

Appendix B. Tuberculosis (TB) risk assessment worksheet

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. Incidence of TB**

- a. 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?
- b. 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 during 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.

Rate

Community _____
 State _____
 National _____
 Facility _____
 Department 1 _____
 Department 2 _____
 Department 3 _____

- _____ c. Are patients with suspected or confirmed TB disease encountered in your setting (inpatient and outpatient)?

- 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.)
- 2) If no, does your health-care setting have a plan for the triage of patients with suspected or confirmed TB disease?
- d. Currently, does your health-care setting have a cluster of persons with confirmed TB disease that might be a result of ongoing transmission of *Mycobacterium tuberculosis*?

Year	No. patients	
	Suspected	Confirmed
1 year ago	_____	_____
2 years ago	_____	_____
5 years ago	_____	_____

2. Risk Classification

a. Inpatient settings

- 1) How many inpatient beds are in your inpatient setting?
- 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.)
- 3) Depending on the number of beds and TB patients encountered in 1 year, what is the risk classification for your inpatient setting?
- 4) Does your health-care setting have a plan for triaging patients with suspected or confirmed TB disease?

Quantity _____
 Previous year _____
 5 years ago _____

___ Low risk
 ___ Medium risk
 ___ Potential ongoing transmission

b. Outpatient 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.)
- 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 in the health-care setting? (Use information from case reports. Determine if any TST or blood assay for *M. tuberculosis* [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?
- 8) When was the first time a risk classification was done for your health-care setting?
- 9) Considering the items above, would your health-care setting need a higher risk classification?

Previous year _____
 5 years ago _____

Year encountered _____
 Date of classification _____

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- _____ 10) Depending on the number of TB patients evaluated in 1 year, what is the risk classification for your outpatient setting (see Appendix C)?
- _____ 11) Does your health-care setting have a plan for the triage of patients with suspected or confirmed TB disease?
- c. Nontraditional facility-based settings
- _____ 1) 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 in the setting?
- _____ 4) Have any recent TST or BAMT conversions occurred among staff or clients?
- _____ 5) Is there a high incidence or prevalence 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? Date of classification _____
- _____ 8) Considering the items above, would your setting require a higher risk 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 nontraditional setting in 1 year, what is the risk classification for your setting (see Appendix C)?
- _____ Low risk
_____ Medium risk
_____ Potential ongoing transmission

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

- _____ 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 | _____ Service workers |
| _____ Mid-level practitioners
(nurse practitioners [NP] and
physician's assistants [PA]) | _____ Janitorial staff |
| _____ Nurses | _____ Maintenance or engineering staff |
| _____ Administrators | _____ Transportation staff |
| _____ Laboratory workers | _____ Dietary staff |
| _____ Respiratory therapists | _____ Receptionists |
| _____ Physical therapists | _____ Trainees and students |
| _____ Contract staff | _____ Volunteers |
| _____ Construction or renovation workers | _____ 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?
- _____ f. Where are test records for HCWs maintained? Location _____
- _____ g. Who maintains the records? Name _____
- _____ h. If the setting has a serial TB screening program for HCWs to test for *M. tuberculosis* infection, what are the conversion rates for the previous years?†
- 1 year ago _____
2 years ago _____
3 years ago _____
4 years ago _____
5 years ago _____
- _____ i. Has the test conversion rate for *M. tuberculosis* infection been increasing or decreasing, or has it remained the same over the previous 5 years? (check one)
- _____ Increasing
_____ Decreasing
_____ No change in previous 5 years

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_____ j. Do any areas of the health-care setting (e.g., waiting rooms or clinics) or any group of HCWs (e.g., laboratory workers, emergency department staff, respiratory therapists, and HCWs who attend bronchoscopies) have a test conversion rate for *M. tuberculosis* infection that exceeds the health-care setting's annual average? If yes, list. Rate _____

_____ k. For HCWs who have positive test results for *M. tuberculosis* 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. TB Infection-Control Program

_____ a. Does the health-care setting have a written TB infection-control plan? Name _____

_____ b. Who is responsible for the infection-control program? Date _____

_____ c. When was the TB infection-control plan first written? Date _____

_____ d. When was the TB infection-control plan last reviewed or updated?

_____ 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 *M. tuberculosis*)?

_____ 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)

<input type="checkbox"/> Physicians	<input type="checkbox"/> Health and safety staff
<input type="checkbox"/> Nurses	<input type="checkbox"/> Administrator
<input type="checkbox"/> Epidemiologists	<input type="checkbox"/> Risk assessment
<input type="checkbox"/> Engineers	<input type="checkbox"/> Quality control
<input type="checkbox"/> Pharmacists	<input type="checkbox"/> Others (specify)
<input type="checkbox"/> Laboratory personnel	

2) If no, what committee is responsible for infection control in the setting? Committee _____

5. Implementation of TB Infection-Control Plan Based on Review by Infection-Control Committee

_____ a. 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 _____

b. 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).

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 _____

d. 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?

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

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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)

<u>In-house</u>	<u>Sent out</u>	
<input type="checkbox"/>	<input type="checkbox"/>	Acid-fast bacilli (AFB) smears
<input type="checkbox"/>	<input type="checkbox"/>	Culture using liquid media (e.g., Bactec and MB-BacT)
<input type="checkbox"/>	<input type="checkbox"/>	Culture using solid media
<input type="checkbox"/>	<input type="checkbox"/>	Drug-susceptibility testing
<input type="checkbox"/>	<input type="checkbox"/>	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 health-care 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)

<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])	_____

b. What are the actual air changes per hour (ACH) and design for various rooms in the setting?

<u>Room</u>	<u>ACH</u>	<u>Design</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

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)

<u>HEPA filtration</u>	<u>UVGI</u>
<input type="checkbox"/> Fixed room-air recirculation systems	<input type="checkbox"/> Duct irradiation
<input type="checkbox"/> Portable room-air recirculation systems	<input type="checkbox"/> Upper-air irradiation
	<input type="checkbox"/> Portable room-air cleaners

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f. 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 units

HEPA filtration

UVGI

Other

(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?

l. 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. Respiratory-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

Mid-level practitioners (NPs and PAs)

Nurses

Administrators

Laboratory personnel

Contract staff

Construction or renovation staff

Service personnel

Janitorial staff

Maintenance or engineering staff

Transportation staff

Dietary staff

Students

Others (specify) _____

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).

<u>Manufacturer</u>	<u>Model</u>	<u>Specific application</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

_____ 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 _____

Frequency _____

g. What method of fit testing is used?

Method _____

_____ h. Is qualitative fit testing used?

_____ i. Is quantitative fit testing used?

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9. Reassessment of TB Risk

a. How frequently is the TB risk assessment conducted or updated in the health-care setting?

b. When was the last TB risk assessment conducted?

Frequency _____

c. What problems were identified during the previous TB risk assessment?

Date _____

- 1) _____

- 2) _____

- 3) _____

- 4) _____

- 5) _____

d. What actions were taken to address the problems identified during the previous TB risk assessment?

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