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KEY WORDS: TB, TB control, tuberculosis, tuberculosis control

POLICY

Tuberculosis (TB) control measures are intended for all patients (pts.) with potentially transmissible laryngeal or pulmonary TB and TB in the oral cavity. The specific category for isolating patients is Airborne Precautions. Persons without evidence of active pulmonary TB (e.g., persons with only positive PPD skin test or with old calcified lung lesion) or pts that have completed adequate treatment for pulmonary/laryngeal TB (>14 days of anti-TB therapy and clinical response as described below) or one induced or three expectorated sputums (24 hours apart) that are smear negative for TB do not require isolation.

This policy also applies to extrapulmonary TB in situations where aerosolization of the organism is possible, e.g. debridment of tissues. If unclear, call HEIC to discuss aerosolization risk.


<u>Glossary</u>			
AFB	Acid Fast Baccili	ID	Infectious Diseases
CXR	Chest X-Ray, Radiograph	MDR-TB	Multi-Drug Resistant TB
HEIC	Hospital Epidemiology and Infection Control	PAPR	Positive airway pressure respirator
HEPA	High-efficiency particulate air filter	TB	Tuberculosis
HSE	Health Safety and Environment		

RESPONSIBILITIES


Clinical and Support Personnel	To follow the requirements of this policy.
Supervisor/Managers of all Departments	Ensure employee compliance with this policy.
Department of Hospital Epidemiology and Infection Control	Can assist with questions concerning policy and measures to discontinue isolation.
Adult/Pediatric Infectious Disease Fellow	Must approve patients being placed in Airborne Precautions.
Health, Safety and Environment	Maintain portable HEPA units and PAPR's and assist with questions concerning their use, operation, and repair.
Central Supply Department	Distribute PAPRs and HEPA units and maintain adequate supplies.
Facilities	Must document the routine and special monitoring and maintenance of the Airborne ventilation systems.

PROCEDURES

1. Assessment/Indications for Use
 - a. Symptomatic patients shall be assessed for TB and the need for isolation. The category of isolation is Airborne Precautions (negative pressure room). The diagnosis of active TB shall be considered and the need for Isolation shall be required in:

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- Any patient with a persistent cough (> 2 weeks duration) and the radiographic presence of a pulmonary infiltrate/cavity suggestive of TB. This includes patients diagnosed with MOTT in the past. See Pulmonary AFB Isolation Algorithm (Appendix A) for details.
 - Any patient diagnosed with TB in the last year that is not compliant with medical therapy or is considered a “medical therapy failure” until the patient’s AFB smear /infectivity is established.
 - Patients with extrapulmonary TB who have respiratory symptoms and/or CXR infiltrates.
 - Children with a lung cavity.
- b. Patients that have a negative AFB smear, but are culture positive for AFB with a change on CXR, must be discussed with Infectious Diseases or Hospital Epidemiology and Infection Control (HEIC) regarding the need for isolation.
- Any patient diagnosed with TB requires isolation when a lung cavity or a new abnormality is present on CXR.
2. Procedures
- a. The Infectious Diseases (ID) fellow/attending must approve Airborne Precautions for all inpatients; the Adult ID service for adults and the Pediatric ID service for children. The physician admitting the patient must obtain the approval.
 - b. The ID fellow/attending will call the shift-coordinator to arrange the Airborne Precautions admission.
 - c. A list of Airborne Precautions Rooms designated as negative pressure as determined by facilities is available at www.hopkins-heic.org under the isolation section. Patients on units without Airborne Precautions rooms should be transferred to designated rooms unless the patient’s medical needs cannot be met on the dedicated units. If the patient must remain in a non-negative pressure room, a portable HEPA filter unit must be placed in the room.
 - d. An order in the medical chart is required to place patients in Airborne Precautions. A nurse may write the order once approval for the bed has been obtained.
 - e. All JHH/JHU healthcare workers entering an Airborne Precautions room must wear a Health Safety and Environment (HSE) approved respirator. The Positive Air Pressure Respirator (PAPR) is the HEPA respirator of choice at JHH.
 - f. The doors to these patients’ rooms must be closed at all times except for entering and exiting.
 - g. Cough-inducing procedures may not be performed on these patients in the Johns Hopkins Outpatient Center (JHOC), except in the Pulmonary Function Lab where a certified, reverse flow, exhausted, clean air bench is located. Time spent in waiting areas must be limited.
3. Care and Use of the PAPR
- a. The PAPR hoods and HEPA units are available from the Central Supply Department @ ext. 5-8357.

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4. Interventions


- a. Patients in Airborne Precautions undergoing cough-inducing procedures shall only have procedures in a negative pressure room or a room with an approved air hood.
- b. Patients thought to have active pulmonary TB who are seen in outpatient areas shall wear a surgical mask and be placed in a private room with the door closed. Time spent in waiting areas must be limited. HEIC will then be called (ext 5-8384 or emergency beeper 3-3855) to discuss patient's disposition.
- c. No surgical procedures can be performed on suspected or active TB cases in JHOC.

5. Responsibility

- a. The HEIC will investigate all active pulmonary TB cases and determine the need for employee evaluation and follow up, i.e. PPD, or CXR.
- b. In the event of a TB exposure, a list of exposed healthcare workers will be compiled by HEIC and the involved departments/areas and forwarded to Occupational Health Services (OHS).
- c. All JHH/JHU employee/student medical follow-up will be coordinated by OHS. OHS will provide a report to HEIC with completed PPD skin test and radiographic results.
- d. The HEIC will maintain a database with the names of patients diagnosed with TB at JHH.
- e. All TB exposures will be reported to the JHH Hospital Epidemiology and Infection Control Committee.
- f. Health Safety and Environment (HSE) will train employees how to use employee protective devices (PAPRS).
- g. All routine and special monitoring and maintenance of the ventilation system of Airborne Precautions rooms are performed by the Facilities Department.
- h. The building ventilation system is monitored by the Facilities Department. Reports are sent to HEIC and HSE quarterly.
- i. As JHH areas are renovated or constructed, HEIC, HSE, and Facilities will assess the need for negative pressure rooms.
- j. The Mycobacteriology Lab will promptly report all positive AFB smears to HEIC.
- k. HEIC will review the Mycobacteriology final lab reports to identify active TB cases.

6. Transportation

- a. A patient on Airborne Precautions may travel off the floor for necessary medical procedures that cannot be performed in the room. The unit where the patient is isolated shall notify the accepting unit or diagnostic area that a patient on Airborne Precautions is coming to their area. The accepting unit shall attempt to clear the area of patients and visitors.

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- b. A patient on Airborne Precautions who travels off the floor must wear a surgical mask. The escort need not wear a mask during transport.

7. Visitors

- a. Visitation to patients in Airborne Precautions should be limited.
- b. In accordance with the JHH isolation policy, visitors shall wear PAPRs. Exceptions can be made on a case by case after consultation with HEIC.
- c. If the parent/caretaker is assessed to have infectious TB, he or she may not enter JHH except as a patient. Consult with HEIC when this occurs.

8. Discontinuing Isolation

- a. To discontinue Airborne Precautions in patients suspected of having tuberculosis (i.e., no AFB smear or cultures positive) the following is necessary:

Three AFB smear negative expectorated sputums from different days.

OR

One AFB smear negative induced sputum.

OR

One AFB smear negative sputum obtained from bronchoscopy.


OR

One AFB smear negative sputum obtained from an endotracheal tube or tracheotomy.

OR

Three negative AFB smear gastric aspirates obtained on different days from pediatric patients. Gastric aspirates are recommended for pediatric patients who are unable to cooperate with obtaining sputum.

- b. In order to discontinue Airborne Precautions on patients who are **AFB smear positive**, one of the following is required:
- **If MDR-TB is not suspected**, isolation may be discontinued if there has been adequate response (defined as resolution or improvement of both respiratory symptoms and fever) to 14 days of empiric therapy with four drugs. Incidences when the patient has a known positive MOTT culture within the recent past and no CXR changes must be discussed with HEIC/ID before discontinuing the isolation.
 - **If MDR-TB is suspected**, continue Airborne Precautions during adequate, multiple drug therapy until there is clinical improvement. The patient must receive at least 14 days of therapy and at least 3 negative AFB smears or 3 negative gastric aspirates or one adequate bronchoscopy or induced sputum specimen.
 - If either of the above are met Airborne Precautions may be discontinued with HEIC approval.

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9. Other procedures

- a. All induced sputums must be performed in a certified, reverse flow, exhausted, clean air bench.
- b. Airborne Precautions must be maintained during bronchoscopy, intubation, and suctioning of patients with suspected TB.
- c. In the unusual circumstance that all Airborne Precautions rooms are occupied, the ID fellow, and HEIC shall be consulted and a portable HEPA filter must be placed near the door of the patient room.
- d. Airborne Precautions patients who undergo operative procedures should have the procedure in the General Operating Room (GOR) or Weinberg negative pressure room or a room with a Hepa filter and should recover in a negative pressure room. They may not be recovered in the GOR Post Anesthesia Recovery Room (PACU). However, Weinberg does not have a negative pressure isolation room.
- e. Bronchoscopy on inpatients who are in Airborne Precautions shall only be performed in a negative pressure procedure room. Patients shall recover in the procedure room following sedation.
- f. Outpatients that are suspected or known TB patients who undergo an outpatient bronchoscopy must be scheduled as the last case of the day and recovered in the procedure room adhering to the conscious sedation protocol.
- g. Autopsy on suspected or known TB patients shall be performed in a negative pressure room and personnel shall wear PAPRs during the autopsy.

10. Laboratory


- a. All laboratory specimens processed for TB smear/culture must be performed in the Biosafety Level 3 Mycobacteriology lab. Personnel shall wear PAPRs or equivalent respirator protection while handling these specimens.
- b. MDR-TB is defined as TB resistant to at least INH plus rifampin.

11. Reportable Conditions

- a. If a patient with MDR-TB is admitted or diagnosed, HEIC shall be contacted immediately.
- b. Any employee/student that has been diagnosed with TB shall report this to Johns Hopkins University Health or JHH OHS.
- c. Any employee who has had a work-related exposure to TB shall follow the JHH occupational guidelines for exposure to TB (refer to the OHS policy).

REFERENCE

Guideline for Preventing the Transmission of M. TB in Health-Care Facilities (1994) MMWR, Vol. 43; No. RR. 13. <http://www.cdc.gov/mmwr/preview/mmwrhtml/00035909.htm>

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SPONSOR

- Medical Care Evaluation Committee

DEVELOPER

- Hospital Epidemiology and Infection Control

COMMUNICATION & EDUCATION

1. This policy will be communicated through Johns Hopkins Hospital publications.
2. Placement of policy on-line at www.Hopkins-HEIC.org
3. This policy will be placed in the Interdisciplinary Clinical Practice Manual on the JHH Intranet site <http://www.insidehopkinsmedicine.org/icpm>. Paper distributions will be made to the Functional Unit Nursing offices in the event of web access difficulty.

REVIEW CYCLE	• Three (3) years	MEDICAL BOARD	Approval Date: 8/12/03 Effective Date: 11/30/03
VICE PRESIDENT FOR MEDICAL AFFAIRS			
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Date:			