

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

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## **I. PURPOSE**

To establish procedures for identifying and reducing the occupational/educational risk for transmission of tuberculosis (TB) to potentially exposed personnel, such as:

- a. Healthcare workers (HCWs), which includes employees, students and volunteers who work in patient care areas;
- b. Laboratory personnel, including postdoctoral associates; and
- c. 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/educational risk and whether there have been any individual TB infections or conversions;
- c. Early identification and management of persons who have TB infection;
- d. TB screening programs for personnel; and
- e. Training and education.

## **II. RESPONSIBILITY**

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

Except on the RBHS Newark campus, Occupational Health (OH) or Student Health is responsible for contacting the County Department of Health which will conduct an infection control investigation in the event that any nosocomial transmission of TB is suspected or on other occasions, as necessary. On the RBHS Newark campus, the Global TB Institute (GTBI) Lattimore Practice TB Investigations Team Leader shall conduct the investigation, with assistance from the Newark OH site (NJMS Occupational Medicine Service (OMS)) and Student Health Services (SHS), as needed. The investigation will determine if any HCW or other personnel are high risk contacts who should be tested. If a documented conversion occurs amongst those tested, then the epidemiologic link is clear.

To ensure that potentially exposed personnel receive appropriate medical surveillance, the OH/SHS will be contacted by the clinical Manager/Director/Supervisor on occasions when a patient presents at a Rutgers University facility with symptoms or findings suggestive of TB disease. On the RBHS Newark campus, the GTBI will also be notified, whereas on other campuses, the County DOH will be notified. OH/SHS and GTBI or the DOH will determine if it is necessary to conduct medical surveillance of potentially exposed personnel and will make appropriate recommendations and notifications. Rutgers Environmental Health and Safety (REHS), in conjunction with OHS/SHS, and the GTBI or DOH, shall recommend appropriate control measures to identify and reduce the risk of nosocomial infections and secondary spread.

The designated clinical supervisors 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 clinical supervisor of each respective clinical facility.

Supervisory responsibilities include:

- a. Conducting an initial and annual risk assessment using the Rutgers University TB Risk Assessment form (Appendix A) to evaluate the risk for transmission of TB in each area. If the risk is determined to be “Medium,” sending the completed Appendix A form to ROHS as appropriate to arrange for TB surveillance. However, the form is not needed to be completed on the Newark RBHS campus, which is currently being considered at least “Medium” risk.
- b. Tailoring this TB infection control plan, as necessary, to ensure its relevance and usefulness for specific areas;
- c. Providing prompt triage for and appropriate management of patients in the clinical practice areas who have symptoms of TB disease;
- d. Developing, implementing and enforcing policies and protocols to ensure early identification of patients who may have TB disease 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;
- e. Implementing the Rutgers University Respiratory Protection Plan, as necessary, in the event that a symptomatic patient with TB disease 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 Respiratory Protection Plan may wear respiratory protection;
- f. Working with Division Chiefs to enroll Providers who may need to wear respiratory protection on certain occasions in the RU Respiratory Protection Plan;
- g. 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;
- h. Cooperating with Administration and Facilities to develop, install, maintain and evaluate ventilation and other engineering controls to reduce the potential for airborne exposure to TB where required by this Plan;
- i. Ensuring that personnel complete online Clinical Health and Safety Training at time of hire and annually thereafter;
- j. Ensuring that personnel comply with annual TB screening programs as required in this Plan; and
- k. Promptly notifying ROHS and on the RBHS Newark campus, the GTBI Lattimore Practice TB Investigations Team, whenever a patient with suspected TB disease is sent for further evaluation to ensure epidemiologic follow up.

### III. 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 TB disease 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 TB disease. These measures include:

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

The clinic supervisor shall work with the Building Administrator, REHS and the Department Chair 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 where high risk procedures are performed or in which high risk patients are diagnosed.

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 TB 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. GTBI/Lattimore Practice (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.

**3. Respiratory Protection Program**

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

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

- a. Persons entering rooms where patient with known or suspected TB disease 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 these situations may be encountered (See Appendix B).

Clinical sites or laboratories which meet all of the following criteria **do not need** to implement a Respiratory Protection Program under this Plan.

- 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 or 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; and
- 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) and 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 enrollment 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 and provide fit testing periodically and upon request.
- b. Medical surveillance upon enrollment and periodically as indicated thereafter to ensure that the wearing of a respirator will not adversely affect any personnel member's health. Medical surveillance for respirator wearers may include a work and medical history and in certain cases, a physical examination, spirometry and/or chest x-rays.

- c. Training personnel 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 are acceptable. Respirators must have a minimum protection rating of HEPA, N-95, R-95 or P-95 and be labeled as such to be used for protection against tuberculosis.
- e. Powered air-purifying respirators (PAPR) 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 HCW 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 by personnel when performing any procedure that is likely to generate droplet nuclei particles from a patient with suspected or confirmed TB or a laboratory source of TB.

#### **IV. RISK ASSESSMENT**

TB infection control measures shall be developed based on a careful assessment of the risk for transmission of TB within clinical practice and laboratory areas. Except on the RBHS Newark campus, 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 ROHS as indicated to review these data to implement TB surveillance as needed.

RU clinical practice areas shall be classified according to criteria of the Centers for Disease Control and Prevention "Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Healthcare Facilities, 2005; MMWR 2005;54(RR-17) <http://www.cdc.gov/mmwr/pdf/rr/rr5417.pdf>. The Newark RBHS campus is considered at least "Medium" risk.

#### **V. IDENTIFYING, EVALUATION, AND INITIATING TREATMENT FOR PATIENTS WHO MAY HAVE TB DISEASE**

Personnel working in clinical practice areas shall promptly identify patients who have TB disease or suspected TB disease, 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 is equipped to safely diagnose and provide care for patients with TB.

#### **Identifying and handling of patients who have symptoms of TB disease**

- 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 TB disease.
- b. Personnel who work in clinical areas, including those who have front line contact with patients, shall receive training to facilitate identification of patients with symptoms suggestive of TB disease (see Appendix C). Any patient who has a persistent cough, i.e., a cough lasting for  $\geq 3$  weeks, or other signs and symptoms compatible with TB disease, e.g., bloody sputum, night sweats, weight loss, anorexia or fever, should be considered to have symptoms of TB disease.
- c. Front line personnel shall promptly provide a coughing patient with a tissue to cough into or a mask and tell the symptomatic patient to cough into it.
- d. Any personnel who suspects that a patient may have symptoms of TB disease 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 clinic supervisor.
- e. 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:** Patients should be placed in rooms that have single-pass air and/or HEPA-filtered exhaust units, if available.
- f. When a patient presents with symptoms of TB disease, the clinic supervisor will notify the clinician 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 patient, the clinic supervisor will inform the ambulance company and the emergency room of the presence of suspected TB disease.
- g. ROHS and the GTBI Lattimore Practice Investigations Team, on the Newark RBHS campus, must be contacted in the event that a patient with suspected TB disease has been referred for further evaluation. The supervisor must document this action on the RU online Accident Database using a Rutgers Accident Report.
- h. After a patient with suspected TB disease 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).

## **VI. REPORTING CASES OF TB**

The County DOH and OH/SHS is responsible for epidemiological follow up and reporting of cases of suspected TB, except on the RBHS Newark campus, where the GTBI Investigations Team Leader will follow-up and report. The clinic supervisor will promptly notify OH/SHS and the GTBI Lattimore Practice Investigations Team whenever a patient with suspected TB disease is sent for further evaluation to ensure epidemiologic follow up.

## **VII. TB EDUCATION AND TRAINING**

All personnel who work in patient care areas, including physicians, residents, nurses, receptionists, home health care personnel, as well as service personnel and students, shall receive education and training regarding occupational transmission of TB that is relevant to persons in their particular work or educational group and assigned setting. The training requirement shall be 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 Settings, 2005; MMWR 2005;54(RR-17).



### **VIII. COUNSELING, SCREENING AND EVALUATION**

TB counseling and screening for personnel who work in the clinical practice areas shall be conducted by ROHS as appropriate upon hire or initiation and annually thereafter. All new personnel regardless of history of BCG vaccination will be screened for TB using the tuberculin skin test, Mantoux method, two-step, or an interferon gamma release assay (IGRA), together known as TB Surveillance Tests (TST), before employment or clinical education. Personnel with a history of BCG vaccination are not exempt from TB screening. Anyone with a documented positive TB skin test should undergo IGRA testing and a symptom survey. If a TST is performed/obtained at a site other than a Rutgers Health Center, the employee is responsible for providing Rutgers with complete documentation of TST results. When indicated, annual or periodic testing will be conducted. TB surveillance should be conducted as per the Rutgers policy on TB Surveillance, Section 40.3.3 <http://policies.rutgers.edu/sites/policies/files/40.3.3%20-%20current.pdf>. Personnel who have had a documented prior positive TST and appropriate treatment should complete a symptom survey and be counseled. Chest x-rays should be done as indicated.

#### **Diagnostic evaluation for TB disease**

Diagnostic evaluation for TB disease is not conducted at Rutgers University clinical practice areas, with the exception of the GTBI Lattimore Practice. Patients with suspected TB disease should be sent to the nearest hospital emergency room for diagnostic evaluation.

### **IX. MEDICAL MANAGEMENT OF INFECTED PERSONNEL**

Personnel with newly-recognized positive TST results or conversions will be referred for a clinical examination and follow-up chest radiographs. Personnel with TB disease will not be allowed to return to work or school until the appropriate Rutgers Health Center ROHS provides written permission to the supervisor allowing the individual to return. The following criteria must be met for personnel to be cleared to return: adequate therapy has been given, cough is resolved, and three consecutive negative sputum smears were collected on different days. In order to return to work or school, personnel must provide documentation of being under treatment with anti-TB therapy for a minimum of 2 weeks and sputum smear negative for Acid Fast Bacteria.

Personnel with latent TB infection will be evaluated for treatment. Personnel with latent TB or extra pulmonary TB infection will be allowed to continue usual work or educational activities, but will be encouraged to be treated as indicated.

# **Appendix A**

## **TB Risk Assessment Form**

**TUBERCULOSIS (TB) RISK ASSESSMENT WORKSHEET**

For RU Clinical Sites

Name and Title of Person Completing Assessment: \_\_\_\_\_

Department and Division: \_\_\_\_\_

Date \_\_\_\_\_

Clinic(s) 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 and for #5 and #6, get assistance from Rutgers Risk Management and Insurance (RMI) or Rutgers Environmental Health and Safety (REHS) as needed.

With exception the Lattmore clinic, RU clinical sites do NOT diagnose, evaluate or treat TB patients or symptomatic TB patients. Appendix C of the TB Infection Control Plan describes the triage procedure for symptomatic TB patients and is included in initial and annual training.

**NOTE: If you check 'YES' for #5 or #6:** Please contact your respective Rutgers Health Center for further instructions.

**Section A: Please check the appropriate section for each question:**

- |  |                      |
|--|----------------------|
| 1. Were there any patients who visited the unit who were identified as having signs/symptoms of TB disease in the past year? | Yes ___ # ___ No ___ |
| 2. Were there any evidence that any patients who visited the unit in the past year had TB disease?                           | Yes ___ # ___ No ___ |
| 3. Number of patients with TB disease (#1 and #2)  | # ___                |
| 4. Number of employees in the area/unit  | # ___                |
| 5. Employee TB surveillance test conversions in the past year*   | Yes ___ # ___ No ___ |
| 6. Evidence of occupational transmission*  | Yes ___ # ___ No ___ |
- \*= According to RMI or EHS

Section B: Determining the Area/Unit TB risk (use the data from #3 above and check the appropriate category below:

- LOW RISK: Fewer than three (3) patients visited the area/unit with TB disease \*\*
  - MEDIUM RISK: Three or more patients visited the area/unit with TB disease \*\*
- \*\*= For outpatient, nontraditional or inpatient less than 200 beds.

**For LOW RISK: please maintain completed form with the Infection Control Plan**  
**For MEDIUM RISK, please fax the completed form to:**

OHD: 732-932-7199; RWJMS EHS: 732-445-0127; or NJMS OMS: 973-972-2904

## **Appendix B**

# **RU Respiratory Protection Plan**

[https://ipo.rutgers.edu/rehs/  
art-safety-respiratory-  
protection-program](https://ipo.rutgers.edu/rehs/art-safety-respiratory-protection-program)

## APPENDIX C

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

1. Notify the Nurse-in-Charge if a patient in the waiting area demonstrates the following signs and symptoms of TB disease:
  - Bloody and/or productive cough ( $\geq 3$  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 en route
  - notify the ambulance dispatcher that transport is being requested for a patient with suspected TB disease
  - 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 patient with TB has left to ensure removal of any contaminated air in the room.
6. Notify Occupational/Employee Student Health Services if a patient with TB disease 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 infectio



