

Targeted Testing for Latent Tuberculosis Infection

CONTENTS

Introduction	3.2
Purpose.....	3.2
Policy	3.2
State laws and regulations.....	3.3
Tuberculosis Assessment / Screening of School Children	3.4
High-Risk Groups	3.6
When to Conduct Targeted Testing	3.8
Approaches to increasing targeted testing and treatment for latent tuberculosis infection	3.8
Screening for latent tuberculosis infection in facilities	3.9
Alaska program standards for health care facilities, staff and long term care facilities.....	3.10
References	3.11

Introduction

Purpose

Use this section to understand and follow national and Alaska guidelines to conduct targeted testing to screen for latent tuberculosis infection (LTBI).

In the 2005 guideline “Controlling Tuberculosis in the United States: Recommendations from the American Thoracic Society, CDC, and the Infectious Diseases Society of America,” one of the recommended strategies to achieve the goal of reduction of tuberculosis (TB) morbidity and mortality is the identification of persons with LTBI at risk for progression to TB disease, and treatment of those persons with an effective drug regimen.¹



For information on treatment, refer to the Treatment of Tuberculosis Disease **(6.2)** and Treatment of Latent Tuberculosis Infection **(8.2)** sections.

Reducing LTBI in high-risk populations is an important strategy to control TB. With an estimated 9.5–14.7 million persons with LTBI in the United States, continued progress toward eliminating TB in the United States and reducing TB among foreign-born persons requires effective strategies to meet this challenge.² Targeted testing for LTBI is a strategic component of TB control that identifies persons at high risk for developing TB who would benefit by treatment of LTBI, if detected. Persons with increased risk for developing TB include those who have had recent infection with *Mycobacterium tuberculosis* (*M. tb*) and those who have clinical conditions that are associated with an increased risk for progression of LTBI to active TB.³

Policy

In Alaska

- Persons who show or report signs and symptoms of TB should be evaluated for TB disease as described in the “Diagnosis of Tuberculosis Disease” topic in this section and reported as suspected cases of TB as described in the “Reporting Tuberculosis” topic in the Surveillance section.
- Contacts should be evaluated as described in the Contact Investigation section.
- TB screening in schools and certain employment settings is required by regulation and described under “Program Standards” in this section.
- Targeted testing for LTBI should be conducted only among persons in groups with identified risk factors for LTBI and/or progression to TB disease.

- For a list of groups with increased likelihood of infection with *M. tb*, refer to Figure 1: Paradigm for evaluation of those with latent tuberculosis infection (LTBI) based on risk of infection, risk of progression to tuberculosis, and benefit of therapy.



For roles and responsibilities, refer to the “Roles, Responsibilities, and Contact Information” topic in the Introduction **1.18**.

State Laws and Regulations



See the Statutes and Regulations section for more information on:

7 AAC 27.213. Tuberculosis Screening of School Children

<http://www.legis.state.ak.us/basis/aac.asp#7.27.213>

7 AAC 12.571. Employee health program

<http://www.legis.state.ak.us/basis/aac.asp#7.12.571>

7 AAC 12.650. Employee health program

<http://www.legis.state.ak.us/basis/aac.asp#7.12.650>

Tuberculosis Assessment / Screening of School Children: Program Standards

The State of Alaska has moved away from universal tuberculosis (TB) screening for school children to risk-based assessment.

Alaska law requires that each public school district and nonpublic school offering pre-elementary education through the 12th grade, or a combination of these grades, shall assess the tuberculosis status of each child not later than 90 days after school enrollment. The department will inform each public school district and each nonpublic school about the appropriate tuberculosis screening strategy that the district or school shall employ. The strategy may consist of annual health surveys upon registration, PPD skin tests, alternative laboratory-approved methods for assessing tuberculosis status, or a combination of two or more of those approaches. The department will use one or more of the following criteria to determine the required screening strategy for a public school district or nonpublic school:

- (1) evidence that prior PPD skin testing of school children in a community served by the district or school demonstrates tuberculosis transmission;
- (2) evidence that tuberculosis disease is occurring in a community served by the district or school;
- (3) evidence that a community served by the district or school has a history of high rates of tuberculosis when compared to rates of tuberculosis for the United States or this state;
- (4) evidence that children from populations having a high risk of tuberculosis are enrolled in the district or school; in this paragraph, "populations having a high risk" includes groups that historically have been medically underserved, homeless persons, foreign-born persons from countries with high rates of tuberculosis, and persons with immune deficiency conditions. (27 AAC 27.213)

In Alaska, schools have been directed to screen students for TB by the Department of Health and Social Services, Division of Public Health per 7 AAC 27.213 according to TB activity or risk, including the presence of high risk populations. Schools in areas of **low TB risk**, such as Anchorage, Fairbanks, Juneau, Kenai, etc., as now designated as low risk schools and are required to do risk assessments for **NEW SCHOOL ENTERERS ONLY** and provide TSTs to those students with identified risk. Blood tests, called interferon gamma release assays (IGRA), may be used instead of TSTs to screen students who require TB testing. Currently, the Alaska TB Program and state public health nurses (PHNs) are unable to provide or pay for IGRA testing; it would be the parent or guardian responsibility to obtain, pay for, and provide the results of IGRA testing to the school to satisfy the regulatory testing requirement. Schools in areas of the state with **high TB risk** or activity, such as the Yukon Kuskokwim Delta, Norton Sound,

etc., are now classified as high-risk schools and are required to screen every student annually for TB by TSTs.

Superintendents are notified in writing regarding the risk category – high or low TB risk – assigned to their schools in addition to the required method(s) for TB screening and reporting in those schools. Tuberculosis screening of school children is done by PHN public health nurses at schools which lack personnel capable of conducting the testing. The school district is responsible for collecting the risk assessment and/or obtaining a consent form signed by the child’s parent or guardian prior to administration of a tuberculin skin test to a child in the parent’s absence. Prior BCG vaccination is not a contraindication to tuberculin skin testing.

It is also the school district’s responsibility to suspend a child under AS 14.30.045 (4) if “...(1) the district or school has not screened the child for tuberculosis; or (2) the child or a person acting on behalf of the child fails to provide the district or school, within 30 days after referral under (b) of this section [if a PPD skin test or other laboratory screening test is positive], a written and signed statement of a health care provider stating that the child is not infectious from tuberculosis to others.” (27 AAC 27.213).



For detailed information on School TB assessment / screening and reporting, please see “School TB Screening Resources” on our website:

<http://dhss.alaska.gov/dph/Epi/id/Pages/tb.aspx>

High-Risk Groups

Certain factors identify persons at high risk for tuberculosis (TB) infection and/or for progression to TB disease. Testing for LTBI should be considered for persons with increased likelihood of infection with *Mycobacterium tuberculosis* (*M. tb*) as listed in Figure 1. Providers making treatment decisions should assess not only the likelihood of infection and risk of progression to active TB if infected, but also the benefit of treatment.

Alaska Natives, particularly persons from the Southwest and Northern regions, have an increased likelihood of infection with *M. tb* due to the current and historic epidemiology of tuberculosis in our state.

Figure 1. **PARADIGM FOR EVALUATION OF THOSE WITH LATENT TUBERCULOSIS INFECTION (LTBI) BASED ON RISK OF INFECTION, RISK OF PROGRESSION TO TUBERCULOSIS, AND BENEFIT OF THERAPY**⁴

Groups with Increased Likelihood of Infection with Mtb		Benefit of Therapy		LTBI Testing Strategy		
↑ Risk of Infection	Household contact or recent exposure of an active case	Yes	Likely to be Infected Low to Intermediate Risk of Progression (TST ≥ 10mM)	Likely to be Infected High Risk of Progression (TST ≥ 5mM)	→ Risk of Developing Tuberculosis if Infected	
	Mycobacteriology laboratory personnel	Not demonstrated				
	Immigrants from high burden countries (>20 / 100,000)	Not demonstrated				
	Residents and employees of high risk congregate settings	Yes				
	None	Not demonstrated	Unlikely to be Infected (TST > 15mM)			
→ Risk of Developing Tuberculosis if Infected						
		Low	Intermediate (RR 1.3 -3)	High (RR 3-10)		
		No risk factors	Clinical predisposition Diabetes Chronic renal failure Intravenous drug use	Children age less than 5 HIV infection Immunosuppressive therapy Abnormal CXR consistent with prior TB Silicosis		
→ Benefit of Therapy						
		Not demonstrated		Yes		

Figure 1. In developing a diagnostic approach for the evaluation of those with suspected LTBI, we recommend the clinician weigh the likelihood of infection, the likelihood of progression to tuberculosis if infected, and the benefit of therapy (Horsburgh and Rubin, Clinical practice: latent tuberculosis infection in the United States. N Engl J Med 2011; 364:1441–8). Recommendations were formulated for each of the 3 groups illustrated above. These groups are concordant with current recommendations for the interpretation of the tuberculin skin test (American Thoracic Society, Targeted tuberculin testing and treatment of latent tuberculosis infection. MMWR Recomm Rep 2000; 49:1–51). Abbreviations: CXR, chest radiograph; HIV, human immunodeficiency virus; LTBI, latent tuberculosis infection; Mtb, *Mycobacterium tuberculosis*; RR, ; TB, tuberculosis; TST, tuberculin skin test.



Additional information on persons at risk for LTBI and progression to TB disease see: CDC. Guidelines for preventing the transmission of *Mycobacterium tuberculosis* in health-care settings, 2005. *MMWR* 2005;54(No. RR-17):1-141; CDC.

https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm?s_cid=rr5417a1_e



Alaska Natives, particularly persons from the Southwest and Northern regions, have an increased likelihood of infection with *M. tb* due to the current and historic epidemiology of tuberculosis in our state.

When to Conduct Targeted Testing

Alaska has a high prevalence of prior positive tuberculin skin tests among its highest risk populations – Alaska Natives, residents of the Southwest and Northern regions of the state, the homeless, and recent immigrants. Tuberculosis screening among these groups cannot be done using tuberculin skin testing. Instead, a combination of symptom screening and sputa collection is done. Please consult the Alaska TB Program at 907-269-8000 for assistance in planning TB screening in these populations.

Targeted testing programs should be conducted only among high-risk groups, and testing should be discouraged for groups at low risk.⁵ High-risk groups include persons likely to be infected with *M. tb* and those with increased risk for developing tuberculosis (TB).



Factors that identify persons at high risk of LTBI infection and/or progressing to TB disease are listed in **Figure 1**.



Evaluate high-risk patients for LTBI as specified in the Diagnosis of Latent Tuberculosis Infection section **7.7**.



Offer treatment of LTBI to infected persons, irrespective of age, who are considered to be at high risk for developing active TB.⁶ See the Treatment of Latent Tuberculosis Infection section **8.4**.

Approaches to Increasing Targeted Testing and Treatment of Latent Tuberculosis Infection

The Centers for Disease Control and Prevention (CDC) describes two approaches to increasing targeted testing and treatment of LTBI. To plan and implement programs for targeted testing and treatment of LTBI, follow the recommended approaches outlined below.⁷

One approach is to promote clinic-based testing of persons who are under a clinician's care for a medical condition (e.g., human immunodeficiency virus [HIV] infection or diabetes mellitus) that also confers a risk for acquiring TB. This approach depends on a person's risk profile for TB.⁸

The other approach is to establish specific programs that target a subpopulation of persons who have a high prevalence of LTBI or who are at high risk for acquiring TB

disease if they have LTBI, or both. This approach requires identifying the subpopulations or areas with high TB risk through epidemiologic analysis and profiling.⁹



For information on the system for prioritizing persons for targeted testing, refer to “Controlling Tuberculosis in the United States: Recommendations from the American Thoracic Society, CDC, and the Infectious Diseases Society of America” (*MMWR* 2005;54[No. RR-12]:40–42) at <http://www.cdc.gov/mmwr/PDF/rr/rr5412.pdf>



The US Preventive Services Task Force published recommendations for LTBI screening and treatment “Screening for Latent Tuberculosis Infection in Adults: US Preventive Services Task Force Recommendation Statement” *JAMA* .969-962:(9)316;2016 .doi:10.1001/jama.2016.11046 <http://jamanetwork.com/journals/jama/fullarticle/2547762>



For assistance in planning targeted testing, contact the Alaska TB Program at 907-269-8000.

Screening for Latent Tuberculosis Infection in Facilities

Screening for LTBI should be conducted based upon each facility’s risk for transmission of *Mycobacterium tuberculosis* (i.e., low-risk, medium-risk, or potential for ongoing transmission),¹⁰ as determined in its TB risk assessment (both initial baseline assessment and periodic reassessments).



Risk assessment protocols and elements are outlined in the CDC’s “Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-care Settings, 2005” (*MMWR* 2005;54[No. RR-17]) at <http://www.cdc.gov/mmwr/pdf/rr/rr5417.pdf> .

Screening determines if a person should be evaluated for LTBI or TB disease by asking questions to gather information about whether the person

- has signs or symptoms of TB disease;
- belongs to a group at high risk for LTBI or (if infected) for progression to TB disease; or
- has a prior positive tuberculin skin test (TST).

Alaska Program Standards for Health Care Facilities, Staff and Long Term Care Facilities

Health Care Facilities and Staff

In Alaska, health-care facilities licensed under Title 7, Chapter 12 of the Alaska Administrative Code (general acute care hospitals, specialized hospitals, nursing homes, intermediate-care facilities for the mentally retarded, ambulatory surgical facilities, birth centers, mental health centers, home health and home health agencies) should have employee health programs that require each employee to be evaluated for TB within the first two weeks of employment and annually thereafter according to the Occupational Safety and Health Administration (OSHA) and/or state requirements.



See the Statutes and Regulations section for more information on:

7 AAC 12.571. Employee health program

[http://www.legis.state.ak.us/basis/folioproxy.asp?url=http://www.jnu01.legis.state.ak.us/cgi-bin/folioisa.dll/aac/query=\[group+!277+aac+12!2E571!27!3A\]/doc/{@1}/hits_only](http://www.legis.state.ak.us/basis/folioproxy.asp?url=http://www.jnu01.legis.state.ak.us/cgi-bin/folioisa.dll/aac/query=[group+!277+aac+12!2E571!27!3A]/doc/{@1}/hits_only)

7 AAC 12.650. Employee health program

[http://www.legis.state.ak.us/basis/folioproxy.asp?url=http://www.jnu01.legis.state.ak.us/cgi-bin/folioisa.dll/aac/query=\[group+!277+aac+12!2E650!27!3A\]/doc/{@1}/hits_only](http://www.legis.state.ak.us/basis/folioproxy.asp?url=http://www.jnu01.legis.state.ak.us/cgi-bin/folioisa.dll/aac/query=[group+!277+aac+12!2E650!27!3A]/doc/{@1}/hits_only)

Long Term Care Facilities

Persons being admitted to long-term care institutions who have a positive skin test (i.e., >10 mm induration) and who have not had a recent chest x-ray (within 1 month of admission) should have a chest x-ray [MMWR 1990:39(RR-10);7-20]. A person who develops protracted cough or fever or who has abnormal chest x-ray findings compatible with tuberculosis, especially if there is a positive skin test reaction, should be evaluated further (with sputum specimens for acid-fast bacilli smear and mycobacterial culture) to exclude active tuberculosis.



Two-step testing improves the interpretation of tuberculin skin tests and should be used for the **initial** skin testing of adults who will be retested periodically, such as healthcare workers. See the Infection Control section for more information (**17.11**).

References

- ¹ ATS, CDC, IDSA. Controlling tuberculosis in the United States: recommendations from the American Thoracic Society, CDC, and the Infectious Diseases Society of America. *MMWR* 2005;54(No. RR-12):15.
- ² ATS, CDC, IDSA. Controlling tuberculosis in the United States: recommendations from the American Thoracic Society, CDC, and the Infectious Diseases Society of America. *MMWR* 2005;54(No. RR-12):40.
- ³ CDC. Targeted tuberculin testing and treatment of latent tuberculosis infection. *MMWR* 2000;49(No. RR-6):1.
- ⁴ ATS, CDC, IDSA. Diagnosis of Tuberculosis in Adults and Children. *Clinical Infectious Diseases* 2017; 64(2):1-33.
- ⁵ CDC. Targeted tuberculin testing and treatment of latent tuberculosis infection. *MMWR* 2000;49(No. RR-6):1-2.
- ⁶ CDC. Targeted tuberculin testing and treatment of latent tuberculosis infection. *MMWR* 2000;49(No. RR-6):1.
- ⁷ ATS, CDC, IDSA. Controlling tuberculosis in the United States: recommendations from the American Thoracic Society, CDC, and the Infectious Diseases Society of America. *MMWR* 2005;54(No. RR-12):40.
- ⁸ ATS, CDC, IDSA. Controlling tuberculosis in the United States: recommendations from the American Thoracic Society, CDC, and the Infectious Diseases Society of America. *MMWR* 2005;54(No. RR-12):40.
- ⁹ ATS, CDC, IDSA. Controlling tuberculosis in the United States: recommendations from the American Thoracic Society, CDC, and the Infectious Diseases Society of America. *MMWR* 2005;54(No. RR-12):40.
- ¹⁰ CDC. Guidelines for preventing the transmission of *Mycobacterium tuberculosis* in health-care settings, 2005. *MMWR* 2005;54(No. RR-17):10.