

Regulations for Tuberculosis Control in Minnesota Health Care Settings

**A guide for implementing tuberculosis (TB)
infection control regulations in your facility**



Tuberculosis Prevention and Control Program
PO Box 64975
St. Paul, MN 55164-0975
Phone: 651-201-5414 or 1-877-676-5414
www.health.state.mn.us/tb

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Introduction

The purpose of this manual is to assist health care facilities in Minnesota to understand what is needed to be in compliance with Minnesota laws revised in 2013 regarding TB prevention and control, and to provide tools for implementing legal regulations and best practices in their settings.

Minnesota laws governing tuberculosis (TB) prevention and control regulations in health care settings (including TB screening of health care workers and residents) have historically consisted of a variety of separate rules written for specific settings at various times. Many of them were based on national recommendations published in the 1990s or earlier.

In 2005, the U.S. Centers for Disease Control and Prevention (CDC) published revised guidelines* (www.cdc.gov/tb/publications/guidelines/infectioncontrol.htm). Since that time, the Minnesota Department of Health (MDH) has recognized that legal regulations and best practices for TB infection control in Minnesota needed to be revised to meet these guidelines and to incorporate current knowledge and technology.

The “TB waivers,” issued by MDH on March 9, 2009, were an interim step in this process to address the outdated TB laws for boarding care homes, home care providers, nursing homes, and supervised living facilities. The “TB waivers” stated that licensees were required to follow the 2005 CDC guidelines.

As a final step, MDH proposed new legislation in 2013, which was adopted by the Minnesota Legislature and takes effect on August 1, 2013. These laws are based on the 2005 national guidelines and replace the 2009 “TB waivers.” They apply to settings licensed by MDH, including boarding care homes, home care providers, hospices, nursing homes, outpatient surgical centers, and supervised living facilities.

*Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Facilities, 2005. From CDC, MMWR, December 30, 2005, 54(RR17);1-141.

Chapter 1

Background

Determining which regulations to follow

All state-licensed or federally-certified health care settings in Minnesota are required by law to follow certain measures to prevent and control TB in their facilities. In addition, facilities should follow the regulations of the Minnesota Occupational Safety and Health Administration (MN-OSHA). (see Resources)

There are three categories of regulations related to TB:

1. TB infection control program
2. Process for screening health care workers (HCWs)
3. Process for screening residents

This manual provides specific information about each type of regulation. To determine which of these regulations apply to your facility, see the table below. If you are unsure what type of license your facility has, you can look it up at www.health.state.mn.us/divs/fpc/directory/providerselect.cfm.

Health care setting	TB infection control program (Chapter 2)	Screening HCWs (Chapter 3)	Screening residents (Chapter 4)	Regulatory authority
Assisted living facility	Yes	Yes	No	<u>Minnesota Statutes, section 144A.4798, Subd. 1¹</u>
Boarding care home (MDH licensed)	Yes	Yes	Yes	<u>Minnesota Statutes, section 144.56, Subd. 2c²</u>
Home care provider (MDH licensed)	Yes	Yes	No	<u>Minnesota Statutes, section 144A.4798, Subd. 1¹</u>
Hospice (MDH licensed)	Yes	Yes	Yes (residential hospice only)	<u>Minnesota Statutes, section 144A.753, Subd.4³</u>
Nursing home (MDH licensed)	Yes	Yes	Yes	<u>Minnesota Statutes, section 144A.04, Subd. 3b⁴</u>
Outpatient surgical center (MDH licensed)	Yes	Yes	No	<u>Minnesota Statutes, section 144.55, Subd. 3c⁵</u>

Health care setting	TB infection control program (Chapter 2)	Screening HCWs (Chapter 3)	Screening residents (Chapter 4)	Regulatory authority
Supervised living facility (MDH licensed)	Yes	Yes	No	<u>Minnesota Statutes, section 144.50, Subd. 6a</u> ⁶
Supplemental nursing services agency (MDH licensed)	Education program only	Yes	No	<u>Minnesota Statutes, section 144A.72, Subd. 1</u> ⁷
All other settings	Yes	Yes	No	<u>MN-OSHA</u> ⁸

¹ www.revisor.mn.gov/statutes/?id=144A.4798

² www.revisor.mn.gov/statutes/?id=144.56

³ www.revisor.mn.gov/statutes/?id=144A.753

⁴ www.revisor.mn.gov/statutes/?id=144A.04

⁵ www.revisor.mn.gov/statutes/?id=144.55

⁶ www.revisor.mn.gov/statutes/?id=144.50

⁷ www.revisor.mn.gov/statutes/?id=144A.72

⁸ www.dli.mn.gov/OSHA/PDF/tuberculosis_cpl.pdf

Chapter 2

TB Infection Control Program

All health care settings in Minnesota should have an up-to-date TB infection control program that includes:

- A team responsible for TB infection control
- A facility TB risk assessment
- Written TB infection control procedures
- Health care worker (HCW) education

TB infection control team

Identify a qualified person or a team of persons in your facility and assign them primary responsibility and authority for TB infection control. This person or team will conduct your setting's facility TB risk assessment; develop, implement, and enforce TB infection control policies (including HCW and resident TB screening); and ensure that HCWs receive adequate TB-related training and education.

Facility TB risk assessment

The facility TB risk assessment is a structured evaluation of a health care facility or setting's risk for transmission of *M. tuberculosis*. The infection control team determines the setting's TB risk classification based on the results of the facility TB risk assessment.

All health care settings in Minnesota should perform an initial facility TB risk assessment. Medium-risk settings should update their assessment yearly; low-risk settings should update theirs every other year. Keep your facility's completed TB risk assessment worksheets on file for future reference.

Your facility TB risk assessment should be conducted by your infection control team. In general, one-assessment encompasses an entire setting. However, in certain settings it may be appropriate to do separate assessments for specific areas within the setting.

Information on the number of TB cases by county for the previous year are posted on MDH's web site in May of each year. Risk assessments conducted early in the calendar year (before new data are posted) should use data from the previous year. Please do not contact MDH before May to obtain TB data for the previous year.

Choose one of the following three methods to conduct your risk assessment(s):

1. Use the *Facility TB Risk Assessment Worksheet for Health Care Settings Licensed by the Minnesota Department of Health (MDH)*. This worksheet was developed by MDH and can be used by boarding care homes, home care providers, hospices, nursing homes, outpatient surgical centers, and supervised living facilities (see www.health.state.mn.us/divs/idepc/diseases/tb/rules/index.html#ch2).
2. Use the *Appendix B: Tuberculosis (TB) risk assessment worksheet* from the Centers for Disease Control and Prevention (CDC). (see www.health.state.mn.us/divs/idepc/diseases/tb/rules/index.html#ch2).
3. Create your own assessment tool using the criteria listed on pages 9-12 of CDC's "Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Settings, 2005."

Use the results from your facility TB risk assessment to determine your TB risk classification.

The three risk classifications are:

- Low risk, in which persons with active TB disease are not expected to be encountered and exposure to TB is unlikely.
- Medium risk, in which HCWs will or might be exposed to persons with active TB disease or clinical specimens that might contain *M. tuberculosis*.
- Potential ongoing transmission, in which there is evidence of person-to-person transmission of *M. tuberculosis*. This is a temporary classification. If you determine that this classification applies to your setting, please consult with MDH's TB Prevention and Control Program at 651-201-5414 for guidance.

If the infection control team is unsure whether to classify your setting as low or medium risk, the medium risk classification should be used.

When updating your facility TB risk assessment, you should confirm and document actions that were taken to address any problems identified during the previous risk assessment. In addition, you should conduct a problem evaluation to address any situations that may have occurred since your last risk assessment was done. Examples might include:

- A person with suspected or confirmed active TB disease was not promptly recognized and appropriate airborne precautions were not initiated,
- Certain administrative, environmental, or respiratory-protection controls failed, and
- Infection control lapses were identified (for example, HCWs were not adequately screened for TB; baseline TB screening of residents [if applicable] was not consistently done and documented; there were delays in transferring of patients with symptoms of active TB disease; or TB-related education and training of HCWs was not done or needs to be updated).

Written TB infection control procedures

Each facility should have written procedures to address TB infection control. Medium-risk settings should review their procedures annually and update, if necessary. Low-risk settings should review their procedures every other year and update, if necessary. Procedures should address:

- Early recognition: All HCWs should know the signs and symptoms of TB and their role in their facility's TB infection control program.
- Isolation: Place a potentially infectious TB patient in an airborne infection isolation (AII) room if available; If not, place patient in separate room with door shut.
- Referral: If your setting does not handle TB patients, transfer potentially infectious TB patients to a setting that is equipped to evaluate and treat TB patients.

The procedures should include information about working with the local or state public health department to conduct a TB contact investigation if health care-associated transmission of *M. tuberculosis* is suspected.

In addition, settings that expect to encounter (admit) patients with suspected or confirmed active TB disease are required to:

- Implement and maintain environmental controls, including AII rooms,
- Develop a respiratory protection program, and
- Develop a plan for accepting patients with suspected or confirmed active TB disease.

HCW education

TB training is required at time of hire for all HCWs. The content of the training should be appropriate to the job responsibilities and educational or professional background of the HCW.

In medium-risk settings, TB training should be conducted annually. Low-risk settings should annually evaluate the need for TB training, and conduct training as needed.

Content should focus on basic information about:

- TB pathogenesis and transmission,
- Signs and symptoms of active TB disease, and
- Your health care setting's infection control plan (i.e., how to implement your early recognition, isolation, and referral procedure), especially any sections that employees are responsible for implementing.

Chapter 3

Screening Health Care Workers (HCWs)

Definition of a HCW:

For purposes of TB infection control procedures, the following staff should be considered HCWs and should be included in your TB screening program:

- Administrators and managers
- Bronchoscopy
- Chaplains
- Clerical
- Computer programmers
- Construction
- Correctional officers
- Dental
- Dietician or dietary
- Educators
- Engineers
- Food service
- Health aides
- Health and safety
- Housekeeping or custodial
- Homeless shelter
- Infection control
- Janitorial, maintenance
- Laboratory
- Morgue
- Nurses
- Outreach
- Patient transport staff, including EMS
- Pharmacists
- Phlebotomists
- Physical and occupational therapists
- Physicians and other clinicians
- Public safety
- Radiology
- Respiratory therapists
- Social workers
- Students (e.g., medical, nursing, technicians, and allied health)
- Technicians (e.g., health, laboratory, radiology, and animal)
- Volunteers

In addition, HCWs who perform any of the following activities should also be included in your TB screening program:

- Entering patient rooms or treatment rooms whether or not a patient is present,
- Participating in aerosol-generating or aerosol-producing procedures (e.g., bronchoscopy, sputum induction, and administration of aerosolized medications),
- Participating in suspected or confirmed *M. tuberculosis* specimen processing, or
- Installing, maintaining, or replacing environmental controls in areas in which persons with active TB disease are encountered.

General principles

- There are two methods available to screen for TB infection: the tuberculin skin test (TST) and the Interferon Gamma Release Assay (IGRA). Information about these methods is available at www.health.state.mn.us/divs/idepc/diseases/tb/tst.html and www.health.state.mn.us/divs/idepc/diseases/tb/bloodtests.html.
- All reports or copies of TST or IGRA results and any related chest X-ray and medical evaluations should be maintained in the employee's record.
- TST documentation should include the date of the test (i.e., month, day, year), the number of millimeters of induration (if no induration, document "0" mm) and interpretation (i.e., positive or negative).
- IGRA documentation should include the date of the test (i.e., month, day, year), the qualitative results (i.e., positive, negative, indeterminate or borderline) and the quantitative assay (i.e., Nil, TB and Mitogen concentrations or spot counts). Indeterminate or borderline results indicate an uncertain likelihood of *M. tuberculosis* infection and should be further evaluated by a physician.
- HCWs should be encouraged to keep copies of the results of their TB screening for future use.
- Disregard a HCW's history of BCG vaccination when administering and interpreting a TST.
- It is the responsibility of the infection control team to ensure that written procedures are in place and are followed by staff to ensure that employees are free of infectious TB disease before beginning employment. Questions regarding the significance of an individual's medical test results (e.g., chest X-ray reports) should be referred to the appropriate medical or nursing staff in your facility.

Baseline TB screening

Baseline TB screening is required for all HCWs (Table 3.1).

Baseline TB screening consists of three components:

1. Assessing for current symptoms of active TB disease,
2. Assessing TB history, and
3. Testing for the presence of infection with *Mycobacterium tuberculosis* by administering either a two-step TST or single IGRA.

An employee may begin working with patients after a negative TB symptom screen (i.e., no symptoms of active TB disease) **and** a negative IGRA or TST (i.e., first step) dated within 90 days before hire. The second TST may be performed after the HCW starts working with patients.

Available tool: *Baseline TB Screening Tool for HCWs Template* on pages 16-17.

Serial TB screening

Serial TB screening refers to TB screening performed at regular intervals following baseline TB screening. The frequency of serial TB testing is based on your facility's TB risk classification (Table 3.1).

Serial TB screening consists of three components:

1. Assessing for current symptoms of active TB disease,
2. Assessing TB history, and
3. Testing for the presence of infection with *Mycobacterium tuberculosis* by administering either a one-step TST or single IGRA.

HCWs who have positive TSTs or IGAs and who work in medium-risk settings do not need additional TSTs or IGAs but should be assessed for current TB symptoms on an annual basis and instructed to seek medical evaluation if TB symptoms develop at any time.

Available tool: *Serial TB Screening Tool for HCWs Template* on pages 18-19.

Table 3.1: Baseline and serial TB screening regulations for HCWs

Risk classification	Baseline screening	Serial screening
Low	Required	Not required
Medium	Required	
Potential ongoing transmission (usually temporary)	Required	May require testing on a quarterly or twice-yearly basis. Consult with the MDH TB Prevention and Control Program at 651-201-5414 regarding the frequency of testing under these circumstances.

Special Situations

HCW with signs or symptoms of active TB disease

A HCW with infectious TB disease poses a special risk in the workplace because of the potential to spread the infection to vulnerable patients. TB is not commonly found in Minnesota HCWs, but it does occur. In 2011-2012, a total of 12 HCWs in Minnesota were diagnosed with active TB disease.

Do not wait for the results of a TST or IGRA before referring a person with TB symptoms for a medical evaluation. Approximately 25 percent of persons with active TB disease have a negative TST or IGRA because the body's immune system is not strong enough to respond to the test.

Persons with active TB disease may have one or more of the following symptoms:

- Prolonged cough (\geq three weeks)
- Hemoptysis
- Weight loss
- Night sweats
- Fatigue
- Fever, chills
- Poor appetite
- Chest pain
- Other symptoms may be present, depending on the site of disease

Active TB disease most commonly affects the lungs (pulmonary). However, TB disease can occur in other parts of the body (most commonly, pleural or lymphatic).

Any HCW with symptoms of active TB disease, regardless of the results of the TST or IGRA, should be promptly evaluated to exclude a diagnosis of active TB disease. This should include a medical evaluation, a chest X-ray, and collection of sputum specimens for mycobacterial smear and culture or additional testing if indicated. If active TB disease is confirmed or suspected, the diagnosing clinician should notify MDH at 651-201-5414 within one working day.

HCWs with suspected or confirmed infectious TB disease or a draining TB skin lesion should be excluded from the workplace. They should be allowed to return to work only after a physician-knowledgeable and experienced in managing TB has determined that they are no longer infectious (this may be done in consultation with the health department).

HCWs with extrapulmonary TB disease usually do not need to be excluded from the workplace as long as the respiratory tract is not involved and the HCW has been cleared for work by a physician.

HCW with a newly-identified positive TST or IGRA

Before the HCW has direct patient contact, the following should be documented in their record:

1. Test result,
2. Assessment for current TB symptoms,
3. Chest X-ray to rule out infectious TB disease. The chest X-ray should be done after the date of the positive TST or IGRA; however, a chest X-ray done within the three months prior to the TST/IGRA is acceptable, provided that the HCW has not been exposed to infectious TB disease since the chest X-ray was done, and
4. Medical evaluation to rule out a diagnosis of infectious TB disease.

After the negative baseline chest X-ray is done and the results are documented, additional chest X-rays are not needed unless the HCW develops symptoms of active TB disease or a clinician recommends a repeat chest X-ray. HCWs who work in medium-risk settings should be assessed for current TB symptoms on an annual basis and instructed to seek medical evaluation if TB symptoms develop at any time.

HCW with written documentation of a previous positive TST or IGRA

If the test is appropriately documented you do not need to repeat the test.

Before the HCW has direct patient contact, the following should be documented in their record:

1. Test result,
2. Assessment for current TB symptoms,
3. Chest X-ray to rule out infectious TB disease. The chest X-ray should be done after the date of the positive TST or IGRA; however, a chest X-ray done within the three months prior to the TST/IGRA is acceptable, provided that the HCW has not been exposed to infectious TB disease since the chest X-ray was done. If infectious TB disease is ruled out, additional chest X-rays are not needed unless the HCW develops symptoms of active TB disease or a clinician recommends a repeat chest X-ray, and
4. If the chest X-ray is done at the time of hire because documentation of a previous film was not available, a medical evaluation to rule out infectious TB disease should be done. No medical evaluation is required if HCW already has a chest X-ray dated after documented positive TST or IGRA.

HCWs who work in medium-risk settings should be assessed for current TB symptoms on an annual basis and instructed to seek medical evaluation if TB symptoms develop at any time.

HCW with a verbal (undocumented) history of a previous positive TST or IGRA

These HCWs should undergo the same screening procedures as HCWs without previous positive results. Results of the screening should be documented in the HCW's record.

If the HCW has documentation of previous treatment for latent TB infection or active TB disease, that documentation may be substituted for documentation of previous positive TST or IGRA results.

Pregnant HCW

Pregnancy is not a contraindication for TB testing. Pregnant women should be included in the same baseline and serial TB screening programs as other HCWs. If a pregnant HCW declines a TST, offer an IGRA if it is available. If an IGRA is not available, consider having the HCW and her personal health care provider complete the *Exemption Form for Tuberculin Skin Testing of a Pregnant HCW* (see page 20).

A pregnant HCW with a newly identified positive TST or IGRA, or signs and symptoms of active TB disease, is at increased risk for active TB disease and should receive a chest X-ray, using an abdominal shield.

Conversions

A conversion is when a person's TST or IGRA result is initially negative but changes to positive at a later date. For surveillance purposes, an increase in induration of >10 mm is defined as a TST conversion. Follow instructions for a HCW with newly positive TST or IGRA. Additional information is available on pages 13 and 32-34 of "Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Settings, 2005."

HCW with TST results between 5 and 9 mm of induration

This result is considered negative for most HCWs but is positive for persons with certain risk factors, including:

- HIV positive,
- Recent close contact with someone with infectious TB disease,
- Organ transplant recipient,
- Immunosuppressed due to taking immunosuppressive drugs (equivalent to greater than 15 mg of prednisone a day for one month or longer) or TNF alpha inhibitor drugs such as Enbrel®, Humira®, or Remicade® for treatment of rheumatoid arthritis, Crohn's disease, or other autoimmune disorders, or
- Have a current chest X-ray that shows “scarring” or “fibrosis” or “old, healed TB.”

Because employers cannot legally collect information about these personal health TB risk factors, it is recommended, but not required, that these HCWs be given MDH's *Information for Health Care Workers with Tuberculin Skin Test (TST) Results between 5 and 9 mm* (see page 21) and encouraged to follow-up with their personal health care providers as necessary.

Students

Students who will be performing health care-related activities should receive the same screening as paid HCWs. Health care facilities where students are placed should ensure that the students' school has performed the required testing. Students who will be in the clinical setting for less than two weeks require only a one-step (not the two-step) TST.

Volunteers

Volunteers who share airspace with patients for five to 10 hours or more per week should receive the same TB screening as paid HCWs.

HCW with previous history of severe adverse reaction to TST

Severe adverse reactions (i.e., necrosis, blistering, anaphylactic shock or ulceration) to TSTs are rare events. A HCW who provides a convincing verbal report of a severe adverse reaction to a prior TST, even if the reaction is not documented, should NOT receive a TST. Substitute an IGRA for the TST if it is available. If an IGRA is not available, document the severe reaction, conduct the TB symptom screen and review TB risk factors.

HCW refusal

HCWs who refuse a TST should be screened using an IGRA. HCWs who refuse an IGRA should be screened using a TST.

HCW who travels outside of the United States

It is recommended, but not required, that HCWs who travel for more than four weeks to a country where TB is common and have close contact with residents of that country (e.g., visiting family, medical volunteer work) be tested with a single TST or IGRA eight to 10 weeks after returning to the United States. The *CDC Health Information for International Travel* (commonly called the Yellow Book) can provide more information. You can find it at:

wwwnc.cdc.gov/travel/yellowbook/2012/chapter-3-infectious-diseases-related-to-travel/tuberculosis.

Baseline TB Screening Tool for HCWs Template (page 1)

Baseline TB Screening Tool for Health Care Workers (HCWs)

Last name, first name, middle initial

/ ____ /
Date form completed

/ ____ /
Date of birth

(_____) ____-_____
Work phone number

Baseline TB screening includes three components:

- (1) Assessing for current symptoms of active TB disease
and
- (2) Assessing HCW's history
and
- (3) Testing for the presence of infection with *Mycobacterium tuberculosis* by administering either a single TB blood test or a two-step TST.

Symptoms of active TB disease (circle all that are present)

Coughing (>3 weeks)	Chest pain	Fatigue
Night sweats	Coughing up blood	
Weight loss/poor appetite	Fever/chills	

Note: If TB symptoms are present, promptly refer HCW for a chest X-ray and medical evaluation before starting work. Do not wait for the TST or TB blood test result.

HCW's history (circle response)

Have you ever had a positive reaction to a TB skin test or TB blood test? Yes No
If yes: Date _____ Number of millimeters of induration _____

Have you had a TB skin test in the past 12 months? Yes No
If yes: Date _____ Number of millimeters of induration _____ Result _____

	Comments	
Have you ever had the BCG vaccine?	Yes	No
Have you ever been treated for latent TB infection?	Yes	No
Have you ever been treated for active TB disease?	Yes	No
Have you ever had an adverse reaction to a TB skin test?	Yes	No
Have you received a live-virus vaccine within the past 6 weeks?	Yes	No

Tool address: www.health.state.mn.us/divs/idepc/diseases/tb/rules/basetbscrn.doc

Baseline TB Screening Tool for HCWs Template (page 2)

TB Blood Test

Name of TB blood test (circle)	QuantiFERON TB-Gold QuantiFERON-TB-Gold InTube T-SPOT
Date of blood draw	
Results	
Interpretation of reading (circle)	Positive* Negative Indeterminate
Laboratory	

*Refer HCW for a chest x-ray and medical examination to rule out active infectious TB disease

Tuberculin skin testing (TST)

	TST – First Step	TST – Second Step
Administration		
Name of person administering test		
Date and time administered		
Location (circle)	L forearm R forearm Other: _____	L forearm R forearm Other: _____
Tuberculin manufacturer		
Tuberculin expiration date and lot #		
Signature of person who administered test		
Results (read between 48-72 hours)		
Date and time read:		
Number of mm of induration: (across forearm)	_____ mm	_____ mm
Interpretation of reading* (circle)	Positive** Negative***	Positive** Negative
Reader's signature		

*Consult grid at www.health.state.mn.us/divs/idepc/diseases/tb/candidates.pdf

** Refer HCW for a chest x-ray to rule out active TB disease

*** If results are negative, perform the second step in one to three weeks

Adapted by the Minnesota Department of Health TB Prevention and Control Program from materials produced by the Global TB Institute and the Francis J. Curry National TB Center

Tool address: www.health.state.mn.us/divs/idepc/diseases/tb/rules/basetbscrn.doc

Serial TB Screening Tool for HCWs Template (page 1)

Serial TB Screening Tool for Health Care Workers (HCWs)

Last name, first name, middle initial

Date form completed

Date of birth

(_____) _____
Work phone number

Serial TB screening includes three components:

- (1) Assessing for current symptoms of active TB disease
and
- (2) Assessing HCW's history
and
- (3) Testing for the presence of infection with *Mycobacterium tuberculosis* by administering either a single TB blood test *or* a two-step TST.

Symptoms of active TB disease (circle all that are present)

Coughing (>3 weeks)	Chest pain	Fatigue
Night sweats	Coughing up blood	
Weight loss/poor appetite	Fever/chills	

Note: If TB symptoms are present, promptly refer HCW for a chest X-ray and medical evaluation before starting work. Do not wait for the TST or TB blood test result.

HCW's history (circle response)

Have you ever had a positive reaction to a TB skin test or TB blood test? Yes No
If yes: Date _____ Number of millimeters of induration _____

Have you had a TB skin test in the past 12 months? Yes No
If yes: Date _____ Number of millimeters of induration _____ Result _____

	Comments	
Have you ever had the BCG vaccine?	Yes	No
Have you ever been treated for latent TB infection?	Yes	No
Have you ever been treated for active TB disease?	Yes	No
Have you ever had an adverse reaction to a TB skin test?	Yes	No
Have you received a live-virus vaccine within the past 6 weeks?	Yes	No

Tool address: www.health.state.mn.us/divs/idepc/diseases/tb/rules/sertbscrn.doc

Serial TB Screening Tool for HCWs Template (page 2)

TB Blood Test

Name of TB blood test (circle)	QuantiFERON TB-Gold QuantiFERON-TB-Gold InTube T-SPOT
Date of blood draw	
Results	
Interpretation of reading (circle)	Positive* Negative Indeterminate
Laboratory	

*Refer HCW for a chest x-ray and medical examination to rule out active infectious TB disease

Tuberculin skin testing (TST)

Administration	
Name of person administering test	
Date and time administered	
Location (circle)	L forearm R forearm Other: _____
Tuberculin manufacturer	
Tuberculin expiration date and lot #	
Signature of person who administered test	
Results (read between 48-72 hours)	
Date and time read:	
Number of mm of induration: (across forearm)	_____ mm
Interpretation of reading* (circle)	Positive** Negative***
Reader's signature	

*Consult grid at www.health.state.mn.us/divs/idepc/diseases/tb/candidates.pdf

** Refer HCW for a chest x-ray to rule out active TB disease

*** If results are negative, perform the second step in one to three weeks

Adapted by the Minnesota Department of Health TB Prevention and Control Program from materials produced by the Global TB Institute and the Francis J. Curry National TB Center

Tool address: www.health.state.mn.us/divs/idepc/diseases/tb/rules/sertbscrn.doc

Exemption Form for Tuberculin Skin Testing of a Pregnant HCW

Note: This is a suggested template developed by the Minnesota Department of Health (MDH) Tuberculosis Prevention and Control Program. It is designed to assist health care facilities who receive employee requests to be exempted from TB skin testing due to pregnancy. **This is not an official MDH form.** It may be adapted by individual health care facilities to create their own form. **MDH does not recommend the practice of routinely exempting health care workers from TB skin testing due to pregnancy.**

To remove "Sample" watermark: On the "Format" menu, click on "Background," then click "Printed Watermark," then click "No watermark."

Exemption from Tuberculin Skin Testing for a Pregnant Health Care Worker

I, _____ (physician's name) recommend that my patient, _____, be exempted from tuberculin skin testing (TST) for the following reason: _____. I understand that the U.S. Centers for Disease Control and Prevention and the Minnesota Department of Health consider TST to be valid and safe during pregnancy and recommend that pregnant women with risk factors (e.g., health care workers) for exposure to tuberculosis (TB) should receive testing.

Check one:

I will arrange for my patient to receive a TB blood test (i.e., QuantiFERON, T-Spot) as a substitute for TST.

I have been unable to locate a laboratory that will perform a TB blood test (i.e., QuantiFERON, T-Spot) for my patient.

Signature: _____ (physician)
Clinic name and phone number: _____

I (employee) have read the above information and understand that tuberculin skin testing is generally considered safe in pregnant women.

Signature: _____ (employee)

References:

1. American Thoracic Society, U.S. Centers for Disease Control and Prevention. Targeted tuberculin testing and treatment of latent TB infection. MMWR 2000; 49(No. RR-6)
2. CDC fact sheet. Tuberculosis and Pregnancy (2008)

Tool address: www.health.state.mn.us/divs/idepc/diseases/tb/rules/exmtpreghcw.doc

Information for Health Care Workers with Tuberculin Skin Test (TST) Results between 5 and 9 mm

Information for Health Care Workers with Tuberculin Skin Test (TST) Results between 5 and 9 mm

Note: This is a suggested template developed by the Minnesota Department of Health (MDH) Tuberculosis (TB) Prevention and Control Program. It is designed to assist health care facilities who have employees with tuberculin skin test (TST) results between 5 and 9 mm induration.

TST results between 5 and 9 mm of induration are negative for most health care workers but are positive for those with certain risk factors. The purpose of this form is to educate health care workers who have TST results between 5 and 9 mm and may have these risk factors. **Employers cannot and should not collect information about these personal health TB risk factors.** Employers are not required to follow-up with employees who have TST results between 5 and 9 mm unless the employee also has signs or symptoms of active TB disease.

This is not an official MDH form. It may be adapted by individual health care facilities to create their own form.

To remove "Sample" watermark: On the "Format" menu, click on "Background," then click "Printed Watermark," then click "No Watermark."

SAMPLE

Dear employee:

You recently participated in tuberculin skin testing (TST). This is a test for latent tuberculosis (TB) infection. Your TST result, administered on ____/____/____ and read on ____/____/____ was ____ mm induration. This test result is considered "negative" (normal) for most health care workers, but is considered "positive" for people with the following risk factors:

- Are HIV positive
- Have had recent close contact with someone with active TB disease of the lungs
- Have had an organ transplant
- Are immunosuppressed due to taking immunosuppressive drugs (equivalent to greater than 15 mg of prednisone a day for 1 month or longer) or TNF alpha inhibitor drugs such as Enbrel®, Humira®, or Remicade® for treatment of rheumatoid arthritis, Crohn's disease, or other autoimmune disorders
- Have a current chest X-ray that shows "scarring" or "fibrosis" or "old, healed TB"

If you have **one or more** of these risk factors, we strongly encourage you to set up an appointment with your personal health care provider to discuss your test results. We recommend that you bring this form with you to your medical appointment.

Additional information about TB testing and latent TB infection is available at www.health.state.mn.us/divs/idepc/diseases/tb/factsheets/tst.html.

Tool address: www.health.state.mn.us/divs/idepc/diseases/tb/rules/hcwtstrslt.doc

Chapter 4

Screening Residents

Routine TB screening of residents (patients) is not required in Minnesota health care settings except for boarding care homes, nursing homes, and residential hospices. Residents in other facilities may be screened for TB at the discretion of their health care providers or the health care setting's infection control team.

General principles

- Screening should be initiated within 72 hours of admission or within 90 days prior to admission.
- There are two methods available to screen for TB infection: the tuberculin skin test (TST) and the Interferon Gamma Release Assay (IGRA). Information about these methods is available at www.health.state.mn.us/divs/idepc/diseases/tb/tst.html and www.health.state.mn.us/divs/idepc/diseases/tb/bloodtests.html.
- It is the responsibility of the infection control team to ensure that written procedures are in place and are followed by staff to ensure that residents are free of infectious TB disease at time of admission. Questions regarding the significance of an individual's medical test results (e.g., chest X-ray reports) should be referred to the appropriate medical or nursing staff in your facility.
- All reports or copies of the TST or IGRA and any chest X-rays and medical evaluations conducted should be maintained in the resident's medical record.
- Residents who are temporarily transferred to other facilities (e.g., a hospital) do not need to be re-tested upon re-admission if that facility has a TB prevention and control program in place.
- Disregard a resident's history of BCG vaccination when administering and interpreting a TST.
- TST documentation for residents should include the date (i.e., month, day, year), the number of millimeters of induration (if no induration, document "0" mm), and interpretation (i.e., positive or negative). If this information is not available, documentation of a history of infection with TB (e.g., a previous positive skin test or history of active TB disease) by a physician in the resident's medical record is acceptable.
- IGRA documentation should include the date of the test (i.e., month, day, year), the qualitative results (i.e., positive, negative, indeterminate, or borderline) and the quantitative assay (i.e., Nil, TB and Mitogen concentrations or spot counts). Indeterminate or borderline results indicate an uncertain likelihood of *M. tuberculosis* infection and should be further evaluated by a physician.

Baseline TB screening of residents in boarding care homes and nursing homes

Baseline TB screening consists of three components:

1. Assessing for current symptoms of active TB disease,
2. Assessing for TB risk factors and TB history, and
3. Testing for the presence of infection with *Mycobacterium tuberculosis* by administering either a two-step TST or single IGRA.

Available tool: *Baseline TB Screening Tool for Residents Template* on pages 27-28.

Baseline TB screening of residents in residential hospices

Baseline TB screening consists of one component:

1. Assessing for current symptoms of active TB disease.

Screening for the presence of infection with *Mycobacterium tuberculosis* using a TST or IGRA is not necessary.

Available tool: *Baseline TB Screening Tool for Residents in Residential Hospice Template* on page 29.

Special Situations

Resident with a newly identified positive TST or IGRA

Documentation should include:

1. Test result,
2. Assessment for current TB symptoms,
3. Assessment of risk factors for progression to active TB disease,
4. Chest X-ray to rule out infectious TB disease. The chest X-ray should be done after the date of the positive TST or IGRA; however, a chest X-ray done within the three months prior to the TST/IGRA is acceptable, provided that the resident has not been exposed to infectious TB disease since the chest X-ray was done. After a baseline chest X-ray is performed and infectious TB disease has been ruled out, the resident will not need additional chest X-rays unless they develop symptoms of active TB disease or a clinician recommends a repeat chest X-ray, and
5. Medical evaluation to rule out a diagnosis of infectious TB disease.

Post the resident's positive TST or IGRA status in a prominent place in their record to ensure that staff are aware of it in case the resident develops symptoms of active TB disease at a later date.

Resident with written documentation of a previous positive TST or IGRA

If the result is appropriately documented, an additional TST or IGRA is not needed.

Documentation should include:

1. Test result,
2. Assessment for current TB symptoms,
3. Assessment of risk factors for progression to active TB disease,
4. Chest X-ray to rule out infectious TB disease. The chest X-ray should be done after the date of the positive TST or IGRA; however, a chest X-ray done within the three months prior to the TST/IGRA is acceptable, provided that the resident has not been exposed to infectious TB disease since the chest X-ray was done. After a baseline chest X-ray is performed and infectious TB disease has been ruled out, the resident will not need additional chest X-rays unless they develop symptoms of active TB disease or a clinician recommends a repeat chest X-ray, and
5. Medical evaluation to rule out a diagnosis of infectious TB disease if resident didn't have an appropriately documented chest X-ray and needed to get one. No medical evaluation is required if resident already has a chest X-ray dated after the documented positive TST or IGRA.

Post the resident's positive TST or IGRA status in a prominent place in their record to ensure that staff are aware of it in case the resident develops symptoms of active TB disease at a later date.

Resident with a verbal (undocumented) history of a previous positive TST or IGRA

These residents should undergo the same screening process as residents without previous positive results. Results of the screening should be documented in the resident's record.

If the resident has documentation of previous treatment for latent TB infection or active TB disease, that documentation may be substituted for documentation of previous positive TST or IGRA results.

Resident with signs or symptoms of active TB disease

Do not wait for the results of a TST or IGRA before referring a resident with TB symptoms for a medical evaluation. Approximately 25 percent of persons with active TB disease have a negative TST or IGRA because the body's immune system is not strong enough to respond to the test.

Residents with active TB disease may have one or more of the following:

- Prolonged cough (\geq three weeks)
- Hemoptysis
- Weight loss
- Night sweats
- Fatigue
- Fever, chills
- Poor appetite
- Chest pain
- Other symptoms may be present, depending on the site of disease

Active TB disease most commonly affects the lungs (pulmonary), but approximately 40 percent of TB cases in Minnesota involve only an extrapulmonary site of disease (most commonly pleural or lymphatic). For infection control purposes, only pulmonary, pleural and laryngeal TB disease are considered potentially infectious; most extrapulmonary TB cannot be transmitted to others.

Any resident with symptoms of infectious TB disease, regardless of the results of the TST or IGRA, should be transferred to a facility with respiratory isolation rooms and promptly evaluated to exclude a diagnosis of active TB disease. This should include a medical evaluation and symptom screen, a chest X-ray, and collection of sputum specimens or additional testing if indicated.

If active TB disease is confirmed or suspected, the diagnosing clinician should notify MDH at 651-201-5414 within one working day. The resident should remain in respiratory isolation until TB is diagnosed and effective treatment is initiated, or TB is ruled out. The resident's physician and the public health department should be consulted for guidance regarding when a resident with infectious TB disease can be removed from isolation.

Resident with a previous history of severe adverse reaction to TST

Severe adverse reactions (i.e., necrosis, blistering, anaphylactic shock or ulceration) to TSTs are rare events. Residents who provide a convincing verbal report of a severe adverse reaction to a prior TST, even if the reaction is not documented, should NOT receive a TST. Substitute an IGRA for the TST if it is available. If an IGRA is not available, document the severe reaction, conduct the TB symptom screen and review TB history and TB risk factors.

Resident refusal

Residents who refuse a TST should be screened using an IGRA. Residents who refuse an IGRA should be screened using a TST. Residents who refuse both the TST and IGRA should receive a chest X-ray to rule out infectious TB disease.

Baseline TB Screening Tool for Nursing Home and Boarding Care Home Residents (page 1)

Baseline TB Screening Tool for Nursing Home and Boarding Care Home Residents

_____ / _____ / _____
Last name, first name, middle initial

_____ / _____ / _____
Date of birth

_____ / _____ / _____
Date form completed

Baseline TB screening includes three components:

- (1) Assessing for current symptoms of active TB disease
and
- (2) Assessing the resident's TB risk factors and TB history
and
- (3) Testing for the presence of infection with *Mycobacterium tuberculosis* by administering either a single TB blood test or a two-step TST.

Symptoms of active TB disease (circle all that are present)

Coughing (>3 weeks)	Chest pain	Fatigue
Night sweats	Coughing up blood	
Weight loss/poor appetite	Fever/chills	

Note: If TB symptoms are present, promptly refer patient for a chest X-ray and medical evaluation. Do not wait for the TST or TB blood test result.

Resident's history and risk factors (circle response)

Ever had a positive reaction to a TB skin test or TB blood test? Yes No
If yes: Date _____ Number of millimeters of induration _____

Had a TB skin test in the past 12 months? Yes No

If yes: Date _____ Number of millimeters of induration _____ Result _____ Comments _____

BCG vaccine?	Yes	No	Unknown	
Treated for latent TB infection?	Yes	No	Unknown	
Treated for active TB disease?	Yes	No	Unknown	
Had a known exposure to TB < 2 years ago?	Yes	No	Unknown	
Born outside of the U.S.?	Yes	No	Unknown	
Traveled or lived outside of the U.S. in the past 2 years?	Yes	No	Unknown	
HIV-infected?	Yes	No	Unknown	
Immune suppressed*?	Yes	No	Unknown	
History of substance abuse?	Yes	No	Unknown	
End stage renal disease, diabetes, or silicosis?	Yes	No	Unknown	
Scarring/fibrosis on chest X-ray?	Yes	No	Unknown	
Undernourished or underweight (< 90% of ideal)	Yes	No	Unknown	
Live-virus vaccine within the past 6 weeks?	Yes	No	Unknown	
Severe adverse reaction to a TB skin test?	Yes	No	Unknown	

*i.e., taking immunosuppressive drugs (equivalent to greater than 15 mg of prednisone a day for 1 month or longer) or TNF alpha inhibitor drugs such as Enbrel®, Humira®, or Remicade® for treatment of rheumatoid arthritis, Crohn's disease, or other autoimmune disorders

Tool address: www.health.state.mn.us/divs/idepc/diseases/tb/rules/tbscrnbchnh.doc

Baseline TB Screening Tool for Residents Template (page 2)

TB Blood Test

Name of TB blood test (circle)	QuantiFERON TB-Gold QuantiFERON-TB-Gold InTube T-SPOT
Date of blood draw	
Results	
Interpretation of reading (circle)	Positive* Negative Indeterminate
Laboratory	

*Refer HCW for a chest x-ray and medical examination to rule out active infectious TB disease

Tuberculin skin testing (TST)

	TST – First Step		TST – Second Step	
Administration				
Name of person administering test				
Date and time administered				
Location (circle)	L forearm R forearm Other: _____		L forearm R forearm Other: _____	
Tuberculin manufacturer				
Tuberculin expiration date and lot #				
Signature of person who administered test				
Results (read between 48-72 hours)				
Date and time read:				
Number of mm of induration: (across forearm)	_____ mm		_____ mm	
Interpretation of reading* (circle)	Positive** Negative***		Positive** Negative	
Reader's signature				

*Consult grid at www.health.state.mn.us/divs/idepc/diseases/tb/candidates.pdf

** Refer HCW for a chest x-ray to rule out active TB disease

*** If results are negative, perform the second step in one to three weeks

Adapted by the Minnesota Department of Health TB Prevention and Control Program from materials produced by the Global TB Institute and the Francis J. Curry National TB Center

Tool address: www.health.state.mn.us/divs/idepc/diseases/tb/rules/tbscrnbchnh.doc

Baseline TB Screening Tool for Residents in Residential Hospice Template

Baseline TB Screening Tool for Residents in Residential Hospice

Last name, first name, middle initial

____ / ____ / ____

Date of birth

____ / ____ / ____

Date form completed

Symptoms of active TB disease (circle all that are present)

Coughing (>3 weeks)

Chest pain

Fatigue

Night sweats

Coughing up blood

Weight loss/poor appetite

Fever/chills

Note: If TB symptoms are present, promptly refer patient for a chest X-ray and full medical evaluation. Do not wait for the TST or IGRA result.

Tool address: www.health.state.mn.us/divs/idepc/diseases/tb/rules/tbscrnrh.doc

Glossary

Term	Defined as
active tuberculosis (TB) disease	Condition caused by <i>Mycobacterium tuberculosis</i> that has progressed to causing clinical or subclinical disease. TB disease usually affects the lungs, but it can also affect other parts of the body, such as the lymph nodes, bone, or brain. If TB is treated properly, most people can be cured. If TB is NOT treated properly, the disease can be fatal or develop into drug-resistant forms of TB. Compare to latent TB infection (LTBI). See also extrapulmonary TB and pulmonary TB.
airborne infection isolation (AII)	Isolation of patients infected with organisms that are spread via airborne droplet nuclei smaller than five microns in diameter (e.g., <i>M. tuberculosis</i>).
Bacille Calmette-Guérin (BCG) vaccine	A vaccine for TB used in many countries where active TB disease is endemic. It is not used in the United States. BCG vaccine helps prevent disseminated and meningeal TB disease in infants and young children, but offers much less protection for adults.
baseline TB screening	The initial screening for TB performed at the time that HCWs begin work or residents are admitted to a health care facility. Baseline screening identifies individuals with LTBI or active TB disease and is also used to compare with any future screening results. See also TB screening.
boosting	A phenomenon in which people who are skin tested many years after becoming infected with <i>M. tuberculosis</i> may have a negative reaction to an initial TST, followed by a positive reaction to a TST given up to a year later; this happens because the first TST boosts the immune response. Two-step testing is used in TB screening programs to tell the difference between boosted reactions and reactions caused by recent infection (see two-step TST). Boosting does not pertain to interferon gamma release assays (IGRAs).
conversion	A change in the result of a test for <i>M. tuberculosis</i> infection (TST or IGRA) which is interpreted as having progressed from uninfected to infected. An increase of ≥ 10 mm in induration during a maximum of two years is defined as a TST conversion for the purposes of employee surveillance programs. A conversion indicates that a new <i>M. tuberculosis</i> infection has likely occurred; this poses an increased risk for progression to active TB disease.
exposure	Being subjected to something (e.g., an infectious agent) that could have an adverse health effect. A person exposed to <i>M. tuberculosis</i> does not necessarily become infected. See also transmission.

Glossary

Term	Defined as
extrapulmonary TB	Active TB disease in any part of the body other than the lungs (e.g., lymph nodes, bone). An individual can have both pulmonary and extrapulmonary TB disease at the same time. Extrapulmonary TB is typically not considered infectious.
facility	A physical building or set of buildings.
facility TB risk assessment	An initial and ongoing evaluation of the risk for transmission of <i>M. tuberculosis</i> in a particular health care setting. To perform a risk assessment, the following factors should be considered: the community rate of TB, number of TB patients encountered in the setting, and the speed at which patients with active TB disease are suspected, isolated, and evaluated. The TB risk assessment determines the types of administrative and environmental controls and respiratory protection needed for a setting.
health care setting	A place where health care is delivered.
health care workers (HCWs)	Paid or unpaid person working in a health care setting.
hemoptysis	Coughing up of blood or blood-tinged sputum; one of the possible symptoms of pulmonary TB disease. Hemoptysis can also be observed in other pulmonary conditions (e.g., lung cancer).
induration	A palpable, raised, hardened area that may develop in response to the injection of tuberculin antigen. Induration is measured in only one direction (across the forearm), and the result is recorded in millimeters. The measurement is compared with guidelines to determine whether the test result is classified as positive or negative.
infectious	The ability of an individual with active TB disease to transmit (spread) TB bacteria to other persons. Directly related to the number of TB bacteria that the individual expels into the air. Persons who expel many bacilli are more infectious than those who expel few or no bacilli.
interferon gamma release assay (IGRA)	A test that detects the presence of <i>M. tuberculosis</i> infection by measuring the immune response to the TB bacteria in the blood. There are two commercially available IGRA: QuantiFERON-TB and T-Spot.

Glossary

Term	Defined as
latent TB infection (LTBI)	Persons with latent TB infection have <i>M. tuberculosis</i> organisms in their bodies but do not have active TB disease, have no symptoms, and are noninfectious. Such persons usually have a positive reaction to a TST or IGRA.
Mantoux tuberculin skin test	see tuberculin skin test
medical evaluation	A process for diagnosing active TB disease or LTBI, selecting treatment, and assessing response to therapy. A medical evaluation can include medical history and TB symptom screen, clinical or physical examination, screening and diagnostic tests (e.g., TSTs, IGRAs, chest X-rays, bacteriologic examination, and HIV testing), counseling, and treatment referrals.
<i>Mycobacterium tuberculosis</i> (<i>M. tuberculosis</i> or <i>M. tb</i>)	A type of tuberculous mycobacteria; a gram-positive bacterium that causes tuberculosis. Sometimes called the tubercle bacillus.
potential ongoing transmission	A risk classification for TB screening, including testing for <i>M. tuberculosis</i> infection when evidence of ongoing transmission of <i>M. tuberculosis</i> is apparent in the setting. Testing might need to be performed every 8–10 weeks until lapses in infection controls have been corrected, and no further evidence of ongoing transmission is apparent. Use potential ongoing transmission as a temporary risk classification only. After corrective steps are taken and conversion rates stabilize, reclassify the setting as medium risk for a period of at least one year.
pulmonary TB	Active TB disease that occurs in the lung, usually producing a cough that lasts ≥ 3 weeks.
purified protein derivative (PPD) (tuberculin)	A material used in the tuberculin skin test for detecting infection with <i>M. tuberculosis</i> . In the United States, PPD solution is approved for administration as an intradermal injection (5 TU per 0.1 mL), a diagnostic aid for LTBI (see tuberculin skin test).
respiratory protection	The use of N-95 or other respirators to protect a HCW from inhaling droplet nuclei containing <i>M. tuberculosis</i> .
serial TB screening	TB screening performed at regular intervals following initial baseline TB screening.

Glossary

Term	Defined as
symptom screen	A procedure used during a clinical evaluation in which patients are asked if they have experienced any of the common symptoms of active TB disease (e.g., cough, weight loss, night sweats).
TB blood test	see IGRA
TB screening	Methods used to identify persons who have active TB disease or LTBI. May include one or more of the following: TST, IGRA, chest x-ray, symptom screening.
transmission	Transmission occurs when a person inhales droplet nuclei containing <i>M. tuberculosis</i> , and the droplet nuclei transverse the mouth or nasal passages, upper respiratory tract, and bronchi to reach the alveoli of the lungs, resulting in infection.
tuberculin skin test (TST)	Skin test used to detect TB infection. Sometimes referred to as “PPD” or “Mantoux.”
two-step TST	Procedure used for the baseline skin testing of persons who will receive serial TSTs (e.g., HCWs and residents of long term care facilities) to reduce the likelihood of mistaking a boosted reaction for a new infection. If an initial TST result is classified as negative, a second step of a two-step TST should be administered 1–3 weeks after the first TST result was read. If the second TST result is positive, it probably represents a boosted reaction, indicating infection most likely occurred in the past and not recently. If the second TST result is also negative, the person is classified as not infected.