

Introduction

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About the Wyoming Tuberculosis Program Manual

Purpose

This manual is designed to present the key steps and crucial information needed to perform tuberculosis (TB) control tasks in states in which TB occurs with a low incidence—defined by the Centers for Disease Control and Prevention (CDC) as less than 3.5 cases/100,000 population/year.¹ Where additional or more detailed information is available, hyperlinks to CDC guidelines and other resources are provided.

The *Wyoming Tuberculosis Program Manual* is based on a template created by an advisory group convened during CDC Task Order #6. The advisory group developed the template's format and created its content by reviewing other TB control manuals, current CDC guidelines, and needs in the four low-incidence states of Idaho, Montana, Utah, and Wyoming.

Audience

The audience for this manual includes city/county/regional public health nurses, outreach workers, physicians, and public health officers; Indian Health Services (IHS) staff; physician consultants; private sector physicians; infection control nurses in hospitals and other facilities; disease intervention specialists; state epidemiologists; and state TB program staff.

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 this hyperlink:

<http://www.adobe.com/products/acrobat/readstep2.html> .

Hyperlinks

When viewing this manual online with an Internet connection, you can go directly to underlined Web addresses by clicking on them.

Cross-References

When viewing this manual electronically, you can go directly to other sections or topics in the manual by clicking on text next to this icon:



Forms

Required and recommended forms are available on the “Wyoming Tuberculosis Program Forms/Supplies” at

<http://wdh.state.wy.us/phsd/tb/forms2.html>



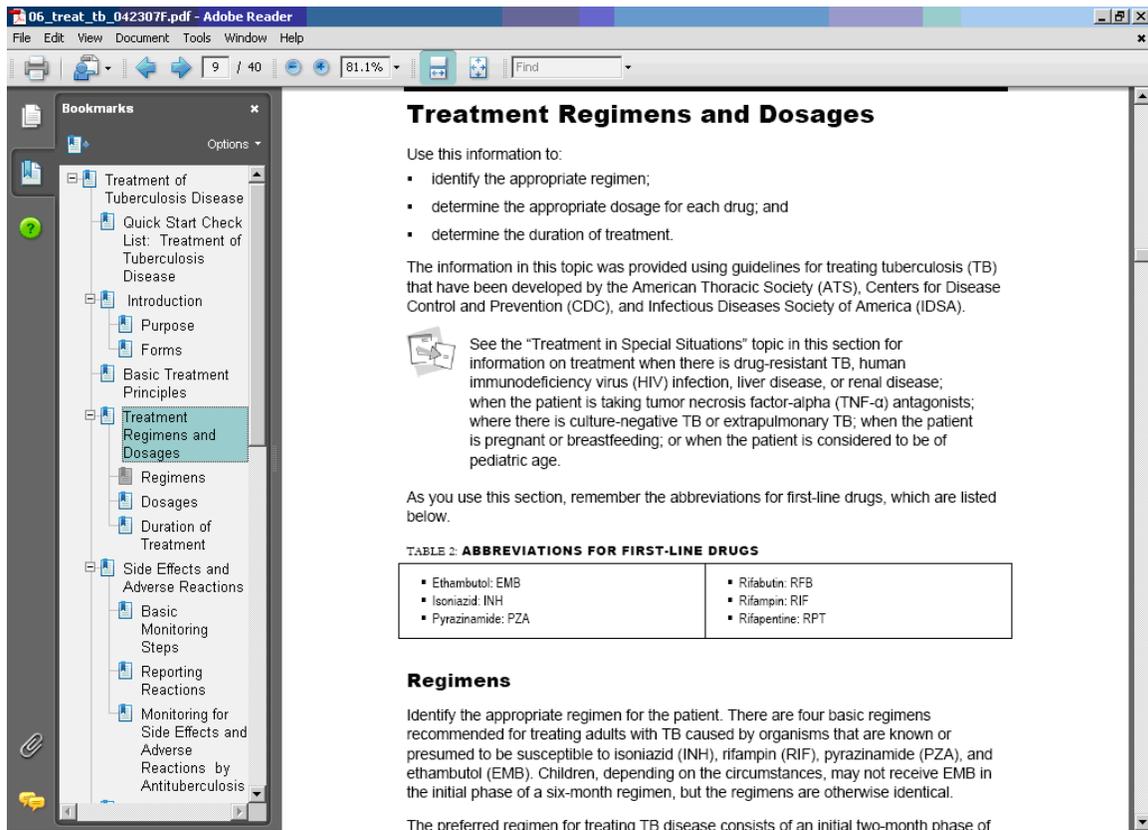
Bookmarks

In PDF files, you can use bookmarks to go quickly to a section or topic. If the bookmarks are not visible on the left, click the Bookmarks icon or tab on the left of the window.

To view sections and topics in the bookmarks list:

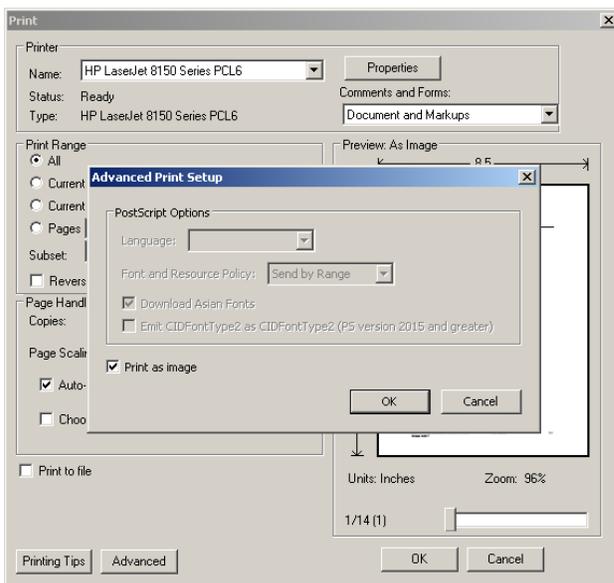
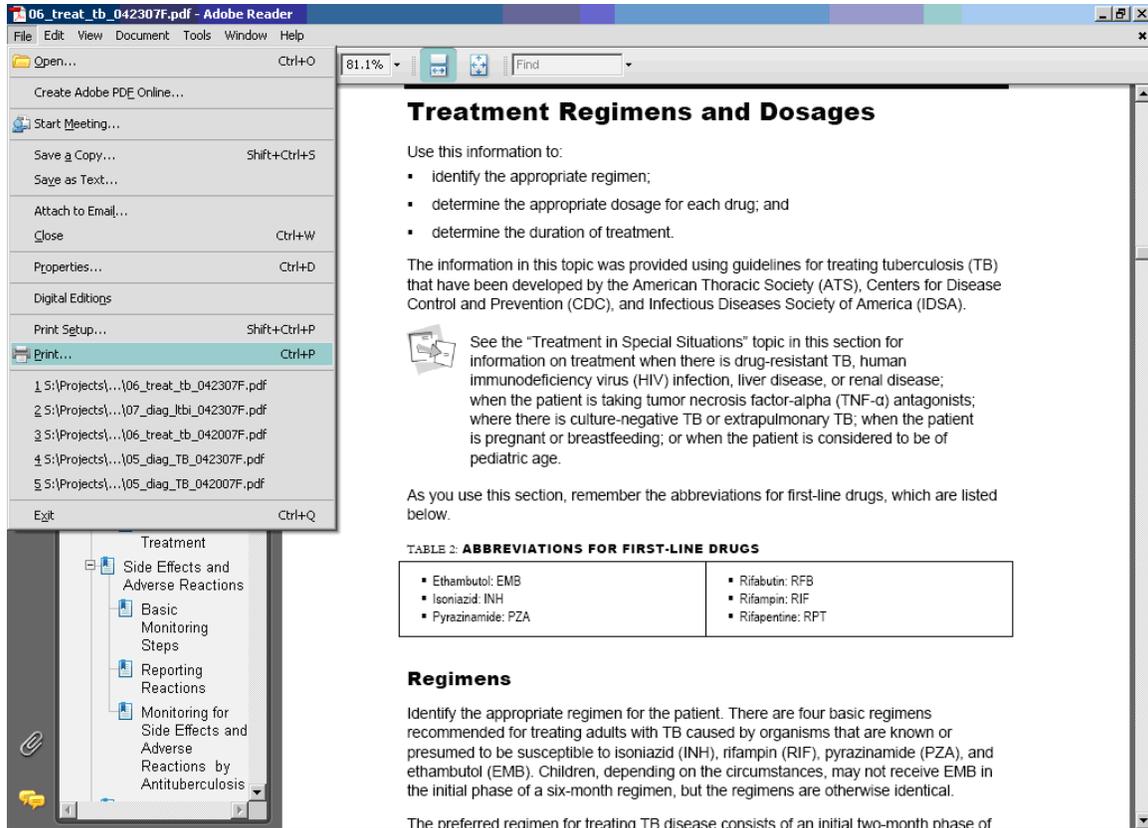
- Click + to see a more detailed list.
- Click – to hide the more detailed list.

To go to a section or topic in the bookmarks list, point to its name and left-click.



Printing

To access the print dialog box, click the File drop-down menu, click Print, and then make your selections in the Print dialog box.



Some printers have older printer drivers that cause spaces to appear in the middle of words. To avoid this problem, select File/Print, click the Advanced button, check Print as Image, and then click OK. If you need further assistance with printing, call the Francis J. Curry National Tuberculosis Center's IT staff at 415-502-5810.

Icons

Throughout the manual, these icons quickly cue you into 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
All	airborne infection isolation
ALT	alanine aminotransferase
<i>ARPE</i>	<i>Aggregate Report for Program Evaluation</i>
ART	antiretroviral therapy
AST	aspartate aminotransferase
ATS	American Thoracic Society
BAMT	blood assay for <i>Mycobacterium tuberculosis</i>
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
<i>M. tuberculosis</i>	<i>Mycobacterium tuberculosis</i>
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
<i>RVCT</i>	<i>Report of Verified Case of Tuberculosis</i>
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
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*. Other mycobacteria are called nontuberculous mycobacteria (NTM) because they do not cause TB. One common type of nontuberculous mycobacteria is *M. avium* complex. 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 doing the following:

- Preventing transmission of *M. tuberculosis* from persons with contagious forms of the disease to uninfected persons
- Preventing progression from latent TB infection (LTBI) to active TB disease among persons who have contracted *M. tuberculosis* infection²



For information on the transmission of *M. tuberculosis* and on how LTBI progresses to TB disease, see the Centers for Disease Control and Prevention's (CDC's) online course, *Interactive Core Curriculum on Tuberculosis* (2004), at this hyperlink:

<http://www.cdc.gov/tb/webcourses/corecurr/index.htm> .

The four fundamental strategies to reduce TB morbidity and mortality include the following:

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 other persons with latent TB infection at risk for progression to TB disease and treatment of those persons with an effective drug regimen
4. Identification of settings in which a high risk exists for transmission of *M. tuberculosis* and application of effective infection control measures³



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 this hyperlink:

<http://www.cdc.gov/MMWR/PDF/rr/rr5412.pdf> .

Wyoming Laws and Rules on Tuberculosis Control

Wyoming laws and rules on tuberculosis (TB) are located in the Wyoming State Statutes.



In the Wyoming State Statutes see Title 35 at

<http://legisweb.state.wy.us/statutes/statutes.aspx?file=titles/Title35/T35CH4AR1.htm>



Contact the Wyoming TB Program at 307-777-8939 for assistance with interpreting laws and rules regarding TB prevention and control.

Objectives and Standards

Quality of Care

For tuberculosis (TB) programs, quality of care is measured by objectives and standards. Such objectives and standards 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.

Standards are an accepted set of conditions or behaviors that define what is expected and acceptable regarding job duties, performance, and provision of services. The TB control program works to achieve objectives through a series of standards.

In Wyoming TB program objectives and standards are established from the following:

TB Program Agreements, Plans, and Protocols

- Wyoming TB Advisory Committee
- Centers for Disease Control and Prevention (CDC) Cooperative Agreement

National TB Guidelines

- American Thoracic Society (ATS)
- Infectious Diseases Society of America (IDSA)
- CDC Division of Tuberculosis Elimination (DTBE) guidelines

National and Wyoming State Program Objectives

Below are national and state TB program objectives. The CDC program objectives are current as of December 2006.⁴

Table 1: **PROGRAM OBJECTIVES AND PERFORMANCE TARGETS**

Indicator		National Tuberculosis Program Objectives and Performance Targets
1	Percent completion of treatment	<p>Increase timely completion of treatment</p> <p>National Objective: At least 93% of patients with newly diagnosed tuberculosis (TB), for whom therapy for 12 months or less is indicated, will complete treatment within 12 months by 2015.</p> <p>Wyoming State Objective: At least 95% of patients with newly diagnosed tuberculosis (TB) for whom therapy for 12 months or less is indicated, will complete treatment within 12 months</p> <p>Achieve a preventive therapy completion rate (i.e., the percentage of people starting therapy for latent TB infection (LTBI) who complete at least a six months course) of > or = 85%.</p>
2	TB case rate	<p>Decline in TB rates</p> <p>a. National Objective: The average yearly decline in TB rates in the US born will be >11%.</p> <p>b. National Objective: The average yearly decline in TB rates in the foreign born will be >4%.</p> <p>c. National Objective: The TB rate in U.S. born will be <0.7 cases/100,000 by 2015.</p> <p>d. National Objective: The TB rate in foreign born will be <14 cases/100,000 by 2015.</p> <p>e. National Objective: The TB rate in U.S.-born black non-Hispanics will be <1.3 cases/100,000 by 2015.</p> <p>f. National Objective: The TB rate in children <5 years of age will be <0.4/100,000 by 2015.</p>

National Tuberculosis Program Objectives and Performance Targets		
Indicator		
3	Thorough contact investigations	<p>Improve contact identification, evaluation, and treatment</p> <ul style="list-style-type: none"> a. National Objective: All sputum-AFB-smear-positive TB cases will have at least one contact listed by 2015. b. National Objective: At least 93% of contacts to sputum-AFB-smear-positive TB cases will be evaluated for infection and disease by 2015. c. National Objective: At least 88% of infected contacts will start treatment by 2015. d. National Objective: At least 79% of contacts who start treatment will complete treatment.
4	Timely laboratory reporting	<p>Ensure timely laboratory reporting</p> <ul style="list-style-type: none"> a. National Objective: State public health labs will report 100% of results of culture identification of <i>M. tuberculosis</i> complex to submitter and state TB program within 21 days of receipt of specimen by 2015. b. National Objective: Increase the percentage of TB patients with initial positive cultures who also are tested for and receive drug susceptibility results to 100% by 2015.

Source: National TB Indicators Project. *Initial Indicators and Performance Targets*. Atlanta, GA: CDC Division of Tuberculosis Elimination; November 1, 2006. [Cleared by CDC but unpublished as of December 2006.]

In addition to the national program objectives listed above, the CDC has two goals (listed below) that do not have national program objectives established at this time. Specific objectives relating to these two goals will be established in the future. In the meantime, states should review the following two goals and establish objectives that are specific, measurable, and time phased, if applicable. National Goal 2 is listed for reference; it does not apply to low-incidence areas.

1. National Goal: Increase the percentage of immigrants and refugees designated as Class A, B1, or B2 who are appropriately evaluated and treated.
2. National Goal: For jurisdictions with greater than 50 reported cases of TB occurring annually in U.S.-born African Americans, decrease the case rate.

Standards

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 Diseases Society of America (IDSA), and the CDC, and generally recognized TB control experts, such as the National Tuberculosis Nurse Coalition (NTNC) and the National Tuberculosis Controllers Association (NTCA). Many state programs, and some local TB control programs, have established their own standards and objectives for case management.

The standards of care for the medical treatment and control of TB are published jointly by ATS, 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. "Diagnostic Standards and Classification of Tuberculosis in Adults and Children" (*Am J Respir Crit Care Med* 2000;161[4 Pt 1]). Available at: <http://www.cdc.gov/tb/pubs/PDF/1376.pdf> .
- ATS, CDC, IDSA. "Treatment of Tuberculosis" (*MMWR* 2003;52[No. RR-11]). Available at: <http://www.cdc.gov/mmwr/PDF/rr/rr5211.pdf> .
- CDC, NTCA. "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. "Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection" (*MMWR* 2000;49[No. RR-6]). Available at: <http://www.cdc.gov/mmwr/PDF/rr/rr4906.pdf> .

For additional guidelines, see the Division of Tuberculosis Elimination's "TB Guidelines" Web page (Division of Tuberculosis Elimination Web site; accessed February 8, 2011). Available at: http://www.cdc.gov/tb/pubs/mmwr/Maj_guide/default.htm .

Roles, Responsibilities, and Contact Information

State Tuberculosis Program Staff

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

Roles and Responsibilities	Contact Information
<p>The Wyoming Tuberculosis Program manager ensures compliance with applicable public health laws and regulations related to tuberculosis (TB) reporting and control. The Wyoming TB Program conducts statewide TB surveillance, data evaluation, and development of policies and guidelines for the control and/or elimination of TB in the state. The Wyoming TB Program coordinates between local and other state jurisdictions and consults on all aspects of TB prevention and control, including case management, contact investigation, and outbreak investigation. In addition, the Wyoming TB program provides training and education and maintains programs for providing drug treatment, latent TB infection treatment, and incentives/enablers.</p>	<p>Canyon Hardesty, MS, CHES Wyoming Department of Health 6101 Yellowstone Road, Ste 510 Cheyenne, WY 82002 Tel: 307-777-8939 Fax: 307-777-5279 E-mail: canyon.hardesty@wyo.gov</p>
<p>The Wyoming Tuberculosis Program conducts semi-annual review of all active cases and a subset of Latent TB infection. All cohort reviews and epidemiologic trend information are facilitated and provided by the Wyoming Tuberculosis Program.</p>	<p>Tai Wright, BS Wyoming Department of Health 6101 Yellowstone Road, Ste 510 Cheyenne, WY 82002 Tel: 307-777-3562 Fax: 307-777-5279 E-mail: tai.wright1@wyo.gov</p>

Table 2: **STATE AND COUNTY HEALTH OFFICER ROLES, RESPONSIBILITIES, AND CONTACT INFORMATION**

Roles and Responsibilities	Contact Information
<p>W.S. 35-1-240 empowers the State Health Officer and others under his direction and supervision to (1) investigate and control the causes of epidemic, endemic, communicable, occupational and other diseases, and (2) establish, maintain and enforce isolation and quarantine. The State Health Officer can delegate these powers to County Health Officers (CHOs).</p> <p>The County Health Officer is expected to become involved in the State's TB Control Program. This may take the form of oversight, where patient care is directed (i.e., medical management is provided) by a private physician. The County Health Officer may be called upon to provide medical direction himself, where the patient has no physician or where no other physician in the community is willing to provide this. Where medical speciality and/or limitations imposed by professional liability insurance coverage preclude a County Health Officer from providing this care directly, the CHO is authorized to direct another physician in the community to provide this care. The County Health Officer will assist the State Health Officer with the issuance of any necessary quarantine procedure. The County Health Officer should be aware of the TB testing capabilities of the State Public Health Laboratory, and promote its use when appropriate.</p> <p>When the County Health Officer needs assistance, he/she should contact the State Health Officer, the State Epidemiologist, the State TB Program Manager and Field Epidemiology staff, and/or Public Health Nursing. Conversely, it is appropriate for a Public Health Nurse or others listed here to contact the County Health Officer for assistance.</p>	<p>Wendy Braund, MD, MPH, MEd Director and State Health Officer 6101 Yellowstone Rd. Ste 420 Wyoming Department of Health, Cheyenne, WY 82002</p> <p>Tel: 307-777-6340 Email: wendy.braund@wyo.gov</p> <p>A list of County Health Officers can be located by calling the WDH TB Program at 307-777-8939.</p>

Local Public Health Agencies and Private Medical Providers

Table 3: **LOCAL PUBLIC HEALTH AGENCIES' AND PRIVATE MEDICAL PROVIDERS' ROLES, RESPONSIBILITIES**

Local Public Health Agencies	Private Medical Providers
<p>Role and Responsibilities of Local Public Health Agencies</p> <p>Local public health agencies are responsible for receiving reports of suspected or confirmed cases of tuberculosis (TB) within their jurisdictions and reporting these to the Wyoming TB Program. Local public health departments are required through the Wyoming Code Annotated (MCA) to ensure that TB cases within their jurisdictions are appropriately isolated (if necessary) and treated until cured. In addition, the state health department in collaboration with local public health departments must perform contact investigations surrounding infectious/potentially infectious TB cases. Regular reporting of case management findings and contact investigation results must be submitted to the Wyoming TB Program. Local public health agencies also conduct targeted testing and treatment of high-risk populations and individuals.</p> <p>For a list of local public health agency contacts, see http://www.health.wyo.gov/familyhealth/nursing/PHN-Co-Offices.html</p>	<p>Role and Responsibilities of Private Medical Providers</p> <p>Medical providers in Wyoming are required to report suspected or confirmed TB cases to the state of Wyoming Public Health Department. In addition, providers are encouraged to coordinate care and treatment of patients with the state and local health department departments.</p> <p>Private providers are highly encouraged to provide all information related to or important to the diagnosis and treatment of TB to the Wyoming State Health department. Together with the, state and local public health departments, the private provider assumes responsibility for the successful completion of therapy of the TB patient.</p>

Laboratories

Table 6: **ROLES, RESPONSIBILITIES, AND CONTACT INFORMATION OF LABORATORIES**

Role and Responsibilities	Contact Information
<p>State Laboratory</p> <p>The Wyoming Public Health Laboratory (WPHL) provides tuberculosis diagnostic services that are a vital part of the Wyoming Tuberculosis Program. The WPHL is the only facility in the state providing full diagnostic tuberculosis services, including AFB smear; culture isolation, identification, and susceptibility testing; and TB direct detection by nucleic acid probe. In addition, the WPHL provides consultation, training, and referral services to other laboratories performing TB diagnostic services within the state and as needed in other states.</p>	<p>Microbiology Supervisor Jim Walford Wyoming Public Health Laboratory Combined Laboratories Facility 208 S. College Drive Cheyenne, WY 82007 Tel: 307-777-7431 Fax: 307-777-6422 E-mail: jim.walford@wyo.gov</p>

Resources and References

Resources

- CDC. "Framework for Program Evaluation in Public Health" (*MMWR* 1999;48[No. RR-11]). Available at: <ftp://ftp.cdc.gov/pub/Publications/mmwr/rr/rr4811.pdf> .
- Division of Tuberculosis Elimination. *A Guide to Developing a TB Program Evaluation Plan* (Division of Tuberculosis Elimination Web site; accessed November 1, 2006). Available at: http://www.cdc.gov/tb/Program_Evaluation/default.htm .
- Division of Tuberculosis Elimination. *Understanding the TB Cohort Review Process: Instruction Guide* (Division of Tuberculosis Elimination Web site; accessed November 1, 2006). Available at: <http://www.cdc.gov/tb/pubs/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://www.umdnj.edu/globaltb/products/planning&implementing.htm> .

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.