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Prevention and Control of Tuberculosis in U.S. Communities with At-Risk Minority Populations Recommendations of the Advisory Council for the Elimination of Tuberculosis

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Summary

Tuberculosis (TB) is an increasing public health problem in the United States, particularly among racial/ethnic minorities. In 1990, the number of reported TB cases increased 9.4% compared with 1989 and 15.5% compared with 1984. In 1990, almost 70% of all TB cases and 86% of those among children ages less than 15 years occurred among racial/ethnic minorities. Compared with non-Hispanic whites, the 1990 TB case rate was notably higher for racial/ethnic minorities.

Adverse social and economic factors, the human immunodeficiency virus epidemic, and immigration of persons with tuberculous infection are contributing factors to the increase in TB cases. Other contributing factors include physician nonadherence in prescribing recommended treatment regimens and patient nonadherence in following prescribed recommended treatment regimens.

To eliminate TB in U.S. communities with at-risk racial/ethnic minorities, the Advisory Council for the Elimination of Tuberculosis * recommends a) initiating public awareness campaigns to alert these communities about the increasing TB problems; b) training and educating public and private health-care providers in the skills needed to relate effectively to the at-risk communities being served, and empowering at-risk populations with knowledge and other resources needed to influence the TB programs directed toward their communities; c) building coalitions to help design and implement intensified community TB prevention and control efforts; d) intensifying the screening of at-risk populations for TB and tuberculous infection and providing appropriate treatment and preventive therapy; e) increasing the speed and completeness with which all health-care providers report confirmed and suspected TB cases to appropriate health departments; and f) improving the availability and quality of TB health-care services in socioeconomically disadvantaged areas.

INTRODUCTION

A national plan for the elimination of tuberculosis (TB) in the United States has specified three basic steps: a) more effective use of existing tools and technology; b) the development of new diagnostic, treatment, and prevention tools; and c) rapid introduction of new technology and tools (1). Providing TB screening and preventive interventions to high-risk populations is the plan's top priority. Implementation of these intervention programs among U.S. racial/ethnic minority populations is of great urgency because TB has become epidemic among some racial/ethnic groups. For example, in 1990, almost 70% of all reported TB cases occurred among racial/ethnic minorities (Figure 1). Among children ages less than 15 years, 85.9% of reported TB cases occurred among racial/ethnic minorities (Figure 2).

This document is a blueprint for the many agencies and organizations that must work together to plan, develop, and implement effective strategies to eliminate TB in racial/ethnic minority population groups and high-risk geographic areas. The Advisory Council for the Elimination of Tuberculosis urges that resources be directed to areas where the disease has shifted into clearly identifiable geographic enclaves, and where the disease disproportionately affects socioeconomically disadvantaged racial/ethnic minorities.

BACKGROUND Magnitude and Extent of Problem

Ongoing analyses of TB morbidity data in the United States continue to identify the magnitude and extent of the TB problem among U.S. racial / ethnic minorities. The number of reported TB cases in the United States decreased from 84,304 in 1953 (when uniform national reporting of TB was initiated) to 22,255 in 1984 -- a reduction of 73.6%. In the same period, the annual risk of TB decreased from a case rate of 53.0/100,000 population to 9.4/100,000 -- a reduction of 82.3%. From 1953 through 1984, the number of reported TB cases declined by an average of almost 5% per year.

Since 1984, the TB morbidity trend has changed. In 1990, 25,701 cases were reported for a case rate of 10.3/100,000 population; this represents a 9.4% increase over the cases reported in 1989 and is 15.5% higher than the number of cases reported in 1984. When the trend for 1953 through 1984 was used to calculate expected cases, 28,000 more cases were reported than expected from 1985 through 1990 (Figure 3).

From 1985 through 1990, Miami, Atlanta, San Francisco, Newark, Tampa, and New York City consistently ranked among the 10 cities with populations greater than 250,000 with the highest TB rates. In 1990, the TB rates for these six cities ranged from 38/100,000 in Tampa to 68.3/100,000 in Newark. Certain sociodemographic and geographic pockets, such as Central Harlem in New York City, have rates approaching or exceeding 300/100,000 population.

From 1985 through 1990, increases in TB cases occurred among non-Hispanic blacks, Hispanics, and Asians/Pacific Islanders, while decreases occurred among non-Hispanic whites and American Indians/Alaskan Natives (Figure 4). Increases in TB cases among non-Hispanic blacks were largest in the 5- to 14-year-old and 25- to 44-year-old groups (41.1% and 55.1%, respectively). Among Hispanics, the largest increases were also in the 5- to 14-year-old and 25- to 44-year-old groups (102.6% and 76.7%, respectively).

Of the 25,701 cases of TB reported in the United States in 1990, 17,814 (69.3%) occurred among racial/ethnic minorities, 7,836 cases (30.5%) occurred among non-Hispanic whites, and 51 cases (0.2%) were in persons whose race/ethnicity was not noted. The risk of TB (compared with the case rate of 4.2/100,000 population among non-Hispanic whites) was 9.9 times higher for Asians/Pacific Islanders, 7.9 times higher for non-Hispanic blacks, 5.1 times higher for Hispanics, and 4.5 times higher for American Indians/Alaskan Natives.

There is evidence that the human immunodeficiency virus (HIV) epidemic is a major factor associated with the recent increase in TB cases. Immunosuppression resulting from HIV infection allows persons with latent tuberculous infection and newly infected persons to progress rapidly to clinical disease. Because the prevalence of latent tuberculous infection is higher among racial/ethnic minorities than among non-Hispanic whites, clinical TB is likely to be more common among HIV-infected minority populations than among HIV-infected non-Hispanic whites.

In addition to the HIV epidemic, persons immigrating from countries with a high incidence of TB also appear to be contributing to increases in TB cases. From 1986 through 1990, the number of TB cases among the foreign-born increased from 4,925 to 6,262 and the percentage of total cases among foreign-born persons increased from 21.6% to 24.4%.

Because of HIV infection and immigration, increasing rates of clinical TB among persons of childbearing/child-rearing age in racial/ethnic populations place the less than or equal to 14-year-old group in affected racial/ethnic minority populations at greater risk of being exposed to and becoming infected with TB. This may explain the recent increase in TB cases in this age group.

Other factors that may contribute to increases include social and economic factors such as substance abuse, limited access to available and acceptable health care, poverty, substandard housing, and homelessness. The role of each of these factors, if any, cannot be quantified, but they are major components in the complex circumstances that make more difficult the prevention and control of TB among disadvantaged groups in our society.

Multiple-drug-resistant (MDR) TB is an emerging problem. MDR TB is associated with a) immigration of persons from countries with a high incidence of resistant TB, b) inappropriate treatment regimens prescribed by private- and public-sector physicians, and c) patients who do not comply with appropriately prescribed treatment regimens.

Case Prevention Potential for High-Risk Areas and Groups

Of the 25,701 cases reported in 1990, 8,381 occurred among persons ages less than 35 years. Cases in this age group are considered potentially preventable by administration of preventive therapy to infected persons who have not yet developed disease. Eighty-five percent of potentially preventable cases occurred among racial/ethnic minorities (Figure 5).

A large proportion of potentially preventable cases are distributed among a few geographic locations. Of the 3,436 cases among non-Hispanic blacks ages less than 35 years, 70.3% (2,414) occurred in 53 counties that reported 10 or more such cases. Of the 2,412 cases among Hispanics ages less than 35 years, 79.8% (1,924) occurred in 40 counties that reported 10 or more such cases. Of the 1,139 cases among Asians/Pacific Islanders ages less than 35 years, 55.3% (630) occurred in 19 counties that reported 10 or more such cases. Of the 121 cases among American Indians/Alaskan Natives ages less than 35 years, 12.4% (15) occurred in one county that reported 10 or more cases.

During 1990, 79.7% of the potentially preventable TB cases among racial/ethnic minorities were reported by 106 counties that reported 10 or more such cases. This represents 3.4% of the nation's 3,138 counties. These counties are located primarily in the Southeastern states, along the East and West coasts, and in Texas (Figure 6). Representatives and health-care providers from at-risk communities, appropriate government agencies, and interested organizations should work collectively with these counties to intensify TB elimination efforts.

RECOMMENDATIONS Public Awareness Campaigns

Individuals in at-risk population groups, including local leaders, are often unaware of the extent of the TB problem in their communities and the potential for preventing infection. Public awareness campaigns can provide essential information.

1. A public awareness campaign should be initiated by

national, state, and local organizations to alert communities at high risk for TB about the increasing TB threat and to the potential for eliminating the disease.

2. At the national level, this campaign should be designed and supported by CDC, the American Lung Association/American Thoracic Society (ALA/ATS), the American Public Health Association, and other national organizations that support or provide services to high-risk population groups.

3. At the state and local levels, health departments should collect and analyze epidemiologic data to identify local communities and population groups with high incidences so that TB prevention activities and public awareness campaigns can be appropriately directed. Local public awareness campaigns should be focused toward community members, health-care providers, and religious, social, economic, and other influential organizations. Awareness campaigns should be designed and supported by health departments and ALA/ATS affiliates working with recognized community leaders, organizations, and health-care providers.

4. The media (print, radio, and television) should be effectively utilized to disseminate information about TB prevention and related elimination efforts:

- a. Local community, minority, and ethnic media (newspapers, magazines, newsletters, radio, and television) should deliver the information to the general public, high-risk communities, and at-risk population groups.
- b. Messages should be disseminated through national and community-based organizations such as churches and forums focused on economic, medical, political, and social activities.

5. National and local TB awareness programs should be supported by the availability of convenient and high-quality TB screening, prevention, and treatment services.

Training and Education of Public and Private Health-Care Providers

Empowerment of at-risk groups in the community is a crucial element in TB control. This step begins with the public awareness campaigns described above because it is vitally important for members of at-risk populations to understand TB; its impact on the community; how it is diagnosed, treated, and prevented; and what services are available. These populations also should be able to influence the TB programs directed toward their communities.

1. Health departments should ensure that the sociodemographic

composition of the communities being served is represented in the composition of the TB-control-program staff. The staff should be culturally and linguistically competent and sensitive to the populations being served.

2. All health department and other health-care staff who provide TB services should receive training to improve interpersonal skills needed to encourage open and effective communication with members of high-risk communities and groups. Continuous efforts must be made to establish and maintain the rapport needed to relate effectively to the communities being served and to the public and private health-care providers serving those communities.
3. Health-care providers serving at-risk areas should be given TB training on recommended procedures for examining, diagnosing, and treating TB cases, suspected cases, and contacts. The training should include information on procedures for rapidly reporting confirmed and suspected TB cases.

Coalition Building

Major progress toward elimination can be achieved by focusing TB screening and preventive therapy programs toward groups of persons at high risk of becoming infected or developing disease. Public and private health-care providers serving many at-risk clients in the community may not fully apply recommended prevention methods. Some at-risk population groups lack access to medical care, and special efforts are often required to provide them with needed services. Coalitions composed of representatives from groups and communities at increased risk of TB can assist in developing and implementing plans to improve access to health care.

1. Health departments should expand their efforts to reach community groups at high risk of TB and health-care providers serving these groups.
2. Decision makers, other key people, and agencies within at-risk communities should be identified and involved in TB elimination planning and implementation activities.
3. Coalitions should be established to advise health departments and health-care providers on how to design and carry out intensified community TB prevention and control efforts. These groups should be composed of representatives from affected communities, community-based organizations, health departments, private and public health-care providers, and the media serving high-risk populations and communities. These coalitions should be responsible for defining the problems and identifying obstacles related to excessive rates of TB in the at-risk communities; establishing short- and long-term goals; setting realistic and time-phased objectives; establishing priorities; and developing, implementing, and evaluating strategies. They should also analyze their communities to determine how strategies should be implemented and how to motivate and mobilize community members.
4. Coalitions should help identify and obtain resources needed by community programs and people serving the at-risk areas.
5. Credit for accomplishments should be given to members of the coalitions and the at-risk communities involved in these efforts.

Screening and Prevention

Screening at-risk populations for TB and tuberculous infection and providing appropriate treatment are crucial for achieving TB elimination. Screening is done to identify persons in need of preventive therapy (2). Responsibility for conducting screening will vary. For some groups, the local health department and health-care providers should assume responsibility for conducting the screening. For others, community-based organizations may conduct the screening with training and evaluation assistance from

the health department.

1. Health departments should assess the prevalence, incidence,

and sociodemographic characteristics of cases of TB and infected persons in their jurisdictions to identify high-risk areas in their communities. On the basis of this assessment, health departments should work with community-based organizations and health-care providers serving those communities to plan and initiate tuberculin screening and preventive therapy programs specifically adjusted to each community's at-risk groups.

2. Planning, developing, and implementing screening programs should be a joint effort coordinated among the local health department, public and private community organizations, and health-care providers serving the affected community. Medicaid, Medicare, and private health-care funds should be sought to support screening and preventive treatment programs.

3. When possible, initiatives to systematically screen for TB should be established in specific high-risk settings such as correctional institutions, long-term-care facilities, nursing homes, drug treatment centers, in- and outpatient hospital facilities, and homeless shelters (2).

Case Reporting

Early reporting of TB is essential so that contacts can be examined for evidence of infection and disease and can be given appropriate therapy as quickly as possible.

1. Health departments should inform health-care providers

serving at-risk groups and communities about the importance of early TB case reporting and about the services offered by the health departments. Health-care providers should become familiar with the TB case reporting system used in their particular areas.

2. Early TB case reporting can be encouraged by offering incentives, such as free laboratory services, to health-care providers and free antituberculosis drugs to their patients.

3. To facilitate TB case reporting for health-care providers, health departments should consider using facsimile machines or telephone-answering machines to receive reports. Large laboratories and health-care facilities should consider using computer-to-computer reporting systems.

4. All private physicians, public and private hospitals, clinics, medical/health centers, alcohol/drug treatment centers, nursing homes, laboratories, and correctional facilities should notify appropriate health departments about confirmed and suspected TB cases as quickly as possible. The development of a reporting system that includes all pharmacies that dispense antituberculosis drugs should also be considered.

Treatment and Adherence

The availability of TB health-care services and related transportation are frequently a problem in high-incidence and socioeconomically disadvantaged areas. Attracting competent health-care staff in some of these areas is sometimes a major obstacle. In addition, it is often difficult to establish and maintain rapport needed for effective diagnosis, treatment, and prophylaxis of patients with TB in at-risk areas and population groups. For many patients, a variety of health and socioeconomic-related problems (e.g.,

unemployment, low income, homelessness, lack of or limited access to health care, language barriers, and alcohol and drug abuse) may limit their ability to adhere to recommendations for treatment or to obtain other needed medical care. Much of their time and effort is understandably devoted to meeting day-to-day economic and survival needs, such as food, shelter, clothing, and safety. Nonadherence is a serious problem that can lead to treatment failure, drug resistance, continuing transmission of infection, increasing disability, and death (3). These are challenges that should be met with new and innovative strategies.

1. Quality TB treatment services and related transportation

should be available at no cost to patients.

2. CDC should recruit, train, and assign a cadre of TB physicians, nurses, social workers, and public health advisors to work in high-incidence areas where TB is increasing and where it is extremely difficult to attract and retain qualified staff. The specific objective for these assignments should be to stabilize and begin to reduce the case rates within 3 years of assignment. As target rates are achieved in these areas, reassignment to other areas can be made.

3. Special treatment-housing centers should be established in cities with large numbers of persons at risk of TB who are homeless. These centers should provide continuous shelter, food, and treatment for homeless persons diagnosed with TB for the duration of their prescribed therapy regimen. The shelter and food act as incentives for patients to remain compliant with treatment. When patients complete their prescribed regimens or do not comply with therapy, they can be discharged from the centers and new patients admitted. The effectiveness of this concept has been demonstrated by existing programs in New York City and Denver. The resources necessary to establish similar centers might be shared through agreements between federal agencies (e.g., U.S. Department of Housing and Urban Development, Health Resources and Services Administration, or CDC), state/local agencies, or private organizations. Many identified at-risk areas contain properties that are federally owned and are suitable for conversion to treatment-housing centers.

4. Specific strategies for improving adherence to treatment regimens by individual patients or groups of patients should be established for each identified high-risk community and population group. These strategies should be broad-based and reflect an understanding of the difficulties associated with behavioral change and be sensitive and responsive to the patients' beliefs, cultures, and environments. This allows for the identification and removal of specific barriers to adherence.

5. Health-care providers of TB services should take the time to explain to patients, in simple language that is culturally and linguistically appropriate, the specific adherence behaviors expected. Patients must first know what is expected of them before they can comply.

6. Patient education and appointment reminders must be culturally sensitive and linguistically appropriate and should be used to effectively influence the cooperation of patients seeking TB services. Whenever possible, patients should be given reminders for pending appointments in person or by telephone. This removes any doubt about whether the patients received the messages. Patients also can be counseled over the telephone, thereby helping them overcome scheduling, transportation, or other problems that interfere with adherence.

7. Directly observed therapy should be considered for all TB patients.

8. Trained nurses or community outreach workers with the same cultural and linguistic background as the patients should help design treatment plans, administer directly observed therapy, and assist patients and

health-care providers to identify and overcome obstacles to adherence.

9. Outreach workers should act as extensions of the clinician and nurse by locating patients, reminding them of appointments, resolving basic problems, encouraging adherence, delivering medication, observing its ingestion, and identifying, tracing, and examining contacts. They should also serve as a liaison between the clinic staff and the patient by helping to bridge cultural and linguistic gaps and by educating patients. Such employees can greatly enhance TB control efforts among at-risk populations.

10. Additional federal, state, local, and private resources will be required to increase the number of outreach workers. These outreach workers should be recruited and hired from the areas and communities being identified for service. They should have a knowledge of and be sensitive to the culture and language of the population to be served.

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2. Advisory Committee for the Elimination of Tuberculosis. Screening for tuberculosis and tuberculous infection in high-risk populations and the use of preventive therapy for tuberculous infection in the United States. MMWR 1990;39(No. RR-8):(inclusive page numbers).
3. Snider DE, Hutton MD. Improving patient compliance in tuberculosis treatment programs. Atlanta: CDC, revised February 1989.
 - The Advisory Council for the Elimination of Tuberculosis recognizes that a variety of terms are used and preferred by different groups to describe race and ethnicity. Racial and ethnic terms used throughout the document reflect the way data are collected and reported by official health agencies.

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