TB Risk Assessment

Every health-care setting should conduct initial and ongoing evaluations of the risk for transmission of *M. tuberculosis*, regardless of whether or not patients with suspected or confirmed TB disease are expected to be encountered in the setting. The TB risk assessment determines the types of administrative, environmental, and respiratory-protection controls needed for a setting and serves as an ongoing evaluation tool of the quality of TB infection control and for the identification of needed improvements in infection-control measures. Part of the risk assessment is similar to a program review that is conducted by the local TB-control program (42). The TB Risk Assessment Worksheet (<u>Appendix B</u>) can be used as a guide for conducting a risk assessment. This worksheet frequently does not specify values for acceptable performance indicators because of the lack of scientific data.

TB Risk Assessment for Settings in Which Patients with Suspected or Confirmed TB Disease Are Expected To Be Encountered

The initial and ongoing risk assessment for these settings should consist of the following steps:

- 1. Review the community profile of TB disease in collaboration with the state or local health department.
- 2. Consult the local or state TB-control program to obtain epidemiologic surveillance data necessary to conduct a TB risk assessment for the health-care setting.
- 3. Review the number of patients with suspected or confirmed TB disease who have been encountered in the setting during at least the previous 5 years.
- 4. Determine if persons with unrecognized TB disease have been admitted to or were encountered in the setting during the previous 5 years.
- 5. Determine which HCWs need to be included in a TB screening program and the frequency of screening (based on risk classification) (<u>Appendix C</u>).
- 6. Ensure the prompt recognition and evaluation of suspected episodes of health-care-associated transmission of *M. tuberculosis*.
- 7. Identify areas in the setting with an increased risk for health-care-associated transmission of *M. tuberculosis*, and target them for improved TB infection controls.
- 8. Assess the number of AII rooms needed for the setting. The risk classification for the setting should help to make this determination, depending on the number of TB patients examined. At least one AII room is needed for settings in which TB patients stay while they are being treated, and additional AII rooms might be needed, depending on the magnitude of patient-days of cases of suspected or confirmed TB disease. Additional AII rooms might be considered if options are limited for transferring patients with suspected or confirmed TB disease to other settings with AII rooms.
- 9. Determine the types of environmental controls needed other than All rooms (see TB Airborne Precautions).
- 10. Determine which HCWs need to be included in the respiratory-protection program.
- 11. Conduct periodic reassessments (annually, if possible) to ensure
 - proper implementation of the TB infection-control plan,
 - prompt detection and evaluation of suspected TB cases,
 - prompt initiation of airborne precautions of suspected infectious TB cases,
 - recommended medical management of patients with suspected or confirmed TB disease (31),
 - functional environmental controls,
 - implementation of the respiratory-protection program, and
 - ongoing HCW training and education regarding TB.
- 12. Recognize and correct lapses in infection control.

TB Risk Assessment for Settings in Which Patients with Suspected or Confirmed TB Disease Are Not Expected To Be Encountered

The initial and ongoing risk assessment for these settings should consist of the following steps:

- 1. Review the community profile of TB disease in collaboration with the local or state health department.
- 2. Consult the local or state TB-control program to obtain epidemiologic surveillance data necessary to conduct a TB risk assessment for the health-care setting.

- 3. Determine if persons with unrecognized TB disease were encountered in the setting during the previous 5 years.
- 4. Determine if any HCWs need to be included in the TB screening program.
- 5. Determine the types of environmental controls that are currently in place, and determine if any are needed in the setting (Appendices A and D).
- 6. Document procedures that ensure the prompt recognition and evaluation of suspected episodes of health-careassociated transmission of *M. tuberculosis*.
- 7. Conduct periodic reassessments (annually, if possible) to ensure 1) proper implementation of the TB infection-control plan; 2) prompt detection and evaluation of suspected TB cases; 3) prompt initiation of airborne precautions of suspected infectious TB cases before transfer; 4) prompt transfer of suspected infectious TB cases; 5) proper functioning of environmental controls, as applicable; and 6) ongoing TB training and education for HCWs.
- 8. Recognize and correct lapses in infection control.

Use of Risk Classification to Determine Need for TB Screening and Frequency of Screening HCWs

Risk classification should be used as part of the risk assessment to determine the need for a TB screening program for HCWs and the frequency of screening (<u>Appendix C</u>). A risk classification usually should be determined for the entire setting. However, in certain settings (e.g., health-care organizations that encompass multiple sites or types of services), specific areas defined by geography, functional units, patient population, job type, or location within the setting might have separate risk classifications. Examples of assigning risk classifications have been provided (see Risk Classification Examples).

TB Screening Risk Classifications

The three TB screening risk classifications are low risk, medium risk, and potential ongoing transmission. The classification of low risk should be applied to settings in which persons with TB disease are not expected to be encountered, and, therefore, exposure to *M. tuberculosis* is unlikely. This classification should also be applied to HCWs who will never be exposed to persons with TB disease or to clinical specimens that might contain *M. tuberculosis*.

The classification of medium risk should be applied to settings in which the risk assessment has determined that HCWs will or will possibly be exposed to persons with TB disease or to clinical specimens that might contain *M. tuberculosis*.

The classification of potential ongoing transmission should be temporarily applied to any setting (or group of HCWs) if evidence suggestive of person-to-person (e.g., patient-to-patient, patient-to-HCW, HCW-to-patient, or HCW-to-HCW) transmission of *M. tuberculosis* has occurred in the setting during the preceding year. Evidence of person-to-person transmission of *M. tuberculosis* includes 1) clusters of TST or BAMT conversions, 2) HCW with confirmed TB disease, 3) increased rates of TST or BAMT conversions, 4) unrecognized TB disease in patients or HCWs, or 5) recognition of an identical strain of *M. tuberculosis* in patients or HCWs with TB disease identified by deoxyribonucleic acid (DNA) fingerprinting.

If uncertainty exists regarding whether to classify a setting as low risk or medium risk, the setting typically should be classified as medium risk.

TB Screening Procedures for Settings (or HCWs) Classified as Low Risk

- All HCWs should receive baseline TB screening upon hire, using two-step TST or a single BAMT to test for infection with *M. tuberculosis*.
- After baseline testing for infection with *M. tuberculosis*, additional TB screening is not necessary unless an exposure to *M. tuberculosis* occurs.
- HCWs with a baseline positive or newly positive test result for *M. tuberculosis* infection (i.e., TST or BAMT) or documentation of treatment for LTBI or TB disease should receive one chest radiograph result to exclude TB disease (or an interpretable copy within a reasonable time frame, such as 6 months). Repeat radiographs are not needed unless symptoms or signs of TB disease develop or unless recommended by a clinician (<u>39</u>,116).

TB Screening Procedures for Settings (or HCWs) Classified as Medium Risk

• All HCWs should receive baseline TB screening upon hire, using two-step TST or a single BAMT to test for infection with *M. tuberculosis*.

- After baseline testing for infection with *M. tuberculosis*, HCWs should receive TB screening annually (i.e., symptom screen for all HCWs and testing for infection with *M. tuberculosis* for HCWs with baseline negative test results).
- HCWs with a baseline positive or newly positive test result for *M. tuberculosis* infection or documentation of
 previous treatment for LTBI or TB disease should receive one chest radiograph result to exclude TB disease.
 Instead of participating in serial testing, HCWs should receive a symptom screen annually. This screen should be
 accomplished by educating the HCW about symptoms of TB disease and instructing the HCW to report any such
 symptoms immediately to the occupational health unit. Treatment for LTBI should be considered in accordance
 with CDC guidelines (<u>39</u>).

TB Screening Procedures for Settings (or HCWs) Classified as Potential Ongoing Transmission

- Testing for infection with *M. tuberculosis* might need to be performed every 8–10 weeks until lapses in infection control have been corrected, and no additional evidence of ongoing transmission is apparent.
- The classification of potential ongoing transmission should be used as a temporary classification only. It warrants immediate investigation and corrective steps. After a determination that ongoing transmission has ceased, the setting should be reclassified as medium risk. Maintaining the classification of medium risk for at least 1 year is recommended.

Settings Adopting BAMT for Use in TB Screening

Settings that use TST as part of TB screening and want to adopt BAMT can do so directly (without any overlapping TST) or in conjunction with a period of evaluation (e.g., 1 or 2 years) during which time both TST and BAMT are used. Baseline testing for BAMT would be established as a single step test. As with the TST, BAMT results should be recorded in detail. The details should include date of blood draw, result in specific units, and the laboratory interpretation (positive, negative, or indeterminate—and the concentration of cytokine measured, for example, interferon-gamma [IFN- γ]).

Long-Term–Care Facilities (LTCFs)

TB poses a health risk to patients, HCWs, visitors, and volunteers in LTCFs (e.g., hospices and skilled nursing facilities) (215,216). Transmission of *M. tuberculosis* has occurred in LTCF (217–220), and pulmonary TB disease has been documented in HIV-infected patients and other immunocompromised persons residing in hospices (218,221,222). New employees and residents to these settings should receive a symptom screen and possibly a test for *M. tuberculosis* infection (see TB Risk Assessment Worksheet).

LTCFs must have adequate administrative and environmental controls, including airborne precautions capabilities and a respiratory-protection program, if they accept patients with suspected or confirmed infectious TB disease. The setting should have 1) a written protocol for the early identification of patients with symptoms or signs of TB disease and 2) procedures for referring these patients to a setting where they can be evaluated and managed. Patients with suspected or confirmed infectious TB disease should not stay in LTCFs unless adequate administrative and environmental controls and a respiratory-protection program are in place. Persons with TB disease who are determined to be noninfectious can remain in the LTCF and do not need to be in an AII room.

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

	Scoring: ✓ or Y = Yes X or N = No NA = Not Applicable				
1. Incid	ence of TB				
a. Wr set	. 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?		Rate Community		
b. Wh cor A r car	hat is the incidence of TB in your facility and specific settings, and how do those rates mpare? (Incidence is the number of TB cases in your community during the previous year, ate of TB cases per 100,000 persons should be obtained for comparison.)* This information in be obtained from the state or local health department.	State National Facility Department 1 Department 2 Department 3			
 c. Are out	patients with suspected or confirmed TB disease encountered in your setting (inpatient and patient)?				
1)	If yes, how many are treated in your health-care setting in 1 year? (Review laboratory data, infection-control records, and databases containing discharge diagnoses for this information.)	Year Su 1 year ago 2 years ago 5 years ago	No. pat	Confirmed	
2)	If no, does your health-care setting have a plan for the triage of patients with suspected or confirmed TB disease?				
d. Cu tha	rrently, does your health-care setting have a cluster of persons with confirmed TB disease t might be a result of ongoing transmission of Mycobacterium tuberculosis?				
2. Risk	Classification				
a. Inp	atient settings				
1)	How many inpatient beds are in your inpatient setting?	Quantity			
2)	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			
3)	Depending on the number of beds and TB patients encountered in 1 year, what is the risk classification for your inpatient setting?	Low risk Medium ris Potential o	sk ongoing tra	nsmission	
 4)	Does your health-care setting have a plan for triaging patients with suspected or confirmed TB disease?				
b. Ou	tpatient settings				
1)	How many TB patients are evaluated at your outpatient setting in 1 year? (Review laboratory data, infection-control records, and databases containing discharge diagnoses for this information.)	Previous year_ 5 years ago			
 2)	Is your health-care setting a TB clinic? (If yes, a classification of at least medium risk is recommended.)				
 3)	Does evidence exist that a high incidence of TB disease has been observed in the community that the health-care setting serves?				
 4)	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 TST or blood assay for <i>M. tuberculosis</i> [BAMT] conversions have occurred among health-care workers [HCWs].)				
 5)	Does evidence exist that ongoing or unresolved health-care-associated transmission has occurred in the health-care setting (based on case reports)?				
 6)	Does a high incidence of immunocompromised patients or HCWs in the health-care setting exist?				
 7)	Have patients with drug-resistant TB disease been encountered in your health-care setting within the previous 5 years?	Year encounter	ed		
8)	When was the first time a risk classification was done for your health-care setting?	Date of classific	cation		
 9)	Considering the items above, would your health-care setting need a higher risk classification?				

 10) Depending on the number of TB patients evaluated in 1 year, what is the risk classification for your outpatient setting (Appendix C)?	Low risk Medium risk		
 Does your health-care setting have a plan for the triage of patients with suspected or confirmed TB disease? 	Potential ongoing transmission		
c. Nontraditional facility-based settings			
 How many TB patients are encountered at your setting in 1 year? 	Previous year 5 years ago		
 2) Does evidence exist that a high incidence of TB disease has been observed in the community that the setting serves?			
 3) Does evidence exist of person-to-person transmission of M. tuberculosis in the setting?			
 4) Have any recent TST or BAMT conversions occurred among staff or clients?			
 5) Is there a high incidence of immunocompromised patients or HCWs in the setting?			
 6) Have patients with drug-resistant TB disease been encountered in your health-care setting within the previous 5 years?	Year encountered		
7) When was the first time a risk classification was done for your setting?			
 8) Considering the items above, would your setting require a higher risk classification?	Date of classification		
 9) Does your setting have a plan for the triage of patients with suspected or confirmed TB disease?			
 10) Depending on the number of patients with TB disease who are encountered in a nontradition setting in 1 year, what is the risk classification for your setting (Appendix C)?	al Low risk Medium risk		
3. Screening of HCWs for M. tuberculosis Infection	Potential ongoing transmission		
a. Does the health-care setting have a TB screening program for HCWs?			
If yes, which HCWs are included in the TB screening program? (check all that apply)			
Physicians			
Mid-level practitioners Service workers (nurse practitioners [NP] and Janitorial staff physician's assistants [PA]) Maintenance or engineering staff Nurses Transportation staff Administrators Dietary staff Laboratory workers Receptionists Physical therapists Trainees and students Physical therapists Volunteers Contract staff Others	-		
 b. Is baseline skin testing performed with two-step TST for HCWs?			
 c. Is baseline testing performed with QuantiFERON®-TB or other BAMT for HCWs?			
d. How frequently are HCWs tested for M. tuberculosis infection?	Frequency		
 e. Are M. tuberculosis infection test records maintained for HCWs?	Fiequency		
 f. Where are test records for HCWs maintained?	Location		
 g. Who maintains the records?	Location		
h. If the setting has a serial TB screening program for HCWs to test for M. tuberculosis infection,	Name		
what are the conversion rates for the previous years?1	1 year ago		
	3 years ago		
	4 years ago		
i. Has the test conversion rate for M. tuberculosis infection been increasing or decreasing, or has	5 years ago		
it remained the same over the previous 5 years? (check one)	Increasing		

- Decreasing No change in previous 5 years

_____f. Is ongoing training and education regarding TB infection-control practices provided for HCWs?

	j.	Do any areas of the health-care setting (e.g., waiting rooms or clinics) or any group of HCWs	Rate	
		the health-care setting's annual average?	If yes, list.	
	k	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 treatment with the local health department or their primary physician?	Not applicable	
	4.T	B Infection-Control Program		
	8	Does the health-care setting have a written TB infection-control plan?		
	b	Who is responsible for the infection-control program?	Name	
	C	When was the TB infection-control plan first written?	Date	
	d	When was the TB infection-control plan last reviewed or updated?	Date	
	e	e. 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>)?		
	f.	Does the health-care setting have an infection-control committee (or another committee with infection-control responsibilities)?		
		1) If yes, which groups are represented on the infection-control committee? (check all that apply)		
		Physicians Health and safety staff Nurses Administrator Epidemiologists Risk assessment Engineers Quality control Pharmacists Others (specify) Laboratory personnel		
		2) If no, what committee is responsible for infection control in the setting?	Committee	
	5. Ir	plementation of TB Infection-Control Plan Based on Review by Infection-Control Committee		
	а	Has a person been designated to be responsible for implementing an infection-control plan in		
		your health-care setting? If yes, list the name.	Name	
	D	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 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). 		
	c	Through what means (e.g., review of TST or BAMT conversion rates, patient medical records, and time analysis) are lapses in infection control recognized?	Means	
	đ	What mechanisms are in place to correct lapses in infection control?	Mechanisms	
	e	Based on measurement in routine QC exercises, is the infection-control plan being properly implemented?		

6. Laboratory Processing of TB-Related Specimens, Tests, and Results Based on Laboratory Review a. Which of the following tests are either conducted in-house at your health-care setting's laboratory or sent out to a reference laboratory? (check all that apply) 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 testing b. 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 Nucleic acid amplification testing Other (specify) c. Does the laboratory at your health-care setting or the reference laboratory used by your healthcare setting report AFB smear results for all patients within 24 hours of receipt of specimen? What is the procedure for weekends? 7. Environmental Controls a. Which environmental controls are in place in your health-care setting? (check all that apply and describe) Environmental control Description All rooms Local exhaust ventilation (enclosing devices and exterior devices) General ventilation (e.g., single-pass system, recirculation system) Air-cleaning methods (e.g., high efficiency particulate air [HEPA] filtration and ultraviolet germicidal irradiation [UVGI]) b. What are the actual air changes per hour (ACH) and design for various rooms in the setting? Room ACH Design c. 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) ____ Laboratory hoods Booths for sputum induction Tents or hoods for enclosing patient or procedure d. What general ventilation systems are used in your health-care setting? (check all that apply) ____ Single-pass system Variable air volume ____ Constant air volume

- ____ Recirculation system
- ____ Other _____

e. What air-cleaning methods are used in your health-care setting? (check all that apply)

HEPA filtration Fixed room-air recirculation systems

- UVGI Duct irradiation
- Portable room-air recirculation systems
- Upper-air irradiation Portable room-air cleaners
- ____ Ponable room-air cleaner

	t.	How many All rooms are in the health-care setting?	Quantity
	g.	What ventilation methods are used for All rooms? (check all that apply) Primary (general ventilation):Single-pass heating, ventilating, and air conditioning (HVAC)Recirculating HVAC systems Secondary (methods to increase equivalent ACH):Fixed room recirculating unitsHEPA filtrationUVGIUVGIOther (specify)	
	h.	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?	
	i.	Are environmental controls regularly checked and maintained with results recorded in maintenance logs?	
	j.	Is the directional airflow in All rooms checked daily when in use with smoke tubes or visual checks?	
	k.	Are these results readily available?	
	I.	What procedures are in place if the All room pressure is not negative?	
	m.	Do All rooms meet the recommended pressure differential of 0.01-inch water column negative to surrounding structures?	_
8	Re	spiratory-Protection Program	
	a.	Does your health-care setting have a written respiratory-protection program?	
	b.	Which HCWs are included in the respiratory-protection program? (check all that apply)	
		Physicians Janitorial staff Mid-level practitioners (NPs and PAs) Mintenance or engineering staff Nurses Transportation staff Administrators Dietary staff Laboratory personnel Students Construction or renovation staff Service personnel	-
	C.	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).	
		Manufacturer Model Specific application	_
			-
	d.	Is annual respiratory-protection training for HCWs performed by a person with advanced training in respiratory protection?	
	e.	Does your health-care setting provide initial fit testing for HCWs? If yes, when is it conducted?	Date
	f. Does your health-care setting provide periodic fit testing for HCWs? If yes, when and how frequently is it conducted?		Date
	g.	What method of fit testing is used?	Method
	h.	Is qualitative fit testing used?	HOUVA
	i.	Is guantitative fit testing used?	

9. Reassessment of TB Risk					
a. How	a. How frequently is the TB risk assessment conducted or updated in the health-care setting? Frequency				
b. Whe	b. When was the last TB risk assessment conducted? Date				
c. Wha	t problems were identified during the previous TB risk assessment?				
1)					
2)					
3)					
4)					
5)					
d. Wha	t actions were taken to address the problems identified during the previous TB risk				
1)					
2)					
3)					
4)					
5)					
e. Did	the risk classification need to be revised as a result of the last TB risk assessment?				

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 previous negative results during a certain period (see Supplement, Surveillance and Detection of *M. tuberculosis* Infections in Health-Care Settings).

Appendix A. (Continued) Administrative, environmental, and respiratory-protection controls for selected health-care settings

Setting	Administrative controls	Environmental controls [†]	Respiratory-protection controls§	
Nontraditional Facility-Bas	sed Settings			
Medical settings in correctional facilities	 Follow recommendations for inpatient and outpatient settings as appropriate. In waiting rooms or areas, follow recommendations for TB treatment facilities. If possible, postpone transporting patients with suspected or confirmed infectious TB disease until they are determined not to have TB disease or to be noninfectious. 	 At least one room should meet requirements for an All room (Table 2). Air-cleaning technologies (e.g., HEPA filtration and UVGI) can be used to increase the number of equivalent ACH (see Supplement, Environmental Controls). When transporting patients with suspected or confirmed infectious TB disease in a vehicle (ideally an ambulance), if possible, physically isolate the cab (the front seat) from rest of the vehicle, have the patient sit in the back seat, and open the windows. 	 For HCWs or others entering the All room of a patient with suspected or confirmed infectious TB disease, at least N95 disposable respirators should be worn. If the patient has signs or symptoms of infectious TB disease (positive AFB sputum smear result), consider having the patient wear a surgical or procedure mask, if possible, during transport, in waiting areas, or when others are present. 	
Home-based health-care and outreach settings	 Patients and household members should be educated regarding the importance of taking medications, respiratory hyglene and cough etiquette procedures, and proper medical evaluation. If possible, postpone transporting patients with suspected or confirmed infectious TB disease until they are determined not to have TB disease or to be noninfectious. Certain patients can be instructed to remain at home until they are determined not to have TB disease or to be noninfectious. 	 Do not perform cough-inducing or aerosol-generating procedures unless appropriate environmental controls are in place (see Supplement, Environmental Controls), or perform those procedures outside, if possible. 	 For HCWs entering the homes of patients with suspected or confirmed infectious TB disease, at least N95 disposable respirators should be worn. For HCWs transporting patients with suspected or confirmed infectious TB disease in a vehicle, consider at least an N95 disposable respirator. If the patient has signs or symptoms of infectious TB disease (positive AFB sputum smear result), consider having the patient wear a surgical or procedure mask, if possible, during transport, in waiting areas, or when others are present. 	
Long-term-care settings (e.g., hospices and skilled nursing facilities)	 Patients with suspected or confirmed infectious TB disease should not be treated in a long- term-care setting, unless proper administrative and environmental controls and a respiratory-protection program are in place. 	 Do not perform cough-inducing or aerosol-generating procedures unless appropriate infection controls are in place (see Supplement, Environmental Controls), or perform those procedures outside, if possible. 	 If the patient has signs or symptoms of infectious TB disease (positive AFB sputum smear result), consider having the patient wear a surgical or procedure mask, if possible, during transport, in waiting areas, or when others are present. 	

* Administrative controls must be implemented to ensure the effectiveness of environmental controls and respiratory-protection programs, and should be in place for all settings where patients with suspected or confirmed TB disease are expected to be encountered. Administrative controls include a written TB infection-control plan (which should be reassessed at least annually), assignment of responsibility for the plan, setting risk assessment, HCW risk classification, HCW training and education, and a TB screening program to test HCWs for infection with M. tuberculosis.

⁺ Environmental controls include local exhaust and general ventilation (i.e., achieving negative pressure), using All rooms, and air-cleaning methods (i.e., HEPA filtration and UVGI).

S All settings where patients with suspected or confirmed TB disease will be encountered need to have a respiratory-protection program. A respiratory-protection program might not be necessary for settings where patients with TB disease are not encountered or where a procedure exists for the prompt transfer of patients with suspected or confirmed TB disease to a setting where they can be evaluated. Visitors with suspected or confirmed TB disease should not have contact with patients, including contact with those who have suspected or confirmed TB.

disease.

** Laboratories that are not based in inpatient settings should observe the same TB infection-control measures as laboratories in inpatient settings.

11 Certain bronchoscopy suites are built to have positive pressure.

SAlthough the majority of these settings are routinely considered "outpatient," they might be part of inpatient services in certain settings. If so, follow the recommendations for inpatient settings for patient rooms.

TB treatment facilities can include TB clinics, infectious disease clinics, or pulmonary clinics.