

Integrating HIV/AIDS

&

TB Efforts

The Challenge for the
President's AIDS Initiative

RESULTS Educational Fund

Network Public Health Programs
Open Society Institute

Integrating HIV/AIDS & TB Efforts

The Challenge for the President's AIDS Initiative

Preliminary report for the
U.S. Office of the Global AIDS Coordinator

February 2004

RESULTS



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Network Public Health Programs

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Published by
Open Society Institute
400 West 59th Street
New York, NY 10019 USA

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Designed by Jeanne Criscola | Criscola Design
Printed in the United States of America by Gist and Herlin Press, Inc.

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Preface

In September 2003, the Open Society Institute's Public Health Programs and RESULTS Educational Fund undertook a study of the 14 countries targeted by President Bush's Emergency Plan for AIDS Relief. The purpose was to assess the TB needs of the 14 countries and highlight the links between TB and HIV/AIDS in these countries. The methodology used to obtain data on the 14 countries included the following:

- ▶ Review and analysis of the *WHO Report 2003, Global Tuberculosis Control: Surveillance, Planning, Financing*, for 7 of the 14 countries included in the WHO report
- ▶ Review and analysis of additional WHO data, reports, and articles
- ▶ Telephone and email correspondence with staff from the Stop TB Partnership, World Health Organization (WHO), U.S. Centers for Disease Control and Prevention (CDC), Pan-American Health Organization (PAHO), Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), and managers of national TB control programs in Côte d'Ivoire, Namibia, Rwanda, and Zambia

The Open Society Institute funded this report. Gaurav Bhattacharya, a consultant to RESULTS Educational Fund, carried out the study and prepared the initial draft. Further research was conducted by Sue Perez. Final drafting of the report was completed by Sue Perez and Joanne Carter of RESULTS Educational Fund. Additional editing was provided by Thomas Pierce, and by Ari Korpivaara and Jeff Hoover of the Open Society Institute's communications office.

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List of Acronyms

AIDS	Acquired Immunodeficiency Syndrome
ARV	Antiretroviral
CDC	U.S. Centers for Disease Control and Prevention
DOTS	Directly Observed Treatment, Short-course
GDF	Global TB Drug Facility
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
HIV	Human Immunodeficiency Virus
ISAC	Intensified Support & Action Countries
MDR-TB	Multi-Drug Resistant Tuberculosis
NGO	Nongovernmental Organization
NIH	National Institutes of Health
NTP	National Tuberculosis Control Programme
PAHO	Pan-American Health Organization
PEPFAR	President's Emergency Plan for AIDS Relief
TB	Tuberculosis
UNAIDS	Joint United Nations Programme on HIV/AIDS
USAID	United States Agency for International Development
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

Note on Cost Estimates

Cost estimates provided in this report estimate additional annual costs of: 1) treating active TB in all HIV-positive individuals using the DOTS strategy in the 14 PEPFAR countries; and 2) treating all patients with active TB using the DOTS strategy in the 14 PEPFAR countries. An estimate of \$200 per TB case to detect TB and provide treatment under DOTS is used for 11 of the 14 countries. Per case cost estimates for Botswana, Namibia, and South Africa are higher due to their status as lower middle-income countries. These estimates of the additional costs required would allow for accelerated expansion of DOTS services in the initial years (through improving cure rates and increasing detection of those sick with TB) and then ongoing delivery of treatment. These estimates are based on expanding services to those TB patients not currently treated under DOTS programs. However, this is still a conservative estimate of the additional need because of the costs associated with upgrading non-DOTS programs to the DOTS strategy and because the \$200 estimated cost per case is based on normative data (while empirical data shows that the cost per case to treat TB can be higher).

The PEPFAR initiative would be well served to ensure that from the earliest planning stages efforts to combat both HIV/AIDS and TB are integrated.

There is no way to address effectively the HIV/AIDS epidemic without scaling up efforts to combat tuberculosis.

Executive Summary

The global HIV/AIDS epidemic has reached staggering proportions. UNAIDS estimated that in 2003 some 40 million people worldwide were living with HIV/AIDS and over 3 million died. While the global response to HIV/AIDS is growing, too little attention is being paid to the relationship between HIV/AIDS and tuberculosis.

These two diseases are inextricably linked. As rates of HIV/AIDS have risen, TB rates have also skyrocketed. An estimated 2 billion people worldwide are infected with the TB bacterium, although the vast majority never become sick or show any symptoms. But especially for people with compromised immune systems, TB can be deadly. TB is the most common opportunistic infection and number one cause of death for people with HIV/AIDS. The good news is that treating TB is one of the most effective means of improving and prolonging the lives of people with HIV/AIDS and those who care for them. Curing TB in those dually infected can extend their lives by two to five years.

In his 2003 State of the Union Address, President Bush pledged \$15 billion over five years to fight the HIV/AIDS pandemic. A significant portion of this funding will go to an initiative known as the President's Emergency Plan for AIDS Relief (PEPFAR), which will prioritize efforts in 14 highly affected African and Caribbean countries. The PEPFAR initiative offers a singular opportunity to focus U.S. bilateral funds to make a significant impact in these countries. Whatever lessons are learned will inform future efforts elsewhere. Most notably, it will be the first large-scale effort by the U.S. government to treat people living with HIV/AIDS.

This paper surveys the current state of HIV/TB coinfection in each of the 14 target countries. It outlines the benefits of better integrating TB and HIV/AIDS efforts by expanding TB programs to reach all those HIV patients with TB and linking TB programs to HIV/AIDS voluntary counseling and testing (VCT). It also calls on the U.S. government to lead efforts to ensure a robust response not only to the HIV/AIDS epidemic, but also to the TB/HIV coepidemic.

The PEPFAR initiative would be well served to ensure that from the earliest planning stages efforts to combat both HIV/AIDS and TB are integrated. There is no way to address effectively the HIV/AIDS epidemic without scaling up efforts to combat tuberculosis. Nevertheless, to date, global efforts to combat the two epidemics have largely proceeded on separate tracks. In resource-poor settings, this places an unnecessary burden on the health care system. It also has a negative impact on patient care, since in most of the target countries more than one-third of TB patients are also infected with HIV/AIDS.

The course of action is clear. The U.S. government must work with other donors, multilateral organizations, and community-based organizations to do the following:

- ▶ Expand the DOTS (Directly Observed Treatment, Short-course) strategy for curing standard TB to all TB/HIV-infected individuals, and provide prophylactic treatment for latent TB to all persons living with HIV
- ▶ Integrate DOTS TB treatment and HIV voluntary counseling and testing
- ▶ Prioritize the development of new TB diagnostics and drugs for coinfecting individuals in order to improve the speed and effectiveness of diagnosis and to significantly reduce treatment time and interactions between anti-TB drugs and ARVs
- ▶ Support the Global TB Drug Facility to continue providing low-cost anti-TB drugs to countries in need

Global leadership on TB/HIV coinfection is urgently needed from the new U.S. Office of the Global AIDS Coordinator. On February 23, 2004, the Bush administration released its initial five-year global HIV/AIDS strategy. Unfortunately, the strategy does not give sufficient attention to the TB/HIV copandemic. It fails to address the ways in which HIV/AIDS prevention, care, and treatment can benefit from integration with TB programs. Both USAID and NIH recognize the urgency of addressing TB and HIV together. The president's plan, however, has yet to allocate adequate funding to enable this to occur.

A person with HIV/AIDS in a developing country who contracts active TB has an estimated average survival time of several weeks. With effective TB treatment, survival time can be extended significantly by two to five years.

A Critical Opportunity

The new U.S. Office of the Global AIDS Coordinator and Congress have a critical opportunity to realize the promise of the President's Emergency Plan for AIDS Relief (PEPFAR) by establishing program and budgetary strategies that integrate efforts to prevent and treat HIV/AIDS with efforts to control tuberculosis. Expanding effective TB treatment will extend the lives and improve the quality of life for people living with HIV/AIDS and help achieve the bold AIDS treatment goals within the PEPFAR initiative.

In his 2003 State of the Union Address, President Bush announced his proposal for PEPFAR, a \$15 billion, five-year initiative from 2004 to 2008 that would focus, in particular, on 14 countries in Africa and the Caribbean that are highly affected by AIDS: Botswana, Côte d'Ivoire, Ethiopia, Guyana, Haiti, Kenya, Mozambique, Namibia, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zambia.

In the summer of 2003, Congress passed authorizing legislation—the United States Leadership Act Against HIV/AIDS, Tuberculosis and Malaria. Signed into law by the president, this bill sets priorities for the prevention, treatment, and care of people with HIV/AIDS, including the provision of antiretroviral therapies. The bill established the Office of the Global AIDS Coordinator to oversee the U.S. government's expanded AIDS initiatives. A 15th country will be added to the original list of 14 to be targeted by PEPFAR.

The bill also authorized funding for TB and malaria. For TB, the legislation aims to expand access to the DOTS treatment strategy for TB and DOTS-Plus for treating cases of multi-drug resistant TB.¹

PEPFAR's specific targets for HIV/AIDS include the prevention of 7 million new HIV infections; the treatment of 2 million HIV-infected people; and the care of 10 million HIV-infected individuals and AIDS orphans.

Without a strategy that includes TB, these goals for HIV/AIDS will be nearly impossible to achieve.

The Deadly Synergy Between TB and HIV/AIDS

In addressing the HIV/AIDS pandemic, TB is far too often ignored or viewed as just one of many opportunistic infections. In fact, TB is the leading killer of people with HIV/AIDS and the first presenting sign in the majority of AIDS patients. It is estimated that about one-third of people with HIV are also infected with TB. Up to half of those living with HIV will develop TB in their lifetime.

One in three people worldwide carries the TB bacterium in the form of a latent infection. HIV/AIDS weakens the immune system, and HIV infection increases by some 800-fold the likelihood that a person will develop active TB, which is usually fatal if not treated. There is also significant evidence that TB accelerates the progression of HIV infection. A person with HIV/AIDS in a developing country who contracts active TB has an estimated average survival time of several weeks. With effective TB treatment, survival time can be extended significantly by two to five years.²

Sub-Saharan Africa has the highest rates of TB, as well as HIV/AIDS, globally. Today, almost 70 percent of those coinfecting with TB and HIV live in Africa. High rates of HIV have caused TB rates to skyrocket. For example, in Kenya, the number of new TB cases is increasing at the alarming rate of 12 percent each year.³ In Côte d'Ivoire, Ethiopia, Mozambique, Namibia, Nigeria, Rwanda, and South Africa, the rate is increasing at 7 percent annually.⁴ This is in contrast to a global annual rate of increase in TB of just 0.4 percent.⁵ In the Latin America and Caribbean region, Haiti stands out as the country with the highest rates of HIV/AIDS and TB/HIV coinfection. Globally, HIV/AIDS is the single most important factor fueling the increasing incidence of TB over the last decade.

While TB works in deadly synergy with HIV/AIDS to take advantage of those with weakened immune systems, TB is far more than just an opportunistic infection. TB is an airborne infectious disease that kills 2 million people a year (the majority of whom are HIV negative), making it the greatest curable infectious killer on the planet. This has significant implications for public health in regions with high levels of HIV and TB, and for the global community. A person with active TB has been estimated to spread the disease to some 15 other people in a year even in low HIV prevalence settings. TB is a growing global epidemic to which we are all vulnerable.

The TB/HIV Coepidemics in the PEPFAR Countries

This report focused on the TB/HIV coepidemic in the 14 countries identified by the PEPFAR initiative. Some of the findings also apply to other countries. From the data presented, it is clear that all of the 14 countries targeted in the president's plan suffer greatly from epidemics of TB and HIV/AIDS, and that the synergy between the two diseases has caused TB rates to skyrocket.

TB incidence rates among the highest in the world

Globally, the average annual rate of TB incidence is estimated at 138 new cases per 100,000 population.⁶ (In the United States in 2002, there were 5.2 new cases of TB per 100,000.⁷) The incidence rates in the 14 countries (with the exception of Guyana) were more than 2 to 5 times the global average (and up to 144 times higher than the United States).

- ▶ Seven of the 14 target countries—Ethiopia, Kenya, Mozambique, Nigeria, South Africa, Tanzania, and Uganda—have been identified by the WHO as among the 22 countries with the highest TB burden in the world.⁸

Data also show that these countries need to make significant progress in expanding access to effective TB treatment if the WHO 2005 TB targets are to be met. While the WHO target is to detect at least 70 percent of new TB cases under DOTS by 2005, the average case detection rate of the 14 countries is currently just slightly above 44 percent. Eventually countries should be detecting and treating all active cases of TB. The WHO target for curing those detected is 85 percent. Thus far, the target has been achieved by only one country—Guyana.

- ▶ Overall, only 41 percent of all active TB cases are being detected and treated under DOTS in these countries. Over 925,000 people with active TB have not yet been reached by DOTS programs.
- ▶ Detection of new active TB cases has decreased in nine countries since 1998.

TB incidence rates continuing to rise

The incidence rate of TB has been rising much faster in sub-Saharan Africa than in the rest of the world. Globally, the incidence of TB is increasing at an annual rate of only 0.4 percent.⁹ In the 14 countries, the average annual increase in incidence is over 5 percent. In the last decade and a half, several of the target countries have seen more than a five-fold increase in TB rates.

- ▶ 13 of the 14 countries have experienced large annual increases in TB incidence since 1997—increases of 3 percent or more. The highest annual increase in incidence was in Kenya—at 12 percent.¹⁰
- ▶ The rise in tuberculosis incidence is particularly profound in eastern and southern Africa, regions hardest hit by HIV/AIDS.¹¹

High rates of TB/HIV coinfection

- ▶ By conservative estimates, there are over 435,000 HIV-infected individuals with active TB in the 14 countries.¹²
- ▶ In Namibia, South Africa, and Zambia, at least 60 percent of adults with active TB are also HIV positive. In Botswana, the rate of HIV infection in those diagnosed with TB is 79 percent. Guyana has the lowest coinfection rate at 14 percent.¹³
- ▶ Fewer than half of HIV-positive TB patients were detected and treated under DOTS programs in these countries, leaving over 222,000 coinfecting individuals not reached by DOTS programs.

The majority of the 14 countries do not have comprehensive and coordinated TB-HIV/AIDS strategies.

The Urgent Need to Address TB and HIV Together

In most countries with HIV/AIDS epidemics, TB and HIV/AIDS are still addressed as separate and distinct diseases, and HIV/AIDS control strategies too often ignore TB. Despite a cure for TB that is effective in people also infected with HIV, in 2003 the WHO estimated that 70 percent of coinfecting people in sub-Saharan Africa did not have access to low-cost anti-TB drugs.

The WHO-recommended strategy to cure standard TB is DOTS. DOTS combines five elements—political commitment, microscopy services, drug supplies, surveillance and monitoring systems, and use of highly efficacious treatment regimes, including chemotherapy. Once the patients with infectious TB have been identified, health and community workers and trained volunteers observe and record patients swallowing the full course of the correct dosage of anti-TB medicines. The drugs required for a full six to eight months of standard treatment under DOTS cost as little as \$10. Effective strategies also exist for treating multi-drug resistant TB—DOTS-Plus, built upon the DOTS model. The WHO's Green Light Committee has reduced the cost of second-line TB drugs by as much as 90 percent.

The example of India's Revised National TB Control Program (RNTCP) shows the remarkable progress that is possible for rapidly scaling up TB efforts. India's RNTCP has expanded India's DOTS coverage 40-fold in the last five years to over 70 percent of the country's population. To date, the RNTCP has successfully treated 2.5 million TB patients and trained 300,000 health workers. The TB cure rate under the RNTCP DOTS program is 84 percent. The Stop TB Partnership, an international coalition of over 300 institutions, is using the India model and providing increased support for more rapid scale-up in priority countries with high burdens of TB and/or TB/HIV through a new initiative called "Intensified Support & Action Countries" (ISAC).

An Existing Infrastructure to Expand Programs to Address Coinfection

Successful programs to control TB exist. Utilizing the TB-control infrastructure, promising efforts to treat TB/HIV coinfection are underway. The United States should support these programs and use their experiences with TB/HIV coinfection to inform PEPFAR's efforts.

The Global TB Drug Facility

The Global TB Drug Facility (GDF) is a remarkably successful mechanism—a “virtual” facility, designed to increase access to high-quality anti-TB drugs. In operation since 2001, the GDF is a model program that allows countries to apply for supplies of first-line anti-TB drugs. To date, the GDF has succeeded in reducing the price of the drugs for a standard six-month course of TB treatment to just \$10, and has approved over 40 countries to receive these low-cost anti-TB drugs.

Despite its remarkable effectiveness, the GDF is facing a serious funding crisis. It does not have monies pledged to meet existing commitments in 2004 and 2005 or to make any new grants for drug purchases. If the GDF does not get its minimum needed funding, almost 1 million TB patients will be put at serious risk and many could die, and supplies of drugs will be interrupted—creating the perfect conditions to develop dangerous multi-drug resistant TB. The GDF needs an estimated \$50 million annually to allow maximum impact. The U.S. government to date has provided just \$2 million to the GDF in 2002 and \$3 million in 2003. An annual U.S. investment of \$15 million in the GDF could treat over 1 million TB patients.

Stop TB Partnership

The Stop TB Partnership, an international coalition of over 300 institutions with its secretariat housed at the WHO, leads a global movement committed to social and political action to stop the unnecessary spread of tuberculosis around the world. The mission of Stop TB is to stop the transmission of TB, to ensure that those people already infected with TB receive proper treatment and have access to the cure, and to reduce both the social and economic impact that TB has on families, communities, and nations.

The Stop TB Partnership, established in 1998, is represented by governments of the high-burden TB countries and over 100 country partners, donors, international groups, and NGOs committed to eliminating TB.

Global TB/HIV Working Group

Under the umbrella of the Stop TB Partnership, there are six working groups that provide a focus for coordinated action on specific TB issues, including one on DOTS expansion, two addressing the new threats of TB/HIV and multi-drug resistant TB, and three working on development of new tools—drugs, diagnostics, and vaccines. The Global TB/HIV Working Group is especially relevant in the context of this report because it works to coordinate the response to the closely linked HIV and TB epidemics by building cooperation between the HIV/AIDS and TB communities.

As a result of the work of the Global TB/HIV Working Group, the World Health Organization released its *Interim Policy on Collaborative TB/HIV Activities* in January 2004. This document is intended to aid policymakers in understanding what should be done to reduce the double burden of TB and HIV. It is designed to be used in conjunction with the WHO's 2002 report, *Strategic Framework to Decrease the Burden of TB/HIV*, and its 2003 report, *Guidelines for Implementing Collaborative TB and HIV Programme Activities*.

Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM)

The Global Fund to Fight AIDS, Tuberculosis and Malaria, founded in April 2001, is a public-private partnership that was created to finance the massive scale-up of effective efforts to combat AIDS, TB, and malaria through prevention, treatment, and care. To apply for GFATM resources, countries create country coordinating mechanisms (CCMs) with representatives from both the public and private sectors, including governments, multilateral or bilateral agencies, non-governmental organizations, academic institutions, private businesses, and people living with the diseases. CCMs develop and submit grant proposals to the GFATM, which are reviewed by a global technical review panel that makes recommendations to the board. After grant approval, the GFATM oversees and reviews progress and the use of funds.

To date, the GFATM has approved grants totaling over \$2.1 billion to 121 countries. Of the total amount pledged, approximately \$319 million, or 6 percent, was approved for joint TB/HIV country projects, with 60 percent overall pledged for HIV/AIDS programs and 17 percent for TB.

The U.S. contribution to the GFATM in 2003 was \$350 million. The 2004 contribution could be as much as \$550 million, depending on the availability of matching funds. In 2005, however, President Bush proposed only \$200 million for the GFATM, which would cripple its ability to expand much-needed programs.

Without an effective and integrated approach to TB and HIV/AIDS, millions of people with HIV/AIDS will continue to die needlessly, deprived of existing TB treatments that could have prolonged their lives by years, even as HIV antiretroviral treatments are scaled up. Moreover, without an integrated approach to the TB/HIV coepidemic, TB will spread to millions more HIV-positive and -negative individuals. Controlling TB not only saves lives but also benefits those caring for people living with AIDS—health care workers, family members, and others—by protecting them against potential TB infection.

DOTS treatment programs for tuberculosis can serve as a primary entry point for identifying people who are HIV positive and eligible for antiretroviral treatment. Voluntary counseling and testing for HIV/AIDS should be integrated into expanded DOTS programs.

Recommendations

The job of the U.S. Office of the Global AIDS Coordinator within the State Department is to coordinate the U.S. government's response to the global AIDS epidemic. Ambassador Randall Tobias was sworn into that office on October 6, 2003.

The following are a series of broad policy recommendations addressing the major benefits to people with HIV/AIDS of expanding TB treatment and improving TB and HIV/AIDS program linkages in the 14 PEPFAR countries. Specific guidelines and recommendations for implementing these and other TB/HIV efforts are provided in the *Interim Policy on Collaborative TB/HIV Activities*, released by the WHO in January 2004, and the *Guidelines for Implementing Collaborative TB and HIV Programme Activities*, released by the WHO in 2003.

The first two recommendations are administrative, the rest programmatic. The last recommendation is for the U.S. government in general.

The U.S. Office of the Global AIDS Coordinator should:

1. Appoint a senior official to focus on addressing TB/HIV coinfection

This individual could serve as a point of contact for external partners and donors and ensure that appropriate technical assistance is delivered to the 14 countries. Specific actions should include briefings for all relevant U.S. government staff—including staff in the target countries—on the TB/HIV situation and ensuring that plans are developed to coordinate TB and HIV/AIDS programs for maximum impact.

2. Establish coordinating bodies for TB/HIV in the 14 target countries

The Office of the Global AIDS Coordinator should work with the WHO to establish coordinating bodies in the 14 target countries to carry out joint planning and resource mobilization for HIV/TB. These bodies should build on the country coordinating mechanisms (CCMs) of the Global Fund to Fight AIDS, Tuberculosis and Malaria.

3. Expand DOTS to reach all HIV-infected individuals

In the context of HIV/AIDS, expanding access to DOTS TB treatment in the 14 target countries is essential in order to meet the president's goals for treatment, prevention, and care. Expanding DOTS to provide treatment to all patients with active TB who are HIV positive would:

- ▶ prolong the life span and improve overall quality of life for over 222,000 additional HIV-infected individuals sick with TB;
- ▶ reduce the spread of TB among people with HIV/AIDS who are most vulnerable to developing active TB disease; and
- ▶ prevent new TB infections in hundreds of thousands of others who are HIV negative, particularly those at greater risk (including health care workers, caretakers, and family members of people with HIV/AIDS and TB), and the general population.

In the 14 PEPFAR countries, DOTS programs are currently detecting and treating about 213,000 TB patients who are HIV positive (Table 1), which represents less than half of coinfecting patients. An additional \$53 million annually could detect and treat the remaining approximately 222,000 TB patients who are HIV positive using the DOTS strategy. This funding estimate represents costs for anti-TB drugs and DOTS treatment for HIV-positive patients not yet being detected and treated under DOTS—as part of overall DOTS expansion.

Country programs should be monitored and evaluated on their success in increasing detection and treatment under DOTS of TB in HIV-infected individuals.

4. Integrate DOTS and VCT

The PEPFAR targets are to treat 500,000 people with HIV/AIDS in 2004 and 2 million by 2008. A major challenge is to identify people who are HIV positive and who are candidates for antiretroviral treatment. In nearly all of the PEPFAR countries, DOTS treatment programs can serve as a primary entry point to identify people eligible for ARV treatment. Integrating expanded DOTS programs with voluntary counseling and testing (VCT) for HIV/AIDS has additional benefits in terms of preventing HIV infection.

- ▶ *Identify Candidates for ARV Treatment:* The approximately 213,000 HIV-infected TB patients detected and being treated for TB under DOTS (Table 1) represent less than half of the estimated HIV-positive individuals with active TB in the 14 countries. Expanding DOTS

treatment programs to reach all HIV-positive people with active TB, and linking TB patients to VCT programs could identify over 435,000 HIV-infected individuals annually who would be potential candidates for ARV treatment.

- ▶ *Help prevent new HIV infections:* Providing voluntary counseling and testing for HIV/AIDS to TB patients offers patients an entry point into the continuum of care, support, and treatment for HIV/AIDS. Access to VCT will help reduce the spread of HIV/AIDS by making patients aware of their HIV status. All TB patients should also be introduced to HIV/AIDS prevention methods.

Based on the WHO's estimates, an additional \$58.2 million will be needed annually to effectively integrate VCT into DOTS programs in the 14 PEPFAR countries.¹⁴ This includes the cost of HIV VCT for all patients detected with TB, and strengthened coordination between TB and HIV/AIDS programs, including referral linkages.

In some cases there may also be opportunities for combining actual delivery efforts of ARVs and anti-TB drugs. Standard TB treatment—DOTS—involves taking a combination of anti-TB drugs under the regular observation and support of a trained health worker or community volunteer for six to eight months. DOTS can provide a model for ARV delivery, and in some cases there may be opportunities for joint delivery efforts of ARVs and anti-TB drugs.

Country programs should be monitored and evaluated on their success ensuring TB patients are linked to VCT for HIV/AIDS, and ensuring all other appropriate linkages are in place between TB and HIV/AIDS programs.

5. Provide prophylactic TB treatment to people with HIV/AIDS who have latent TB infection

Routinely screening people with HIV/AIDS for TB infection will help prolong people's lives. People with HIV are particularly vulnerable to reactivation of latent TB infections; providing prophylactic anti-TB treatment with isoniazid can prevent the development of active TB disease in those with HIV. This can protect and prolong people's lives. In addition, the availability of preventive therapy is an added incentive for people to seek voluntary counseling and testing for HIV/AIDS even before ARV treatment is widely available.

6. Prioritize the development of new diagnostic tools and treatment for TB in HIV-infected individuals

Better TB diagnostic tools and anti-TB drugs are needed to increase efficiency of diagnosis and treatment of coinfecting people. People with HIV/AIDS who have TB are more likely to be missed by common diagnostic methods used to detect both active TB disease and latent TB

infection. For this reason, new and better diagnostic methods are particularly important in regions with high levels of TB/HIV coinfection. Also, certain widely used standard TB drugs interact with ARVs. New TB drugs that avoid such interactions and shorten treatment time are critical, and would be particularly beneficial for those with HIV/AIDS.

Research and development efforts—including those being undertaken by the Global Alliance for TB Drug Development to bring forward new and better anti-TB drugs, as well as efforts to develop improved diagnostic tools—should receive expanded support.

7. Work with other donors and international organizations to treat all active TB cases in the PEPFAR priority countries

In the 14 PEPFAR countries, annual incidence of TB is estimated at 1.574 million new TB cases each year, with only about 41 percent (648,500) detected by DOTS programs (Table 2). This leaves about 926,000 TB patients annually who are currently not being detected and treated under DOTS programs. The total estimated cost to treat all active TB cases in the 14 PEPFAR countries would be \$205 million annually (from all sources).

Expanding DOTS programs to treat all active TB cases would protect both HIV-positive and HIV-negative members of the community, all of whom are at risk of contracting TB.

The U.S. government should:

8. Increase its investment in global TB and TB/HIV control

The U.S. government should expand its investment to control TB globally and address the growing coepidemic of TB/HIV, and work to mobilize other donors to do the same. Countries, including India and China, that are identified as the “next wave” of the HIV pandemic already have massive TB epidemics.* Russia and Eastern Europe have among the fastest growing rates of HIV and the highest rates of MDR-TB in the world. In addition to what can and will be achieved by PEPFAR in the 14 countries, increased investment in expanding TB treatment and addressing TB/HIV worldwide and greater coordination of efforts among bilateral and multilateral partners will be necessary to tackle these pandemics on a global scale.

* See September 2002 National Intelligence Council report at:
http://www.cia.gov/nic/PDF_GIF_otherprod/HIVAIDS/ICA_HIVAIDS20092302.pdf

Conclusion

Expanding effective TB treatment programs in the 14 PEPFAR countries is an immediately available, high-impact means of keeping people with HIV/AIDS alive. Additionally, controlling the TB epidemic protects communities. Expanding and strengthening the existing DOTS infrastructure in the 14 countries selected to receive resources through PEPFAR, and linking these programs to expanded voluntary counseling and testing services for HIV/AIDS, will provide the most important entry point for identifying people with AIDS who are prime candidates for ARV treatment. DOTS programs can provide important lessons and, in some cases, infrastructure for scaling up ARV treatment activities. We cannot afford to treat TB and HIV as separate problems. By supporting expanded and strengthened programs and developing an integrated strategy to tackle these diseases, we can save hundreds of thousands of additional lives and help reverse this dual epidemic.

Country Profiles

The 14 key countries targeted in the President's Emergency Plan for AIDS Relief are profiled in the following pages. These country profiles include the most current statistics on TB (from 2002):

1. Estimated number of new TB cases in that year
2. Overall TB incidence rate (number of new cases per 100,000 population)
3. Annual percentage increase in TB incidence (1997–2002)
4. Estimated number of TB deaths
5. Percentage of overall TB incidence occurring in adults aged 15 to 49 years
6. Percentage of adult TB cases with HIV coinfection
7. Percentage of TB deaths occurring in patients who were infected with HIV (Globally, an average of 30 percent of HIV/AIDS cases are coinfecting with TB. However, exact estimates for each country of TB coinfection rates for HIV/AIDS cases are not available.)
8. Percentage of population “covered” by DOTS, i.e., percentage of TB services that are implementing DOTS or Directly Observed Treatment, Short-course, the WHO-recommended strategy for treating standard TB
9. Percentage of new TB cases actually detected and successfully cured under DOTS programs

Each country profile also includes a brief summary highlighting significant information on the TB and HIV/AIDS epidemics and TB/HIV coinfection, as well as trends in DOTS population coverage, detection, and treatment success.

Botswana

CURRENT COUNTRY DATA ON TB (2002)

Population	1.770 million
Est. number of new TB cases	11,622
Overall TB incidence rate	657 per 100,000 population
Annual % increase in number of new TB cases	5.0 (1997–2002)
Est. number of TB deaths	1,593
% new TB cases in adults (15-49 yrs)	71
% Adult TB cases that are HIV+	79
% TB deaths that are HIV-infected	63
% DOTS population coverage	100
% DOTS detection (new smear+)	73
% DOTS treatment success (new smear+)	78 (2001 estimate)

Source: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004.

CURRENT SITUATION

The huge HIV/AIDS problem in the country has undermined progress to control TB. Prevalence of HIV/AIDS in Botswana is one of the highest in the world at almost 40 percent of the adult population living with HIV/AIDS.¹⁵ In conjunction with this very high prevalence of HIV/AIDS, Botswana now also has the highest TB/HIV coinfection rate in sub-Saharan Africa—with over three-quarters (79 percent) of adults who are newly diagnosed with TB estimated to also be infected with HIV.

In 2002, the annual incidence of TB had reached an alarming 657 new TB cases per 100,000 population—one of the highest in sub-Saharan Africa. To provide some perspective, the global average TB incidence rate was 138 new TB cases per 100,000 population in 2001.¹⁶ In the United States, the average incidence rate for 2002 was 5.2 cases per 100,000 population (making Botswana's annual incidence 126 times the U.S. rate).¹⁷

Botswana's estimate of 100 percent DOTS TB treatment coverage means that nearly all clinics are providing DOTS treatment. The reported rate of successfully detecting 73 percent of new cases of TB within DOTS programs is very good by global standards. However, further expanding detection is critical, especially in a nation with such high rates of coinfection. In addition, because HIV-positive patients are more likely to be missed by common DOTS detection methods, it is possible that the actual number of new TB cases is underestimated.

The massive rate of TB/HIV coinfection highlights the impact that effective TB treatment will have on prolonging the lives of those with HIV/AIDS and the need to support comprehensive and coordinated TB and HIV strategies. It also demonstrates the critical role that DOTS programs can and will play in identifying HIV-positive individuals who are in need of antiretroviral treatment.

Côte d'Ivoire

CURRENT COUNTRY DATA ON TB (2002)

Population	16.365 million
Est. number of new TB cases	67,376
Overall TB incidence rate	412 per 100,000 population
Annual % increase in number of new TB cases	7.0 (1997–2002)
Est. number of TB deaths	20,540
% new TB cases in adults (15–49 yrs)	71
% Adult TB cases that are HIV+	39
% TB deaths that are HIV-infected	44
% DOTS population coverage	74
% DOTS detection (new smear+)	25
% DOTS treatment success (new smear+)	73 (2001 estimate)

Source: *Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004.*

CURRENT SITUATION

Ongoing political instability since a military coup in December 1999 has made it difficult for the government of Côte d'Ivoire to address the country's worsening TB and HIV/AIDS situation. In the West Africa region, Côte d'Ivoire now has the highest adult prevalence rate of HIV/AIDS at 9.7 percent.¹⁸ The TB-HIV/AIDS coinfection rate of 39 percent is also relatively high even among the 14 PEPFAR countries.

In 1998, an impressive 98 percent of TB clinics provided DOTS treatment. By 2001, DOTS coverage had dropped dramatically to just 21 percent of the population—the lowest DOTS population coverage in Africa that year.¹⁹ In 2002, the government reported that 74 percent of TB clinics were once again providing DOTS treatment. Actual detection of new TB cases under DOTS has also followed an up and down trend over the last five years, from 51 percent in 1998 down to a mere 9 percent in 2001.²⁰ Currently, DOTS detection is slightly improved over 2001 to a level of 25 percent, but it still has far to go.

Prior to 1999, Côte d'Ivoire had a DOTS program in place that covered most of the country. While the larger issue of political instability must be addressed, the Ivoirian experience of providing the population access to DOTS can and should be built on as health care services are restored. Given the levels of TB/HIV coinfection, a functioning TB program is particularly critical and can be a main entry point for scaling up HIV/AIDS treatment.

Ethiopia

CURRENT COUNTRY DATA ON TB (2002)

Population	68.961 million
Est. number of new TB cases	255,345
Overall TB incidence rate	370 per 100,000 population
Annual % increase in number of new TB cases	7.0 (1997–2002)
Est. number of TB deaths	60,938
% new TB cases in adults (15–49 yrs)	71
% Adult TB cases that are HIV+	29
% TB deaths that are HIV-infected	32
% DOTS population coverage	95
% DOTS detection (new smear+)	33
% DOTS treatment success (new smear+)	76 (2001 estimate)

Source: *Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004.*

CURRENT SITUATION

The estimated number of Ethiopians living with HIV/AIDS in 2001 was 2.1 million—5 percent of the global total.²¹ In September 2002, the U.S. National Intelligence Council released *The Next Wave of HIV/AIDS: Nigeria, Ethiopia, Russia, India, and China*, which predicted dramatic increases in rates of HIV/AIDS in these five countries by 2010. The report estimates that the HIV/AIDS epidemic will advance most rapidly in Nigeria and Ethiopia if the current priorities and focus are not shifted to the growing problem in these countries. Already nearly one-third of adult TB cases are HIV positive. As HIV/AIDS spreads, TB rates can be expected to skyrocket.

Out of the 22 high-burden TB countries identified by the WHO, Ethiopia ranks in the top half, with some 255,300 new TB cases in 2002. Progress to control TB has been slow, with DOTS coverage increasing by only 6 percent between 1998 and 2001.²² But then, between 2001 and 2002, the country reported that DOTS coverage increased to 95 percent. This means that nearly all existing TB clinics now provide treatment under DOTS. However, detection of new TB cases

stands at just 33 percent, far short of the WHO 2005 target of 70 percent. This slow progress, in part, reflects the broader problem that nearly 50 percent of Ethiopia's population does not have access to primary health services overall and therefore little or no infrastructure exists to expand DOTS or other services to much of the country.

Unless the low rate of detecting new TB cases is rapidly improved and DOTS and other health services are extended, the rising rate of HIV/AIDS could cause the TB epidemic to spiral out of control. One of the most immediate, effective ways to extend health services in Ethiopia would be to expand DOTS coverage to the entire population. This could serve as a critical bridge for scaling up of HIV/AIDS services and identifying candidates for antiretroviral treatment.

Guyana

CURRENT COUNTRY DATA ON TB (2002)

Population	763,722
Est. number of new TB cases	879
Overall TB incidence rate	115 per 100,000 population
Annual % increase in number of new TB cases	8.0 (1997–2002)
Est. number of TB deaths	166
% new TB cases in adults (15–49 yrs)	61
% Adult TB cases that are HIV+	14
% TB deaths that are HIV-infected	15
% DOTS population coverage	25
% DOTS detection (new smear+)	11
% DOTS treatment success (new smear+)	90 (2001 estimate)

Source: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004.

CURRENT SITUATION

A relatively small country with a population of less than one million, Guyana continues to be seriously affected by HIV/AIDS. Out of the 20 Central and South American countries, Guyana has one of the highest adult prevalence rates of HIV/AIDS—at almost 3 percent.²³ The HIV/AIDS epidemic has fueled increased rates of TB/HIV coinfection, which now stands at 14 percent—second only to Haiti.

Guyana's TB incidence rate is one of the highest in the Latin American and Caribbean region. Since 1997, Guyana has seen an 8 percent annual increase in the number of new TB cases. This is not surprising given that Guyana has one of the lowest levels of DOTS treatment

coverage in the entire region, with only 25 percent of people having access to DOTS treatment. The number of TB cases actually detected under DOTS stands at an abysmally low 11 percent.

With support, Guyana should have the capacity to make rapid progress in expanding DOTS coverage and to have a significant impact on its TB problem, even in the face of its HIV/AIDS epidemic. While a small percentage of people with TB are currently treated within DOTS programs, their treatment success is very high. Every effort should be made to replicate these effective treatment procedures as overall coverage and detection are expanded.

Haiti

CURRENT COUNTRY DATA ON TB (2002)

Population	8.218 million
Est. number of new TB cases	26,224
Overall TB incidence rate	319 per 100,000 population
Annual % increase in number of new TB cases	-4.0 (1997–2002)
Est. number of TB deaths	5,895
% new TB cases in adults (15-49 yrs)	61
% Adult TB cases that are HIV+	28
% TB deaths that are HIV-infected	29
% DOTS population coverage	45
% DOTS detection (new smear+)	41
% DOTS treatment success (new smear+)	75 (2001 estimate)

Source: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004.

CURRENT SITUATION

Among all countries in Latin America and the Caribbean, Haiti has the highest incidence and prevalence rates of TB;²⁴ highest rate of HIV/AIDS;²⁵ and the highest TB/HIV coinfection rate.²⁶ Less than half of the population of 8.2 million people has access to DOTS TB treatment and only 41 percent of new TB cases are detected within DOTS programs every year. Decades of political instability and a lack of foreign aid and investment have helped sustain serious economic crises and compromised the government's ability to deal with its devastating TB and HIV/AIDS epidemics.

Partners in Health is leading a highly successful effort, modeled on the DOTS strategy, to integrate TB and HIV/AIDS treatment in rural areas of the country. Trained health workers deliver not only TB treatment but also free antiretroviral medications to people with HIV/AIDS in their homes, as well as provide other support services for patients.²⁷ This integrated approach to

addressing the dual epidemics of TB and HIV/AIDS can be applied to other parts of the country and provides important lessons for global scale-up of ARV treatment.

Kenya

CURRENT COUNTRY DATA ON TB (2002)

Population	31.540 million
Est. number of new TB cases	170,213
Overall TB incidence rate	540 per 100,000 population
Annual % increase in number of new TB cases	12 (1997–2002)
Est. number of TB deaths	41,648
% new TB cases in adults (15-49 yrs)	71
% Adult TB cases that are HIV+	51
% TB deaths that are HIV-infected	53
% DOTS population coverage	100
% DOTS detection (new smear+)	49
% DOTS treatment success (new smear+)	80 (2001 estimate)

Source: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004.

CURRENT SITUATION

In Kenya, 15 percent of the population is living with HIV/AIDS—a number that represents 6 percent of the global total.²⁸ Due to the significant TB and HIV/AIDS epidemics in the country, the TB/HIV coinfection rate now stands at over 50 percent.

Kenya is classified by the WHO as one of the 22 high-burden TB countries. Kenya has experienced a sharp increase in the incidence of TB; the country's annual increase in incidence rate of 12 percent is among the highest in sub-Saharan Africa.

While Kenya estimates that all TB services are providing DOTS treatment, and treatment success under DOTS is 80 percent (approaching the 2005 goal of 85 percent), much work remains to increase the actual number of new cases being detected by DOTS programs—still less than half of those sick with TB. Rapid progress toward ensuring that nearly all TB cases are actually detected and subsequently treated and cured within DOTS programs is critical, especially with the alarmingly rapid increase in TB incidence.

Mozambique

CURRENT COUNTRY DATA ON TB (2002)

Population	18,537 million
Est. number of new TB cases	80,893
Overall TB incidence rate	436 per 100,000 population
Annual % increase in number of new TB cases	7 (1997–2002)
Est. number of TB deaths	23,044
% new TB cases in adults (15-49 yrs)	71
% Adult TB cases that are HIV+	47
% TB deaths that are HIV-infected	51
% DOTS population coverage	100
% DOTS detection (new smear+)	45
% DOTS treatment success (new smear+)	77 (2001 estimate)

Source: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004.

CURRENT SITUATION

Mozambique's adult HIV/AIDS prevalence rate of 13 percent is one of the highest in sub-Saharan Africa.²⁹ The level of TB/HIV coinfection is also one of the highest in the region at 47 percent, and over half of all TB deaths were associated with HIV.

Mozambique is among the WHO's 22 high-burden TB countries, with almost 81,000 new TB cases annually. Despite Mozambique reporting 100 percent DOTS coverage, it is estimated that only about half of the population may actually have access to DOTS programs. The possibility of an overreporting of DOTS coverage nationwide suggests that the actual number of new cases of TB is higher than estimated. Moreover, a lower actual DOTS population coverage would also suggest an overestimate of the percentage of new TB cases detected under DOTS. It is critical that Mozambique ensure that the entire population has access to DOTS and that DOTS programs work to improve detection of those sick with TB.

Namibia

CURRENT COUNTRY DATA ON TB (2002)

Population	1.961 million
Est. number of new TB cases	14,724
Overall TB incidence rate	751 per 100,000 population
Annual % increase in number of new TB cases	7.0 (1997–2002)
Est. number of TB deaths	2,158
% new TB cases in adults (15–49 yrs)	71
% Adult TB cases that are HIV+	64
% TB deaths that are HIV-infected	53
% DOTS population coverage	60
% DOTS detection (new smear+)	77
% DOTS treatment success (new smear+)	63 (2001 estimate)

Source: *Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004.*

CURRENT SITUATION

In Namibia, adult prevalence of HIV/AIDS is 22.5 percent—the fourth highest in southern Africa. Given that high rate, it is no surprise that TB/HIV coinfection is over 60 percent.

Namibia suffers from one of the highest incidence rates of TB in sub-Saharan Africa at 751 new TB cases per 100,000 population—an increase over the incidence rate in 2001 of 626 cases per 100,000 population.³⁰ The reported DOTS population coverage has stood at 60 percent since 2001; however, case detection has declined from a level of 81 percent in 2001 to 77 percent today.³¹ Such a decrease in case detection could be explained by the inaccessibility of clinics due to large geographical distances between clinics and patients.

Despite the immense challenge of its TB and HIV/AIDS epidemics, Namibia has greater capacity than many of its neighbors, and, with adequate support, it should be able to rapidly expand and improve its national TB control program. This is urgent given the very high rate of TB infection and TB/HIV coinfection.

Nigeria

CURRENT COUNTRY DATA ON TB (2002)

Population	120.911 million
Est. number of new TB cases	367,836
Overall TB incidence rate	304 per 100,000 population
Annual % increase in number of new TB cases	7.0 (1997–2002)
Est. number of TB deaths	108,135
% new TB cases in adults (15-49 yrs)	65
% Adult TB cases that are HIV+	27
% TB deaths that are HIV-infected	30
% DOTS population coverage	55
% DOTS detection (new smear+)	12
% DOTS treatment success (new smear+)	79 (2001 estimate)

Source: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004.

CURRENT SITUATION

Although Nigeria does not yet have the mature HIV/AIDS epidemic of many southern and eastern African countries, the sheer size of its overall population means that Nigeria had almost 9 percent (3.5 million people) of the estimated global total of people living with HIV/AIDS at the end of 2001.³² Because Nigeria's HIV/AIDS epidemic is less advanced, the TB/HIV coinfection rate is lower than in many other countries, despite a large burden of TB. The September 2002 National Intelligence Council report, however, identified Nigeria as one of five "next wave" countries where HIV/AIDS is expected to spread rapidly by 2010, with immense social and economic consequences predicted for Nigeria, in particular.

As the most populous country in sub-Saharan Africa, Nigeria carries the largest number of TB cases on the continent—about 367,800 cases in 2002. This high burden of TB has placed it among the top five of the WHO's 22 high-burden TB countries. In 2002, about 108,100 people died of TB in Nigeria. Overall DOTS coverage is only 55 percent. Of even greater concern, detection of new TB cases under DOTS is one of the lowest in sub-Saharan Africa at 12 percent, a decrease from 2001 when it was 16 percent.³³

Current government efforts to control both TB and HIV/AIDS will need to be ramped up dramatically in order to avert greater disasters. Nigeria has a short window of opportunity to rapidly scale up DOTS TB control efforts before HIV/AIDS pushes TB rates higher and makes TB control much more difficult. In addition, with a current adult coinfection rate of 27 percent,

expansion of DOTS programs can function as a key entry point for identifying those with HIV/AIDS—in order to expand HIV prevention and AIDS treatment efforts.

Rwanda

CURRENT COUNTRY DATA ON TB (2001)

Population	8.272 million
Est. number of new TB cases	32,155
Overall TB incidence rate	389 per 100,000 population
Annual % increase in number of new TB cases	7.0 (1997–2002)
Est. number of TB deaths	9,480
% new TB cases in adults (15-49 yrs)	71
% Adult TB cases that are HIV+	37
% TB deaths that are HIV-infected	43
% DOTS population coverage	100
% DOTS detection (new smear+)	29
% DOTS treatment success (new smear+)	61 (2000 estimate)

Source: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004.

CURRENT SITUATION

Civil war, massive population displacements, and political conflicts with neighboring countries have left Rwanda in severe social and economic crisis. By the end of 2001, the estimated number of adults living with HIV/AIDS in Rwanda was nearly 9 percent of the population.³⁴

The extent of the country's social and economic deterioration is also partly reflected in Rwanda's TB program, where DOTS case detection and treatment success rates have both decreased since 1998. Much of the country's health infrastructure has deteriorated over the last decade, and detection of new TB cases within DOTS programs fell from 58 to 29 percent of all cases, and treatment success within DOTS programs fell from 72 to 61 percent.³⁵ Another indicator of Rwanda's worsening TB situation is its annual increase in the number of new TB cases since 1997. This 7 percent increase per year is one of the highest in sub-Saharan Africa.

Rwanda's high rates of TB and HIV can be expected to rise further if the current political situation does not improve. The TB/HIV coinfection rate stands at 37 percent—one of the highest in the region—demonstrating the importance of reversing the decline in TB control efforts and the importance of expanding and strengthening DOTS programs as a main entry point for scaling up HIV/AIDS efforts.

South Africa

CURRENT COUNTRY DATA ON TB (2002)

Population	44.759 million
Est. number of new TB cases	249,660
Overall TB incidence rate	558 per 100,000 population
Annual % increase in number of new TB cases	7.0 (1997–2002)
Est. number of TB deaths	35,497
% new TB cases in adults (15-49 yrs)	71
% Adult TB cases that are HIV+	60
% TB deaths that are HIV-infected	60
% DOTS population coverage	98
% DOTS detection (new smear+)	96
% DOTS treatment success (new smear+)	65 (2001 estimate)

Source: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004.

CURRENT SITUATION

South Africa is only beginning to address its huge HIV/AIDS epidemic. It is estimated that 20 percent of adults in South Africa were living with HIV/AIDS by the end of 2001.³⁶ This represents over 12 percent of the global total of people with HIV/AIDS.³⁷ An estimated 60 percent of adults with active TB are HIV positive.

In 2001, South Africa reported an estimated 243,306 new cases of TB, making it seventh highest on the WHO's list of 22 high-burden TB countries.³⁸ (This number increased in 2002 to over 249,000 new TB cases.) South Africa has one of the highest rates of new TB cases in the world, increasing at an annual rate of 7 percent between 1997 and 2002. The overall TB incidence rate was 558 per 100,000 population in 2002.

South Africa reports 98 percent DOTS coverage, meaning that nearly all TB clinics are treating patients under DOTS. The estimate of 96 percent actual detection of active TB cases under DOTS is extremely high by global standards. Even if it represents an overestimate—it is likely that both the overall incidence of TB has been underestimated in South Africa and that some TB cases may be accidentally double-counted—this still implies good outreach. Of concern is the relatively low rate of treatment success under DOTS—at just 65 percent, especially given the high treatment cost per case in South Africa, which is over \$700 per case for treatment in urban centers and over \$1,200 per case nationally. South Africa needs to improve the treatment success of its TB program—ensuring that patients entering the system complete treatment and are cured—and to lower the cost of treatment.

Tanzania

CURRENT COUNTRY DATA ON TB (2002)

Population	36.276 million
Est. number of new TB cases	131,566
Overall TB incidence rate	363 per 100,000 population
Annual % increase in number of new TB cases	3.0 (1997–2002)
Est. number of TB deaths	29,789
% new TB cases in adults (15-49 yrs)	71
% Adult TB cases that are HIV+	34
% TB deaths that are HIV-infected	37
% DOTS population coverage	100
% DOTS detection (new smear+)	43
% DOTS treatment success (new smear+)	81 (2001 estimate)

Source: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004.

CURRENT SITUATION

Adult prevalence of HIV/AIDS stands at about 8 percent of the population.³⁹ Furthermore, an estimated 34 percent of adult TB cases are HIV positive.

Tanzania is identified by the WHO as one of the 22 high-burden TB countries. Among the 14 countries targeted in PEPFAR, Tanzania is surpassed only by Nigeria, South Africa, Ethiopia, and Kenya in number of TB cases—with 131,566 new TB cases in 2002. While Tanzania estimates 100 percent DOTS population coverage, it should be of concern that the actual detection of new TB cases under DOTS has decreased steadily since 1998 from 53 percent that year to 43 percent in 2002 and is well below the WHO target of 70 percent case detection by 2005.⁴⁰ A greater commitment to TB control by the Tanzanian government, particularly ensuring increased case detection so that all of those sick with TB actually receive treatment, is needed to turn this trend around.

Uganda

CURRENT COUNTRY DATA ON TB (2002)

Population	25,004 million
Est. number of new TB cases	94,362
Overall TB incidence rate	377 per 100,000 population
Annual % increase in number of new TB cases	3.0 (1997–2002)
Est. number of TB deaths	21,392
% new TB cases in adults (15-49 yrs)	65
% Adult TB cases that are HIV+	24
% TB deaths that are HIV-infected	26
% DOTS population coverage	100
% DOTS detection (new smear+)	47
% DOTS treatment success (new smear+)	56 (2001 estimate)

Source: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004.

CURRENT SITUATION

While Uganda has been successful in slowing its HIV/AIDS epidemic, HIV/AIDS has been an immense challenge to progress in efforts to control TB. An estimated 5 percent of the adult population is living with HIV.⁴¹ In addition, 24 percent of adults with TB are infected with HIV.

Uganda is one of the 22 high-burden TB countries identified by the WHO. In 2002, the number of new TB cases was over 94,000, up from 78,000 in 2001.⁴² Case detection under DOTS has decreased steadily from 61 percent in 1998 to 47 percent in 2002, well below the WHO 2005 target of 70 percent.⁴³ Furthermore, the overall treatment success rate under DOTS stands at a disappointing 56 percent.

Uganda, with the support of the United States and others, must increase the capacity of its TB program to cure those patients who are in the system and to ensure that those with active TB are actually accessing DOTS treatment.

Zambia

CURRENT COUNTRY DATA ON TB (2002)

Population	10.698 million
Est. number of new TB cases	71,509
Overall TB incidence rate	668 per 100,000 population
Annual % increase in number of new TB cases	3.0 (1997–2002)
Est. number of TB deaths	16,239
% new TB cases in adults (15-49 yrs)	71
% Adult TB cases that are HIV+	62
% TB deaths that are HIV-infected	55
% DOTS population coverage	55
% DOTS detection (new smear+)	40
% DOTS treatment success (new smear+)	75 (2001 estimate)

Source: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004.

CURRENT SITUATION

Zambia is one of the poorest countries in the world and has relatively high rates of TB and HIV/AIDS. According to UNAIDS, about 21.5 percent of the adult population is living with HIV/AIDS. As a result of this high rate, over 60 percent of adult TB cases are estimated to be HIV positive.

Zambia has one of the highest TB incidence rates in sub-Saharan Africa, with 668 new TB cases per 100,000 population in 2002—over five times the global average and 128 times that of the United States in 2001.⁴⁴ The country's poverty and overall lack of basic health care services were exacerbated by a disastrous World Bank-led health sector reform effort in the 1990s that resulted in the dismantling of the existing TB control program. Efforts to rebuild the TB program have been slow despite the urgent need. The government is just starting to report on the status of DOTS coverage, detection, and treatment success.

Zambia faces a particular challenge in rebuilding its dismantled TB control program in the face of raging epidemics of TB and HIV/AIDS. However, given the enormously high rate of TB and TB/HIV coinfection, action to expand DOTS treatment is urgent—to save lives now and to provide the best means of identifying those with HIV/AIDS for scale-up of treatment and prevention services. Unless Zambia receives massive assistance to address adequately its TB epidemic, as well as its HIV/AIDS epidemic, these two deadly diseases will continue to fuel each other, causing more deaths and contributing to greater social and economic devastation.

TABLE 1: Estimated Additional Annual Funding Required to Treat TB in Adult Cases (All Forms**) that are HIV-Positive (based on 2002 data)

Country	% HIV Prevalence in Adult TB Cases (2002)	Est. Annual Adult TB Cases that are HIV+	# Adult TB Cases (All Forms) Detected Under DOTS that are HIV+	# Adult TB-HIV Cases Remaining to be Treated for TB Under DOTS	Est. Cost Per Case to Treat TB in Adults (1)	Annual Funding Required to Treat Remaining Adult TB Cases that are HIV+ (2)
Botswana	79	6,527	5,731	796	\$558	\$444,280
Côte d'Ivoire	39	18,664	2,925	15,739	\$200	\$3,147,799
Ethiopia	29	52,750	22,784	29,966	\$200	\$5,993,272
Guyana	14	77	9	68	\$200	\$13,560
Haiti	28	4,513	1,392	3,121	\$200	\$624,170
Kenya	51	62,114	29,260	32,854	\$200	\$6,570,710
Mozambique	47	27,124	8,565	18,559	\$200	\$3,711,737
Namibia	64	6,635	5,764	871	\$499	\$434,664
Nigeria	27	64,107	5,167	58,941	\$200	\$11,788,169
Rwanda	37	8,415	1,573	6,842	\$200	\$1,368,420
South Africa	60	106,515	90,710	15,805	\$713	\$11,268,642
Tanzania	34	31,506	14,442	17,065	\$200	\$3,412,946
Uganda	24	14,631	6,310	8,321	\$200	\$1,664,214
Zambia	62	31,546	18,302	13,244	\$200	\$2,648,845
TOTAL		435,125	212,934	222,191		\$53,091,429

** All forms includes smear-positive pulmonary, smear-negative pulmonary, and extrapulmonary new TB cases.

(1) Estimates of cost per adult TB case are based on empirical data and includes both costs for anti-TB drugs and delivery of treatment. A cost estimate of \$200 per case for 11 of the 14 countries is based on an extrapolation of WHO data. Per case cost estimates for Botswana (\$558), Namibia (\$499), and South Africa (\$713 for clinic-based care only) are higher, reflecting their income status as lower middle-income countries. Costs for Botswana and Namibia were calculated based on cost for clinic-based care in South Africa (\$713/case), adjusted according to the ratio of Gross National Income for the two countries.

(2) Formula Used: # Adult TB-HIV Cases Remaining to be Treated for TB Under DOTS x Est. Cost Per Case to Treat TB in Adults

Data in columns 2–5 courtesy of WHO/Geneva: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004

TABLE 2: Estimated Additional Annual Funding Required to Treat Remaining Adult TB Cases (All Forms**) Under DOTS (based on 2002 data)

Country	Population (in thousands)	Est. Annual # All Forms of New, Active TB Cases	Total All Forms TB Cases Detected Under DOTS	# Remaining TB Cases Requiring Treatment Under DOTS	Est. Cost Per Case to Treat TB in Adults (1)	Annual Funding Required to Treat All Remaining TB Cases Under DOTS (2)
Botswana	1.770	11,622	10,204	1,418	\$558	\$791,034
Côte d'Ivoire	16.365	67,376	10,560	56,816	\$200	\$11,363,103
Ethiopia	68.961	255,345	110,289	145,056	\$200	\$29,011,287
Guyana	0.764	879	105	774	\$200	\$154,818
Haiti	8.218	26,224	8,090	18,134	\$200	\$3,626,844
Kenya	31.540	170,213	80,183	90,030	\$200	\$18,005,963
Mozambique	18.537	80,893	25,544	55,349	\$200	\$11,069,816
Namibia	1.961	14,724	12,791	1,933	\$499	\$964,612
Nigeria	120.911	367,836	29,645	338,191	\$200	\$67,638,223
Rwanda	8.272	32,155	6,011	26,144	\$200	\$5,228,731
South Africa	44.759	249,660	212,616	37,044	\$713	\$26,412,682
Tanzania	36.276	131,566	60,306	71,260	\$200	\$14,251,923
Uganda	25.004	94,362	40,695	53,667	\$200	\$10,733,301
Zambia	10.698	71,509	41,487	30,022	\$200	\$6,004,327
TOTAL	394.037	1,574,363	648,526	925,837		\$205,256,665

** All forms includes smear-positive pulmonary, smear-negative pulmonary, and extrapulmonary new TB cases.

(1) Estimates of cost per adult TB case are based on empirical data and includes both costs for anti-TB drugs and delivery of treatment. A cost estimate of \$200 per case for 11 of the 14 countries is based on an extrapolation of WHO data. Per case cost estimates for Botswana (\$558), Namibia (\$499), and South Africa (\$713 for clinic-based care only) are higher, reflecting their income status as lower middle-income countries. Costs for Botswana and Namibia were calculated based on cost for clinic-based care in South Africa (\$713/case), adjusted according to the ratio of Gross National Income for the two countries.

(2) Formula Used: # Remaining TB Cases Requiring Treatment Under DOTS x Est. Cost Per Case to Treat TB in Adults

NOTE: Annual funding required of \$205.3 million includes costs required in Table 1 of \$53 million.

Data in columns 2–5 courtesy of WHO/Geneva: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004

ANNEX 1: Country Statistics on TB, 2002

Country	Population (in thousands)	Est. # All Forms of TB Cases**	Est. All Forms TB Incidence Rate (per 100,000 pop)	% Increase Annual Incidence (1997–2002)	Est. # All Forms TB Deaths	% New TB Cases in Adults (15-49 yrs)	% HIV Prevalence in Adult TB Cases	% TB Deaths that are HIV- infected
Botswana	1.770	11,622	657	5	1,593	71	79	63
Côte d'Ivoire	16.365	67,376	412	7	20,540	71	39	44
Ethiopia	68.961	255,345	370	7	60,938	71	29	32
Guyana	0.764	879	115	8	166	61	14	15
Haiti	8.218	26,224	319	-4	5,895	61	28	29
Kenya	31.540	170,213	540	12	41,648	71	51	53
Mozambique	18.537	80,893	436	7	23,044	71	47	51
Namibia	1.961	14,724	751	7	2,158	71	64	53
Nigeria	120.911	367,836	304	7	108,135	65	27	30
Rwanda	8.272	32,155	389	7	9,480	71	37	43
South Africa	44.759	249,660	558	7	35,497	71	60	60
Tanzania	36.276	131,566	363	3	29,789	71	34	37
Uganda	25.004	94,362	377	3	21,392	65	24	26
Zambia	10.698	71,509	668	3	16,239	71	62	55

** All forms includes smear-positive pulmonary, smear-negative pulmonary, and extrapulmonary new TB cases.

Source: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004

ANNEX 2: Country Trends in DOTS Coverage, Detection, and Cure

Country	% DOTS Population Coverage (2002)	% DOTS Detection (2002)** (new smear+)	% DOTS Treatment Success (2001)** (new smear+)
Botswana	100	73	78
Côte d'Ivoire	74	25	73
Ethiopia	95	33	76
Guyana	25	11	90
Haiti	45	41	75
Kenya	100	49	80
Mozambique	100	45	77
Namibia	60	77	63
Nigeria	55	12	79
Rwanda	100	29	61 (2000 data)
South Africa	98	96	65
Tanzania	100	43	81
Uganda	100	47	56
Zambia	55	40	75

** WHO global targets for TB include 70 percent detection of new TB cases and 85 percent cure rate of those cases by 2005. However, the ultimate goal for case detection and cure would ideally be 100 percent.

Source: Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2004

Notes

1. The WHO recommends Directly Observed Treatment, Short-course (DOTS) as the most effective strategy available today for treating standard TB. DOTS involves five key elements: 1) government commitment; 2) diagnosis by sputum microscopy; 3) short-course chemotherapy under direct patient observation for at least the first two months of the 6-9 months standard regimen; 4) uninterrupted supply of anti-TB drugs; and 5) standardized recording and reporting system.
2. WHO/Stop TB (<http://www.stoptb.org/tuberculosis/default.asp>)
3. Corbett EL, et al. *Arch Int Med*. 2003;163:109-21.
4. Ibid.
5. *WHO Report 2003. Global Tuberculosis Control: Surveillance, Planning, Financing*.
6. Corbett EL, et al. *Arch Int Med*. 2003;163:109-21.
7. CDC. *Reported Tuberculosis in the United States, 2002*. Atlanta GA: U.S. Department of Health and Human Services, September 2003.
8. The WHO has identified 22 countries in the world that, combined, contribute 80 percent of the global burden of TB.
9. *WHO Report 2003. Global Tuberculosis Control: Surveillance, Planning, Financing*.
10. Ibid.
11. Ibid.
12. This is based on 2002 data.
13. Corbett EL, et al. *Arch Int Med*. 2003;163:109-21.
14. Data courtesy of Katherine Floyd, WHO/Geneva.
15. UNAIDS. *AIDS Epidemic Update*. December 2002.
16. Corbett EL, et al. *Arch Int Med*. 2003;163:109-21.
17. CDC. *Reported Tuberculosis in the United States, 2002*. Atlanta GA: U.S. Department of Health and Human Services, September 2003.
18. UNAIDS. Table of UNAIDS/WHO country-specific HIV/AIDS estimates end-2001. *Global HIV/AIDS Epidemic 2002*.
19. *WHO Report 2003. Global Tuberculosis Control: Surveillance, Planning, Financing*.
20. Ibid.
21. UNAIDS. Table of UNAIDS/WHO country-specific HIV/AIDS estimates end-2001. *Global HIV/AIDS Epidemic 2002*.
22. *WHO Report 2003. Global Tuberculosis Control: Surveillance, Planning, Financing*.
23. UNAIDS. Table of UNAIDS/WHO country-specific HIV/AIDS estimates end-2001. *Global HIV/AIDS Epidemic 2002*.
24. Corbett EL, et al. *Arch Int Med*. 2003;163:109-21.

25. UNAIDS. Table of UNAIDS/WHO country-specific HIV/AIDS estimates end-2001. *Global HIV/AIDS Epidemic 2002*.
26. Corbett EL, et al. *Arch Int Med*. 2003;163:109-21.
27. Partners in Health website: www.pih.org
28. UNAIDS. Table of UNAIDS/WHO country-specific HIV/AIDS estimates end-2001. *Global HIV/AIDS Epidemic 2002*.
29. UNAIDS. Table of UNAIDS/WHO country-specific HIV/AIDS estimates end-2001. *Global HIV/AIDS Epidemic 2002*.
30. *WHO Report 2003. Global Tuberculosis Control: Surveillance, Planning, Financing*.
31. Ibid.
32. UNAIDS. Table of UNAIDS/WHO country-specific HIV/AIDS estimates end-2001. *Global HIV/AIDS Epidemic 2002*.
33. *WHO Report 2003. Global Tuberculosis Control: Surveillance, Planning, Financing*.
34. UNAIDS. Table of UNAIDS/WHO country-specific HIV/AIDS estimates end-2001. *Global HIV/AIDS Epidemic 2002*.
35. *WHO Report 2003. Global Tuberculosis Control: Surveillance, Planning, Financing*.
36. UNAIDS. Table of UNAIDS/WHO country-specific HIV/AIDS estimates end-2001. *Global HIV/AIDS Epidemic 2002*.
37. Ibid.
38. *WHO Report 2003. Global Tuberculosis Control: Surveillance, Planning, Financing*.
39. UNAIDS. Table of UNAIDS/WHO country-specific HIV/AIDS estimates end-2001. *Global HIV/AIDS Epidemic 2002*.
40. *WHO Report 2003. Global Tuberculosis Control: Surveillance, Planning, Financing*.
41. UNAIDS. Table of UNAIDS/WHO country-specific HIV/AIDS estimates end-2001. *Global HIV/AIDS Epidemic 2002*.
42. *WHO Report 2003. Global Tuberculosis Control: Surveillance, Planning, Financing*.
43. Ibid.
44. CDC. *Reported Tuberculosis in the United States, 2002*. Atlanta, GA: U.S. Department of Health and Human Services, September 2003.

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