Introduction

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About the Alaska Tuberculosis Program Manual

Purpose

This manual is designed to present the key steps and information needed to perform tuberculosis (TB) prevention and control tasks in Alaska.[1] Where additional or more detailed information is available, hyperlinks to CDC guidelines and other resources are provided.

Audience

The audience for this manual includes physicians, physician assistants, nurses, nurse practitioners, public health nurses, infection control nurses, and community health aides/practitioners.

How to Use This Manual

Portable Document Format

This manual is available electronically as a portable document format (PDF) file. To view the PDF file, you will need the free Adobe Reader, available at http://www.adobe.com/products/acrobat/readstep2.html .

Icons

Throughout the manual, these icons quickly cue you about important information and other resources:

This warns about high-consequence information you must understand when performing the task.

This signals when you should call to report or to consult on the task.

This highlights special considerations for pediatric patients.

This suggests another relevant area in the manual or another resource that you may want to review.

This alerts you that a form is available for the task.

Abbreviations

Refer to the list below for abbreviations used in the manual.

ACET	Advisory Council for the Elimination of Tuberculosis
ACH	air changes per hour
AFB	acid-fast bacilli
AIDS	acquired immunodeficiency syndrome
AII	airborne infection isolation
ALT	alanine aminotransferase
ARPE	*Aggregate Report for Program Evaluation*
ART	antiretroviral therapy
AST	aspartate aminotransferase
ATS	American Thoracic Society
BAMT	blood assay for *Mycobacterium tuberculosis*
BCG	Bacille Calmette-Guérin
CDC	Centers for Disease Control and Prevention
CT	computed tomography
CXR	chest radiograph
DNA	deoxyribonucleic acid
DOT	directly observed therapy
DTBE	Division of Tuberculosis Elimination
DTH	delayed-type hypersensitivity
ED	emergency department
EMB	ethambutol
EMS	emergency medical service
ESRD	end-stage renal disease
FDA	U.S. Food and Drug Administration

HAART	highly active antiretroviral therapy
HCW	healthcare worker
HEPA	high-efficiency particulate air
HIPAA	Health Insurance Portability and Accountability Act
HIV	human immunodeficiency virus
IDSA	Infectious Diseases Society of America
IGRA	interferon gamma release assay
INH	isoniazid
LTBI	latent tuberculosis infection
M. tuberculosis	*Mycobacterium tuberculosis*
MDR-TB	multidrug-resistant tuberculosis
MIRU	mycobacterial interspersed repetitive units
MOTT	mycobacterium other than tuberculosis
NAA	nucleic acid amplification
NIOSH	National Institute for Occupational Safety and Health
NNRTI	nonnucleoside reverse transcriptase inhibitors
NTCA	National Tuberculosis Controllers Association
NTM	nontuberculous mycobacteria
NTNC	National Tuberculosis Nurse Coalition
OSHA	Occupational Safety and Health Administration
PAPR	powered air-purifying respirator
PCR	polymerase chain reaction
PI	protease inhibitor
PPD	purified protein derivative
PZA	pyrazinamide
QA	quality assurance
QFT	QuantiFERON®-TB test

QFT-G	QuantiFERON®-TB Gold test
RFB	rifabutin
RFLP	restriction fragment length polymorphism
RIF	rifampin
RNA	ribonucleic acid
RPT	rifapentine
RVCT	*Report of Verified Case of Tuberculosis*
RZ	rifampin and pyrazinamide
TB	tuberculosis
TIMS	Tuberculosis Information Management System
TNF-α	tumor necrosis factor alpha
TST	tuberculin skin test
TU	tuberculin units
USCIS	U.S. Citizenship and Immigration Services
UVGI	ultraviolet germicidal irradiation
VDOT	video directly observed therapy
XDR-TB	extremely drug-resistant tuberculosis

Purpose of Tuberculosis Control

Tuberculosis (TB) is caused by a bacterial organism named *Mycobacterium tuberculosis.* (These organisms are sometimes called tubercle bacilli.) Mycobacteria can cause a variety of diseases. Some mycobacteria are called tuberculous mycobacteria because they cause TB or diseases similar to TB. These mycobacteria are *M. tuberculosis, M. bovis,* and *M. africanum.* Tuberculous mycobacteria readily spread from person to person; nontuberculous mycobacteria do not usually spread from person to person.

The goal of TB control in the United States is to reduce TB morbidity and mortality by:

- preventing transmission of *M. tuberculosis* from persons with contagious forms of the disease to uninfected persons, and
- preventing progression from latent TB infection (LTBI) to active TB disease among persons who have contracted *M. tuberculosis* infection.[2]

The four fundamental strategies to reduce TB morbidity and mortality are:

1. early and accurate detection, diagnosis, and reporting of TB cases, leading to initiation and completion of treatment;
2. identification of contacts of patients with infectious TB and treatment of those at risk with an effective drug regimen;
3. identification of persons with latent TB infection at risk for progression to TB disease, and treatment of those persons with an effective drug regimen; and
4. identification of settings in which a high risk exists for transmission of *M. tuberculosis* and application of effective infection control measures.[3]

For more information on these strategies and the thinking behind them, see “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]) at http://www.cdc.gov/MMWR/PDF/rr/rr5412.pdf.

Alaska Statutes and Regulations on Tuberculosis Control

Alaska Statutes and Regulations pertaining to the control of tuberculosis in Alaska are available in the Statutes and Regulations section of the manual **19.1**.

Objectives and Standards

Quality of Care

For tuberculosis (TB) programs, quality of care is measured by means of objectives. Such objectives are used as yardsticks to direct the program and measure its success.

Objectives reflect outcomes or results and program desires. Programs require objectives to define expected outcomes and results for case management activities.

In Alaska, TB program objectives are established from the following:

State Statutes and Regulations

Alaska Statutes and Regulations pertaining to the control of tuberculosis in Alaska are available in the Statutes and Regulations section of the manual **19.1**.

This information can also be found online in “Conditions Reportable to Public Health” at
http://dhss.alaska.gov/dph/Epi/Pages/pubs/conditions/default.aspx

Alaska TB Program Protocols, Resources and Reference Materials

Information on essential programmatic services and resources for providers and public health professionals is available on the Alaska TB Program website. Current recommendations for TB screening in schools and health care workers can also be accessed on the website.

Visit the Alaska Tuberculosis Program website at:
http://dhss.alaska.gov/dph/Epi/id/Pages/tb.aspx

National and State Program Objectives

Below are national and select state TB program objectives. The CDC program objectives are current as of August 2019.[4] Under the targeted national objectives, there are state-specific objectives established by the Alaska TB Program, based on Alaska’s epidemiology and recent program performance.

Table 1: **NATIONAL TUBERCULOSIS PROGRAM OBJECTIVES AND PERFORMANCE TARGETS FOR 2025**

Goals for Reducing TB Incidence		Targets
TB Incidence Rate	Reduce the incidence of TB disease.	1.3 cases per 100,000
U.S.-Born Persons	Decrease the incidence of TB disease among U.S.-born persons.	0.4 cases per 100,000
Alaska Objective	*Decrease the incidence of TB disease among U.S.-born persons who are not Alaska Native*	*0.4 cases per 100,000*
Foreign-Born Persons	Decrease the incidence of TB disease among foreign-born persons.	8.8 cases per 100,000
U.S.-Born Non-Hispanic Blacks or African Americans	Decrease the incidence of TB disease among U.S.-born non-Hispanic blacks or African Americans.	1.0 cases per 100,000
Alaska Objective	*Decrease the incidence of TB disease among Alaska Native persons.*	*33 cases per 100,000*
Children Younger than 5 Years of Age	Decrease the incidence of TB disease among children younger than 5 years of age.	0.1 cases per 100,000
Objectives on Case Management and Treatment		**Targets**
Known HIV Status	Increase the proportion of TB patients who have a positive or negative HIV test result reported.	99%
Treatment Initiation	For TB patients with positive acid-fast bacillus (AFB) sputum-smear results, increase the proportion who initiated treatment within 7 days of specimen collection.	96%
Recommended Initial Therapy	For patients whose diagnosis is likely to be TB disease, increase the proportion who are started on the recommended initial 4-drug regimen.	97%
Sputum Culture Result Reported	For TB patients ages 12 years or older with a pleural or respiratory site of disease, increase the proportion who have a sputum culture result reported.	99%
Sputum Culture Conversion	For TB patients with positive sputum culture results, increase the proportion who have documented conversion to negative results within 60 days of treatment initiation.	83%
Completion of Treatment	For patients with newly diagnosed TB disease for whom 12 months or less of treatment is indicated, increase the proportion who complete treatment within 12 months.	95%

Adapted from Source: CDC. National TB Program Objectives & Performance Targets for 2025. Available at: https://www.cdc.gov/tb/education/pdf/2025_TB_Objectives.pdf

National Standards, Guidelines and Recommendations

Program standards are what the stakeholders of the TB program would consider to be "reasonable expectations" for the program. For TB, standards have been established by nationally accepted authorities, such as the American Thoracic Society (ATS), the Infectious Disease Society of America (IDSA), and CDC, as well as generally recognized TB control experts, such as the National Tuberculosis Nurse Coalition (NTNC) and National Tuberculosis Controllers Association (NTCA).

The standards of care for the medical treatment and control of TB are published jointly by the ATS, the IDSA, and the CDC. These standards should be available for reference by each TB staff member. The standards are included in the following guidelines:

- 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]). Available at: http://www.cdc.gov/MMWR/PDF/rr/rr5412.pdf.
- ATS, CDC, IDSA. Diagnosis of Tuberculosis in Adults and Children. *Clinical Infectious Diseases 2017*; 64(2):1-33. Available at: https://www.cdc.gov/tb/publications/guidelines/pdf/cid_ciw694_full.pdf.
- ATS, CDC, IDSA. Treatment of Drug-Susceptible Tuberculosis. *Clinical Infectious Diseases 2016*; 63(7):147-95. Available at: https://www.cdc.gov/tb/publications/guidelines/pdf/clin-infect-dis.-2016-nahid-cid_ciw376.pdf.
- A. "Guidelines for the Investigation of Contacts of Persons with Infectious Tuberculosis: Recommendations from the National Tuberculosis Controllers Association and CDC" (*MMWR* 2005;54 [No. RR-15]). Available at: http://www.cdc.gov/mmwr/pdf/rr/rr5415.pdf.
- CDC. "Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-care Settings, 2005" (*MMWR* 2005;54[No. RR-17]). Available at: http://www.cdc.gov/mmwr/pdf/rr/rr5417.pdf.CDC. "Latent TB Infection Testing and Treatment: Summary of U.S. Recommendations available at: https://www.cdc.gov/tb/publications/ltbi/pdf/CDC-USPSTF-LTBI-Testing-Treatment-Recommendations-508.pdf

For additional guidelines, see the Division of Tuberculosis Elimination's "TB Guidelines" Web page (Division of Tuberculosis Elimination Web site). Available at: http://www.cdc.gov/tb/publications/guidelines/default.htm.

Roles, Responsibilities, and Contact Information

State TB Program Staff

Table 2: **ALASKA TUBERCULOSIS CONTROL PROGRAM STAFF ROLES, RESPONSIBILITIES, AND CONTACT INFORMATION**

Roles and Responsibilities	Contact Information
Alaska TB Controller / Medical Epidemiologist Establishes short- and long-range program goals for prevention of infection and controlling disease; directs the planning, implementation and evaluation of program activities/special projects, develops program policies, procedures and standards; writes TB grant applications; provides oversight of preparation, allocation and monitoring of program resources and budget; conducts infectious disease surveillance and analyzes tuberculosis data; supervises the maintenance of appropriate records and data collection systems; and responds to inquiries regarding interpreting state TB laws and regulations. Provides medical consultation and education to healthcare providers statewide who diagnose and treat patients with TB or LTBI. Also provides consultation to PHNs in areas of TB case management, including DOT. Provides medical evaluation of chest radiograph and patient history and makes recommendations for LTBI therapy. Responds to inquiries from the general public, media and legislators regarding TB morbidity, disease outbreaks and disease trends. Provides consultation and technical assistance to local health agencies, schools, clinics, long-term care facilities, correctional facilities, homeless shelters, and other public and private agencies regarding TB policies and procedures. Determines need for legal actions such as quarantine and isolation.	Michelle M. Rothoff, MD Section of Epidemiology 3601 C Street, Suite 540 Anchorage, AK 99503 Tel: 907-269-8000 Fax: 907-563-7868 E-mail: michelle.rothoff@alaska.gov
Roles and Responsibilities	Contact Information
Alaska TB Program Nurse Consultant Provide statewide consultations to public health nurses (PHNs), physicians, other health care providers, hospitals, schools, long-term care facilities, homeless shelters,	Vacant Section of Epidemiology 3601 C Street, Suite 540 Anchorage, AK 99503

correctional systems and other agencies regarding TB program standards of care for case management, contact investigation, treatment of LTBI, and directly observed therapy. In partnership with the Section of Public Health Nursing (SOPHN), coordinate TB case management and participate in case management teleconferences with local PHNs. Conduct tuberculosis outbreak investigations and assist with large contact investigations. Conduct training for health care providers statewide. Provide phone consultations to the general public.	Tel: 907-269-8000 Fax: 907-562-7802 E-mail:

Roles and Responsibilities	Contact Information
Alaska Public Health Nurses and Grantees Alaska Public Health Nurses (PHNs) play a vital role in the prevention and control of tuberculosis. **Case Management** Conduct local case management for all cases of active TB, order TB medications from the state pharmacy, set up and monitor directly observed therapy (DOT) at the community level for all infectious cases, participate in case management teleconferences with the Alaska TB Program, work with primary care provider on TB standards of care as needed. Conduct patient education as needed. **Contact Investigation** Lead contact investigations and adequately test contacts, identify contacts needing therapy for latent TB infection (LTBI), order meds through state pharmacy, monitor LTBI therapy, including establishing DOT for high-risk persons with LTBI. Document and report all contact investigation activities and follow-up to the Alaska TB Program. **TB Prevention and Screening** Facilitate targeted testing of high-risk populations on a case-by-case basis. **Immigrant and Refugee Screening** Conduct TB screening for immigrants and refugees and provide LTBI therapy as needed. Document and report all screening activities and follow-up to the Alaska TB Program.	Tim Struna, MPH, RN Chief, Section of Public Health Nursing P.O. Box 110611 Juneau, AK 98111-0611 Tel: 907-465-3150 Fax: 907-465-3913 E-mail: tim.struna@alaska.gov Information about public health centers across the state is available at: http://dhss.alaska.gov/dph/Nursing/Pages/locations.aspx

Local Public Health Agencies

Table 3: **LOCAL PUBLIC HEALTH AGENCIES' ROLES, RESPONSIBILITIES, AND DIRECTORY**

Roles and Responsibilities	Contact Information
The Municipality of Anchorage Health and Human Services, Community Health Services, Disease Prevention and Control Provides tuberculosis screening, case management for persons with suspect or active TB, contact investigation, and immigrant and refugee screening.	TB Control Program 825 L Street, 1st Floor Anchorage, AK 99503 Tel: 907-343-4799 Fax: 907-343-7992 Information about TB services provided by the Municipality of Anchorage is available at: http://www.muni.org/Departments/health/Pages/TB.aspx#

Private Medical Providers

Table 4: **PRIVATE MEDICAL PROVIDERS ROLES AND RESPONSIBILITIES**

Role and Responsibilities
1. Report all suspected or confirmed cases of active tuberculosis disease to the Section of Epidemiology within 2 working days of evaluation.
2. Conduct initial patient evaluation and periodic follow-up with the patient.
3. Prescribe tuberculosis medications and send prescriptions to local public health nurse. Medications will be supplied free-of-charge from the state pharmacy.
4. Provide adequate and understandable instruction in disease control measures to each patient who has been diagnosed with active tuberculosis.
5. Maintain responsibility for deciding date of discharge for hospitalized tuberculosis patients and consult with the Alaska TB Program regarding plans for public health follow-up of the patient in the community.

Laboratories

TABLE 5: **LABORATORIES' ROLES, RESPONSIBILITIES AND DIRECTORY**

Role and Responsibilities	Contact Information
State Laboratory The Alaska State Public Health Laboratory (ASPHL) is an integral part of the Division of Public Health and the Alaska Tuberculosis Program. As the state's only reference laboratory, the ASPHL provides clinics, hospitals and other health care agencies a wide range of services including identification and confirmation of pathogenic organisms. In addition, it provides susceptibility testing for all isolates of *M. Tuberculosis* (MTB) and sends all isolates to the national genotyping project. The TB Unit receives and processes MTB specimens five days a week. Microscopic results are provided within 24 hours of receipt except on weekends and holidays. The Acid-Fast Bacilli (AFB) positive results received by the ASPHL are entered into a lab database and reported within a day (by phone or fax) to submitting laboratories, health care providers and the Alaska TB Program. Using state of the art technology, the unit performs isolation and definitive identification on all mycobacterial isolates received by ASPHL. Drug susceptibility testing is also routinely performed on all first time MTB isolates and on isolates from patients whose symptoms suggest they are not responding to first line drugs.	Alaska State Public Health Laboratory Yvette Vergnetti 5455 Dr. Martin Luther King Jr. Ave. PO Box 196093 Anchorage, AK 99507 Tel: (907) 334-2153 Fax: (907) 334-2161 E-mail: yvette.vergnetti@alaska.gov Additional information about state laboratory services is available at: http://dhss.alaska.gov/dph/Labs/Pages/default.aspx
Private Laboratories There are a number of reference laboratories in communities across the state. It is recommended that specimens for *M. Tuberculosis* (MTB) testing be submitted to ASPHL.	

Resources and References

Resources

- CDC. “Framework for Program Evaluation in Public Health” (*MMWR* 1999;48[No. RR-11]). Available at: https://www.cdc.gov/mmwr/preview/mmwrhtml/rr4811a1.htm
- Division of Tuberculosis Elimination. A Guide to Developing a TB Program Evaluation Plan (Division of Tuberculosis Elimination Web site; accessed January 25, 2017). Available at: http://www.cdc.gov/tb/programs/Evaluation/Guide/PDF/Complete_guide_Developing_eval_plan.pdf .
- Division of Tuberculosis Elimination. *Understanding the TB Cohort Review Process: Instruction Guide* (Division of Tuberculosis Elimination Web site; accessed January 25, 2017). Available at: http://www.cdc.gov/tb/publications/guidestoolkits/cohort/default.htm .
- New Jersey Medical School National Tuberculosis Center. *Planning & Implementing the TB Case Management Conference: A Unique Opportunity for Networking, Peer Support and Ongoing Training* (Newark, NJ; 2004). Available at: http://globaltb.njms.rutgers.edu/downloads/planning&implementing/TBCaseMGT.pdf .

References

[1] CDC. Progressing toward tuberculosis elimination in low-incidence areas of the United States: recommendations of the Advisory Council for the Elimination of Tuberculosis. *MMWR* 2005;51(No. RR-5):1.
[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):14.
[3] 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.
[4] CDC. National TB Program Objectives & Performance Targets for 2025. Available at: https://www.cdc.gov/tb/education/pdf/2025_TB_Objectives.pdf