

Persons using assistive technology might not be able to fully access information in this file. For assistance, please send e-mail to: mmwrq@cdc.gov. Type 508 Accommodation and the title of the report in the subject line of e-mail. Advisory Council for the Elimination of Tuberculosis January 1995 CHAIRMAN

Charles M. Nolan, M.D.

Director, Tuberculosis Control

Seattle-King County Department of Public Health

Seattle, WA ACTING EXECUTIVE SECRETARY

Samuel W. Dooley, Jr., M.D.

Acting Associate Director for Science

National Center for Prevention Services

Centers for Disease Control and Prevention

Atlanta, GA MEMBERS Paul T. Davidson, M.D.

Los Angeles County Department of Health Services

Los Angeles, CA Miguel A. Escobedo, M.D.

El Paso City/County Health District

El Paso, TX Sue C. Etkind, R.N., M.S. *

Massachusetts Department of Public Health

Jamaica Plain, MA Charles P. Felton, M.D.

Harlem Hospital Center

New York, NY Kathleen F. Gensheimer, M.D.

Maine Department of Human Services

Augusta, ME Jeffrey Glassroth, M.D.

Northwestern University Medical School

Chicago, IL Kathleen S. Moser, M.D.

San Diego County Department of Health Services

San Diego, CA Gisela F. Schechter, M.D., M.P.H. *

San Francisco Tuberculosis Control Program

San Francisco, CA Jeffrey R. Starke, M.D.

Baylor College of Medicine

Houston, TX Lillian J. Tom-Orme, Ph.D.

Utah Department of Health

Salt Lake City, UT Betti Jo Warren, M.D.

King-Drew Medical Center

Los Angeles, CA EX OFFICIO MEMBERS G. Stephen Bowen, M.D.

Health Resources and Services Administration

Rockville, MD Michael J. Brennan, Ph.D.

Food and Drug Administration

Bethesda, MD Georgia S. Buggs

Office of Minority Health

Public Health Service

Rockville, MD Warren Hewitt, Jr.

Substance Abuse and Mental Health Services Administration

Rockville, MD J. Terrell Hoffeld, D.D.S.

Agency for Health Care Policy and Research

Rockville, MD Gary A. Roselle, M.D.

Department of Veterans Affairs

Cincinnati, OH Zeda Rosenberg, Sc.D.

National Institutes of Health

Bethesda, MD Bruce Tempest, M.D.

Indian Health Service

Gallup, NM Basil P. Vareldzis, M.D.

Agency for International Development

Washington, DC LIAISON REPRESENTATIVES John B. Bass, Jr., M.D.

American Thoracic Society

University of South Alabama

Mobile, AL Nancy Dunlap, M.D.

American College of Chest Physicians

University of Alabama at Birmingham

Birmingham, AL Wafaa El-Sadr, M.D., M.P.H.

Infectious Disease Society of America

Harlem Hospital Center

New York, NY Alice McIntosh

American Lung Association

New York, NY Norbert P. Rapoza, Ph.D.

American Medical Association

Chicago, IL Michael L. Tapper, M.D.

Society for Hospital Epidemiology of America

Lenox Hill Hospital

New York, NY COMMITTEE REPRESENTATIVES Advisory Committee on the Prevention of HIV Infection

Walter F. Schlech, M.D.

Victoria General Hospital

Halifax, Nova Scotia, Canada Hospital Infection Control Practices Advisory Committee

Susan Forlenza, M.D.

Nassau County Medical Center

East Meadows, NY

These members who made substantive contributions to this report rotated

off the Council in 1994. The following CDC staff member prepared this report:
Patricia M. Simone, M.D.

Division of Tuberculosis Elimination

National Center for Prevention Services in collaboration with the Advisory Council for the Elimination of Tuberculosis Summary Tuberculosis (TB) rates declined steadily for decades in the

United

States, but several complex social and medical factors caused TB morbidity

to increase 14% from 1985 through 1993. The recent increases in TB morbidity have placed additional demands on state and local TB control

programs, which already had been substantially weakened by inadequate

staffing and funding support. TB programs throughout the nation must be

revitalized if they are to provide core TB control activities that enable

effective responses to this public health challenge. This report describes

a model for TB control programs and the essential components of a successful TB control program, including three priority strategies for TB

prevention and control: a) identifying and treating persons who have active

TB, b) finding and screening persons who have had contact with TB patients

to determine whether they are infected with *Mycobacterium tuberculosis* or

have active TB and providing appropriate treatment, and c)

screening

populations at high risk for TB infection and the development of TB

disease

to detect infected persons and providing therapy to prevent

progression to

active TB. State and local health departments have primary responsibility

for

preventing and controlling TB. To meet this challenge successfully,

TB

control programs should be able to administer activities that

include the

following core components:

- conducting overall planning and development of policy,

- identifying persons who have clinically active TB,

- managing persons who have or who are suspected of having disease,

- identifying and managing persons infected with M. tuberculosis,

- providing laboratory and diagnostic services,

- collecting and analyzing data, and

- providing training and education. The Advisory Council for the Elimination of Tuberculosis has

prepared this report to provide a national standard by which policymakers,

TB

control program managers, and others evaluating TB programs can

assess

individual TB control programs. The report may also help local programs to obtain and maintain adequate resources for TB control activities. In addition to defining the essential components of a TB control program, this report emphasizes the importance of a) prioritizing TB control activities; b) coordinating care with other health-care providers, facilities, and community organizations; c) using alternative approaches to TB control (e.g., the expanded use of directly observed therapy); d) targeting screening and prevention programs to high-risk populations; and e) following current recommendations for the treatment of TB. TB control program managers should make every effort to incorporate each of these components into their program activities. TB programs may perform these activities directly, or programs may coordinate with other providers to ensure the implementation of these activities. Failure to meet these core standards can decrease a TB program's effectiveness in controlling this

reemergent public health risk. INTRODUCTION The incidence of tuberculosis (TB) was declining in the United States until recently, and in 1989, goals were set to eliminate the disease by the year 2010 (1). However, instead of continuing to decline, TB morbidity increased 14% from 1985 through 1993 (2). This recent trend has been attributed to several factors, including the human immunodeficiency virus (HIV) epidemic, the occurrence of TB in foreign-born persons from countries that have a high prevalence of TB, and the transmission of Mycobacterium tuberculosis in congregate settings (e.g., health-care facilities, correctional facilities, drug-treatment centers, and homeless shelters). The increase in TB and the complexity of factors associated with this increase have placed additional demands on public health TB control programs, yet many of these programs lack adequate support for services necessary for TB control. In particular, funding for TB control programs has been reduced markedly because of the increased competition for

public

health funds; the decrease in government services at federal, state, and

local levels; and the decline in TB cases reported before 1985 (3).

The

public health-care infrastructure must be rebuilt to meet the challenge of

the recent resurgence of TB cases (4). In the United States, state and local health departments have

legal

responsibility for the prevention and control of TB in communities.

Three

strategies are fundamental to the prevention and control of TB. The first

priority is identifying and treating persons who have active TB; this

priority entails identifying persons who have TB, ensuring that they

complete appropriate therapy, and, in exceptional circumstances, using

confinement measures. The second priority is finding and screening persons

who have been in contact with TB patients to determine whether they have TB

infection or disease and providing them with appropriate treatment.

The

third priority is screening high-risk populations to detect persons

who are infected with *M. tuberculosis* and who could benefit from therapy to prevent the infection from progressing to TB disease. To implement these three strategies, public health TB control programs should coordinate with health-care providers from several community organizations to ensure the provision of direct services for TB patients.

Health departments are responsible for providing centralized, coordinated systems for many activities extending beyond individual patient care (e.g., identifying TB cases; ensuring that patients complete therapy; performing contact investigations; screening high-risk groups; and collecting,

analyzing, and publishing epidemiologic and surveillance data). **PURPOSE** The Advisory Council for the Elimination of Tuberculosis (ACET) has prepared this report to provide a national standard ** for the assessment of individual TB control programs by TB control program managers, policymakers, and other persons evaluating TB programs. This report also may be used to assist local programs in obtaining and maintaining

adequate

resources for TB control activities. In addition to defining the

essential

components of a TB control program, these recommendations emphasize

the

importance of prioritizing TB control activities; coordinating care

with

other health-care providers, facilities, and community

organizations; and

using alternative approaches to TB control (e.g., the expanded use

of

directly observed therapy, targeted screening and prevention

programs to

high-risk populations, and adoption of current recommendations for

the

treatment of TB) (5-7). Although the size and structure of TB

control

programs vary according to each community's specific needs, TB

control

program managers should attempt to incorporate each of these core

components into program activities. OVERALL PLANNING AND POLICY To achieve

effective TB control and progress toward TB

elimination, TB

control programs should develop an overall TB control strategy,

including

written policies and procedures, and should be able to provide

guidance and

oversight to local facilities and practitioners involved in TB control

activities. TB control programs should ensure that appropriate laws and

adequate staff and funding are available to support TB control activities.

These programs also should form networks and coalitions with community

groups to assist with implementing TB control activities. An Overall TB Control Strategy and Written Policies and Procedures TB control programs should develop an overall TB control

strategy in collaboration with local health-care providers, professional societies, and

voluntary organizations. To determine specific needs, the program should

use local TB morbidity data and standard indicators of program performance

(e.g., the rate of completion of therapy). The plan should be developed by

the state or local ACET in conjunction with community TB coalition representatives. The TB control strategy should outline program priorities

and objectives reflecting the specific needs of the community and the roles

of the various agencies, organizations, and providers. TB control programs

should also have written policies and procedures that clearly define the standard of practice for TB treatment and prevention in the community (1,5-18).

periodically and revised as needed. Advising Local Institutions and Practitioners TB control programs should provide consultation and oversight for the

TB control activities of local facilities and practitioners (and local

health departments where appropriate) to ensure that these efforts reflect

current standards of care and public health practice. The consultation may

be provided by either health department staff or local or regional medical

experts who have agreed to act as consultants for the health department.

Consultants should be available to advise local practitioners about patient

management problems (e.g., monitoring treatment adherence); at least one

consultant should be experienced in treating patients having drug-resistant

TB. Information on the latest laboratory techniques and technology,

guidance about appropriate laboratory methods for local facilities and

laboratories, and assistance in conducting contact or outbreak investigations should be available from TB control programs or their consultants. TB programs should seek opportunities to inform persons or facilities about activities and technologies that can improve TB services. Appropriate Laws and Regulations to Support TB Control Activities TB control programs periodically should review applicable laws, regulations, and policies to ensure their consistency with currently recommended medical and public health practices (8). States and municipalities should create laws, regulations, and policies that provide support and a legal basis for the following TB control activities:

- ensuring the prompt, mandatory reporting of each confirmed and suspected case of TB;
- observing state and local laws and regulations protecting patient confidentiality;
- examining persons at high risk for TB infection and disease and prescribing and monitoring appropriate treatment for these persons;
- ensuring that a treatment plan is devised for all hospitalized

patients before their discharge;
ensuring rapid laboratory examination of specimens and
reporting of
results (including susceptibility-test results) to the
appropriate
health department and the requesting clinician;
ensuring that patients who have TB receive appropriate
treatment
until they are cured;
protecting the health of the public by isolating and treating
persons who have infectious TB;
detaining persons who, though not infectious, are unwilling or

unable to complete treatment and who are at risk for becoming
infectious again and acquiring drug-resistant TB; and
treating patients without consideration of their ability to
pay. States also should require health-care facilities and
congregate-living settings (e.g., correctional facilities) to apply recommended
measures for
infection control. Adequate and Appropriate Staff to Conduct TB Control Activities TB
control programs should have adequate and appropriate staff
to
ensure the fulfillment of TB control activities outlined in this
report.
The number and type of staff for these programs may vary, depending
on the
local TB morbidity and the specific needs of the community. Staff

are necessary for program planning, program funding, record-keeping, education, and coordination of health department activities with other TB control activities in the community. All TB control programs should have a designated program manager. These programs should have access to, or have on staff, epidemiologists qualified to conduct data-based evaluation and surveillance activities. Community outreach workers are needed to deliver directly observed TB therapy, thereby ensuring continuity and completion of treatment.

Outreach workers may also be involved in other activities (e.g., educating patients, observing preventive therapy, conducting contact investigations, arranging or providing transportation, assisting patients with social services, serving as interpreters, and assisting clinicians with clinical services).

These outreach workers may be nurses or lay persons specifically trained for these activities. The TB program should ensure that outreach workers have adequate clinical and administrative supervision. Depending on clinic needs,

clinic staff may be composed of various combinations of nurses, physicians, physician assistants, and other workers. In many areas, clinics have nurse managers responsible for providing most of the education, treatment, clinical monitoring, prevention services, and supervisory needs of the clinic. A physician who is qualified and trained in the diagnosis, management, and clinical monitoring of TB should be available on staff or employed on a contract basis.

Clinic staff should have characteristics appropriate to the community's cultural and language needs. Adequate Funding to Conduct TB Control Activities TB control programs should seek funding for TB control activities from federal, state, local, and private sources. They should work with local organizations (e.g., state and local medical societies, lung associations, and TB coalition members) to educate policymakers about the local TB problem and local program priorities, needs, and objectives. Networks with Community Groups Optimal TB prevention and control activities require a

multidisciplinary approach. Thus, TB control programs in communities having a high prevalence of TB should form networks and coalitions with local groups (e.g., cultural and ethnic organizations, community clinics, places of worship, professional societies, lung associations, and medical and nursing schools). In collaborating with these community groups, the TB control program should a) ensure that community leaders, health-care providers, and policymakers are knowledgeable about TB; b) help educate the public about TB; and c) provide guidance and assistance for local screening and prevention services. Coalitions with community groups help TB control programs reach high-risk groups more effectively and provide culturally appropriate services. TB control programs should educate and advise community groups to ensure the quality and appropriateness of TB control activities in accordance with the community's needs. The National Coalition to Eliminate Tuberculosis exemplifies a national coalition involved

in

educating health-care providers and the public about TB. MANAGING PERSONS WHO HAVE DISEASE OR WHO ARE SUSPECTED OF HAVING

DISEASE TB control programs should ensure that the services needed to evaluate,

treat, and monitor TB patients are readily available in each community. In

many areas, these services may be provided directly by the state TB control

program. In other areas, local TB control programs or health-care professionals, with supervision and consultation from the state TB control

program, provide treatment services to patients. Although some patients may

undergo most of their evaluation and treatment in settings other than the

health department, the major responsibility for monitoring and ensuring the

quality of all TB-related activities in the community should be undertaken

by the health department as part of its duties to protect the public

health. The public health goals of TB patient management are to initiate

treatment promptly and ensure the completion of effective therapy to cure

illness, reduce transmission, and prevent the development of

drug-resistant

TB. Clinical Services Developing a Treatment Plan A specific health department employee (case manager) should be

assigned

primary responsibility and held accountable for ensuring that each patient

is educated about TB and its treatment, that therapy is continuous, and

that contacts are examined. Some specific responsibilities also may be

assigned to other persons (e.g., clinical supervisors {nurses, physicians,

or physician assistants}, outreach workers, health educators, and social

workers). As soon as TB is diagnosed or suspected, treatment should be started,

and the TB case should be reported to the health department. Within 3

working days after the case is reported, a health department worker should

visit the patient in the hospital or home to initiate patient education,

identify contacts, make appropriate referrals for medical evaluation, and

detect possible problems related to adherence to therapy. In cooperation

with the other medical, nursing, and outreach staff providing care

to the

patient, the case manager should develop an initial treatment and monitoring plan based on the initial visit, the medical and nursing

assessment, and other available information (Table_1). The

initial

treatment plan should be developed within 1 week of diagnosis

(i.e., within

1 week of initiation of therapy for a person suspected to have TB

or within

1 week of identification of a person having a positive culture).

This

treatment plan should be reviewed regularly and modified as needed

when

additional relevant information becomes available (e.g.,

susceptibility-test results) or when the care of the patient is

transferred

from one provider to another. The treatment plan should include the specifics of the medical

regimen,

a monitoring plan for toxicity and for clinical and bacteriologic

response,

and an assessment of the patient's social, behavioral, and

additional

medical needs that may affect continuity or completion of therapy

(19). The

health department employee responsible for monitoring treatment

adherence

should identify and implement methods that promote adherence and that are

appropriate to the patient's needs and desires. A treatment plan should be

designed for efficiency and economy of services and convenience to the

patient. When developing and implementing a treatment plan, TB control programs

should work closely with health-care providers from local hospitals,

drug-treatment centers, HIV clinics, correctional facilities, health

maintenance organizations, private physicians' offices, and other facilities where TB patients receive medical care. TB control programs

should fulfill their mandated responsibilities and also respect the

relationship between patient and primary health-care provider. Clinic Services Clinic services provided by TB control programs should be accessible

and acceptable to the members of the community served by the clinic. Clinic

hours should be convenient and preferably should include some evening hours

for persons who work or attend school during the day. The clinic should be

easily accessible by public transportation, or transportation should be provided. Intervals between the time of referral and the time of appointment and waiting times in the clinic should be kept to a minimum. In busy TB clinics or multipurpose clinics, priority should be given to persons having TB or suspected of having TB and to persons receiving TB medications. Clinic services, including diagnostic evaluation, medications, and transportation, should be provided without consideration of the patient's ability to pay. The clinic should have staff members who speak the same language and have similar cultural and socioeconomic backgrounds as the community served by the clinic, or the clinic should employ persons trained to work in cross-cultural settings. Promoting Adherence Methods for promoting adherence to therapy should be tailored to the patient's needs, life-style, social support system, and beliefs about health. An assessment of these factors should be included in the development of a treatment plan (19,20). Patients should be educated about

the causes and effects of TB, the dosing and possible adverse reactions of their medication, and the importance of taking their medication according to the treatment plan. To facilitate adherence, the plan should use short-course treatment regimens and, for patients whose therapy is not directly observed, fixed-dose combination tablets. Providing transportation to the clinic also is important for promoting adherence. A welcoming and respectful atmosphere within the clinic setting is fundamental to maintaining adherence. Consideration should be given to treating all patients with directly observed therapy (DOT) (6,7). With DOT, a health-care provider or other responsible person observes the patient swallowing each dose of anti-TB medication. DOT may be administered with daily or intermittent regimens and may be given to patients in an office or clinic setting or by an outreach worker in the patient's home, place of employment, school, or other mutually agreed-upon place. In some instances, DOT may be administered by

the staff of correctional facilities or drug-treatment programs,
home
health-care workers, staff of maternal and child health facilities,
or a
responsible community or family member. Incentives and enablers should be available
to enhance
adherence to
therapy. These incentives range from simple approaches (e.g.,
offering a
cup of coffee or food discount coupons and talking with a patient
while he
or she is waiting in the clinic) to complex approaches (e.g.,
obtaining
food and housing for a homeless patient). Health-care professionals, including private
practitioners,
who become
aware of a TB patient who has demonstrated an inability or
unwillingness to
adhere to a prescribed treatment regimen should consult the health
department. The TB control program should assist in evaluating the
patient
for the causes of nonadherence to therapy and provide assistance
(e.g.,
outreach-worker services) to enable the patient to complete the
recommended
therapy. If the patient still fails to adhere to treatment, the
health

department should take appropriate action based on local laws and regulations. This action could entail seeking court-ordered DOT or detention for those patients who are unwilling or unable to complete their treatment and who are infectious or who are at risk for becoming infectious or developing drug-resistant TB. Additional services may be necessary to facilitate continuity and completion of therapy. Social workers, translators, and referral sources for drug-treatment services should be available in the clinic or easily accessible to the patients.

Referral System for Other Medical Problems A system should be in place to facilitate referral of TB patients for evaluation and treatment of other medical problems, including those conditions (e.g., HIV infection, underlying malignancy, diabetes mellitus, and substance abuse) that may affect the course or outcome of TB treatment.

Consultants should see referred patients in a timely fashion, and the assessment and recommendations of the consultant should be made available promptly to the referring health-care provider. If patients receive

care in
more than one setting, treatment should be coordinated with the
other
health-care providers to ensure continuity and completion of
therapy,
minimize drug interactions, and avoid duplication of efforts. The
TB
program should take primary responsibility for ensuring TB
treatment and
monitoring for adherence. Clinical Consultative Services Expert medical consultation
should be available for management
of all
TB patients, including those who have drug-resistant TB. These
consultative
services should be available to the TB control program and
health-care
providers in the community. The consultation may be provided by a
staff
member of the TB control program or by a local or regional
consultant
collaborating with the health department. Inpatient Care Regardless of the patient's
ability to pay, appropriate
accommodations
should be available for any TB patient requiring inpatient hospital
care
for TB or other conditions. The facility should have effective
infection

control measures in place to prevent transmission of TB infection in the hospital (12). Medical staff knowledgeable about the management of TB patients should be available to assist in the care of the patient while hospitalized. In addition, appropriate medications should be available in the facility so that the patient can continue therapy in the hospital.

Appropriate diagnostic services (e.g., radiology and mycobacteriology) should be available to monitor the patient for adverse reactions, the progress of treatment, and other medical conditions. The local TB program and the facility should develop and implement protocols to ensure rapid reporting of known or suspected TB cases to the local health department. **Confinement Capability** To ensure that patients receive treatment until they are cured, TB control programs should have adequate legal authority and appropriate facilities available to isolate and treat patients who have infectious TB.

When all less restrictive measures have failed, TB control programs

also

should have the authority to detain patients unwilling or unable to

complete their treatment. This authority also should apply to

nonadherent

patients who are no longer infectious, but who are at risk for

again

becoming infectious or for the development of drug-resistant TB. Infection Control TB

control programs should serve the medical community as

sources of

information and consultation regarding appropriate infection

control

practices (12). During interactions with the medical community, TB

control

programs should emphasize the need to maintain a high level of

suspicion

for TB in evaluating patients who have TB symptoms and also the

importance

of early diagnosis and isolation and prompt initiation of therapy.

The

programs should give expert advice or provide referrals to experts

for

information about appropriate infection control measures for

different

settings (e.g., hospitals, clinics, nursing homes, correctional

facilities,

homeless shelters, and drug-treatment centers). TB control programs should provide

guidance to local facilities and the community to ensure the availability of an appropriate number of TB

isolation rooms to meet community needs. Because local needs may change,

the adequacy of the number of isolation rooms should be reassessed each

year as part of the evaluation of the TB control program. TB control programs should educate the staff of facilities

providing care for TB patients about the need for routine periodic evaluation of

infection control practices and may also assist in the evaluation process.

Assistance may include providing current recommendations and regulations to

the facility, providing names of experts in infection control, or providing

access to personnel involved in programmatic evaluations. Coordinating Care with Other Health-Care Providers and Facilities TB patients often receive care in multiple settings, including

HIV clinics, drug-treatment centers, correctional facilities, hospitals,

nursing homes, or primary care clinics. When patients move among these

various settings, continuity and completion of therapy may be compromised unless a system for the coordination of care exists. Discharge planning for hospitalized patients should begin as soon as TB is diagnosed (i.e., at the time of initiation of therapy in a suspected case or identification of a positive culture in a confirmed case). A representative from the TB control program should visit the patient in the hospital to identify contacts, collect information for the initial treatment plan, and ensure that no obstacles to the patient's follow-up care exist (see Managing Persons Who Have Disease or Who Are Suspected of Having Disease). To provide and coordinate continuous TB treatment and to facilitate transfers of care, TB control programs should communicate regularly with providers and facilities involved in TB patient care, including hospitals, infection-control practitioners, private practitioners, community clinics, correctional facilities, homeless shelters, and drug-treatment centers. TB

control

programs should consider using a computerized system for coordinating the

care of TB patients. IDENTIFYING PERSONS WHO HAVE CLINICALLY ACTIVE TB

Diagnostic Methods Clinics providing services for TB patients should have access to the

basic methods necessary for the diagnosis of TB, including tuberculin skin

testing, chest radiography, sputum induction, and mycobacteriology services

for smears, cultures, and drug-susceptibility testing (see Laboratory and

Diagnostic Services). TB control programs should provide guidance to

facilities about appropriate diagnostic methods for different circumstances. Sputum smear examinations and cultures for mycobacteria

should be performed on persons suspected of having active pulmonary or

laryngeal TB. Tuberculin testing is the standard method for screening

asymptomatic populations for infection with *M. tuberculosis*.

However,

screening initially for disease rather than infection may be more appropriate in some circumstances (e.g., when tuberculin skin-test results

may be unreliable, when application and reading of the test may be

impractical, or when the consequences of an undiagnosed case may be

severe). For example, because elderly persons living in long-term care

facilities are at high risk for the development of TB and may be anergic,

all patients admitted to these facilities should have an initial screening

chest radiograph. Chest radiography also may be the preferable screening

method for persons incarcerated in jails or residing in other settings

where TB is common and where diagnostic delays may result in large numbers

of persons being exposed to TB. Case Finding Most persons who have TB are diagnosed when they seek medical care for

symptoms caused by TB or other medical conditions. Therefore, for early

identification of TB cases, health-care providers in the community must

have an awareness of TB. Conducting contact investigations is another

important way to find TB cases and may yield approximately 700 cases per

100,000 persons evaluated (CDC Program Management Reports 1990-1992,

unpublished data). Health departments should seek cases of TB through active surveillance of mycobacteriology laboratories. Routine screening with chest radiographs to identify persons who have disease is justifiable in certain situations, particularly when the prevalence of TB is extremely high (e.g., among homeless populations or certain immigrant or refugee populations from areas that have a high prevalence of TB) or when the consequences of an undiagnosed case of TB are severe (e.g., in residential facilities for HIV-infected persons, correctional facilities, homeless shelters {21,22}, or nursing homes).

Using local epidemiologic data, TB programs should identify these high-risk groups and settings and determine whether screening is indicated. Contact Investigation Staff of TB control programs should begin a contact investigation as soon as they are notified of a suspected or confirmed case of TB.

TB control programs should educate health-care providers in the community about the need for prompt reporting of suspected cases. Contact investigations are important for identifying persons who have TB

infection

and who are at high risk for the development of active disease.

Contact

investigations are also important for detecting cases of active TB

(5). The priority, speed, and extent of a contact investigation

should be

influenced by the likelihood of transmission (based on the

characteristics

of the source patient, environment, and contacts) and the possible

consequences of infection (especially for HIV-infected contacts or

contacts

who are young children). IDENTIFYING AND MANAGING PERSONS INFECTED WITH M.

TUBERCULOSIS TB Skin Testing of High-Risk Groups TB control programs should

assess the prevalence and incidence

of TB

and the sociodemographic characteristics of TB patients and

infected

persons in each community. On the basis of these data, TB control

programs

should design tuberculin screening programs to reach the

community's

high-risk groups (13,16). Regular evaluation of the usefulness of

these

screening programs is extremely important because, in general,

screening

should not be given preference over higher priority activities

(e.g.,

treatment of TB patients and contact investigation). The practice of screening low-risk groups should be discontinued. TB control programs should identify and establish working relationships with persons, facilities, and agencies providing health-care services to high-risk populations and should assist them in developing and implementing screening programs appropriate for various situations. Decisions to initiate programs to skin test high-risk groups should be based on the ability of the TB control program and these community groups to provide adequate preventive therapy services. For appropriate implementation of screening programs, the TB control program and local facilities should be able to perform tuberculin skin tests, read and interpret the tests, evaluate those persons who have positive results, initiate preventive therapy when appropriate, monitor patients for adverse reactions, and ensure that patients complete preventive therapy. The plan for evaluation

and treatment of patients should be developed before testing begins. Health-care providers serving high-risk groups should receive assistance from TB control programs in planning and providing these

services, including training staff and evaluating screening programs to

determine their effectiveness. Members of high-risk groups should be

educated about the problem of TB in their community and should be involved

in the implementation of screening and prevention programs. **LABORATORY AND DIAGNOSTIC SERVICES** Chest Radiograph and Interpretation Outpatient and inpatient facilities offering TB treatment should have

ready access to a sufficient quantity of radiology equipment and enough

trained radiology technicians so that chest radiographs can be obtained

each day during clinic hours for all patients needing them.

Furthermore,

the chest radiograph should be interpreted by a qualified person, and the

report of the chest radiograph findings should be available within

24

hours. **Mycobacteriology Laboratory** To ensure that results of acid-fast examinations of specimens

are

available promptly (ideally, within 24 hours of specimen collection), TB control programs should have access to adequate mycobacteriology laboratory services. Reports of isolation and identification of *M. tuberculosis* should be available within 10-14 days, and reports of drug-susceptibility tests should be available within 15-30 days of specimen collection. The TB control program should work closely with the laboratory to ensure rapid delivery of specimens to the laboratory and prompt laboratory reporting of acid-fast bacilli smears, culture results, and results of drug-susceptibility tests to the clinician and health department. The laboratory should use rapid laboratory methods, including fluorescent acid-fast staining procedures, inoculation of a liquid medium as primary culture, nucleic acid probes to identify *M. tuberculosis*, and, using radiometric (e.g., BACTEC (R)) or similar systems, testing of *M. tuberculosis* isolates for susceptibility to the first-line drugs (23).

These mycobacteriology laboratory services also should be available

to TB

control programs for monitoring bacteriologic response to therapy. Diagnostic Services to Assess Drug Toxicity The outpatient and inpatient facilities where TB treatment is offered

should provide, or have access to, diagnostic services for monitoring

patients for potential adverse reactions to anti-TB medications. At least

monthly during therapy, patients receiving anti-TB medications should be

evaluated by a health-care professional (e.g., nurse, physician, or physician assistant) and questioned about possible adverse

reactions. The

facilities offering TB treatment should be able to perform visual acuity

and color vision evaluations on site. Blood tests for liver enzymes, blood

urea nitrogen, creatinine, uric acid, complete blood count, and platelets

may be performed at an outside laboratory; however, phlebotomy services

should be available on site. Audiometry should be available on site or at

another accessible location. In geographic areas that have a high prevalence of drug-resistant TB, testing of serum levels for anti-TB

medications, especially cycloserine, should be available through a reference laboratory. HIV Testing and Counseling All persons who have confirmed or suspected TB should be offered HIV counseling and antibody testing. If TB clinics are unable to perform on-site counseling and testing, they should coordinate with HIV-testing programs to make these services available. In geographic areas that have a high prevalence of HIV-infected persons, TB prevention and control staff should be trained and qualified to provide routine HIV counseling and antibody testing.

DATA COLLECTION AND ANALYSIS Case Reporting TB control programs should ensure and facilitate TB case reporting from various community sources (e.g., physicians, laboratories, hospitals, and pharmacies) and routinely monitor the completeness of reporting and the duration of time between diagnosis and reporting. TB control programs also should communicate regularly with infection-control practitioners in hospitals and other facilities that frequently diagnose TB. Case reporting

is essential to the compilation of national, state, and local morbidity reports and to program planning and evaluation, and prompt reporting is necessary for effective contact tracing. TB Registry To carry out mandatory community public health responsibilities, health department TB control programs should maintain a computerized record system (case registry) with up-to-date information on all current clinically active and suspected TB cases in the community. To ensure follow-up of all TB patients and those persons suspected of having TB, registry information (e.g., smear, culture, and susceptibility results; clinical status; chest radiograph results; and doses of medications being administered) should be obtained and updated on a continuing basis. A specific health department staff member should review detailed registry information for TB cases at least monthly to identify patients who have potential problems with adherence or response to therapy (e.g., patients who have persistently

positive sputum or who are taking medications to which their TB organisms

are resistant) and to ensure follow-up (e.g., initiating field follow-up

visits or arranging medical consultation with providers). TB control

programs also should maintain records on the examination and treatment

status of the contacts of infectious TB patients and other groups of

high-risk infected persons (e.g., persons coinfecting with M. tuberculosis

and HIV). **Protection of Confidentiality** TB control programs should devise policies to ensure the data

security

and confidentiality of TB records. Strategies should be in place to protect

all TB reports, records, and files containing patient names or other

identifying information. Local policies regarding the security and confidentiality of such information, including HIV test results, must

adhere to all laws applicable in state and local jurisdictions (8,24). TB

control programs should collaborate with HIV programs to develop and

implement such policies. **Drug Resistance Surveillance** TB control programs should

ensure that drug-susceptibility tests are performed on all initial isolates of *M. tuberculosis* and that the results are reported promptly to the primary care provider and the local health department. TB control programs should monitor local drug resistance rates to assess the effectiveness of local TB control efforts and to determine the appropriateness of the currently recommended initial TB treatment regimen for the area.

Data Analysis and Program Evaluation To determine morbidity rates, trends, and demographic characteristics of the TB patient population in the area, TB control programs should analyze the data collected each year. Local health departments should rapidly report cases, including the necessary demographic information, to state health departments, and states should regularly forward the reports to CDC. Timely and complete reporting is essential for local, state, and national public health planning and assessment. TB control programs should assess program performance by

determining

the rates for completion of therapy, contact identification, and initiation

and completion of preventive therapy. At least annually, TB control program

staff should assess progress toward achievement of program objectives. To

facilitate the monitoring of TB morbidity and program performance, programs

should implement computerized systems for data collection and analysis.

Program evaluation reports should be shared with the appropriate public,

private, and community groups. TB control programs should periodically review screening

activities to

assess their effectiveness in identifying infected persons and in ensuring

that these persons are completing courses of preventive therapy when

appropriate. If reviews demonstrate that few or no new cases are being

identified by particular screening activities, these activities should be

discontinued. Programs also should conduct periodic reviews of selected records

systems (e.g., laboratory reports, pharmacy reports, AIDS

registries, and death certificates) to validate the surveillance system and to detect any failure to report cases. TB control programs should analyze each new TB case and each death caused by TB to determine whether the case or death could have been prevented. Based on such a review, new policies should be developed and implemented to reduce the number of preventable cases and deaths. In collaboration with community-based organizations and professional societies, health departments should prepare annual reports based on these assessments. These reports should document the extent and nature of the TB problem in the area, assess the adequacy of prevention and control measures, and provide recommendations for program improvements. Some TB programs may determine that an outside review by experts from the state health department, CDC, local lung associations, or other TB experts may be helpful to determine methods for improving program performance and community TB control and for providing support for major changes (e.g., significant restructuring or acquisition of new resources).

TRAINING AND EDUCATION

Staff Training TB control programs should provide appropriate training and evaluation

for all program staff at time of employment and at regular intervals so

that staff can maintain an accurate, up-to-date level of knowledge about

TB, public health practice, management and evaluation skills, and other

related topics. Education for Health-Care Providers and Members of the Community TB control programs should provide leadership in TB education in the

community. To determine needs for training and education, TB control

programs should monitor the level of knowledge about TB among health-care

providers, policymakers, and other community members who provide services

to TB patients (e.g., the staff of social services departments, correctional services departments, mental health offices, and legal service

offices). TB control programs should work closely with medical and nursing

schools, schools of public health, community-based organizations, professional societies, minority advocacy groups, and others to meet the

training and education needs of the community. References

CDC. A strategic plan for the elimination of tuberculosis in

the United

States. MMWR 1989; 38(No. S-3).

CDC. Expanded tuberculosis surveillance and tuberculosis morbidity --

United States, 1993. MMWR 1994;43:361-6.

Brudney K, Dobkin J. Resurgent tuberculosis in New York City: human

immunodeficiency virus, homelessness, and the decline of the tuberculosis control programs. Am Rev Respir Dis 1991;144:745-9.

Snider DE Jr, Roper WL. The new tuberculosis. N Engl J Med 1992;326:703-5.

American Thoracic Society/CDC. Control of tuberculosis in the United

States. Am Rev Respir Dis 1992;146:1623-33.

CDC. Initial therapy for tuberculosis in the era of multidrug resistance: recommendations of the Advisory Council for the Elimination

of Tuberculosis. MMWR 1993;42(No. RR-7).

American Thoracic Society/CDC. Treatment of tuberculosis and tuberculosis infection in adults and children. Am J Respir Crit Care

Med 1994;149:1359-74.

CDC. Tuberculosis control laws -- United States, 1993: recommendations

of the Advisory Council for the Elimination of Tuberculosis (ACET).

MMWR 1993;42(No. RR-15).

American Thoracic Society/CDC. Diagnostic standards and classification

of tuberculosis. Am Rev Respir Dis 1990;142:725-35.

CDC. Tuberculosis and human immunodeficiency virus infection: recommendations of the Advisory Committee for the Elimination of

Tuberculosis (ACET). MMWR 1989;38:236-8,243-50.

CDC. Prevention and control of tuberculosis in correctional institutions: recommendations of the Advisory Committee for the

Elimination of Tuberculosis. MMWR 1989;38:313-20,325.

CDC. Guidelines for preventing the transmission of Mycobacterium

tuberculosis in health-care facilities, 1994. MMWR 1994;43(No. RR-13).

CDC. Screening for tuberculosis and tuberculous infection in high-risk

populations: recommendations of the Advisory Committee for Elimination

of Tuberculosis. MMWR 1995;44(No. RR-11):19-34.

CDC. Prevention and control of tuberculosis in facilities providing

long-term care to the elderly: recommendations of the Advisory

Committee for Elimination of Tuberculosis. MMWR 1990; 39(No. RR-10):

7-20.

CDC. Tuberculosis among foreign-born persons entering the United

States: recommendations of the Advisory Committee for Elimination of

Tuberculosis. MMWR 1990;39(No. RR-18):1-21.

CDC. The use of preventive therapy for tuberculous infection in the

United States: recommendations of the Advisory Committee for Elimination of Tuberculosis. MMWR 1990;39 (No. RR-8):8-12.

CDC. Prevention and control of tuberculosis in migrant farm workers:

recommendations of the Advisory Council for the Elimination of

Tuberculosis. MMWR 1992;41(No. RR-10):1-15.

CDC. Prevention and control of tuberculosis among homeless persons:

recommendations of the Advisory Council for the Elimination of

Tuberculosis. MMWR 1992;41(No. RR-5):13-23.

CDC. Improving patient adherence to tuberculosis treatment. Atlanta: US

Department of Health and Human Services, Public Health Service, CDC, 1994.

Sumartojo E. When tuberculosis treatment fails: a social behavioral

account of patient adherence. Am Rev Respir Dis
1993;147:1311-20.

McAdam J, Brickner PW, Glicksman R, Edwards D, Fallon B,
Yanowitch P.

Tuberculosis in the SRO/homeless population. In: Brickner PW,
Scharer

LK, Conanan B, Elvy A, Savarese M, eds. Health care of
homeless people.

New York: Springer, 1985:155-75.

Barry MA, Wall C, Shirley L, et al. Tuberculosis screening in
Boston's

homeless shelters. Public Health Rep 1986;101:487-98.

Tenover FC, Crawford JT, Huebner RE, Geiter LJ, Horsburgh CR,
Good RC.

The resurgence of tuberculosis: is your laboratory ready? J
Clin

Microbiol 1993;31:767-70.

Gostin LO. Controlling the resurgent tuberculosis epidemic: a
50-state

survey of TB statutes and proposals for reform. JAMA
1993;269:255-61. ** The word "standard" is being used to indicate a prototype
established by

authority, custom, or general consent. Table_1

Note:

To print large tables and graphs users may have to change their printer settings to
landscape and use a small font size.

TABLE 1. Elements of a treatment plan for TB patients

=====

=====

I. Assignment of responsibility

- A. Case manager (i.e., person assigned primary responsibility)
- B. Clinical supervisor (e.g., nurse, physician, physician assistant)
- C. Other caregivers (e.g., outreach worker, nurse, physician, physician assistant)
- D. Person responsible for completing the contact investigation

II. Medical evaluation

- A. Tests for initial evaluation (e.g., tuberculin skin test, chest radiograph, smear, culture, susceptibility tests, HIV test), including results of each test and date completed
- B. Important medical history (e.g., previous treatment, other risk factors for drug resistance, known drug intolerances, and other medical problems)
- C. Potential adverse reactions
 - 1. Appropriate baseline laboratory tests to monitor toxicity (e.g., liver enzymes, visual acuity, color vision, complete blood count, audiogram, BUN, and creatinine), including results of each test and date completed
 - 2. Potential drug interactions
- D. Obstacles to adherence

III. TB treatment

- A. Medications, including dosage, frequency, route, date started, and date to be completed for each medication
- B. Administration

1. Method (directly observed or self-administered)
2. Site(s) for directly observed therapy

IV. Monitoring

- A. Tests for response to therapy (e.g., chest radiograph, smear, and culture),
including planned frequency of tests and results
- B. Tests for toxicity, including planned frequency of tests and results

V. Adherence plan

- A. Proposed interventions for obstacles to adherence
- B. Plan for monitoring adherence
- C. Incentives and enablers

VII. TB education

- A. Person assigned for culturally appropriate education
- B. Steps of education process and date to be completed

VIII. Social services

- A. Needs identified
- B. Referrals, including date initiated and results

IX. Follow-up plan

- A. Parts of treatment plan to be carried out at TB clinic
- B. Parts of treatment plan to be carried out at other sites and person(s) conducting activities

=====

=====

[Return to top.](#)

Disclaimer

All MMWR HTML versions of articles are electronic conversions from ASCII text into HTML. This conversion may have resulted in character translation or format errors in the HTML version. Users should not rely on this HTML document, but are referred to the electronic PDF version and/or the original MMWR paper copy for the official text, figures, and tables. An original paper copy of this issue can be obtained from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402-9371; telephone: (202) 512-1800. Contact GPO for current prices.**Questions or messages regarding errors in formatting should be addressed to mmwrq@cdc.gov.

Disclaimer

All MMWR HTML versions of articles are electronic conversions from ASCII text into HTML. This conversion may have resulted in character translation or format errors in the HTML version. Users should not rely on this HTML document, but are referred to the electronic PDF version and/or the original MMWR paper copy for the official text, figures, and tables. An original paper copy of this issue can be obtained from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402-9371; telephone: (202) 512-1800. Contact GPO for current prices. Page converted: 09/19/98

[HOME](#) |

[ABOUT MMWR](#) |

[MMWR SEARCH](#) |

[DOWNLOADS](#) |

[RSS](#)

|

[CONTACT](#)

[POLICY |](#)

[DISCLAIMER |](#)

[ACCESSIBILITY](#)

Morbidity and Mortality Weekly Report

Centers for Disease Control and Prevention

1600 Clifton Rd, MailStop E-90, Atlanta, GA

30333, U.S.A

Department of Health and Human Services This page last reviewed 5/2/01

