Banner Health

Title: Tuberculosis (TB) Prevention and Control Plan	
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Approved by: BH System Practice Oversight Team, Infection Prevention Senior Leadership, PolicyTech Administrators, 12/12/2019	

Discrete Operating Unit/Facility:
Banner Baywood Medical Center
Banner Behavioral Health Hospital
Banner Boswell Medical Center
Banner Casa Grande Medical Center
Banner Churchill Community Hospital
Banner Del E Webb Medical Center
Banner Desert Medical Center
Banner Estrella Medical Center
Banner Fort Collins Medical Center
Banner Gateway Medical Center
Banner Goldfield Medical Center
Banner Heart Hospital
Banner Ironwood Medical Center
Banner Lassen Medical Center
Banner Ocotillo Medical Center
Banner Payson Medical Center
Banner Thunderbird Medical Center
Banner--University Medical Center Phoenix
Banner--University Medical Center South
Banner--University Medical Center Tucson
East Morgan County Hospital
McKee Medical Center
North Colorado Medical Center
Ogallala Community Hospital
Page Hospital
Platte County Memorial Hospital
Sterling Regional MedCenter
Torrington Community Hospital
Washakie Medical Center

Ambulatory Services
Banner Health Clinics
Banner Imaging Services
Banner MD Anderson Cancer Center
Banner Medical Group
Banner Urgent Care Services
Banner--University Medical Group
Banner--University Medical Group Phoenix
Occupational Health/Employee Health Services
Rural Health Clinics
University of Arizona Cancer Center

Banner Home Care and Hospice (BHCH)
Home Health
Home Infusion Therapy
Home Medical Equipment
Home-Based Palliative Care
Hospice
Olive Branch Senior Center
Telehealth

Banner Pharmacy Services
Pharmacy Acute and Ambulatory Care
Pharmacy Prep and Dispensing
Pharmacy Specialty, Home Delivery, Central Fill
Retail Pharmacy

Post-Acute Care Services (PACS)
Inpatient Rehabilitation Therapy
Skilled Nursing Facility

Research
Research Administration

I. Purpose/Population:

A. **Purpose**:
   1. To facilitate early detection, isolation and treatment of persons with active Mycobacterium tuberculosis (MTB).
   2. To provide care to patients with tuberculosis (TB) in a manner that minimizes the risk of patient-to-patient and patient-to-public transmission of tuberculosis.
   3. To enhance the work environment to minimize the risk of exposure to tuberculosis.
   4. To reduce the risk among our healthcare workers of contracting TB on the job.
   5. To support the principles and recommendations of the Centers for Disease Control and Prevention (CDC), the National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA).

B. **Population**: All Employees, Patients, Physicians, Volunteers, Visitors, and the General Public

II. Definitions:

A. BAMT: blood assay for *Mycobacterium tuberculosis*

III. Policy:

A. Administration shall be responsible for providing resources that enable implementation of the TB Prevention and Control Plan.
B. The Infection Prevention and Control Committee is responsible for managing all aspects of the TB Prevention and Control Plan, and for providing support and feedback as requested.
C. Infection Prevention is responsible for:
   1. Overall implementation of the facility-wide TB Prevention and Control Plan.
   2. Working collaboratively with Administration and other departments to develop and implement policies and procedures specific to the Tuberculosis standards.
   3. Providing direction relative to the implementation of the applicable policies and procedures.
   4. Reviewing and revising the Tuberculosis Prevention and Control Plan annually and as needed.
   5. Being aware of current legal requirements concerning TB.
   6. Conducting periodic facility audits to ensure plan compliance.
   7. Reporting active TB cases to the local health department.
D. The Occupational Health Department is responsible for pre-employment screening; yearly fit testing of N95 respirators (some facilities Wellness Department); annual respiratory medical clearance for PAPR and post-exposure screening and follow up of all healthcare workers and volunteers. Medical Staff Services assures compliance with TB requirements for medical staff members who are not employed by Banner.
E. All department directors/managers shall be responsible for:
   1. Implementing the plan and further developing the plan when it has specific application to their departments
   2. Providing TB exposure-control training in their respective areas, including orientation of new employees prior to undertaking their first work assignment
   3. Observing infection prevention practices of their employees related to TB prevention and control and taking corrective action if necessary.
F. Facilities Services is responsible for:
   1. Negative pressure testing prior to placing a suspected or known infectious TB patient into the negative air pressure room. Testing can be done by various monitoring methods (**variance**: May be performed by Respiratory Therapy, Nursing, or Infection Prevention):
      a. Chemical aerosols (e.g., smoke tube)
      b. Differential pressure-sensing devices (e.g., manometer)
      c. Physical indicators (e.g., flutter strips)

2. When occupied by a patient, the negative pressure room should be checked daily for negative pressure (**variance**: May be performed by Respiratory Therapy, Nursing, or Infection Prevention).
3. Monthly testing of all negative air pressure rooms for ensuring the availability of negative air, the proper functioning of negative air-pressure rooms, and the adequacy of air filtration and exhaust in areas where patients with suspected or known infectious TB are located.

G. Each Healthcare worker (HCW) has a responsibility to understand the plan and follow it conscientiously.
   1. Each employee and Independent Licensed Practitioners have the right to access and review the facility-wide TB prevention and control plan at any time. The plan is shared during new employee orientation and is available to each HCW on-line. A hard copy will be located in the Infection Prevention Department Office.

IV. Procedure/Interventions:

A. Rapid identification and isolation of patients with active tuberculosis or strongly suspect patients with classic symptoms will be carried out as soon as possible.
   1. Pulmonary tuberculosis should be part of the differential diagnosis of patients with pulmonary signs and symptoms.
      - Mandatory screening for TB risk factors/symptoms (Infectious Disease Screening).
   2. Patients with known or suspected extrapulmonary tuberculosis displaying signs or symptoms of pulmonary tuberculosis.
   3. All persons at high risk for tuberculosis should be assessed for TB symptoms (e.g. a cough lasting for greater than 3 weeks, bloody sputum, night sweats, weight loss, anorexia, or fever). Persons at high risk for tuberculosis may include the following:
      a. Persons with HIV infection.
      b. Close contacts of persons known or suspected to have TB (within the last 2 years
      c. Immunocompromised patients (i.e., diabetic, oncology and ESRD pts, chronic steroid use, etc.).
      d. Foreign-born persons from high prevalence countries (i.e. Asia, Africa, Latin America, Mexico, Caribbean, and former Soviet Union countries).
      e. Medically under-served populations, e.g., homeless individuals.
      f. Alcoholics and intravenous drug users.
      g. Residents and employees of high risk settings (e.g., correctional institutions, hospitals, long term care centers, homeless shelters.
      h. Persons with a history of previous treatment with anti-tuberculosis drugs.
      i. Cases with positive bacteriology after three months of therapy.
   4. Consider placing patients with recent TB exposure or 3 or more symptoms of TB (unexplained weight loss, loss of appetite for more than 2 months, fatigue that interferes with daily activities, persistent cough over the last 3 weeks, persistent fevers over the past few months, sweats than leave the sheets or bedclothes moist, any blood- streaked sputum) in Airborne Precautions.

B. Patients with suspected or confirmed laryngeal or pulmonary tuberculosis are placed in a private, negative pressure room with an Airborne Precautions sign posted outside the room. (see **Appendix A** for list of Negative Pressure rooms)
   1. Inform the Infection Prevention & Control Department.
   2. Patients who have NOT yet been moved to a negative pressure room must wear a surgical mask and should be transferred as soon as possible.
   3. Isolation room doors must be kept closed to maintain control over the direction of air flow.
   4. When these rooms are being used by suspect or confirmed infectious TB patients, they must be monitored for negative pressure at least once every 24 hours

5. Employees entering a tuberculosis isolation room will wear appropriate PPE and the approved NIOSH N-95 mask or PAPR.
6. Isolation may be discontinued as follows:
    a. Patient is on appropriate therapy and is improving clinically, **and**
    b. Patient has three consecutive negative sputum smears collected at least 8 hours apart, **or**
    c. TB is ruled out.

C. For outpatients who have possible TB, precautions should be initiated promptly
1. Place a **surgical** mask on the patient (no respiratory protection is required for healthcare workers).
2. Place patient in separate waiting area, or room with controlled (negative pressure) ventilation if available, and
3. Notify IP when surgical or other procedures are scheduled for patients with known or suspected pulmonary or extrapulmonary tuberculosis. Modifications may be necessary.

D. **Airborne Isolation rooms may not be reused immediately.** The door must remain closed for a minimum of 1 hour, following discharge of the patient. If a regular patient room (non-negative) is used to temporarily house a suspect or known TB patient, check Appendix B for time required for room to be closed prior to use. **(**See **Appendix B.** for downtimes based on air exchange rate)

E. Patients with signs and symptoms suggestive of TB should have chest X-rays and bacteriologic studies as soon as possible. Studies of drug susceptibility on initial isolate should be obtained on all patients

F. Specimen collection.
1. Three sputum specimens for smear and culture collected at least 8 hours apart is advisable to ascertain communicability of patients with tuberculosis. Early morning specimens are preferable. Instruct patient to inhale and then cough deeply to produce a reliable specimen.
2. Cough-inducing procedures and other procedures likely to generate aerosolized organisms should be performed on TB patients only when absolutely necessary and is to be done in appropriate space:
    a. In areas that have local exhaust ventilation devices (e.g. booths or special enclosures),
    b. In a room that meets the ventilation requirements for TB isolation
3. Following completion of the procedures, TB patients should remain in the booth or negatively ventilated room until their coughing subsides
4. Procedures likely to generate aerosolized organisms include:
    a. Diagnostic sputum induction
    b. Administration of aerosolized medication (such as Pentamidine)
    c. Bronchoscopy
    d. Endotracheal intubation and open suctioning
    e. Autopsy

G. Respiratory Etiquette
1. Emphasize the importance of respiratory etiquette to help decrease transmission of respiratory pathogens.
2. Educate patients about the importance of respiratory etiquette practices for preventing the spread of respiratory illnesses.
3. Patients should be taught to cover their nose and mouth when coughing or sneezing and to direct their cough or sneeze away from others.
4. Emphasize the importance of prompt tissues disposal in trash can or bag at the bedside.

H. An attempt should be made to perform as many treatments as possible in the airborne isolation room; however, treatments should not be delayed or not performed as a result of the need for airborne isolation.

I. Teach the patient that when transported to other departments that he/she must wear a surgical mask during transport and while in the designated department. Persons transporting the patients do not need to wear respiratory protection outside the airborne isolation room.
J. Long-Term Care Facilities, Behavioral Health Settings, Rehabilitation Facilities and Dental Offices must follow the same practices as the hospital. Negative pressure isolation rooms must be available, or the patient/resident must be transferred to an appropriate facility.
K. Home-health Services
    1. Cough-inducing procedures will be performed outside in open space.
    2. If not possible, perform in a well-ventilated place, with windows open, and residents of house asked to leave for 30 min.
    3. HCW (health care worker) should wear N95 mask during procedure.
L. Transporting of patients in a closed space (i.e.; vehicle, aircraft).
    1. Surgical mask should be placed on patient, if possible.
    2. Instruct patients to cover their mouth and nose with tissues when coughing or sneezing if they must remove their mask to facilitate respiratory clearance
    3. Health care workers will wear approved respiratory protection
    4. If feasible, the rear windows of the vehicle will be kept open and the heating or air conditions system set on a non-recirculating cycle.
M. Operating rooms
    1. Elective procedures should be delayed until the patient is no longer infectious.
    2. Procedures should be done in operating rooms with anterooms; if there are no anterooms then the doors should be kept closed and traffic kept to a minimum.
    3. Procedures should be the last case of the day if possible.
    4. During recovery, the patient should be placed in an airborne isolation room.
        a. All employees/volunteers are considered to be at risk of exposure within the health care facility.
        b. Persons considered to be at increased risk are those with repeated, prolonged, close contacts with high risk groups (as defined by the Centers for Disease Control), persons who perform high hazard procedures, and persons with any direct contact with infectious individuals within the facility.
            i. A high hazard procedure is one that has the potential to generate airborne respiratory secretions.
            ii. High hazard procedures include: aerosolized pentamidine treatments, bronchoscopy, sputum induction, open suctioning procedures, and autopsies
N. Mask Use
    1. The N-95 respirator worn for TB protection must:
        a. Filter particles 1 micron in size in unloaded state at $\geq$ 95% efficiency.
        b. Qualitatively or quantitatively be fit-tested to achieve face seal .(Occupational Health Services)
        c. Fit most facial sizes and characteristics. If employee fails the fit-testing procedure, an alternative will be provided, e.g., PAPR unit.
    2. **EMPLOYEES** entering airborne infection isolation rooms will wear appropriate PPE and the approved NIOSH (N-95) mask or PAPR, and other personal protective equipment as delineated by standard precautions.
    3. NIOSH approved (N-95) respirator masks or PAPR should be worn by personnel who perform autopsies on deceased persons who had, or may have had, TB at time of death.
    4. **PATIENTS** with known or suspected pulmonary or laryngeal tuberculosis infection will wear a surgical mask during transport outside a negative-pressure room.
    5. **VISITORS**
        a. Should be given an N95 mask (Lawson # 25224) to wear while in the room, along with general instructions on its use and limitations.

b. Do not need to be fit-tested.
c. The number of visitors should be limited as much as possible.
d. Visitors not previously exposed should be encouraged not to visit.
e. **Children under the age of 5, or any child who cannot reasonably wear an N95 mask, may not visit a suspect or confirmed TB patient. Permission from a doctor is required before allowing the child to visit.**

O. Standard Precautions must be observed at all times with all patients, including the use of masks, eye protection, and face shields whenever potentially infectious materials are expected to be generated.

P. Engineering Controls - Physical Measures to Reduce Microbial Contamination of Air
1. Airborne infection isolation (AII) rooms are under negative pressure in relation to adjacent rooms and hallways at a rate of ≥ 6 air exchanges per hour (ACH) for existing facilities and ≥ 12 ACH for new or renovated facilities.
2. Periodic checks (per Facilities Management protocol of AII rooms) are required through any of the following:
   a. Central plant alarm system
   b. Flutter strips
   c. Smoke tubes
   d. Air velocity measure device (use with smoke tubes) or
   e. Digital monitoring device.
3. When AII rooms are being used by suspect or confirmed infectious TB patients, they must be monitored at least once every 24 hours.
4. When AII rooms are not being used for patients who have suspected or confirmed TB disease, the negative pressure should be checked on a monthly basis.
5. Periodic evaluations (Infection Control/Facilities Management) should be done on the number of Airborne infection isolation rooms, treatment rooms, local exhaust devices, and regular maintenance and monitoring of the local and general exhaust systems, and HEPA filter systems.
6. “Downtimes” of the room/area should be implemented when airborne contaminants are known or suspected. See **Appendix B** to determine required “downtime” before room may be reused.
7. Guidelines for Dilution and Removal of Potential Airborne Contaminants
   a. General ventilation is used for diluting and removing contaminated air and controlling airflow patterns within patient rooms and/or treatment areas.
   b. The time required to dilute and remove potential airborne contaminants depends upon the number of air exchanges per hour in the room or treatment area. **Check with Facility Services for specific room information.**

Q. Respiratory Protection Program
1. All employees/volunteers are considered to be at risk of exposure within the health care facility.
2. Persons considered to be at increased risk are those with repeated, prolonged, close contacts with high risk groups (as defined by the CDC), persons who perform high hazard procedures, and persons with any direct contact with infectious individuals within the facility.
   a. A high hazard procedure is one that has the potential to generate airborne respiratory secretions.
   b. High hazard procedures include: aerosolized pentamidine treatments, bronchoscopy, sputum induction, open suctioning procedures, and autopsies
3. Employees providing direct patient care to patients in Airborne Precautions or employees performing high hazardous procedures are required to wear a NIOSH approved (N-95) mask fitted snugly to the face.

4. NIOSH approved (N-95) respirator masks should be worn by personnel who perform autopsies on deceased persons who had, or may have had, TB at time of death.
5. Standard Precautions must be observed at all times with all patients, including the use of masks, eye protection, and face shields whenever potentially infectious materials are expected to be generated.
6. **EMPLOYEES** entering tuberculosis isolation rooms will wear appropriate PPE and the approved NIOSH (N-95) mask or PAPR.
7. **PATIENTS** with known or suspected pulmonary or laryngeal tuberculosis infection will wear a surgical mask during transport outside a negative-pressure room.
8. **VISITORS** should be given an N95 mask to wear while in the room, along with general instructions on its use and limitations. Only immediate adult family members will be allowed to visit. **No children under the age of 5 years of age should be allowed to visit; consider requiring permission from a doctor before allowing the child to visit.**
9. The N-95 respirator worn for TB protection must:
    a. Filter particles 1 micron in size in unloaded state at greater than or equal to 95% efficiency.
    b. Qualitatively or quantitatively be fit-tested to achieve face seal .(Occupational Health Services or Wellness Department)
    c. Fit most facial sizes and characteristics.
    d. If employee fails the fit-testing procedure, an alternative will be provided, e.g., PAPR unit.

R. Training and Education of Employees: Employees will be trained regarding the hazards and control of tuberculosis before initial assignment: in addition, employees at increased risk will receive annual education. At a minimum, the following will be discussed:
1. The basic concepts (epidemiology) of tuberculosis:
    a. The cause and transmission of tuberculosis.
    b. The signs and symptoms of tuberculosis
    c. The distinction between tuberculosis active disease and infection.
    d. The risk factors for tuberculosis.
    e. Responsibilities of the health care worker to seek medical evaluation promptly if symptoms develop that may be due to tuberculosis.
2. Tuberculin Skin Test (TST) and Blood Assay for *Mycobacterium tuberculosis* (BAMT):
    a. The responsibility of the health care worker to receive appropriate evaluation and therapy if TST or BAMT test conversion occurs, including chest x-ray
3. Personal protective equipment
    a. Health care workers will receive instruction on the purpose, proper selection, fit, use, and limitation of personal protective equipment (PPE).
    b. Health care workers will demonstrate proper fitting of the respirator.
4. The principles and practices of infection control that reduce the risk of transmission of tuberculosis:
    a. Identification of TB patients.
    b. Engineering controls.
    c. Respiratory Protection Program and medical screening. (See **Appendix E**, Interpretation of Skin Tests)
    d. Location of Tuberculosis Prevention and Control Plan.

S. Based on a review of the risk assessment of a defined problem area, the following qualifiers may be used for reevaluation of the TB program:
1. Observational review of TB Infection Control practices (i.e.: Airborne Precautions sign in place, door closed).
2. Review of environmental controls and maintenance procedures.
3. Review of health care worker PPE use and respiratory program.

T. Risk Assessment and Periodic Reassessment
   1. TB control measures for each Banner Health facility are based on an annual assessment of the risk of TB transmission in each area and occupational group in the facility. Infection control interventions are based on the risk assessment of the individual facilities. Steps in the risk assessment process include:
      a. Evaluation of health care workers TST or BAMT test conversion data.
      b. Determination of TB prevalence among the patient population.
   2. Reassessment of facility risk should occur yearly.
   3. Risk assessment and periodic reassessment will include random observations of the facility's health care worker infection control practices.
   4. Based on the risk assessment protocol recommended by the CDC, each facility will select the risk protocol most appropriate for their TB control program. (See **Appendix C** for TB Risk Assessment).
   5. If during the risk assessment or reassessment process, health care worker TST or BAMT test conversions are found to match TB patients by location (possible source case), the problem evaluation process recommended by the CDC will be followed. (See **Appendix C,** Problem Evaluation).

U. Record-keeping
   1. Occupational Health records of skin testing or BAMT results, medical evaluations and treatment are maintained for the duration of employment plus 30 years (29 CFR 1910.20).
   2. All training session records will be maintained for three years from the date on which the training occurred.
   3. A positive skin test or BAMT conversion is recorded on the OSHA 300 log when there is a known workplace exposure to active TB disease. (20 CFR 1904).

V. Health Care Worker Counseling and Screening
   1. Two-step TB skin testing or BAMT is required for all employees and volunteers at hire (2 step).
   2. All health care workers are counseled regarding TB infection at time of hire and annually.
   3. Frequency of skin testing or BAMT:
      a. At the time of employment or the beginning of volunteer service, unless there is a history of a previous positive skin test or BAMT.
      b. Two step testing or BAMT is performed on all new employees/volunteers.
      c. Persons who have received BCG vaccination are skin tested at the time of employment, including 2 step testing if the first TST is negative, regardless of age. Alternatively, a blood test specific for the diagnosis of TB infection may be required.
      d. If employees or volunteers with a history of BCG vaccination are negative after 2 step testing or BAMT, an appropriately timed skin testing schedule will apply.
      e. After exposure to a patient known to be infected with tuberculosis
      f. TST or BAMT is required annually at all facilities classified as medium risk or greater, based on current CDC guidelines.
      g. TST or BAMT is required annually, regardless of CDC risk classification in California and Alaska.
   4. TST's are read by a designated qualified individual.
   5. CDC criteria are used for interpretation of skin tests. See **Appendix E**.
   6. Occupational Health will provide clinical evaluation of employees and volunteers who have positive skin tests or BAMT and employees with a history of positive skin tests or BAMT and who have symptoms suggestive of tuberculosis.
   7. If tuberculosis infection is diagnosed, the employee or volunteer is counseled regarding appropriate prophylactic therapy.

8. An employee or volunteer with active pulmonary or laryngeal tuberculosis is excluded from work until adequate treatment has been instituted, the cough is improved, sputum is AFB smear negative, a physician certifies that the employee is no longer infectious, and employee is cleared by Occupational Health.

W. Exposure Determination and Clinical Evaluation to be done with all employees and volunteers who have potentially been exposed to TB as follows:
1. Employees who have had contact with an infectious person through a common ventilation system or without protective equipment.
2. Employees having unprotected contact with an infectious patient while performing a high hazard procedure, or exposure to an infectious patient who is actively coughing,
3. Employees determined to have been exposed to active, infectious, tuberculosis are placed in the Employee Health follow-up program.

X. Health Care Worker TST and BAMT Conversions See **Appendix D**
1. Each facility will review and evaluate employee test conversions on at least annual basis.
2. Employee test conversions will be evaluated for possible occupational transmission.
3. If health care worker conversions are found to match TB patients by location within the facility (possible source case), information from the review of identified patients is used to aid in determining transmission risks to employee.
4. Infection Control parameters are evaluated in the above patients by calculating intervals from:
   a. Admission until TB suspected.
   b. Admission until TB evaluation performed.
   c. Admission until AFB specimens ordered.
   d. AFB specimens ordered until AFB specimens collected.
   e. AFB specimens collected until AFB smears done and reported.
   f. AFB specimens collected until cultures done and reported.
   g. AFB specimens collected until species identification done and reported.
   h. AFB specimens collected until drug susceptibility tests done and reported.
   i. Admission until TB isolation initiated.
   j. Admission until TB treatment initiated.
   k. Duration of TB isolation.

V. Procedural Documentation:

A. Documentation of precautions in EHR (NURSING), under Assessments, Safety/Precautions Assessment.

VI. Additional Information:

A. The Infection Preventionist in each facility has primary responsibility for the design, implementation, and maintenance of the TB infection prevention and control program.

B. The Infection Preventionist will designate other individuals in the facility to assist in meeting all requirements of the TB control program. At a minimum, this would include individuals with expertise in occupational (employee) health, education, safety and facility services. These individuals are identified per facility.

VII. References:

CDC Morbidity & Mortality Weekly Report (2005, December 30). Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Settings, 2005; http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm

Centers for Disease Control and Prevention. Core Curriculum on Tuberculosis: What the Clinician Should Know, Sixth Edition 2013.

Centers for Disease Control and Prevention. Prevention and Control of Tuberculosis in Facilities Providing Long-term Care to the Elderly: Recommendations of the advisory committee for the elimination of tuberculosis, 1990. MMWR 1990; 39(No. RR-10).

VIII. Other Related Policies/Procedures:

A. N/A

IX. Keywords/Keyword Phrases:

A. BAMT
B. Blood assay for *Mycobacterium tuberculosis*
C. Infection Control
D. *Mycobacterium tuberculosis*
E. Occupational Health
F. TB
G. TB Exposure Control Plan
H. TB management
I. TB skin test
J. Tuberculosis

X. Appendices:

Appendix A: Negative Airflow Rooms by Facility.
Appendix B: Air Exchanges per Hour (ACH) and time in minutes required for removal of airborne contaminants
Appendix C: Protocol for Conducting a Tuberculosis Risk Assessment in a Health Care Facility
Appendix D: TST Test Conversion in HCW
Appendix E: Summary of Interpretation of Skin Tests

Appendix A
Negative Airflow Rooms by Facility

BBMC					
207	606	713	Endo 3	ED 42	
425	607	731	Endo 15	ED 47	
446	625	743		ED 52	
525	643	744		ED 61	
546	644				
BBWMC					
Endo #1	A 201	A 301	3N 361	D 541	1101
Endo #2	C 240	B 327	3N 363	C 540	1123
Endo #3	D 241	C 340		A 514	1124
ICU -GB 126		D 341		ED – 25	
BCCH					
216	218	ICU 3	ER 2		
BCGMC					
ICU 11	ICU 17	OBS 153	WIS106	PCU 206	PCU 253
ICU 12	ICU 22	OBS 154	WIS116	PCU 207	PCU 254
			Nursery Room 1		
CCMC					
POTC Exam OP01	Peds ED PE40	P208	Peds Pre-op PO01	P408	P608
POTC Exam OP02	Peds ED PE41	P209	Peds PACU PA 09	P409	P609
	Peds EDPE42	P210	Peds Hold IM04or IM07	P410	P610
	Peds ED PE43	P211		P411	P611
			NICU 17, 18, 19, 20	P508	P708
				P509	P709
				P510	P710
				P511	P711
BDMC					
A215	B129	D106	Adult ED room 1	CVICU 236	
A 216	B130	D107	Adult ED room 2	Endo 2 and 4	
A127	B329	D219	Adult ED room 25	Adult PACU 25	
A317	B330	D220	Adult ED room 26	Nuc. Med 1-3	
A318	B417	D312	Adult ED room 27	Adult Pre-op 9	
A419	C Triage #1	D313	Adult ED room 34		
A420	C Triage #2	D412	Adult ED room 35		
A421	C LDR 1	D413	Adult ED room 36		
A422	C LDR 15 & 16	215A			
A423	C318	216A			
A424					

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Appendix A (continued)
Negative Airflow Rooms by Facility

BDWMC **Note**: "Endo Rm. 1" is a Bronchoscopy Procedure Room, not a patient room; and it is tested annually.					
A215	Endo Rm. 1	C343	D309	ED C6	PACU D22
A315	B336	C443	D330	ED C7	
	B536	C543	D409	ED C11	
		C643	D430	ED C12	
			D506		
			D528		
BEMC					
1015	WIS PACU 4	3036	4036	6001	NICU #1
1016	2001	3037	4037	6025	NICU #13
1031	2025	3049	4049	6048	CARES #1
1044	2048	3072	4072	Bronch Suite 2248	CARES #12
1045	3001	4001	5001	ED # 43	PACU P111
LDR #1	3025	4025	5025	ED # 57	PACU P112
LDR #12	3048	4048	5048	ED # 64	PACU P220
PreOp P207	PreOp P212	PreOp P213	PreOp P220		
BFCMC					
ED A1136	LD F1128	Nursery G1134	ISU G2101	ISU H2131	Pre-op C2141
BGMC					
WIS Rooms	Patient Tower	Pt Tower	ED Rooms	Interventional Rms	
LDR #10	1211	1411	ED treatment #2	PAC #2 (PACU)	
Post-Partum 1123	1212	1412	ED treatment #3	PRE # 27 (Pre-op)	
Nursery Isolation	1213	1413		Endoscopy #1	
	1214	1414			
	1311	1511			
	1312	1512			
	1313	1513			
	1314	1514			
BGFMC					
ED Room 8	PCU Room 4	ICU Room 18			
BHH					
4011	4060	5028	Preop - 3329		
4038	5010B	5038			

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Appendix A (continued)
Negative Airflow Rooms by Facility

BIMC					
Unit	Room #	Rm Label	Unit	Room #	Rm Label
ED	A1228	#34	MOSU	C3177	#1312
Endo	B2104	#1	MOSU	C3180	#1311
Endo	B2108	#2	M/S	D3105	#1324
PACU	B2163	#8	M/S	D3109	#1323
PACU	B2166	#11	M/S	D3147	#1314
L&D	C2201	#1201	M/S	D3151	#1313
PP	C2321	#1213	4th Floor	C4138	#1401
PP	C2326	#1224	4th Floor	C4141	#1402
PP	C2416	#1214	4th Floor	C4177	#1412
PP	C2458	#1223	4th Floor	C4180	#1411
MOSU	C3138	#1301	WIS	C2404	Nursery
MOSU	C3141	#1302			
BLMC					
658 MedSurg	692 Security Rm	676 DOU			
BPMC					
ICU 1	Room 9	Endo 1	Endo 2		
BTMC					
3A 307 and 322	LLB 37	1B 137 and 152	2B 237 and 252	3B 337 and 352	
LLC Peds 80	PICU 1C Rooms 163 & 174	NICU Room 1	ED Copper 13 and 14	PACU Room 11	
Endo Rooms 1, 2, 3, 4	Endo Recovery 8	ED Rooms 5, 10, 25, 30, 44, 46	Nuc Med Rooms 1, 2, 3		
ST 2E 19 and 20	ST 2W 21 and 22	ST 3E 19 and 20	ST 3W 21 and 22		
ST 4E 19 and 20	ST 4W 21 and 22	ST 5E 19 and 20	ST 5W 21 and 22		
BUMCP					
Tower 1 (New)	**Tower 1 (New)**	**Tower 2**	**Tower 2**	**Ancillary**	
A101 A	1123 E	151 A	680 C	1 Pre-Op	
A102 A	1124 E	180 C	681 D	2 Pre-Op	
B124 B	1223 E	251 A	770 B	55 PACU	
B125 B	1224 E	266 B	781 D	58 PACU	
421 E	1423 E	274 C	851 A	OTC (1080)	
422 E	1424 E	275 D	852 A	A1-1736 Endo	

Continued on next page

Appendix A (continued)
Negative Airflow Rooms by Facility

BUMCP, cont.					
521 E	1523 E	455 A	869 B	Rm 26 A-1621 Endo	
522 E	1524 E	475 C	870 B	Rm 27 A-1622 Endo	
621 E	1623 E	476 C	879 C	A3-1018 NICU	
622 E	1624 E	481 D	880 C	A3-1023 NICU	
1023 E	1723 E	486 D	881 D	A3-1095 NICU	
1024 E	1724 E	570 B	882 D	223 L&D	
		581 D	981 D	341 L&D	
		670 B		Suite 605 Edwards	
BUMCT					
Room Unit	***Room Unit***	***Room Unit***	***Room Unit***	***Room Unit***	***Room Unit***
3312 3NE	5624 5E	1519 ED	4211A,B NICU	14 PACU	7101 7EW
3313 3NE	5625 5E	1215 ED	4213C,D NICU	15 PACU	7124 7EW
3314 3NE	5628 5E	1214 ED	5233 D5	36 PACU	7125 7NS
3315 3NE	5629 5E	1123 TRAUMA	5235 D5	37 PACU	7126 7NS
4312 4NE	5632 5E	2214 D2N	5236 D5	21701 CARS	7147 7NS
4313 4NE	5633 5E	2215 D2N	6214 D6N	21702 CARS	7148 7NS
4314 4NE	7508 7W	3242 D3W	6216 D6N	5101 5EW	8101 8EW
4315 4NE	2824 GI	3243 D3W	6217 D6N	5124 5EW	8124 8EW
4337 4NW	1819 PACU	3214 D3N		5125 5NS	8125 8NS
	1820 PACU	3215 D3N		5126 5NS	8126 8NS
	1821 PACU			6101 6EW	8147 8NS
	1822 PACU			6124 6EW	8148 8NS
	1660 PACU			6125 6NS	9101 9EW
	1663 PACU			6126 6NS	9124 9EW
	1664 PACU			6147 6NS	9125 9NS
				6148 6NS	9126 9NS
					9147 9NS
					9148 9NS
*No self-closing door or toilet as required by AIA guidelines					
BUMCS					
541	485	*BHP ED*	*Clinics*		
560	420	ISO 41	ISO 2177CC		
521	421	ISO 42	ISO 2345		
573	461	ISO 22	ISO 2344CO		
572	ED 34	ISO 21	C-189		
442	ED 33	ISO 11	C-141		
441	Recovery Room 6	ISO 8	C-110		
459	ICU 203	ISO 7			
460	ICU 204				
BUMG					
Wilmot Multispecialty Clinic		1094	1096		

EMCH					
ED Room 1	PACU Room 430		MedSurg Room 7	MedSurg Room 8	
McKee					
ED 3	289	216	376		

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Appendix A (continued)
Negative Airflow Rooms by Facility

NCMC					
ED 19, 33,15	A345, A348	A412, A418			
Triage 3	ICU room A and P	C446, C447			
PACU hold/iso AG152	Endo room 5/Bronch room	B475, B476			
Rm B164	C305, C306				
NICU Rm 10	B375, B376				
OCH					
Room 8					
Page					
ED Trauma 2	PACU	ICU 3			
PCMH					
Room 2225					
Sterling					
Med/Surg 216 and 217	ED Room 8 and 9				
TCH					
Room 121	ED Secure Room	ED Decon	Mobile Tent		
WMC					
111	ED#1	ED Decon			

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Appendix B

Air exchanges per hour (ACH) and time in minutes required for removal of airborne contaminants

	Minutes required for a removal efficiency of:					Minutes required for a removal efficiency of:		
ACH	**90%**	**99%**	**99.9%**		**ACH**	**90%**	**99%**	**99.9%**
1	138	276	414		14	10	20	30
2	69	138	207		15	9	18	28
3	46	92	138		16	9	17	26
4	35	69	104		17	8	16	24
5	28	55	83		18	8	15	23
6	23	46	69		19	7	15	22
7	20	39	59		20	7	14	21
8	17	35	52		25	6	11	17
9	15	31	46		30	5	9	14
10	14	28	41		35	4	8	12
11	13	25	38		40	3	7	10
12	12	23	35		45	3	6	9
13	11	21	32		50	3	6	8

Appendix C. Risk classifications for various health-care settings and recommended frequency of screening for Mycobacterium tuberculosis infection among health-care workers (HCWs)*

	Risk classification†		
Setting	**Low risk**	**Medium risk**	**Potential ongoing transmission§**
Inpatient <200 beds	<3 TB patients/year	≥3 TB patients/year	Evidence of ongoing *M. tuberculosis* transmission, regardless of setting
Inpatient ≥200 beds	<6 TB patients/year	≥6 TB patients/year	
Outpatient; and nontraditional facility-based	<3 TB patients/year	≥3 TB patients/year	
TB treatment facilities	Settings in which • persons who will be treated have been demonstrated to have latent TB infection (LTBI) and not TB disease • a system is in place to promptly detect and triage persons who have signs or symptoms of TB disease to a setting in which persons with TB disease are treated • no cough-inducing or aerosol-generating procedures are performed	Settings in which • persons with TB disease are encountered • criteria for low risk are not otherwise met	
Laboratories	Laboratories in which clinical specimens that might contain *M. tuberculosis* are not manipulated	Laboratories in which clinical specimens that might contain *M. tuberculosis* might be manipulated	
Recommendations for Screening Frequency			
Baseline two-step TST or one BAMT¶	Yes, for all HCWs upon hire	Yes, for all HCWs upon hire	Yes, for all HCWs upon hire
Serial TST or BAMT screening of HCWs	No**	At least every 12 months††	As needed in the investigation of potential ongoing transmission§§
TST or BAMT for HCWs upon unprotected exposure to *M. tuberculosis*	Perform a contact investigation (i.e., administer one TST or BAMT as soon as possible at the time of exposure, and, if the result is negative, give a second test [TST or BAMT, whichever was used for the first test] 8–10 weeks after the end of exposure to *M. tuberculosis*)¶¶		

* The term Health-care workers (HCWs) refers to all paid and unpaid persons working in health-care settings who have the potential for exposure to *M. tuberculosis* through air space shared with persons with TB disease.

† Settings that serve communities with a high incidence of TB disease or that treat populations at high risk (e.g., those with human immunodeficiency virus infection or other immunocompromising conditions) or that treat patients with drug-resistant TB disease might need to be classified as medium risk, even if they meet the low-risk criteria.

§ A classification of potential ongoing transmission should be applied to a specific group of HCWs or to a specific area of the health-care setting in which evidence of ongoing transmission is apparent, if such a group or area can be identified. Otherwise, a classification of potential ongoing transmission should be applied to the entire setting. This classification should be temporary and warrants immediate investigation and corrective steps after a determination has been made that ongoing transmission has ceased. The setting should be reclassified as medium risk, and the recommended timeframe for this medium risk classification is at least 1 year.

¶ All HCWs upon hire should have a documented baseline two-step tuberculin skin test (TST) or one blood assay for *M. tuberculosis* (BAMT) result at each new health-care setting, even if the setting is determined to be low risk. In certain settings, a choice might be made to not perform baseline TB screening or serial TB screening for HCWs who 1) will never be in contact with or have shared air space with patients who have TB disease (e.g., telephone operators who work in a separate building from patients) or 2) will never be in contact with clinical specimens that might contain *M. tuberculosis*. Establishment of a reliable baseline result can be beneficial if subsequent screening is needed after an unexpected exposure to *M. tuberculosis*.

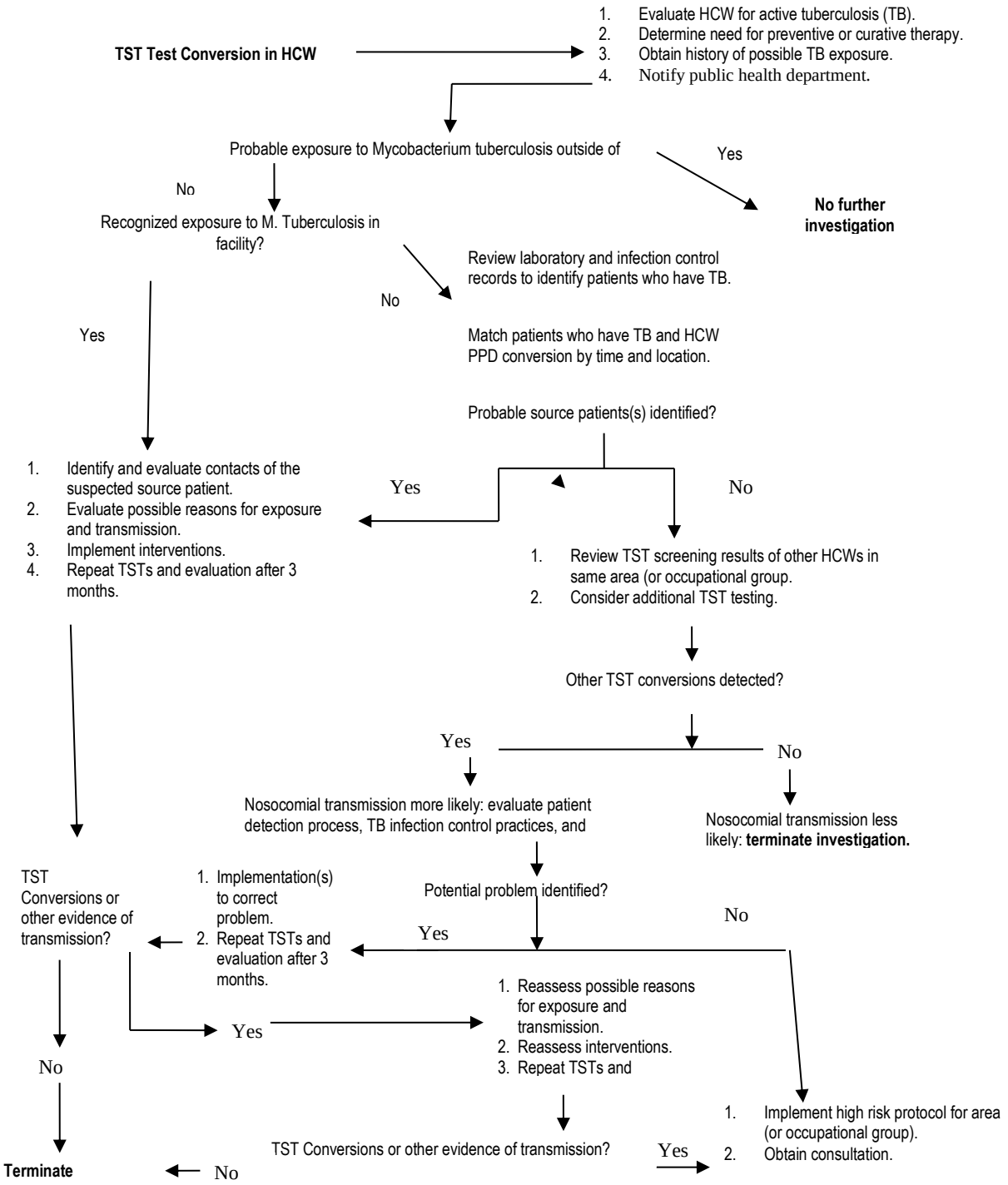
** HCWs in settings classified as low risk do not need to be included in the serial TB screening program.

†† The frequency of screening for infection with *M. tuberculosis* will be determined by the risk assessment for the setting and determined by the Infection Control team.

§§ During an investigation of potential ongoing transmission of *M. tuberculosis*, testing for *M. tuberculosis* infection should be performed every 8–10 weeks until a determination has been made that ongoing transmission has ceased. Then the setting should be reclassified as medium risk for at least 1 year.

¶¶ Procedures for contact investigations should not be confused with two-step TSTs, which are used for baseline TST results for newly hired HCWs.

Appendix D: TST Test Conversion in HCW



Appendix E

SUMMARY OF INTERPRETATION OF SKIN TESTS

1. A reaction of greater than or equal to 5 mm is classified as positive in:
   - persons with HIV infection or risk factors for HIV infection with unknown HIV status
   - persons who have had recent close contact* with persons with active TB
   - persons who have abnormal chest radiographs consistent with old healed TB
2. A reaction of greater than or equal to 10 mm is classified as positive in all persons who do not meet any of the criteria above but who have other risk factors for TB including:

   High-Risk Groups -
   - intravenous drug users known to be HIV sero-negative
   - persons with other medical conditions that have been reported to increase the risk of progressing form latent TB infection to active TB, including silicosis, gastrectomy, jejuno-ileal bypass surgery, being 10% or more below ideal body weight, chronic renal failure, diabetes mellitus, high dose corticosteroid and other immunosuppressive therapy, some hematologic disorders (e.g., leukemias and lymphomas), and other malignancies.

   High-Prevalence Groups -
   - foreign-born persons form high prevalence countries in Asia, Africa, and Latin America
   - persons from medically underserved low income populations
   - residents of long-term care facilities (e.g., correctional institutions, nursing homes)
   - persons from high risk populations in their communities, as determined by local public health authorities
3. Induration of greater than or equal to 15 mm is classified as positive for persons who do not meet any of the above criteria.
4. Recent converters are defined on the basis of both induration and age:
   - Greater than or equal to 10 mm increase within a 2-year period is classified as positive for persons less than 35 years of age
   - Greater than or equal to 15 mm increase within a 2-year period is classified as positive for persons greater than or equal to 35 years of age
   - Greater than or equal to 5 mm increase under certain circumstances (#1 above)

*Recent close contact implies household contact or unprotected exposure similar in intensity and duration to household contact.