

**INFECTION CONTROL PLAN
FOR PREVENTING THE TRANSMISSION OF *M. TUBERCULOSIS* in
Rutgers University Patient Care Sites**

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PURPOSE

To establish a procedure for identifying and reducing the risk for transmission of tuberculosis to personnel who work in patient care areas (Healthcare Worker [HCW]) and also to personnel who provide patient home care or outreach.

Also, to emphasize the importance of:

- a) Hierarchy of control measures, including administrative and engineering controls and personal respiratory protection;
- b) Use of risk assessments to determine the level of occupational risk and whether there has been any employee conversions;
- c) Early identification and management of persons who have TB;
- d) TB screening programs for Healthcare workers (HCWs). Healthcare workers are defined as employees who work in patient care areas; and
- e) HCW training and education

RESPONSIBILITY

The _____ has ultimate authority and responsibility to ensure compliance with this Infection Control Plan.

The Director of Occupational Medicine/Occupational Health Services (OHS) is responsible for assembling a Committee which will conduct an infection control investigation in the event that any nosocomial transmission of Tuberculosis is suspected or on other occasions, as necessary. The investigation will determine if any conversions were caused by occupational exposure and if additional control measures are necessary in any affected areas.

To ensure that potentially exposed personnel receive appropriate medical surveillance, OHS will be contacted by the Nurse Manager on occasions when a patient presents at a Rutgers University facility with symptoms or findings suggestive of active pulmonary TB. OHS will determine if it is necessary to conduct medical surveillance of potentially exposed employees and will make appropriate recommendations. The Rutgers Environmental Health and Safety Services (REHS), in conjunction with OHS, shall recommend appropriate control measures to identify and reduce the risk of nosocomial infections in patients and Healthcare workers.

The designated Nurse Managers shall ensure compliance with this Plan for their facilities. The directors of service departments, such as Facilities, shall ensure that employees who spend time in patient care areas receive training and medical surveillance as required by this plan.

Responsibility for the day-to-day implementation of this TB Infection Control Plan is assigned to the Nurse Manager of each respective clinical facility.

Supervisory responsibilities include:

- 1) Conducting an initial and annual risk assessments using the Rutgers University TB Risk Assessment form (Appendix A) to evaluate the risk for transmission of TB in each area and sending the completed Appendix A form to OHS
- 2) Tailoring this TB infection control plan, as necessary to ensure its relevance and usefulness for specific areas

- 3) Providing prompt triage for and appropriate management of patients in the clinical practice areas who have symptoms of infectious TB
- 4) Developing, implementing and enforcing policies and protocols to ensure early identification of patients who may have infectious TB and to ensure that they are sent directly to the nearest hospital emergency room or other facility equipped with appropriate isolation rooms and which performs diagnostic evaluations
- 5) Implementing the Rutgers University Respiratory Protection Plan, as necessary, in the event that a symptomatic patient is identified at the site. The Plan includes selection of approved respirators, fit-testing, training and medical surveillance. Only those personnel who have been enrolled in the Plan may wear respiratory protection.
- 6) Working with Division Chiefs to enroll Providers who may need to wear respiratory protection on certain occasions in the RU Respiratory Protection Plan.
- 7) Ensuring utilization of precautions when cough-inducing procedures are performed on high-risk patients. **Note:** Cough-producing procedures are not performed in the clinical practice areas of RU on high-risk patients; however, clinical faculty and staff may have occasion to do this in the inpatient setting at affiliated sites
- 8) Cooperating with Administration and Facilities to develop, install, maintain, and evaluate ventilation and other engineering controls to reduce the potential for airborne exposure to Tuberculosis where required by this Plan
- 9) Ensuring that personnel complete online Clinical Health and Safety Training at time of hire and annually thereafter.
- 10) Ensuring that personnel comply with routine Tuberculosis screening programs as required in this Plan
- 11) Promptly notifying OHS whenever a patient with suspected TB is sent for further evaluation to ensure epidemiologic follow up.

INFECTION CONTROL MEASURES

The Rutgers University TB Infection Control Program is based on a hierarchy of control measures which are described below. The first two levels of the hierarchy minimize the number of areas where exposure to infectious TB may occur, and they reduce, but do not eliminate, the risk in those few areas where exposure to TB can still occur (e.g., rooms in which patients with known or suspected infectious TB are being isolated).

1. Administrative Controls

The first level of the hierarchy, and that which affects the largest number of persons, is using administrative measures intended primarily to reduce the potential for contact of uninfected persons to persons who have infectious TB. These measures include:

- a) Implementing procedures to ensure the rapid identification, isolation, and transport of persons likely to have TB to the nearest hospital;
- b) Implementing effective work practices among HCW's who have contact with persons who have symptoms of infectious TB (e.g., correctly wearing respiratory protection and keeping doors to exam rooms closed);
- c) Educating, training and counseling HCW's and administrative personnel working in clinical areas about TB and screening HCW's for TB infection and disease;
- d) Assessing the risk for transmission of Tuberculosis to HCW'S, administrative personnel, patients, volunteers, visitors and other persons in Rutgers clinical care sites; and
- e) Ensuring that control measures are implemented for HCWs who spend time in the homes of patients and in all clinical practice areas as required by this Plan.

The Nurse Manager shall work with the Building Administrator, REHS and the Division Chief to ensure that administrative controls are implemented.

2. **Engineering Controls**

The second level of the hierarchy is the use of engineering controls to prevent the spread and reduce the concentration of infectious droplet nuclei in areas which perform high risk procedures or which diagnose high risk patients.

These controls may include:

- a) Isolation rooms with negative pressure;
- b) Direct capture of airborne droplet nuclei using local exhaust ventilation;
- c) Controlling direction of airflow to prevent contamination of air in areas adjacent to the infectious source;
- d) Diluting and removing contaminated air via general ventilation; and,
- e) Air cleaning via air filtration and/or ultraviolet germicidal irradiation (UVGI) as adjuncts to ventilation for reducing the concentration of infectious droplet nuclei in areas in which the risk for transmission of tuberculosis is determined to be high (e.g., isolation rooms, treatment rooms where high risk procedures are performed). Sites which use ultraviolet lights and/or HEPA-filtered negative pressure devices will follow the applicable safety guidelines in accordance with the manufacturer's recommendations.

The ventilation system design at Rutgers University clinical practice areas shall meet all applicable federal, state, and local requirements. Dilution and removal of contaminated air via general ventilation is the primary engineering control utilized to prevent the spread of Tuberculosis in patient examination rooms.

The following facilities are equipped with a room that has single-pass air (non-recirculating) and/or may have HEPA-filtered exhaust units which either exhaust filtered air back into the room or directly outside the room and building. Whenever possible, these are the preferred rooms for triaging patients with suspected TB in those facilities.

The following locations have been identified as having single-pass air or HEPA-filtered fan equipment:

Newark campus

- a. Lattimore Clinic (has separate TB Infection Control Plan)

New Brunswick/Livingston campus:

- a. Family Medicine Clinic: Room 8, single-pass air
- b. Eric B. Chandler Health Center:
 - Room 104: single-pass air and HEPA-filtered fan which exhausts back into the room.
 - Room 114: HEPA-filtered fan which exhausts back into the room.
- c. Hurtado Health Center: Room 145, HEPA-filtered fan exhausts to the outside.
- d. Wilets Health Center: Room 104, HEPA-filtered fan exhausts to the outside.

- e. Busch-Livingston Health Center: Room 113, HEPA-filtered fan exhausts to the outside.

Camden Campus

- a. College Center (Student Health Office): Room 240A, HEPA-filtered fan exhausts to the outside.
- b. Blumenthal Hall: Room 102N, HEPA-filtered fan exhausts to the outside.

3. Respiratory Protection Program

The third level in the hierarchy is the implementation of a Respiratory Protection Program for clinical faculty and staff in the clinical practice areas and/or for those clinical faculty and staff who may come in contact with suspected TB patients in affiliated off-site settings (e.g., hospitals, patient homes).

These are situations in which the risk for infection with Tuberculosis may be relatively high and include:

- a) Persons entering rooms where patient with known or suspected infectious TB are being isolated;
- b) Persons present during cough-inducing or aerosol-generating procedures performed on high-risk patients; and
- c) Persons who work in off-site settings such as patient homes where administrative and engineering controls are not likely to protect them from inhaling airborne droplet nuclei.

A written Respiratory Protection Plan must be customized for each clinical practice area where one or more of the situations described above in a, b, or c may be encountered (See Appendix B).

Clinical sites or laboratories which meet all of the criteria listed in a, b, c, d, and e, below **do not need** to implement a Respiratory Protection Program, under this Plan. Clinical sites which:

- a) Do not diagnose or perform tests (such as x-rays) to diagnose TB in patients with coughs or other TB symptoms (e.g. dermatology, ophthalmology)
- b) Do not perform high risk procedures
- c) Refer patients with symptoms directly to a collaborating facility
- d) Risk assessment (Appendix A) indicates that the facility is considered low risk for TB transmission
- e) Do not make respiratory protection available to personnel

Before respiratory protection may be worn by personnel, a Respiratory Protection Program as required by the Occupational Safety and Health Act (29 CFR, 1910.134) as adopted under the Public Employees Occupational Safety and Health Act will be instituted.

The Rutgers University Respiratory Protection Plan describes the minimal acceptable requirements for the use of respiratory protection by Rutgers personnel. Site-specific written standard operating procedures can be found in Appendix 2 of the Plan, which must be completed by clinical sites that make respiratory protection available. The following provisions are included in the Plan:

- a) Fit testing upon enrolment and annually thereafter to ensure that there is no leakage of air through the respirator/face juncture due to an inadequate fit. REHS will coordinate fit testing upon request.
- b) Medical surveillance upon enrollment and annually thereafter to ensure that the wearing of a respirator will not adversely affect any personnel member's health. Medical surveillance for respiratory wearers includes a work, medical history and in certain cases, may require spirometry and/or chest x-ray.

- c) Training employees upon enrollment and annually thereafter in the proper use of respirators, including putting on and removing them, any limitations on their use, and how to store and maintain them.

NOTE: Both Training and Medical Surveillance may be completed taking the REHS Online Respiratory Protection Training. The online module is located on the REHS Training Calendar tab, accessed via 'https://myrehs.rutgers.edu'.

- d) Use only disposable respirators which have been approved by the National Institute of Occupational Safety and Health (NIOSH) for protection against TB. **A surgical mask is not a respirator.** For protection against TB, only particulate respirators which have a NIOSH or NIOSH/MSHA label on the respirators filter, container, instruction sheet or respirator. Respirators must have a minimum protection rating of HEPA, N-95, R-95 or P-95 to be used for protection against tuberculosis. For example, 3M's disposable respirator model number 1860 has a protection rating of N95.
- e) Powered air-purifying (PAPR) respirators may be required in event that a proper fit cannot be achieved or that the HCW cannot be clean-shaven. Such equipment must be supplied by the respective clinical department.

At all RU clinical sites, appropriate respiratory protection must be worn by HCWs when entering an exam room of a patient with suspected TB. Additionally, respiratory protection must be worn by workers when entering the room of a patient with confirmed or suspected TB in the home or in an affiliated healthcare facility, or when performing any procedure that is likely to generate droplet nuclei particles from a patient with suspected or confirmed TB.

RISK ASSESSMENT

TB infection control measures shall be developed based on a careful assessment of the risk for transmission of TB within its clinical practice areas. Each clinical area shall conduct a baseline risk assessment which will be repeated annually, using Appendix A (TB Risk Assessment Form). The purpose of the risk assessment is to evaluate the risk of transmission of TB in each RU clinical site. The completed Appendix A should be forwarded to the respective Occupational/Employee Health Services who will review this data to estimate the number of TB nosocomial transmission and to assess the level of potential occupational risk.

RU clinical practice areas shall be classified according to the Centers for Disease Control and Prevention "Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Healthcare Facilities, 1994 risk classification." The risk classification is based upon the a) incidence of TB in the community in the past year, b) number of infectious TB patients who presented at the clinic, or the number of patients with symptoms of infectious TB who were identified, and c) the results of analysis of workers TST conversions (where applicable) and possible person-to-person transmission of TB.

IDENTIFYING, EVALUATION, AND INITIATING TREATMENT FOR PATIENTS WHO MAY HAVE ACTIVE TB

Personnel working in clinical practice areas shall promptly identify patients who have active TB or suspected TB, take measures to prevent exposure of other persons in the area to droplet nuclei, and facilitate transport of the symptomatic patient to the nearest hospital which are equipped to safely diagnose and provide care for Tuberculosis patients.

1. Identifying and handling of patients who have symptoms of active TB

- a) All personnel who work in patient care areas are required to complete initial and annual training in the identification of persons who have symptoms of infectious TB.
- b) Personnel who work in clinical areas, including who have front line contact with patients shall receive training to facilitate identification of patients with symptoms suggestive of TB (see Appendix C). Any patient who has a persistent cough (ie, a cough lasting for >3 weeks) or other signs and symptoms compatible with active TB (e.g., bloody sputum, night sweats, weight loss anorexia or fever) should be considered to have symptoms of infectious TB.
- c) Front line personnel shall promptly give a patient a tissue and tell the symptomatic patient to cough into it. Any personnel who suspects that a patient may have symptoms of active TB will notify a member of the clinical staff who will immediately escort the patient to an exam room in the clinical area, close the door, and notify the Nurse Manager.
- d) TB precautions in the clinical practice areas include: 1) placement of the suspected patient in a separate area apart from the other patients, and not in an open waiting area; 2) giving these patients a surgical mask to wear and instructions to keep their mask on, and 3) giving these patients tissues and instructing them to cover their mouth and nose with the tissue when coughing or sneezing.
NOTE: If available, patients should be placed in rooms that have single-pass air and/or HEPA-filtered exhaust units.
- e) When a patient presents with symptoms of TB, the Nurse Manager will notify the physician in charge who will triage the patient to determine disposition, and if necessary, facilitate transport of the patient to the nearest hospital. If an ambulance is called to transport the suspected TB patient, the Nurse Manager will inform the ambulance company and the emergency room of the presence of suspected TB.
- f) Occupational/Employee Health Services must be contacted in the event that a suspect TB patient has been referred for further evaluation. The supervisor must document this action on the RU online Accident Database.
- g) After a patient with suspected TB leaves the exam room, the door shall be closed and a sign attached indicating when it is safe to use the room again (a minimum of 1.5 hours).

REPORTING CASES OF TB

Occupational/Employee Health Services is responsible for epidemiological follow up and reporting of cases of suspected TB. The Nurse Manager will promptly notify Occupational/Employee Health Services whenever a patient with suspected TB is sent for further evaluation to ensure epidemiologic follow up.

TB EDUCATION AND TRAINING FOR HEALTH CARE WORKERS

All personnel who work in patient care areas, including physicians, residents, nurses, receptionists, home health care personnel, as well as service personnel, shall receive education and training regarding occupational transmission of TB that is relevant to persons in their particular occupational group and assigned setting. The training requirement is satisfied by the completion of the online Clinical Health and Safety Training (required upon hire and annually thereafter). Training elements will be consistent with Centers for Disease Control and Prevention, "Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Health Care Facilities, 1994."

HCW COUNSELING, SCREENING AND EVALUATION

TB counseling and screening for persons who work in the clinical practice areas shall be conducted by Occupational/Employee Health Services upon hire and annually thereafter. All personnel regardless of history of BCG vaccination will be screened for TB before employment. If a TST is performed/obtained at a site other than a Rutgers University Health Center, the employee is responsible for providing their Rutgers

with documentation of TST results. When indicated, semiannual testing will be conducted during the hire month and six (6) months later.

Diagnostic evaluation for active TB

Diagnostic evaluation for active TB is not conducted at Rutgers University clinical practice areas (with the exception of the Lattimore Clinic). Patients with suspected active TB are sent to the nearest hospital emergency room up for diagnostic evaluation.

MEDICAL MANAGEMENT OF INFECTED HEALTH CARE WORKERS (HCWs)

HCWs with newly-recognized positive TST results or conversions will be referred for a clinical examination and follow-up chest radiograph. Workers with active TB will not be allowed to return to work until the appropriate Rutgers Health Center provides written permission to their supervisors allowing them to return. The following criteria must be met for personnel to be cleared to return to work: adequate therapy has been given, cough is resolved, and three consecutive negative sputum smears were collected on different days. After returning to work, the appropriate Rutgers Health Center will ensure that the employee remains on anti-TB therapy for the appropriate time and remains AFB sputum smear negative. If a HCW is treated for TB by a private physician, that physician must notify the Rutgers Health Center so that they may monitor the treatment.

HCWs with latent TB will be evaluated for preventive therapy. HCWs with latent TB or non-laryngeal and non-pulmonary TB infection will be allowed to continue their usual work activities.

Appendix A

TB Risk Assessment Form

TUBERCULOSIS (TB) RISK ASSESSMENT WORKSHEET
For RU-Clinical Outpatient Areas
for compliance with PEOSH TB regulation

Name and Title of Person Completing Assessment: _____

Department and Division: _____

Date _____

Nurse Manager: _____

Clinic where PPDs were administered to your unit's employees:

Instructions: The purpose of this form is to assist your unit in complying with the NJ Public Employee Occupational Safety and Health Program (PEOSH) requirement that all public employers complete a risk assessment to determine the level of risk of TB exposure in each patient area. Complete the form and indicate 'unknown' where you do not know the answer.

Divisions such as Pulmonary Medicine which diagnose TB patients: **Complete Section A.**

Divisions such as Dermatology, which do not diagnose TB: **Complete Section B.**

All Department/Divisions: **Complete section C.**

If you check 'YES' for either #6a, #7a, or #9b, contact RU Occupational Health Services for further instructions

Section A. To be completed by patient care areas that diagnose TB: 3a and 6a to be completed by Occupational Health Services.

- 1a. Number of patients who visited area/unit who were then diagnosed with active pulmonary TB in the past year: # _____
- 2a. Number of employees in area/unit # _____
- 3a. Number of employees with documented previous positive skin test results # _____
- 4a. Number of employees required to be skin tested (#3a - #4a) # _____
- 5a. Number of employees in area/unit tuberculin skin tested # _____
- 6a. Employee conversions in past year Yes _____ # _____ No _____
- 7a. Evidence of occupational transmission? Yes _____ No _____

Section B. To be completed by areas that do NOT diagnose TB: 5b and 8b to be completed by Occupational Health Services

- 1b. Were there any patients who visited the unit who were identified as having signs/symptoms of active TB in the past year? Yes _____ # _____ No _____
- 2b. Was there any evidence that any patients who visited the unit in the past year had active TB? Yes _____ # _____ No _____
- 3b. Number of patients with active TB (#1b + #2b) # _____
- 4b. Number of employees in area/unit # _____
- 5b. Number of employees with documented previous positive skin test results # _____
- 6b. Number of employees required to be skin tested (#4b - #5b) # _____
- 7b. Number of employees in area/unit tuberculin skin tested # _____
- 8b. Employee conversions Yes _____ # _____ No _____
- 9b. Evidence of occupational transmission? Yes _____ No _____

Section C. Determining the Area/Unit TB risk (To be completed by all patient care areas)

Use the data from #1a or #3b above and check the appropriate area/unit TB risk category below:

- LOW RISK:** Fewer than six patients visited the area/unit with active pulmonary TB
- INTERMEDIATE:** Six or more patients visited the area/unit with active pulmonary TB

Fax the completed form to: RU OHS: 732-932-7199; RWJMS EHS: 732-445-0127; NJMS OMS: 973-972-2904

Appendix B

RU Respiratory Protection Plan (link to be provided later)

APPENDIX C

Recognition and Management of Patients with Symptoms of Tuberculosis (TB)

1. Notify the Nurse-in-Charge if a patient in the waiting area demonstrates the following signs and symptoms of TB:
 - Bloody and/or productive cough (> 3 weeks).
 - Sweaty, pallid, chills, feverish.
2. Symptomatic patient must be brought to an empty exam room/isolation room. Give patient:
 - a surgical mask to wear; instruct patient to keep the mask on.
 - tissues to cover their mouth and nose when coughing or sneezing
3. If respiratory protection is made available in your clinic, clinician may wear a disposable respirator when in the room with a symptomatic patient. Remember: you **MUST** have medical clearance, been fit tested and trained prior to wearing respiratory protection!
4. If there is no isolation room/sputum booth on site, the Nurse-in-Charge, as directed by the physician, will:
 - direct the patient to an appropriate clinic or ER where there is an isolation room/sputum booth for diagnosis of TB.
 - phone the clinic of ER to inform them that the symptomatic patient is in route
 - notify the ambulance dispatcher that transport is being requested for a suspect TB patient
 - If indicated. reschedule the medical evaluation until the patient is non-infectious.
5. Wait a minimum of 1.5 hours prior to re-entering an exam room after a symptomatic TB patient has left to ensure removal of any contaminated air in the room.
6. Notify Occupational/Employee Health Services if a patient with active TB presented at the clinic, so that potentially exposed personnel can receive appropriate follow-up.
7. Supervisors must document potential exposures and any conversions using the RU Accident Database accessed via 'https://myrehs.rutgers.edu'.

Remember: People with *latent TB infection* cannot spread disease! You do not need to be tested if you have spent time with someone with **latent** TB infection!

