



TUBERCULOSIS CONTROL PLAN

SOUTHERN ILLINOIS UNIVERSITY SCHOOL OF MEDICINE

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TB CONTROL PLAN

INTRODUCTION

Southern Illinois University School of Medicine (SIU) strives for a safe environment for its patients and employees. This TB Control Plan (Plan) complies with the Centers for Disease Control and Prevention's (CDC) Guidelines for Preventing the Transmission of Tuberculosis in Health-Care Settings, 2005 (MMWR Recommendations and Reports, Dec 30, 2005/Vol.54 (RR#17); 1-141).

The Plan administrators review the Plan at least every two years or when CDC or other guidance agencies recommend change.

	Page No.
PURPOSE AND OBJECTIVES	3
PLAN COVERAGE	3
AUTHORITY AND RESPONSIBILITY	3
ACCESSIBILITY	4
RISK ASSESSMENT	4
POLICIES:	
TB-100.00 Early Detection of TB in Patients	5-6
TB-100.10 Management of Patients with Confirmed or Suspected TB	7-8
TB-101.00 Engineering Controls	9
TB-102.00 TB Screening	10-11
TB-103.00 Management of Exposure to TB	12
TB-104.00 Personal Respiratory Protection	13-14
TB-105.00 Information and Training	15
TB-106.00 Coordination with Public Health Department	16
TB-107.00 Recordkeeping	17
APPENDICES:	
Appendix A TB Risk Assessment Worksheet	18-24
Appendix B Annual TB Screening Questionnaire	25
Appendix C Factors Affecting Treatment Decisions	26

PURPOSE AND OBJECTIVES

1. Provide guidelines and procedures to prevent or minimize exposure to tuberculosis (TB) to those entering SIU facilities.
2. Implement TB interventions based on the Centers for Disease Control (CDC) hierarchy of control measures, including:
 - a. administrative measures to reduce the risk or exposure to persons with infectious TB;
 - b. engineering and environmental controls to prevent the spread and reduce the concentration of infectious droplet nuclei; and
 - c. personal respiratory protection (respirators) worn in areas when there is a risk of TB exposure.
3. Conduct an annual risk assessment to determine the appropriate level of the CDC hierarchy of control measures.
4. Assign responsibilities to execute this Plan.

PLAN COVERAGE

The Plan covers SIU health care workers and other persons on campus with exposure to the same air space as potential TB patients. Persons from contractual organizations and non-employees are evaluated on an individual basis, however all will follow infection control procedures.

The term Health Care Worker (HCW) in this document refers to all paid and unpaid persons working at SIU who have potential for exposure to *Mycobacterium tuberculosis* (*M. tuberculosis*), including, but not limited to: physicians, nurses, aides, technicians, laboratory workers, medical students, part-time personnel, and persons not directly involved in patient care but who have potential occupational exposure to *M. tuberculosis* (i.e. maintenance, clerical and janitorial staff, and volunteers).

AUTHORITY AND RESPONSIBILITY

All SIU units and departments are responsible for developing, implementing, and enforcing protocols and procedures within the scope of the TB Control Plan. Each HCW is responsible for understanding and complying with the Plan. Non-compliance with TB controls may result in disciplinary action.

The following individuals and departments administer the TB Control Plan:

1. The Infectious Diseases Division (ID) assumes supervisory responsibility for the Plan through the Infection Control and Safety Committee (ICSC). ID coordinates the TB Control Plan and keeps up to date on the current literature and CDC guidelines for TB control.
2. Infection Control & Safety Committee - reviews and approves the Plan.
3. Facilities Management – designs and manages engineering controls.
4. Employee Health Nurse – conducts TB testing and other employee screening, post exposure follow-up, retention of medical forms, and TB Control Plan training.
5. Office of Risk Prevention, Patient Safety & Employee Health and the Environmental Health and Safety Office – conduct respirator training and fit testing.

ACCESSIBILITY

The Plan is accessible to all employees, faculty, and medical students on the SIU intranet site.

RISK ASSESSMENT

The risk assessment is used to evaluate the likelihood of tuberculosis transmission in each health care and non-healthcare setting. The elements of the assessment provide the basis for employing appropriate infection control interventions. The exposure potential for occupants of SIU facilities are considered in the risk assessment.

The elements of a risk assessment include:

1. Patient case surveillance by Infectious Diseases or designees - number of Class III TB cases in the SIU outpatient population for the year. (<3 per year-low risk and ≥ 3 per year medium risk) Ref: CDC MMWR December 30, 2005.
2. Employee case surveillance - number of employees with Class III TB.
3. Information provided by Illinois Department of Public Health on the number of TB cases in SIU's service area.
4. TB conversion rate surveillance - analysis of TB screening (Quantiferon TB Gold testing) of HCW for SIU as a whole, and for certain areas/departments and occupational groups.
5. An evaluation of the adequacy of the TB testing program.
6. Assessment of the infection control practices – results from routine and scheduled audits for clinical TB compliance, including using PPE, negative air flow rooms when available, and isolation of suspected/known TB patients in the clinic.

After analyzing the above information, the ICSC assigns a TB category of risk for areas/departments and occupational groups with potential TB exposure.

SIU falls into the 'low risk' category according to CDC guidelines. As a result, SIU discontinued annual TB testing for all employees. The category of risk is re-assessed annually and the plan revised according to the outcome. SIU continues fit testing and annual TB screening in the following areas due to a higher risk of exposure based on patient population:

1. Infectious Diseases (Adult and Pediatrics)
2. Pulmonary (Adult and Pediatrics)

POLICY TB-100.00

EARLY DETECTION OF TB IN PATIENTS

Early identification and isolation of possible TB patients is essential to TB control. HCWs must maintain awareness of:

- persons at risk for TB,
- persons with signs and symptoms of TB,
- results of positive diagnostic results from radiology and laboratory,
- TB (AFB) isolation policies and procedures, and
- the effectiveness of treatment which is monitored by AFB sputum smears.

A diagnosis of TB should be considered in any patient with persistent productive cough (≥ 3 weeks duration) or other signs and symptoms compatible with TB:

- bloody sputum
- night sweats
- weight loss
- anorexia
- fever

Suspicion for TB should be very high in clinical areas that see populations with a high prevalence of TB. Indicators of active TB include:

- acid fast bacilli (AFB) present in sputum
- chest x-ray suggestive of TB
- presence of symptoms highly suggestive of TB (i.e. cough with hemoptysis, weight loss of more than 10 pounds, anorexia, and night sweats)

The probability of TB is higher among persons with the following characteristics:

- positive PPD skin test or Quantiferon test
- past history of a positive PPD skin test or Quantiferon test
- previous active TB
- exposure to active TB
- member of a group at high risk for TB

Diagnostic measures include:

- PPD skin test
 - If positive with history of receiving BCG vaccine, order Quantiferon TB Gold and schedule appointment with ID
 - If positive with no history of BCG, order chest x-ray and schedule appointment with ID
- Quantiferon test
- history and physical examination
- chest x-ray
- acid fast bacilli (AFB) smear or culture of sputum or other appropriate specimen
- bronchoscopy or biopsy if indicated

TB may occur simultaneously in immunocompromised individuals with pulmonary infections due to other organisms (i.e. *Pneumocystis jirovecii* or *Mycobacterium avium complex*) making it more difficult to diagnose.

Persons at high risk of TB infection

- persons with HIV infection
- persons from foreign countries with high incidence of TB
- close contacts of infectious TB cases
- persons with the following medical conditions which increase the risk of active TB:
 - silicosis
 - fibrotic lesions
 - diabetes mellitus
 - prolonged corticosteroid therapy

- immunosuppressive therapy
- hematologic and reticuloendothelial disease
- end stage renal disease
- intestinal bypass
- post gastrectomy
- chronic malabsorption syndrome
- carcinoma of the oropharynx and upper GI tract
- being 10% or more below ideal body weight
- transplant patients
- medically underserved, low income populations including high risk groups
- homeless persons
- alcoholics and IV drug abusers
- residents of long term care facilities (nursing homes)
- persons with diagnosis of "old" TB - (check with personal physician)
- persons in prisons

Physicians and other HCWs should maintain a high level of suspicion of TB infection when taking care of high risk patients and isolate the patient until TB infection has been ruled out.

POLICY TB-100.10

MANAGEMENT OF PATIENTS WITH CONFIRMED OR SUSPECTED TB

1. Patients with confirmed or suspected TB immediately begin anti-tubercular treatment regimens recommended by the CDC.
2. TB precautions apply to patients with suspected TB during the diagnostic evaluation. HCWs entering the room and/or attending the patient must wear a properly fitted disposable N95 respirator or PAPR.
3. Outpatients presenting with signs and symptoms suggestive of active TB are promptly isolated in an exam room (negative pressure room when possible) and evaluated by a health care professional to minimize TB exposure to other patients and HCW. Clinics must also:
 - a. Avoid scheduling appointments for patients with known or suspected infectious TB on days and at times when HIV positive or severely immunocompromised patients are in the clinic.
 - b. Clinics at 751 N. Rutledge isolate patients with known or suspected infectious TB in Room 1503 in the Internal Medicine Clinic. Room 1503 has continuous negative air pressure which vents room air to the outside.
 - c. When patients with known or suspected infectious TB arrive at an outpatient clinic in Springfield without a designated negative air pressure room, (i.e. Pavilion), the physician may contact reception (545-8008) at 751 N. Rutledge to see if room 1503 is available. If available, attempt to transfer and examine the patient in that room. During transport the patient should wear an isolation mask and cough/sneeze into a tissue. If room 1503 is not available, take the patient to the designated isolation room for the clinic, and instruct the patient to wear an isolation mask and cough/sneeze into a tissue.
 - d. The door to the examination room housing a known or suspected TB patient is kept closed at all times while the patient is present and during the purge after the patient leaves.
 - e. Instruct patients who must remain in a common waiting area to wear an isolation mask and cough/sneeze into tissue.
 - f. After discharging the patient, the exam room door remains closed and no one may enter the room without respiratory protection until enough time has elapsed for the room to complete a purge of 12 full air exchanges.
 - Negative pressure rooms (751 Rutledge, rooms 307, 309, 311, 313, 315, and 1503) must remain out of service for a minimum of two hours.
 - Other clinic rooms that have housed a suspected or known TB patient must remain out of service for a minimum of twelve hours.
4. Other potential TB exposures:
 - a. any direct contact with infectious TB patients
 - b. repeated, prolonged contact with high risk groups (see POLICY TB-100.00)
 - c. medical procedures that generate aerosols of respiratory fluid
5. When active TB is under consideration, SIU clinics should not perform medical procedures that generate aerosols of respiratory fluid. Memorial Medical Center and St. John's Hospital have appropriate rooms to perform medical procedures with increased risk of TB exposure including:
 - bronchoscopy
 - sputum induction and collection

- endotracheal intubation/suction procedures
 - procedures that stimulate coughing (i.e. aerosolized pentamidine treatment)
 - autopsy
6. Transportation of known or suspected TB patients to other areas.
- a. Transport patients as little as possible. Preferably, tests or procedures take place in the patient's examination room.
 - b. If the above is not feasible, the attending physician's staff must notify the receiving department of the patient's TB diagnosis.
 - c. Instruct the patient to practice respiratory hygiene (wear an isolation mask and cough/sneeze into a tissue) when transferring to another area for a test or procedure.
 - d. If the patient is unable to tolerate an isolation mask (i.e. cannot breathe with it on), tissues or a clean cloth is given to the patient to hold in place over their nose and mouth during transport.
 - e. TB patients should not enter an elevator occupied by others or HCW not wearing a respirator (transporters voluntarily use N95 respirators).
7. Refer to the SIU's Occupational Exposure Control Plan for decontamination, cleaning, and disinfecting procedures for patient care equipment and environmental surfaces (*Occupational Exposure Control Plan Section III, Methods of Compliance and Appendix A Low- and Intermediate-Level Cleaning and Disinfection*).

POLICY TB-101.00

ENGINEERING CONTROLS

SIU Facilities Management manages engineering controls to reduce the risk of TB transmission in ambulatory care areas serving patients at high risk for TB. Facilities Management:

1. Collaborates with experts in building air handling systems and designs local exhaust and general ventilation that conforms to CDC guidelines for TB control.
2. Maintains negative pressure in the TB isolation rooms at 751 N. Rutledge, rooms 307, 309, 311, 313, 315, and 1503. These rooms are used to isolate patients known or suspected of having infectious TB or any other highly infectious disease spread by droplets or aerosols.
3. Coordinates regular preventative maintenance and monitoring of the negative air pressure rooms through an HVAC contractor.

POLICY TB-102.00

TB SCREENING

SIU orders Quantiferon TB Gold tests from labs designated by the Employee Health Nurse for all TB screening and exposure follow-up. Quantiferon TB Gold test results are interpreted based on risk factors as defined by CDC's recommendation.

1. Tuberculin Screening:
 - a. All new SIU employees undergo TB testing during new employee orientation.
 - Positive screenings will be evaluated by employee health in consultation with SIU Infectious Disease
 - b. TB questionnaires may be administered every 12 months for HCWs assigned to TB high risk areas or who are present during high hazard procedures. High risk areas/personnel include:
 - Infectious Diseases (Adult and Pediatrics)
 - Pulmonary (Adult and Pediatrics) Critical Care
 - Obstetrics and Gynecology
 - FQHC Clinical Staff
 - c. All employees exposed to TB will be tested and provided medical follow-up if needed.
 - d. Exemptions for TB testing:
 - i. HCW with a previously documented positive TB test. Proper documentation includes results recorded in millimeters (mm); along with documentation of evaluation, adequate treatment, or preventive therapy.
 - ii. When HCW cannot provide proper documentation as required above, a TB test is necessary.
 - iii. HCWs are responsible for providing proper documentation.
 - iv. Pregnant women can be TB tested.
2. Evaluation of a HCW with a positive TB test and possible nosocomial TB transmission.
 - a. HCWs previously documented as positive for TB do not require chest x-rays after a TB exposure. The HCW must report to the Employee Health Nurse if they develop symptoms suggestive of TB and must complete a TB symptom questionnaire yearly.
 - b. HCWs with a positive TB test at the time of hire or who convert to TB positive during their employment require a chest x-ray and an examination by an ID Physician.
 - i. The clinical evaluation with the ID physician and medical follow-up occurs during work hours.
 - ii. A HCW diagnosed with infectious TB cannot return to work until the SIU Employee Health Nurse receives a work release (documentation indicating the HCW is no longer contagious) from a personal physician or county health department. Work releases are kept in the HCW's confidential employee health file.

- iii. The Employee Health Nurse makes arrangements to ensure further clinical evaluation and follow-up occurs. It is the employee's responsibility to inform the Employee Health Nurse if additional treatment is necessary.
- iv. An immunocompromised HCW (i.e. those with HIV infection or other immunosuppressive condition) receives counseling from SIU ID, their personal physician, or their county health department about the increased risk of developing active TB disease.

3. HCW who develops active disease:

- a. HCWs who develop signs and symptoms suggestive of active TB require an examination by a qualified health care professional for TB infection regardless of TB test results.
- b. Report the diagnosis of active disease to the appropriate county health department.
- c. A HCW with active pulmonary, laryngeal, or extra pulmonary TB cannot return to work until their personal physician or county health department provides the Employee Health Nurse with a work release (documentation indicating the HCW is no longer contagious).

4. HCW Work Restrictions:

- a. There are no work restrictions for a HCW with a positive TB test if they are asymptomatic and their chest x-ray is negative.
- b. Personnel with current pulmonary or laryngeal mycobacterium tuberculosis (MTB) whose sputum smear show acid fast bacilli cannot return to work until adequate treatment has begun and the sputum is free of acid fast bacilli on three (3) consecutive smears obtained at least 8 hours apart.
- c. Personnel who have current MTB at a site other than the lung or larynx may to continue their usual activities.
- d. Personnel who stop taking medications for active pulmonary or laryngeal disease before completing the prescribed course of therapy cannot return to work until submitting a work release by a personal physician.
- e. Decisions about work restrictions for infected workers or workers with active disease are based on the Centers for Disease Control and Prevention's most recent guidelines, SIU Communicable Disease Protocol, or physician assessment.
- f. HCWs excluded from the workplace for infectious conditions may be entitled to pay and benefits according to workers' compensation, disability, and other applicable laws.

POLICY TB-103.00

MANAGEMENT OF EXPOSURE TO TB

HCW Responsibilities

Upon exposure to a suspected or known TB patient:

1. SIU HCWs inform their immediate Supervisor. Clinical faculty inform the Nurse Supervisor of the clinic. The Supervisor or Nurse Supervisor of the employee notifies the Employee Health Nurse.
2. Medical students inform the supervising nurse at the site of exposure and the Employee Health Nurse by pager (217-492-2446), phone (217-545-8970), or in person as soon as possible. If the exposure occurs after hours, contact the SIU Employee Health Nurse the next work day.
3. If the exposure occurs at a satellite or preceptor site, follow that site's TB Control Plan and contact the SIU Employee Health Nurse as soon as possible.
4. Within 24 hours of the exposure, complete a Sensor report describing the circumstances surrounding the exposure and the duties being performed that relate to the exposure.
5. SIU HCWs must also contact the Workers' Compensation/Benefits staff in Human Resources.

Employee Health Nurse Responsibilities

1. Determine whether the exposure is of a nature that may transmit TB.
2. Have the source patient contact their physician or SIU Infectious Diseases to request medical records related to their TB status and send a copy to the Employee Health Nurse.
3. Maintain the following:
 - a. The Sensor report describing the exposed HCW's duties that relate to the exposure incident, the route of exposure, and circumstances under which it occurred.
 - b. Maintain medical records relevant to the treatment, including TB status, in the employee's health file.
4. The employee may notify SIU Human Resources of the incident to initiate a workers' compensation claim. All information regarding exposures reported to the Employee Health Nurse are kept confidential.

Post Exposure Screening

HCWs who suffer potential infectious exposure to TB undergo the following medical surveillance:

- screening for TB symptoms;
- TB testing for the HCW who previously tested negative;
- if the initial TB test result is negative, repeat the TB test and symptom screening at 8 and 10 weeks post exposure;
- when the symptom screening or any of the TB tests is positive, promptly evaluate the HCW for TB disease including a chest radiograph; and
- provide additional medical and diagnostic evaluation for LTBI, including determining the level of exposure, when infectious TB disease is ruled out.

POLICY TB-104.00

PERSONAL RESPIRATORY PROTECTION

The CDC recommends an N95 or PAPR respirator for protection from exposure to TB. HCWs wear respiratory protection when entering an exam room with a patient known or suspected of having infectious TB, or when present during cough inducing and high risk procedures on patients with known or suspected infectious TB. A HCW without respiratory protection must not enter a room housing a known or suspected TB patient.

1. All respiratory protective devices are NIOSH certified (29 CFR 1910.134.).
2. A qualitative or quantitative fit test is conducted for tight-fitting respirators.
3. Before each use, the user inspects the respirator for physical damage and achieves a successful fit check.
4. Follow manufacturer's instructions for inspection, cleaning and maintenance or the procedure in 29 CFR 1910.134.
5. Fit testing
 - a. SIU employees are fit tested according to the SIU Respiratory Protection Program.
 - b. HCWs in the high TB risk clinics (ID and Pulmonary) complete initial and annual fit testing.
 - c. Medical Students are fit tested in an N95 respirator. Those who do not pass or complete a fit test use a PAPR when entering a TB isolation area.
 - d. Only those approved to wear a respirator by the Employee Health Nurse will be fit tested.
 - e. Fit testing is repeated if any of the following occur:
 - i. A weight change of +/- 20 lbs;
 - ii. Significant facial scarring;
 - iii. Significant dental changes (i.e., extraction, dentures partials);
 - iv. Reconstructive or cosmetic surgery; or
 - v. Other conditions that may interfere with face piece seal.
 - f. Fit testing is free of charge and occurs during regular work hours.
 - g. The Office of Risk Prevention, Patient Safety & Employee Health and the Environmental Health and Safety Office conduct respirator fit testing.
 - h. The Employee Health Nurse retains fit testing records.
6. HCWs are not assigned a task requiring use of respirators unless they are physically able to do the work while wearing the respirator.
 - a. HCWs assigned to wear a TB respirator complete an N95 TB Respirator and PAPR screening questionnaire upon hire, annually thereafter, and when a re-evaluation is necessary.
 - b. A qualified MD or RN reviews questionnaires to assess physical ability to wear a respirator.
7. Respirator training is free of charge and occurs during regular work hours. At a minimum, training includes the following:

- a. Why engineering controls do not adequately eliminate the need for personal respiratory protection.
- b. Rationale for the respirator being used; its capabilities and limitations.
- c. How to inspect, don, fit check and correctly wear the device.
- d. How to recognize a damaged or inadequately functioning respirator.

POLICY TB-105.00

INFORMATION AND TRAINING

1. Education on TB is designed according to the annual risk assessment for HCWs with direct patient contact. Education is conducted before initial assignment, annually thereafter, and when changes or new information affects HCWs occupational risk of acquiring TB.
2. Training, appropriate to the job description, is free of charge and occurs during regular work hours.
3. Training includes the following elements:
 - Transmission, pathogenesis, and diagnosis of TB
 - TB infection vs. active TB disease
 - Signs and symptoms of TB
 - Possibility of reinfection in persons with a positive test
 - Potential for occupational exposure to persons with infectious TB
 - Prevalence of TB in the community and SIU
 - Isolation procedures at SIU
 - Situations with increased risk of exposure to TB
 - Infection control principles/practices that reduce the risk of transmission of TB
 - Hierarchy of TB infection control measures
 - Purpose of TB testing
 - Significance of a positive TB test
 - Importance of participating in TB testing
 - Preventive therapy for latent TB infection
 - Indications, use, effectiveness, and potential adverse effects of preventive medications
 - Responsibility of HCW to report signs/symptoms of TB or active TB
 - Drug therapy for active TB
 - Responsibility of SIU to maintain confidentiality
 - Heightened risk posed by TB to persons with HIV infection or other immunocompromising conditions

POLICY TB-106.00

COORDINATION WITH PUBLIC HEALTH DEPARTMENT

1. Inform the county health department where the individual resides as soon as a patient or HCW is known or suspected to have TB.
2. The county health department is responsible for appropriate community contact investigation.
3. Forward results of the following to the appropriate county health department as soon as they become available in accordance with state and local laws and regulations.
 - all positive tests
 - all AFB positive sputum smears
 - all cultures that are positive for M. tuberculosis
 - drug susceptibility results on M. tuberculosis isolates
4. Clinics (in Springfield and satellites) notify the Employee Health Nurse of known or suspected TB patients.

POLICY TB-107.00

RECORDKEEPING

Employee Health - SIU will establish and maintain an accurate record for each HCW with occupational exposure to tuberculosis. This record will include the name and department of the HCW, information pertaining to medical students, and the dates and results of TB testing. For HCWs who have had a positive TB test, the record also includes copies of:

- a. examinations, medical testing, chest x-rays, and follow-up procedures
- b. professional written opinions resulting from medical evaluations

TB test results, medical evaluations, and treatment records are kept for the term of employment plus 30 years.

Confidentiality - Except as required by this section or as required by law, SIU ensures health records are kept confidential and not disclosed or reported to any person within or outside the workplace without the HCW's express written consent.

Training Records - will include the following information:

- a. date of training session
- b. contents or a summary of the session
- c. names and qualifications of person(s) conducting the session
- d. names and departments of all persons attending the session

Training records are maintained for three years from the date of the training session.

Availability - SIU will ensure that all records required by this section are available upon request to the Department of Labor, the subject HCW, or anyone having written consent of the subject HCW.

Appendix A Tuberculosis (TB) Risk Assessment Worksheet

This model worksheet should be considered for use in performing TB risk assessments for health care facilities and nontraditional facility-based settings. Facilities with more than one type of setting will need to apply this table to each setting.

Scoring .Y or Y = Yes	X or N = No	NA = Not Applicable
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1. Incidence of TB

What is the incidence of TB in your community (county or region served by the health-care setting), and how does it compare with the state and national average? What is the incidence of TB in your facility and specific settings and how do those rates compare? (Incidence is the number of TB cases in your community the previous year. A rate of TB cases per 100,000 persons should be obtained for comparison.)* This information can be obtained from the state or local health department.	Community rate _____ State rate _____ National rate _____ Facility rate _____ Department 1 rate _____ Department 2 rate _____ Department 3 rate _____
Are patients with suspected or confirmed TB disease encountered in your setting (inpatient and outpatient)?	Yes No
If yes, how many patients with suspected and confirmed TB disease are treated in your health-care setting in 1 year (inpatient and outpatient)? Review laboratory data, infection-control records, and databases containing discharge diagnoses.	Year No. patients Suspected Confirmed 1 year ago 2 years ago
If no, does your health-care setting have a plan for the triage of patients with suspected or confirmed TB disease?	Yes No
Currently, does your health-care setting have a cluster of persons with confirmed TB disease that might be a result of ongoing transmission of <i>Mycobacterium tuberculosis</i> within your setting (inpatient and outpatient)?	Yes No

2. Risk Classification

Inpatient settings	
How many inpatient beds are in your inpatient setting?	
How many patients with TB disease are encountered in the inpatient setting in 1 year? Review laboratory data, infection-control records, and databases containing discharge diagnoses.	Previous year _____ 5 years ago _____
Depending on the number of beds and TB patients encountered in 1 year, what is the risk classification for your inpatient setting? (See Appendix C.)	<input type="radio"/> Low risk <input type="radio"/> Medium risk <input type="radio"/> Potential ongoing transmission
Does your health-care setting have a plan for the triage of patients with suspected or confirmed TB disease?	Yes No
Outpatient settings	
How many TB patients are evaluated at your outpatient setting in 1 year? Review laboratory data, infection-control records, and databases containing discharge diagnoses.	Previous year _____ 5 years ago _____
Is your health-care setting a TB clinic? (If yes, a classification of at least medium risk is recommended.)	Yes No
Does evidence exist that a high incidence of TB disease has been observed in the community that the health-care setting serves?	Yes No
Does evidence exist of person-to-person transmission of <i>M. tuberculosis</i> in the health-care setting? (Use information from case reports. Determine if any tuberculin skin test [TST] or blood assay for <i>M. tuberculosis</i> [BAMT] conversions have occurred among health-care workers [HCWs]).	Yes No
Does evidence exist that ongoing or unresolved health-care-associated	Yes No

transmission has occurred in the health-care setting (based on case reports)?	
Is there a high incidence of immunocompromised patients or HCWs in the health-care setting?	Yes No
Have patients with drug-resistant TB disease been encountered in your health-care setting within the previous 5 years?	Yes No Year _____
When was the first time a risk classification was done for your health-care setting?	_____
Considering the items above, would your health-care setting need a higher risk classification?	Yes No
Depending on the number of TB patients evaluated in 1 year, what is the risk classification for your outpatient setting? (See Appendix C)	<input type="radio"/> Low risk <input type="radio"/> Medium risk <input type="radio"/> Potential ongoing transmission
Does your health-care setting have a plan for the triage of patients with suspected or confirmed TB disease?	Yes No
Nontraditional facility-based settings	
How many TB patients are encountered at your setting in 1 year?	Previous year _____ 5 years ago _____
Does evidence exist that a high incidence of TB disease has been observed in the community that the setting serves?	Yes No
Does evidence exist of person-to-person transmission of <i>M. tuberculosis</i> in the setting?	Yes No
Have any recent TST or BAMT conversions occurred among staff or clients?	Yes No
Is there a high incidence of immunocompromised patients or HCWs in the setting?	Yes No
Have patients with drug-resistant TB disease been encountered in your health-care setting within the previous 5 years?	Yes No Year _____
When was the first time a risk classification was done for your setting?	_____
Considering the items above, would your setting require a higher risk classification?	Yes No
Does your setting have a plan for the triage of patients with suspected or confirmed TB disease?	Yes No
Depending on the number of patients with TB disease who are encountered in a nontraditional setting in 1 year, what is the risk classification for your setting? (See Appendix C)	<input type="radio"/> Low risk <input type="radio"/> Medium risk <input type="radio"/> Potential ongoing transmission

3. Screening of HCWs for *M. tuberculosis* Infection

Does the health-care setting have a TB screening program for HCWs?	Yes No
If yes, which HCWs are included in the TB screening program? (Check all that apply.) <input type="checkbox"/> Physicians <input type="checkbox"/> Mid-level practitioners (nurse practitioners [NP] and physician's assistants [PA]) <input type="checkbox"/> Nurses <input type="checkbox"/> Administrators <input type="checkbox"/> Laboratory workers <input type="checkbox"/> Respiratory therapists	<input type="checkbox"/> Janitorial staff <input type="checkbox"/> Maintenance or engineering staff <input type="checkbox"/> Transportation staff <input type="checkbox"/> Dietary staff <input type="checkbox"/> Receptionists <input type="checkbox"/> Trainees and students <input type="checkbox"/> Volunteers <input type="checkbox"/> Others _____

<input type="checkbox"/> Physical therapists <input type="checkbox"/> Contract staff <input type="checkbox"/> Construction or renovation workers <input type="checkbox"/> Service workers	
Is baseline skin testing performed with two-step TST for HCWs?	Yes No
Is baseline testing performed with QFT or other BAMT for HCWs?	Yes No
How frequently are HCWs tested for <i>M. tuberculosis</i> infection?	
Are the <i>M. tuberculosis</i> infection test records maintained for HCWs?	Yes No
Where are the <i>M. tuberculosis</i> infection test records for HCWs maintained? Who maintains the records?	
If the setting has a serial TB screening program for HCWs to test for <i>M. tuberculosis</i> infection, what are the conversion rates for the previous years?† 1 year ago _____ 4 years ago _____ _____ 2 years ago _____ _____ 5 years ago _____	
Has the test conversion rate for <i>M. tuberculosis</i> infection been increasing or decreasing, or has it remained the same over the previous 5 years? (check one)	<input type="checkbox"/> Increasing <input type="checkbox"/> Decreasing <input type="checkbox"/> No change
Do any areas of the health-care setting (e.g., waiting rooms or clinics) or any group of HCWs (e.g., lab workers, emergency department staff, respiratory therapists, and HCWs who attend bronchoscopies) have a test conversion rate for <i>M. tuberculosis</i> infection that exceeds the health-care setting's annual average?	Yes No If yes, list _____ _____ _____
For HCWs who have positive test results for <i>M. tuberculosis</i> infection and who leave employment at the health setting, are efforts made to communicate test results and recommend follow-up of latent TB infection (LTBI) treatment with the local health department or their primary physician?	Yes No Not applicable

4. TB Infection-Control Program

Does the health-care setting have a written TB infection-control plan?	Yes No
Who is responsible for the infection-control program?	
When was the TB infection-control plan first written?	
When was the TB infection-control plan last reviewed or updated?	
Does the written infection-control plan need to be updated based on the timing of the previous update (i.e., >1 year, changing TB epidemiology of the community or setting, the occurrence of a TB outbreak, change in state or local TB policy, or other factors related to a change in risk for transmission of <i>M. tuberculosis</i>)?	Yes No
Does the health-care setting have an infection-control committee (or another committee with infection control responsibilities)?	Yes No
If yes, which groups are represented on the infection-control committee? (Check all that apply.)	
<input type="checkbox"/> Physicians <input type="checkbox"/> Nurses <input type="checkbox"/> Epidemiologists <input type="checkbox"/> Engineers <input type="checkbox"/> Pharmacists	<input type="checkbox"/> Laboratory personnel <input type="checkbox"/> Health and safety staff <input type="checkbox"/> Administrator <input type="checkbox"/> Risk assessment <input type="checkbox"/> Quality control (QC) <input type="checkbox"/> Others (specify)

<u>If no, what committee is responsible for infection control in the setting?</u>	
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5. Implementation of TB Infection-Control Plan Based on Review by Infection-Control Committee

Has a person been designated to be responsible for implementing an infection-control plan in your health-care setting? If yes, list the name: _____	Yes No
Based on a review of the medical records, what is the average number of days for the following:	
• Presentation of patient until collection of specimen _____	
• Specimen collection until receipt by laboratory _____	
• Receipt of specimen by laboratory until smear results are provided to health-care provider _____	
• Diagnosis until initiation of standard antituberculosis treatment _____	
• Receipt of specimen by laboratory until culture results are provided to health-care provider _____	
• Receipt of specimen by laboratory until drug-susceptibility results are provided to health-care provider _____	
• Receipt of drug-susceptibility results until adjustment of antituberculosis treatment, if indicated _____	
• Admission of patient to hospital until placement in airborne infection isolation (AII) _____	
Through what means (e.g., review of TST or BAMT conversion rates, patient medical records, and time analysis) are lapses in infection control recognized?	
What mechanisms are in place to correct lapses in infection control?	
Based on measurement in routine QC exercises, is the infection-control plan being properly implemented?	Yes No
Is ongoing training and education regarding TB infection-control practices provided for HCWs?	Yes No

6. Laboratory Processing of TB-Related Specimens, Tests, and Results Based on Laboratory Review

Which of the following tests are either conducted in-house at your health-care setting's laboratory or sent out to a reference laboratory?	In-house	Sent out
Acid-fast bacilli (AFB) smears		
Culture using liquid media (e.g., Bactec and MB-BacT)		
Culture using solid media		
Drug-susceptibility testing		
Nucleic acid amplification (NAA) testing		
What is the usual transport time for specimens to reach the laboratory for the following tests?		
AFB smears _____		
Culture using liquid media (e.g., Bactec, MB-BacT) _____		Culture using solid media _____
Drug-susceptibility testing _____		
Other (specify) _____		
NAA testing _____		
Does the laboratory at your health-care setting or the reference laboratory used by your health-care setting report AFB smear results for all patients within 24 hours of receipt of specimen? What is the procedure for weekends?	Yes No	_____ _____

7. Environmental Controls

<u>Which environmental controls are in place in your health-care setting? (Check all that apply and describe)</u>	
<u>Environmental control</u>	<u>Description</u>
<input type="checkbox"/> All rooms	

<input type="checkbox"/> Local exhaust ventilation (enclosing devices and exterior devices) _____ <input type="checkbox"/> General ventilation (e.g., single-pass system, recirculation system.) _____ <input type="checkbox"/> Air-cleaning methods (e.g., high-efficiency particulate air [HEPA] filtration and ultraviolet germicidal irradiation [UVGI])																
What are the actual air changes per hour (ACH) and design for various rooms in the setting? <table border="1"> <thead> <tr> <th><u>Room</u></th> <th><u>ACH</u></th> <th><u>Design</u></th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>		<u>Room</u>	<u>ACH</u>	<u>Design</u>												
<u>Room</u>	<u>ACH</u>	<u>Design</u>														
Which of the following local exterior or enclosing devices such as exhaust ventilation devices are used in your health-care setting? (Check all that apply) <input type="checkbox"/> Laboratory hoods <input type="checkbox"/> Booths for sputum induction <input type="checkbox"/> Tents or hoods for enclosing patient or procedure																
What general ventilation systems are used in your health-care setting? (Check all that apply) <input type="checkbox"/> Single-pass system <input type="checkbox"/> Variable air volume (VAV) <input type="checkbox"/> Constant air volume (CAV) <input type="checkbox"/> Recirculation system <input type="checkbox"/> Other _____																
What air-cleaning methods are used in your health-care setting? (Check all that apply) <u>HEPA filtration</u> <input type="checkbox"/> Fixed room-air recirculation systems <input type="checkbox"/> Portable room-air recirculation systems <u>UVGI</u> <input type="checkbox"/> Duct irradiation <input type="checkbox"/> Upper-air irradiation <input type="checkbox"/> Portable room-air cleaners																
How many AII rooms are in the health-care setting?																
What ventilation methods are used for AII rooms? (Check all that apply) <u>Primary (general ventilation):</u> <input type="checkbox"/> Single-pass heating, ventilating, and air conditioning (HVAC) <input type="checkbox"/> Recirculating HVAC systems <u>Secondary (methods to increase equivalent ACH):</u> <input type="checkbox"/> Fixed room recirculating units <input type="checkbox"/> HEPA filtration <input type="checkbox"/> UVGI <input type="checkbox"/> Other (specify) _____																
Does your health-care setting employ, have access to, or collaborate with an environmental engineer (e.g., professional engineer) or other professional with appropriate expertise (e.g., certified industrial hygienist) for consultation on design specifications, installation, maintenance, and evaluation of environmental controls?	Yes No															
Are environmental controls regularly checked and maintained with results recorded in maintenance logs?	Yes No															
Are AII rooms checked daily for negative pressure when in use?	Yes No															
Is the directional airflow in AII rooms checked daily when in use with smoke tubes or visual checks?	Yes No															

Are these results readily available?	Yes No
What procedures are in place if the AII room pressure is not negative?	_____
Do AII rooms meet the recommended pressure differential of 0.01-inch water column negative to surrounding structures?	Yes No

8. Respiratory-Protection Program

Does your health-care setting have a written respiratory-protection program?	Yes No
Which HCWs are included in the respiratory protection program? (Check all that apply)	<input type="checkbox"/> Janitorial staff <input type="checkbox"/> Maintenance or engineering staff <input type="checkbox"/> Transportation staff <input type="checkbox"/> Dietary staff <input type="checkbox"/> Students <input type="checkbox"/> Others (specify) _____ _____ _____ _____
<input type="checkbox"/> Physicians <input type="checkbox"/> Mid-level practitioners (NPs and PAs) <input type="checkbox"/> Nurses <input type="checkbox"/> Administrators <input type="checkbox"/> Laboratory personnel <input type="checkbox"/> Contract staff <input type="checkbox"/> Construction or renovation staff <input type="checkbox"/> Service personnel	
Are respirators used in this setting for HCWs working with TB patients? If yes, include manufacturer, model, and specific application (e.g., ABC model 1234 for bronchoscopy and DEF model 5678 for routine contact with infectious TB patients).	
<u>Manufacturer</u> <u>Model</u> <u>Specific application</u> _____ _____ _____ _____	
Is annual respiratory-protection training for HCWs performed by a person with advanced training in respiratory protection?	Yes No
Does your health-care setting provide initial fit testing for HCWs? If yes, when is it conducted? _____	Yes No
Does your health-care setting provide periodic fit testing for HCWs? If yes, when and how frequently is it conducted? _____	Yes No
What method of fit testing is used? Describe. _____ _____	
Is qualitative fit testing used?	Yes No
Is quantitative fit testing used?	Yes No

9. Reassessment of TB risk

How frequently is the TB risk assessment conducted or updated in the health-care setting?	
When was the last TB risk assessment conducted?	
What problems were identified during the previous TB risk assessment?	
1) _____	
2) _____	
3) _____	

4) _____
5) _____
What actions were taken to address the problems identified during the previous TB risk assessment?
1) _____
2) _____
3) _____
4) _____
5) _____
Did the risk classification need to be revised as a result of the last TB risk assessment?
Yes No

* If the population served by the health-care facility is not representative of the community in which the facility is located, an alternate comparison population might be appropriate.

† Test conversion rate is calculated by dividing the number of conversions among HCWs by the number of HCWs who were tested and had prior negative results during a certain period (see Supplement, Surveillance and Detection of *M. tuberculosis* infections in Health-Care Settings).

Appendix B TB Screening Questionnaire

ANNUAL TB SCREENING QUESTIONNAIRE

(For Documented PPD/TB Positive Employees/Med Students)

NAME _____ DATE _____

[] SIU EMPLOYEE DEPARTMENT _____
[] SIU MEDICAL STUDENT

DATE OF BIRTH _____ WORK SITE _____

PLEASE ANSWER THE FOLLOWING QUESTIONS:

HAVE YOU EXPERIENCED ANY OF THE FOLLOWING SYMPTOMS RECENTLY?

YES NO

- [] [] 1. PRODUCTIVE COUGH OF MORE THAN TWO WEEKS IN DURATION.
- [] [] 2. BLOOD PRESENT IN SPUTUM.
- [] [] 3. CHRONIC FEELING OF FATIGUE FOR MORE THAN TWO WEEKS IN DURATION.
- [] [] 4. LOW-GRADE FEVER OF MORE THAN ONE WEEK IN DURATION.
- [] [] 5. NIGHT SWEATS.
- [] [] 6. UNEXPLAINED WEIGHT LOSS OF FIVE POUNDS OR MORE.
- [] [] 7. LOSS OF APPETITE.
- [] [] 8. SHORTNESS OF BREATH.
- [] [] 9. CHEST PAIN.

I HEREBY ACKNOWLEDGE THAT MY TUBERCULIN SKIN TEST HAS BEEN POSITIVE. FURTHER, I TAKE RESPONSIBILITY FOR IMMEDIATELY REPORTING ANY OF THESE SIGNS AND SYMPTOMS OF TUBERCULOSIS LISTED ABOVE, SHOULD THEY APPEAR IN THE FUTURE, TO THE EMPLOYEE HEALTH NURSE.

I HAVE ALSO RECEIVED INFORMATION ABOUT THE CAUSES, TREATMENT AND PREVENTION OF TUBERCULOSIS.

SIGNATURE

DATE

Appendix C Factors Affecting Treatment Decisions

BOX 5. Factors affecting treatment decisions during the medical and diagnostic evaluation, by tuberculin skin test (TST) result

TST result ≥ 5 mm is positive	TST result ≥ 10 mm is positive	TST result ≥ 15 mm is positive*
<ul style="list-style-type: none"> • Persons infected with HIV[†] • Recent contacts of a person with tuberculosis (TB) disease • Persons with fibrotic changes on chest radiograph consistent with previous TB disease • Organ transplant recipients and other immunosuppressed persons (e.g., persons receiving ≥ 15 mg/day of prednisone for ≥ 1 month)[§] • TB suspects[¶] 	<ul style="list-style-type: none"> • Recent immigrants (i.e., within the previous 5 years) from countries with a high incidence of TB disease • Persons who inject illicit drugs • Residents and employees (including health-care workers [HCWs])** of the following congregate settings <ul style="list-style-type: none"> — hospitals and other health-care facilities — long-term-care facilities (e.g., hospices and skilled nursing facilities) — residential facilities for patients with AIDS^{††} or other immunocompromising conditions — correctional facilities — homeless shelters • Mycobacteriology laboratory personnel • Persons with any of the following clinical conditions or immunocompromising conditions that place them at high risk for TB disease <ul style="list-style-type: none"> — diabetes mellitus — silicosis — chronic renal failure — certain hematologic disorders (e.g., leukemias and lymphomas) — other specific malignancies (e.g., carcinoma of the head, neck, or lung) — unexplained weight loss of $\geq 10\%$ of ideal body weight — gastrectomy — jejunioileal bypass • Persons living in areas with high incidence of TB disease • Children aged <4 years • Infants, children, and adolescents exposed to adults at high risk for developing TB disease • Locally identified groups at high risk 	<ul style="list-style-type: none"> • Persons with no known risk factors for TB disease • HCWs who are otherwise at low risk for TB disease and who received baseline testing at the beginning of employment as part of a TB screening program**

* TST results ≥ 15 mm is positive in anyone. These persons should receive a symptom screen and do not need be tested again. They should be evaluated for TB disease, and if disease is excluded, they should be offered treatment for latent TB infection (LTBI) if they have no contraindication to treatment.

[†] Human immunodeficiency virus.

[§] The risk for TB disease in persons treated with corticosteroids increases with higher doses and longer duration of corticosteroid use.

[¶] Persons with suspected TB disease can be treated based on the medical and diagnostic evaluation, regardless of the TST results.

** For HCWs who are otherwise at low risk for LTBI and progression to TB disease if infected and who received baseline testing at the beginning of employment as part of a TB infection-control screening program, a TST result of ≥ 15 mm (instead of ≥ 10 mm) is considered to be positive. Although a result of ≥ 10 mm on baseline or follow-up testing is considered a positive result for HCWs for the purposes of referral for medical and diagnostic evaluation, if the TST result is 10–14 mm on baseline or follow-up testing, the referring clinician might not recommend treatment of LTBI. SOURCE: Marsh BJ, San Vicente J, vonReyn F. Utility of dual skin tests to evaluate tuberculin skin test reactions of 10 to 14 mm in health-care workers. *Infect Control Hosp Epidemiol* 2003;24:821–4.

^{††} Acquired immunodeficiency syndrome.