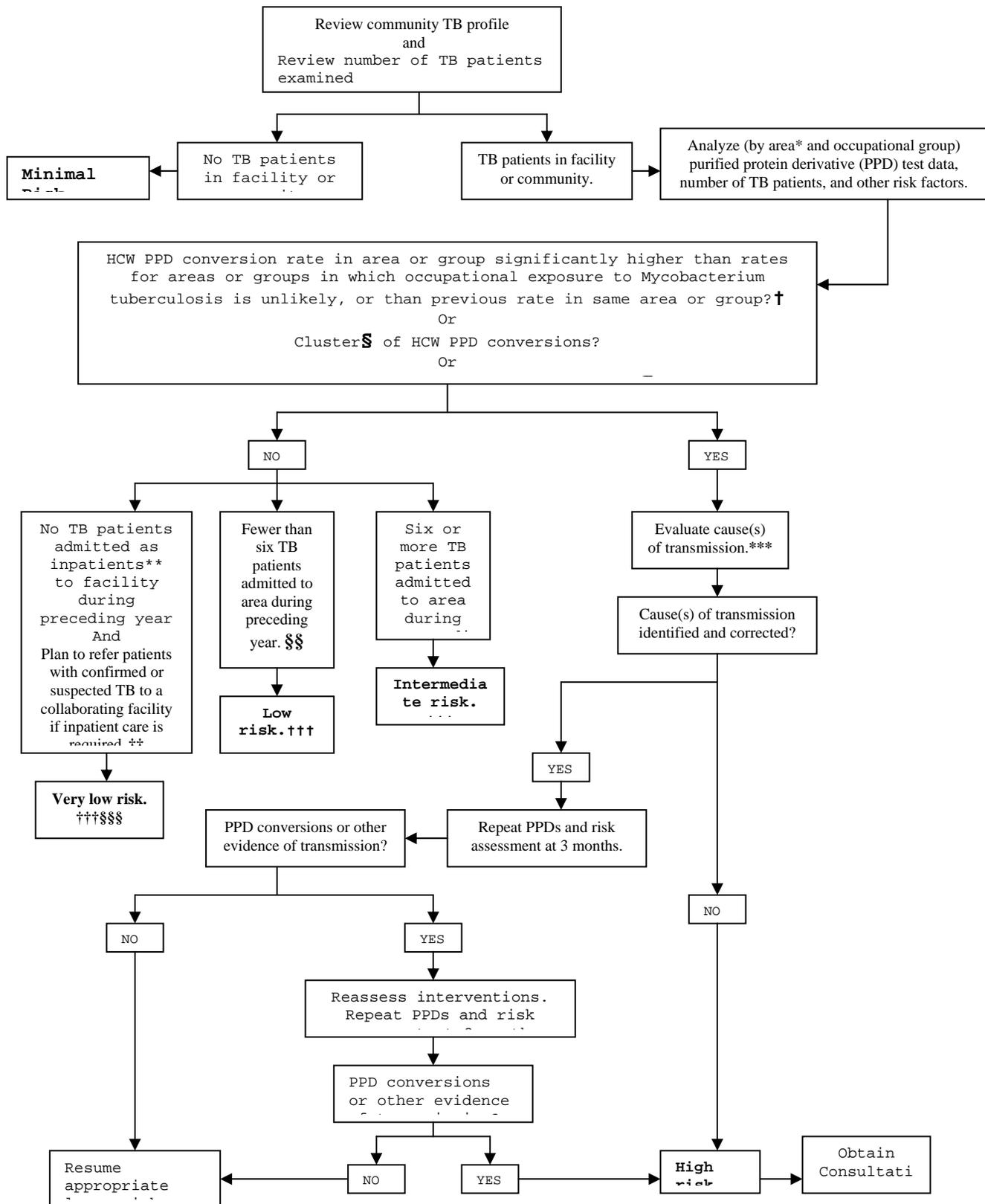


FIGURE 1 - Protocol for conducting a TB risk assessment in a healthcare facility.

* Area: a structural unit (e.g., a hospital ward or laboratory) or functional unit (e.g., an internal medicine service) in which hospital care workers (HCW) provides services to and share air with a specific patient population or work with clinical specimens that may contain viable *M. tuberculosis* organisms. The risk for exposure to *M. tuberculosis* in a given area depends on the prevalence of TB in the population served and the characteristics of the environment.

† With an epidemiological evaluation suggestive of occupational (nosocomial) transmission (see Problem Evaluation section in the text).

§ Cluster: two or more PPD skin test conversions occurring within a 3 month period among HCWs in a specific area or occupational group, and epidemiological evidence suggests occupational (nosocomial) transmission.

¶ For example, clusters of *M. tuberculosis* isolates with identical DNA fingerprint (RFLP) patterns or drug resistance patterns, with an epidemiological evaluation suggestive of nosocomial transmission (see Problem Evaluation section in the text).

** Does not include patients identified in triage system and referred to a collaborating facility or patients being managed in outpatient areas.

†† To prevent inappropriate management and potential loss to follow-up of patients identified in the triage system of a very low-risk facility as having suspected TB, an agreement should exist for referral between the referring and receiving facilities.

§§ Or, for occupational groups, exposure to fewer than six TB patients for HCWs in the particular occupational group during the preceding year.

¶¶ Or, for occupational groups, exposure to six or more TB patients for HCWs in the particular occupational group during the preceding year.

*** See Problem Evaluation Section in the text.

††† Occurrence of drug-resistant TB in the facility or community, or a relatively high prevalence of HIV infection among patients or HCWs in the area, may warrant a higher risk rating.

§§§ For outpatient facilities, if TB cases have been documented in the community but no TB patients have been examined in the outpatient area during the preceding year, the area can be designated as very low risk.

Figure 1 was used by Preventive Medicine Department to conduct an initial risk assessment for NMCP based on PPD conversion data and the number of confirmed TB cases for the past 10 years. Our facility was determined to be low risk (< 6 TB patients per year), as there were only 5 confirmed cases of infectious TB in 1999 and < 2% PPD conversions. At this time, there are no high risk areas designated at Naval Medical Center, Portsmouth. This assessment will be monitored in an ongoing manner by Preventive Medicine Department and the Infection Control Committee.

Table 1 identifies areas that could reflect potential intermediate risk for TB transmission:

Table 1 - Potential Intermediate Risk Areas for Tuberculosis (TB) Exposure/Transmission at Naval Medical Center Portsmouth *
<ul style="list-style-type: none">- Intensive Care Unit Staff- 4H (General Medicine) Staff- Emergency Department Staff- Pulmonary Medicine Clinic Staff- Respiratory Therapy Staff- ID/HIV Clinic Staff- Microbiology Laboratory Staff- Autopsy Room Personnel
*based on current Tuberculosis (TB) Exposure Control Plan

TABLE 2. Elements of a risk assessment for tuberculosis (TB) in health care facilities (Reprinted from [CDC 1994, page 8])

<p>1. Review the community TB profile (from public health department data).</p> <p>2. Review the number of TB patients who were treated in each area of the facility (both inpatient and outpatient). (This information can be obtained by analyzing laboratory surveillance data and by reviewing discharge diagnoses or medical and infection control records.)</p> <p>3. Review the drug susceptibility patterns of TB isolates of patients who were treated at the facility.</p> <p>4. Analyze purified protein derivative (PPD) tuberculin skin test results of healthcare workers (HCWs), by area or by occupational group for HCWs not assigned to a specific area (e.g., respiratory therapists).</p> <p>5. To evaluate infection control parameters, review medical records of a sample of TB patients seen at the facility.</p> <p><i>Calculate intervals from:</i></p> <ul style="list-style-type: none"> • Admission until TB suspected; • Admission until TB evaluation performed; • Admission until acid-fast bacilli (AFB) specimens ordered; 	<ul style="list-style-type: none"> • AFB specimens collected until AFB smears performed and reported; • AFB specimens collected until cultures performed and reported; • AFB specimens collected until species identification conducted and reported; • Admission until TB isolation initiated; • Admission until TB treatment initiated; • And duration of TB isolation. <p><i>Obtain the following additional information:</i></p> <ul style="list-style-type: none"> • Were appropriate criteria used for discontinuing isolation? • Did the patient have a history of prior admission to the facility? • Was the TB treatment regiment adequate? • Were follow-up sputum specimens collected properly? • Was appropriate discharge planning conducted? <p>6. Perform an observation review of TB infection control practices.</p> <p>7. Review the most recent environmental evaluation and maintenance procedures.</p>
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8. TRAINING AND FIT TESTING OF N95 RESPIRATORS

The Safety Manager is designated as the Respiratory Protection Program Manager (RPPM) and has full responsibility for the management of the Respiratory Protection Program. Occupational Health Department will provide the RPPM guidance on Respiratory program enrollment in conjunction with Infection Control, Industrial Hygiene, and Preventative Medicine. Occupational Health will also provide medical clearance and certification for staff requiring respiratory protection. Active Duty staff, without medical contraindications for respirator use, are considered qualified through the PHA process. Respirator training and fit testing is recorded in ESAMS and will be managed by the Safety Department. Documentation of training and fit testing will be maintained by the Safety Department. Access and training in E-SAMS will be provided to the Department Safety Representatives and supervisors. Supervisors and safety representatives will educate staff under their cognizance in the use and care of the appropriate respiratory protection. For questions regarding enrollment requirements in the respiratory protection program contact the NMCP Safety Office.

9. INFECTION CONTROL MEASURES

a. Rapid detection depends upon rapid triage at the first point of contact using the following criteria:

(1) High Risk Patients

- HIV infected patients
- Persons known to have a positive PPD or history of active TB in the past
- Injecting drug users
- Close contact (household members) of patients known to have active TB
- Foreign born persons from high prevalence areas including Asia, Africa, Caribbean and Latin America
- Residents of long-term care facilities (such as nursing homes, correctional institutions, psychiatric facilities)
- Homeless persons and residents of shelters
- Immunosuppressed patients (other than HIV infected patients) including those treated with systemic corticosteroids for prolonged periods of time and those with hematological

- malignancies are at risk of developing active TB.

(2) Most common signs and symptoms should be readily recognized:

- Fever
- Night sweats
- Persistent cough
- Sputum production
- Weight loss
- Bloody sputum

b. All patients diagnosed or suspected of having active TB will be treated using the following procedures:

(1) TB precautions in the ambulatory setting should include placing these patients in a separate area, apart from other patients, and not in open waiting areas (ideally in a room or enclosure meeting TB isolation requirements). Additionally, these patients should be given surgical masks to wear with instructions to keep their masks on at all times.

(2) Patients admitted shall be placed in a negative pressure isolation room. Several wards are equipped with negative pressure isolation rooms, however, *4H shall be the primary ward to admit TB patients for isolation.* 4F shall be designated as the overflow site to admit TB patients for isolation.

(3) Airborne precautions will be taken for those patients suspected of TB. An "Airborne Isolation" sign must be posted outside the door.

(4) The entrance door and the anti-room door **must** be closed at all times.

(5) In compliance with Federal Occupational Health Law, particulate respirators (N95) shall be worn by all staff members including contractor personnel while in the patient's room. The same individual may reuse the respirator as long as the respirator remains structurally and functionally intact. If the respirator becomes crushed, moist or soiled, it shall be discarded and not reused.

(6) Visitors must be kept to a minimum. Visitors should be given a surgical mask and provided the proper instructions on how to place on the face to cover the nose and mouth in addition

to how to properly dispose of the used mask and to carry out hand hygiene before and after visitation.

(7) Patients in airborne precautions shall be permitted to leave the room **only** when absolutely necessary. Patients should not be transported in elevators carrying other patients or visitors if at all possible. Patients must wear a standard surgical mask when leaving the room.

(8) Reusable articles will be handled in accordance with hospital policy. Disposable patient items are to be disposed of in the patient's room in accordance with reference (f).

(9) Hands must be washed before and after touching the patient or potentially contaminated articles.

(10) Evaluation of the continued use of airborne precautions or institution of airborne precautions upon readmission of a patient previously treated for TB will be done by the Medical Officer responsible for the treatment. Consultation with the Infection Control Nurse and/or Infection Control Committee Chairman should be considered. If advice or consultation is needed during off-duty hours, contact the Infectious Disease physician on-call, 682-1423.

10. **PATIENT EDUCATION/RESPONSIBILITIES**

a. The patient shall be educated on etiology and transmission of TB by physician or nursing staff.

b. The patient should be made aware that the entrance and anti-room doors must remain closed at all times (except when entering and exiting the room).

c. Patients are to be instructed to cover all coughs and sneezes with a tissue. The soiled tissue will be disposed of in accordance with reference (f).

d. The patient is not to leave room unless instructed to do so by physician or nursing staff.

e. The patient will wear a surgical mask if required to leave room for a procedure. The mask is to be kept on at all times when out of the room.

11. ENGINEERING CONTROLS

a. The negative pressure isolation rooms have continuous monitoring devices installed. These monitoring devices shall be maintained in the alarm mode at all times. When the isolation room is occupied by a patient in airborne precautions, a **minimum** negative pressure of .001 WC (water column) **must** be maintained at all times. Negative pressure and verification of the alarm status must be verified and charted on the parameter section of the 24 Hour Nurses Notes **at the beginning of each shift.**

Negative pressure readings and alarm status verification for negative pressure rooms not occupied by a patient in airborne precautions under AFB precautions **shall be verified monthly.**

b. If the required negative pressure of .001 WC cannot be maintained in the room, as indicated by the continuous monitoring device or the alarm system, a trouble call shall be placed **immediately** to Facilities Management Department trouble desk (3-5664) during normal work hours or the Systems Control Center (3-0050) after hours or on holidays. Also, the Nursing Shift Supervisor shall be notified whenever negative pressure isolation rooms fail. **If the required negative pressure cannot be maintained, DO NOT ADMIT ANY TB, R/O TB, OR MDR TB PATIENTS IN THE ROOM.**

c. If negative pressure fails in a room occupied by a TB patient, that patient shall continuously wear a surgical mask until negative pressure is restored or arrangements can be made to transfer the patient to another properly functioning negative pressure isolation room.

d. The exhaust system from isolation rooms shall be maintained, cleaned and serviced **only** by Public Works Center or contractor qualified personnel wearing appropriate personal protective equipment specified by the Safety Department.

12. TB SCREENING AND PPD TESTING

a. Prospective Naval Medical Center Portsmouth employees will be screened for TB prior to assignment by the Occupational Health Department. Typically, a two-step PPD screening process will be used for all prospective employees.

b. At risk NMCP personnel will receive required periodic PPD skin testing at specified intervals:

- (1) High Risk - more frequent testing, up to every 3 months is permitted
- (2) Intermediate Risk - screened every 6 months
- (3) Low Risk - screened annually

c. A positive skin test for TB, even on initial testing (except pre-assignment screening) is recorded in the OSHA 200 log based on a presumption of work relatedness unless there is clear documentation of an external exposure. Report to the Command Safety Manager any exposures reportable on OSHA Form 200.

13. POST EXPOSURE EVALUATION AND FOLLOW-UP PROCEDURES

a. Reporting of suspected or confirmed TB Disease Exposure:

(1) When a diagnosis of active TB is initially suspected or confirmed in a patient, the responsible Medical Officer will immediately notify the Preventive Medicine Department.

(2) Employees who are exposed to a patient with undiagnosed TB will be identified, notified and followed as outlined in the current TB instruction NAVMEDCENPTSVAINST 6224.1A.

14. SPECIAL AREAS POLICY

a. Operating Room:

No elective surgical procedures will be done until patient is noninfectious.

b. Autopsy:

Personnel participating in autopsies in which TB disease is suspected shall follow stringent measures of infection control and wear N95 respirators.

c. Emergency Medical Services:

Remember the symptoms and promptly isolate any suspect cases.

d. Laboratory:

Bio-safety Level III practices, as outlined in reference (g), must be observed when dealing with *Mycobacterium tuberculosis*. Laboratory rooms should be under negative pressure air flow with exhaust to the outside.

e. Transport Services:

(1) In compliance with the Ryan White Comprehensive AIDS Resources Emergency Act (Federal Register, March 31, 1994; pp. 13418-13428) which states that "a medical facility that receives a patient with tuberculosis, who may have exposed an emergency response worker, must notify the employer's designated officer about the exposure as soon as possible, but no later than 48 hours."

(2) Transport patients in reverse isolation with attendants wearing N95 respirators.

f. Contract Personnel:

Contract personnel shall comply with the TB exposure control plan and the respiratory protection program as defined in this plan and the relevant section of the contract governing NMCP employment.

g. Pregnant Personnel:

PPD testing is not contraindicated in pregnancy.

15. EMPLOYEE TRAINING

The Staff Education and Training Department will coordinate initial training on occupational hazards and required protective measures to all Naval Medical Center Portsmouth staff during command orientation and annually thereafter (rodeo). The Staff Education and Training Department will be responsible for the documentation of initial and annual update training for all Naval Medical Center Portsmouth staff.

REVIEWED/REVISED:

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